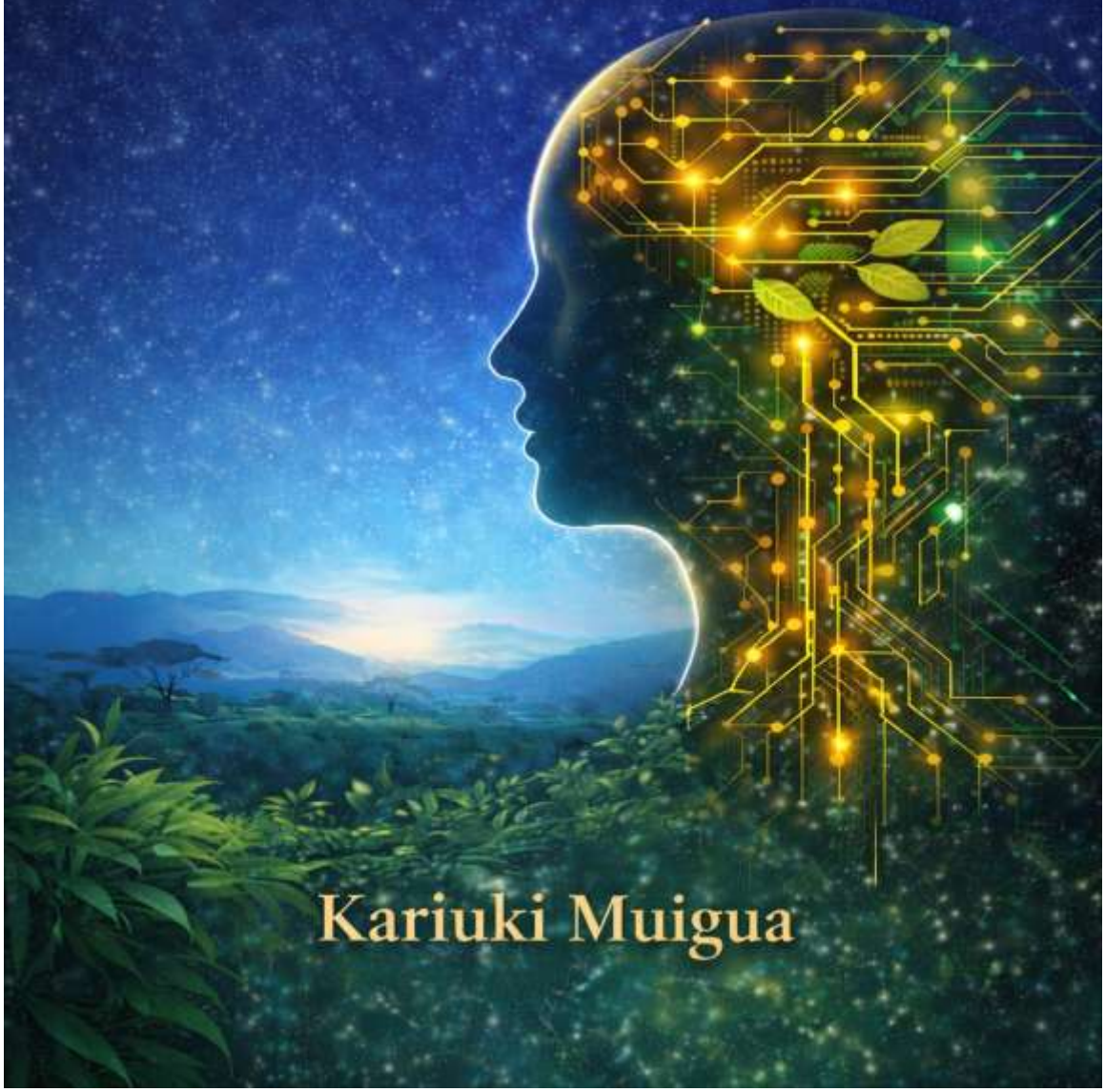
# Governing Artificial Intelligence in Africa:

*Law, Science, Ethics and Sustainable Development*



Kariuki Muigua

# Governing Artificial Intelligence in Africa:
## Law, Science, Ethics and Sustainable Development

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**Dedication**

This book is dedicated to
all those working
at the intersection of innovation
and justice, scholars, policymakers,
technologists and practitioners
who believe
that technological advancement
must remain anchored
in human dignity and
public accountability.

It is also dedicated to
the next generation of African thinkers
and leaders who will inherit
a digital world still in formation.

May they approach Artificial Intelligence
not merely as a tool of efficiency,
but as a domain requiring wisdom,
ethical clarity, and principled governance.

## Acknowledgements

The preparation of *Governing Artificial Intelligence in Africa: Law, Science, Ethics and Sustainable Development* has been shaped by sustained interdisciplinary engagement across law, technology, public policy and sustainability.

Addressing the governance challenges posed by Artificial Intelligence requires both analytical rigour and normative clarity.

I am grateful to colleagues and institutions whose insights strengthened the conceptual framework and reaffirmed the importance of aligning technological innovation with constitutional principles and public accountability.

I extend my sincere appreciation to Jack Liaduma, Anne Wairimu, Mwati Muriithi, Kelvin Kasyoki, Victor Makau, the staff of Glenwood Publishers, and the team at Kariuki Muigua & Co. Advocates for their professional support and collaboration during the preparation of this manuscript.

Finally, I also acknowledge with deep appreciation the steadfast support of my family, whose encouragement and understanding has made sustained scholarly work possible.

## Author's Note

Artificial Intelligence is often described as a technological revolution. Yet its deeper significance lies not in computation, but in governance. As algorithmic systems increasingly influence public administration, dispute resolution, environmental management, and institutional decision-making, they reshape not only efficiency but authority itself.

This book emerged from a growing recognition that the governance of Artificial Intelligence cannot be left solely to engineers or market forces. It demands sustained engagement from legal scholars, policymakers, regulators, and institutions committed to safeguarding constitutionalism, human dignity, and sustainable development. For Africa in particular, the challenge is not merely to adopt digital technologies, but to ensure that they are governed in ways that reflect continental priorities, social realities, and developmental aspirations.

The work therefore seeks to bridge law, science, ethics, and policy in a manner that is both principled and practical. It invites reflection on how emerging technologies can be aligned with rule-of-law values and development objectives, and how Africa can contribute meaningfully to shaping global AI governance frameworks.

Artificial Intelligence will influence the architecture of governance in the decades ahead. The question is not whether it will do so — but how responsibly, and under whose normative guidance.

**Hon. Prof. Kariuki Muigua, Ph.D, SC, C.Arb, OGW**
**Nairobi Kenya**
**February 2026**

## List of Abbreviations

| | |
|---|---|
| ADR | Alternative Dispute Resolution |
| AI | Artificial Intelligence |
| AII | Artificial Intelligence Integration |
| AU | African Union |
| ICTs | Information and Communication Technologies |
| LLMs | Large Language Models |
| NGOs | Non-Governmental Organizations |
| ODR | Online Dispute Resolution |
| SDGs | Sustainable Development Goals |
| TDRMs | Traditional Dispute Resolution Mechanisms |
| UN | United Nations |
| UNEP | United Nations Environment Programme |

## Table of Statutes and Instruments

Data Protection Act (Kenya)

African Union Agenda 2063

Digital Transformation Strategy for Africa

Science, Technology and Innovation Strategy for Africa

United Nations 2030 Agenda for Sustainable Development

Sustainable Development Goal 16

Sustainable Development Goal 16.3

Sustainable Development Goal 17

## SECTION I: FOUNDATIONS OF ARTIFICIAL INTELLIGENCE AND GOVERNANCE

*This section lays the conceptual and theoretical foundation for the book by reframing Artificial Intelligence as a governance and regulatory force. It interrogates the relationship between AI, power, law, and public authority, with particular attention to Africa's institutional and developmental context.*

# Chapter 1: Artificial Intelligence as a Governance and Regulatory Force

***Abstract***

*This chapter examines the role of Artificial Intelligence (AI) in governance. The chapter observes that AI has emerged as a governance and regulatory force that is increasingly shaping decision-making, authority, and accountability at all levels. In addition, the chapter argues that AI is no longer a neutral technological tool but now performs functions analogous to law and public regulation including through structuring social, economic and environmental choices, embedding normative assumptions, and generating outcomes with legal, political, economic and social consequences.*

*The chapter focuses on the role of AI within the African governance context. It highlights how institutional asymmetries, resource constraints, and historical patterns of inequality amplify both the opportunities and risks associated with the adoption of AI in Africa. The chapter argues that while AI holds significant potential to foster Sustainable Development in Africa including through sound environmental governance, and improved public administration, unregulated or poorly governed AI systems may entrench exclusion, undermine the rule of law, violate human rights and erode public trust. In light of the foregoing concerns, the chapter advances a justice-centred framework for AI governance in Africa. It identifies transparency, accountability, oversight, human rights, and explainability as core principles for aligning AI deployment with justice, equality and the rule of law in Africa. The chapter proposes the adoption of AII in justice systems, dispute resolution, and Sustainable Development initiatives in Africa towards good governance.*

## 1.1 From Technology to Governance

For much of the late twentieth and early twenty-first centuries, technology was commonly framed in African governance discourse as a facilitative instrument—an enabler of efficiency, administrative modernisation, and service delivery. Digital tools and technologies including mobile connectivity, cloud computing, broadband expansion, and data-driven systems have been widely adopted to strengthen record-keeping, streamline administrative procedures, widen access to public services, improve transparency in governance and support institutional reforms[1]. In this framing, technology largely appears as a neutral infrastructure: a means through which existing legal and governance frameworks can be strengthened[2].

AI disrupts this neutrality assumption in at least three ways. For instance, AI systems increasingly generate, rank, and recommend outcomes rather than merely storing or transmitting information[3]. In addition, AI systems operate at scale, making it possible for a single model to

[1] Barrett. L et al., 'E-Governance and Public Service Modernization in Africa' Available at https://www.researchgate.net/publication/397818524_E-Governance_and_Public_Service_Modernization_in_Africa (Accessed on 04/02/2026)

[2] Ibid

[3] Shalini. R.C., 'The Influence of AI Powered Recommendation Systems on Consumer Choice' International Journal for Multidisciplinary Research., Available at https://www.ijfmr.com/papers/2025/2/43571.pdf (Accessed on 04/02/2026)

shape numerous decisions across time and space[4]. Further, many AI systems are embedded in socio-technical environments—data pipelines, sensors, platform interfaces, procurement arrangements, and human workflows—that are themselves shaped by power relations and institutional constraints[5]. Due to these features, it has been argued that AI does not simply support governance; instead it structures governance, sometimes determining which outcomes are even available to human decision-makers[6].

AI is therefore best understood as a governance and regulatory force, and not merely as a technological tool. For instance, when algorithms classify individuals for eligibility, predict risk for policing, allocate scarce resources, or influence the pace and direction of adjudication, they are participating in the exercise of public power[7]. Through this, AI systems establish practical rules, embed normative assumptions, and generate consequences comparable to those produced by legislation, administrative regulations, or judicial decisions[8].

In light of the foregoing, there is need to recognise AI as a governance and regulatory force. This approach shifts the evaluative frame of AI from technical performance based on accuracy and efficiency to constitutional, human rights and rule-of-law standards including legality, fairness, accountability, justice and the right to challenge adverse decisions[9]. It also brings into view the institutional questions that accompany AI adoption: who designs and procures systems, who controls updates and datasets, who audits performance, and who bears responsibility when harm occurs[10].

For African states, the governance framing is especially vital. Digital transformation programmes are being pursued all over Africa in pursuit of good governance[11]. It has been argued that technology can transform governance in Africa, particularly in the areas of transparency,

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[4] Ibid

[5] Ibid

[6] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Available at https://www.oecd.org/en/publications/2025/06/governing-with-artificial-intelligence_398fa287.html (Accessed on 04/02/2026)

[7] Pasquale. F., 'The Black Box Society: The Secret Algorithms That Control Money and Information' (Harvard University Press, 2015).

[8] Ibid

[9] Ibid

[10] Lessig. L., Code and Other Laws of Cyberspace (Basic Books, 2006).

[11] AUDA-NEPAD., 'Powering The African Vision - Blockchain Technology for Africa's Transformative Governance' Available at https://www.nepad.org/publication/powering-african-vision-blockchain-technology-africas-transformative-governance#:~:text=Powering%20The%20African%20Vision%20%2D%20Blockchain%20Technology%20for%20Africa's%20Transformative%20Governance,-Download&text=The%20report%20examines%20the%20potential,governance%20and%20promoting%20economic%20growth. (Accessed on 04/02/2026)

efficiency, and trust[12]. However, persistent challenges of inequality, resource constraints, and uneven institutional capacity undermine the effective adoption of technology and digital tools in Africa[13]. It has been observed that in such contexts, AI systems can become appealing shortcuts—promising rapid gains in service delivery or administrative control[14]. Yet without good governance, these same systems can deepen exclusion, concentrate power, and erode public trust[15]. In light of these concerns, there is need, to govern AI in order to ensure that its deployment aligns with constitutional values, development goals, and the protection of human rights[16].

**1.2 Role of Artificial Intelligence as a Regulatory Force**

AI systems increasingly operate in domains that are inherently governance-relevant. For example, in finance, AI algorithms have the potential to assess creditworthiness, price insurance, enhance customer service, detect fraud, ensure regulatory compliance, and determine eligibility for financial products[17]. In social protection, automated systems may identify beneficiaries, verify identity, and flag anomalies[18]. Further, in security, predictive tools may guide surveillance priorities or resource deployment. In environment and climate governance, AI-enabled modelling and remote sensing inform regulatory planning, biodiversity conservation, disaster preparedness, and risk communication[19].

In the foregoing settings, AI does not merely advise; it establishes decision criteria and distributes benefits and burdens. Through this, AI functions as a regulatory force. However, unlike formal regulation, algorithmic regulation is often not enacted through democratic processes, and its rule-like effects may be hidden behind technical complexity or proprietary restrictions[20].[7] It has

[12] Ibid

[13] Muigua. K., 'Enhancing Technology Development and Transfer in Africa for Sustainability' Available at https://kmco.co.ke/wp-content/uploads/2024/06/Enhancing-Technology-Development-and-Transfer-in-Africa-for-Sustainability.pdf (Accessed on 04/02/2026)

[14] Barrett. L et al., 'E-Governance and Public Service Modernization in Africa' Op Cit

[15] Ibid

[16] Muigua. K., 'Enhancing Technology Development and Transfer in Africa for Sustainability' Op Cit

[17] What is artificial intelligence (AI) in finance?., Available at https://www.ibm.com/think/topics/artificial-intelligence-finance (Accessed on 04/02/2026)

[18] Organisation for Economic Cooperation and Development., 'AI and the Future of Social Protection' Available at https://www.oecd.org/en/about/projects/ai-and-the-future-of-social-protection.html (Accessed on 04/02/2026)

[19] Muigua. K., 'Utilising Science, Technology and Innovation for Effective Environmental Governance in Africa' Available at https://kmco.co.ke/wp-content/uploads/2024/09/Utilising-Science%5EJ-Technology-and-Innovation-for-Effective-Environmental-Governance-in-Africa.pdf (Accessed on 04/02/2026)

[20] Coglianese. C., & Lehr. D, 'Regulating by Robot: Administrative Decision-Making in the Machine-Learning Era' Available at https://www.law.upenn.edu/live/files/6329-coglianese-and-lehr-regulating-by-robot (Accessed on 04/02/2026)

been observed that the standards embedded in an AI system may be more influential than written policies, because they are applied repeatedly and consistently within operational systems[21].

De facto regulation by AI raises fundamental concerns. For example, traditional regulation through laws, policies and institutional frameworks is typically constrained by legality, procedural fairness, public participation, and review mechanisms[22]. By contrast, AI systems may be adopted through procurement processes that are not transparent, deployed without robust impact assessment, and updated in ways that are difficult for public institutions to monitor[23]. It has been argued that in instances where an AI system is supplied and maintained by an external vendor, the state's capacity to understand and challenge model behaviour may be limited, potentially shifting power away from public authority[24].

A practical governance challenge in AI lies in the opacity of machine learning. For instance, where decision logic cannot be readily explained in human-readable terms, the ability of affected persons to understand why a decision was made—and the ability of institutions to justify it may be compromised[25]. This is particularly significant in most governance contexts where due process requires transparent and accountable decision making processes and a meaningful opportunity for those affected to challenge adverse outcomes[26]. Consequently, it has been observed that algorithmic opacity may produce a form of "procedural deficit," even when outcomes appear administratively efficient[27].

A second challenge concerns data. AI systems are only as reliable and fair as the data on which they are trained and the contexts in which they are deployed[28]. As a result, if datasets under-represent certain groups, encode historical bias, or reflect patterns of exclusion, the resulting models may reproduce and amplify such inequities fueling discrimination and human right violations[29]. In the Africa context, data constraints may be exacerbated by the limited

[21] Ibid
[22] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Op Cit
[23] Ibid
[24] Zuboff. S., 'The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power' Available at https://www.hbs.edu/faculty/Pages/item.aspx?num=56791 (Accessed on 04/02/2026)
[25] Ibid
[26] Wachter. S., Mittelstadt. B., & , Floridi. L., 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' *International Data Privacy Law*, Volume 7, Issue 2, May 2017, pp 76–99,
[27] Ibid
[28] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Op Cit
[29] Ibid

availability of high-quality public datasets, the uneven digitisation of records, and the use of imported datasets that do not reflect local realities[30].

De facto regulation through AI therefore demands governance interventions at multiple points. These include legal frameworks that clarify the permissibility and limits of automated decision-making[31]; institutional policies that require transparency, accountability and impact assessments[32]; technical safeguards such as auditing and monitoring[33]; and remedies that enable individuals to challenge and obtain redress for algorithmic harms and biases[34]. Without these measures, AI risks becoming regulation without accountability.

**1.3 Algorithmic Power, Law, and Authority**

Law traditionally structures power by defining authority, allocating responsibility, and establishing procedures for decision-making and accountability. It has been argued that AI challenges each of these functions by altering how decisions are generated and by diffusing responsibility across complex supply chains of design, data, deployment, and operation[35].

Algorithmic power is exercised through design choices that are often invisible to those affected. Developers select variables, define objective functions, tune thresholds, and determine error tolerances[36]. It has been observed that these choices embed normative judgments about what should be prioritised (such as efficiency over fairness, and risk reduction over inclusion)[37]. Even apparently technical choices, such as which dataset to use or which features to weigh, can carry distributive consequences with impacts on fairness, transparency and inclusivity[38]. It has been argued that when such choices drive public decisions, they should be treated as governance choices[39].

Further, accountability becomes more complex when AI systems are involved. For instance, traditional legal responsibility may attach to identifiable human decision-makers[40]. However,

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[30] AUDA-NEPAD., 'Powering The African Vision - Blockchain Technology for Africa's Transformative Governance' Op Cit

[31] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Op Cit

[32] Ibid

[33] Ibid

[34] Ibid

[35] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Op Cit

[36] Wachter. S., Mittelstadt. B., & , Floridi. L., 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' Op Cit

[37] Ibid

[38] Hildebrandt. M., 'Smart Technologies and the End(s) of Law' Novel Entanglements of Law and Technology, 2016

[39] Ibid

[40] Ibid

with AI, responsibility is frequently distributed. For example, the procuring agency selects the system; a vendor provides and updates it; a data controller determines data sources; and frontline staff implement outputs[41].Therefore, when harm occurs, each actor may claim that responsibility lies elsewhere—creating accountability gaps[42].

Further, AI also blurs the boundary between public and private authority creating accountability concerns. Private actors may design AI systems and tools used by courts, regulatory agencies, and public services[43]. In this context, contractual terms and trade-secret claims may limit transparency, while public institutions may depend on external expertise they cannot fully scrutinise[44]. This dynamic risks undermining core administrative law principles, including reason-giving, procedural fairness, and the right to review[45].

A governance-centred approach requires that law respond not only to outcomes but to the processes by which outcomes are generated in order to ensure fairness, transparency and accountability. This suggests the importance of: clear rules on when and how automated decision-making is permissible; obligations to document model design, data sources, and decision pathways; audit and monitoring requirements; and robust remedies[46]. These measures help ensure that AI systems do not bypass legality and constitutionalism under the banner of innovation[47].

When adopting AI in governance and regulation, the goal is not to impede innovation, but to align it with public values including transparency, fairness, justice and human rights . AI can support better governance when deployed responsibly—for instance, by improving environmental monitoring, detecting systemic corruption patterns, enhancing financial inclusivity and expanding legal information and access to justice[48]. But the legitimacy of such deployments depends on whether they remain subject to law's core constraints: transparency, accountability, and respect for fundamental human rights.

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[41] Wachter. S., Mittelstadt. B., & , Floridi. L., 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' Op Cit

[42] Ibid

[43] Palumbo. A., & Dacuing. C., 'The Blurring of the Public-Private Dichotomy in Risk-based EU Digital Regulation: Challenges for the Rule of Law' Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5397112#:~:text=Liberal%20democracy%20essentially%20ties%20the,founding%20value%20of%20the%20EU. (Accessed on 04/02/2026)

[44] Ibid

[45] Ibid

[46] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Op Cit

[47] Ibid

[48] Ibid

**1.4 Africa's Governance Context and Algorithmic Asymmetries**

Africa's engagement with AI occurs within distinctive historical, institutional, and socio-economic conditions. It has been observed that the continent's governance context includes uneven regulatory capacity, resource constraints, and persistent inequality[49]. These factors shape both the potential benefits of AI and the vulnerabilities associated with its unregulated adoption[50].

A defining feature of AI adoption in Africa is structural asymmetry. For instance, many AI systems deployed across the continent are developed elsewhere, trained on datasets that do not reflect African realities, and embedded within institutional environments that may lack robust regulatory and oversight mechanisms[51]. It has been argued that where models are imported "as-is," they may misclassify local conditions, encode inappropriate assumptions, or marginalise groups who are not well represented in training data[52]. Such risks are heightened when the underlying data infrastructure is weak or when public institutions have limited capacity to commission independent evaluations[53].

These asymmetries can also take the form of dependency. When core systems are procured from external vendors, public institutions may face difficulties in understanding model updates, negotiating transparency, or ensuring continuity if such relationships are damaged. This has implications for sovereignty and long-term institutional capacity crating governance challenges[54]. Good governance, therefore, requires not only regulating outputs but building the capability to assess and manage AI systems across their lifecycle.

At the same time, African states face strong incentives to adopt AI. It has been argued that pressures to modernise public administration, expand service delivery, improve climate resilience, and strengthen justice systems make algorithmic tools attractive for Africa[55]. However, the risk lies not in innovation itself, but in innovation without governance. For instance, it has been pointed that without deliberate frameworks, AI may deepen exclusion, enable surveillance, and undermine trust and credibility in Africa[56]. Conversely, with appropriate governance, AI can help support evidence-based policy, strengthen environmental stewardship, and widen access to

[49] AUDA-NEPAD., 'Powering The African Vision - Blockchain Technology for Africa's Transformative Governance' Op Cit

[50] Muigua. K., 'Enhancing Technology Development and Transfer in Africa for Sustainability' Op Cit

[51] Azaroual. F., 'Artificial Intelligence in Africa: Challenges and Opportunities' Available at https://www.policycenter.ma/publications/artificial-intelligence-africa-challenges-and-opportunities (Accessed on 04/02/2026)

[52] Ibid

[53] Ibid

[54] Ibid

[55] AUDA-NEPAD., 'Powering The African Vision - Blockchain Technology for Africa's Transformative Governance' Op Cit

[56] Ade-Ibijola. A., & Okonkwo. C., 'Artificial Intelligence in Africa: Emerging Challenges' Available at https://link.springer.com/chapter/10.1007/978-3-031-08215-3_5 (Accessed on 04/02/2026)

justice[57]. Therefore, embracing a justice-centred approach by governing AI as a matter of public power in accordance with constitutional values including transparency, accountability, inclusivity and human rights can ensure that AI is effectively adopted in Africa, for Sustainable Development[58]. This means designing legal and institutional responses that are context-sensitive—responsive to local realities, attentive to inequality, and oriented towards just and inclusive outcomes[59].

**1.5 Core Governance Principles for Artificial Intelligence**

A justice-centred framework for AI governance must be grounded in normative principles that reflect constitutional values and rule-of-law commitments. At a minimum, governance of AI systems in public and quasi-public domains should be informed by transparency, accountability, human oversight, and explainability[60].

Transparency requires disclosure of the existence and purpose of AI systems, especially where they influence decisions affecting rights or obligations.[61] In addition, it also requires meaningful information about data sources, model objectives, and performance limitations[62]. On the other hand, accountability demands clear allocation of responsibility across the AI lifecycle, ensuring that harms can be traced and remedied[63]. Human oversight affirms that AI should support, rather than replace, human judgment in contexts with significant legal, socialor ethical consequences[64]. Further, explainability ensures that affected individuals can understand and challenge decisions shaped by algorithmic processes, protecting due process and procedural justice[65]. By fostering these tenets, it is possible to adopt AI effectively in Africa by ensuring that it aligns with local needs and circumstances including inclusivity, fairness and human rights. It has been observed that thesehese principles are not merely technical safeguards; they express constitutional commitments and democratic legitimacy[66]. They can be operationalised through governance tools such as: algorithmic impact assessments; procurement standards that require auditability;

[57] Ibid
[58] Muigua. K., 'Enhancing Technology Development and Transfer in Africa for Sustainability' Op Cit
[59] Azaroual. F., 'Artificial Intelligence in Africa: Challenges and Opportunities' Op Cit
[60] United Nations Educational, Scientific and Cultural Organization., 'Recommendation on the Ethics of Artificial Intelligence' Available at https://www.unesco.org/en/articles/recommendation-ethics-artificial-intelligence (Accessed on 04/02/2026)
[61] Ibid
[62] Ibid
[63] Ibid
[64] Wachter. S., Mittelstadt. B., & , Floridi. L., 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' Op Cit
[65] Ibid
[66] United Nations Educational, Scientific and Cultural Organization., 'Recommendation on the Ethics of Artificial Intelligence' Op Cit

independent oversight bodies; training and capacity development for public officials; and remedies that permit challenge and redress[67].

In the African context, implementing these principles must also address the realities of digital inequality and resource constraints that are widespread in the continent. Transparency mechanisms should be accessible in language and format; oversight should be feasible for institutions with limited technical staff; and remedies should not depend on costly litigation alone[68]. A governance framework that is theoretically robust but practically inaccessible will fail to protect those most at risk from algorithmic harm.[69]

**1.6 Transition: From Governance to Justice**

Recognising AI as a governance and regulatory force provides the conceptual foundation for the chapters that follow. Governance concerns in AI become most acute where algorithmic systems intersect directly with justice systems and the rule of law. Courts, tribunals, and dispute resolution mechanisms represent spaces where power, rights, and accountability converge.

The next chapter turns to the implications of AI for access to justice, due process, and the administration of law. It examines how algorithmic tools are reshaping justice delivery, and the safeguards required to ensure that efficiency gains do not come at the expense of fairness, dignity, and legal certainty. The governance principles articulated here—transparency, accountability, human oversight, and explainability—will be examined in the justice domain, where the legitimacy of decisions depends on both outcomes and procedures.

**1.7 Conclusion**

This chapter has argued that AI should understood not merely as a technological innovation, but as a *governance and regulatory force* that increasingly shapes decision-making, authority, and accountability. By influencing outcomes in areas such as public administration, justice systems, environmental governance, and resource allocation, AI systems now perform functions traditionally associated with law, policy and public institutions. This shift requires a corresponding transformation in how AI is evaluated, regulated, and integrated into governance frameworks for sustainability.

Embracing AI as a governance issue brings into focus the profound implications of algorithmic decision-making for constitutionalism, the rule of law, and human rights and dignity. Unlike earlier digital tools, AI systems do not simply support institutional processes; they structure

[67] Coglianese. C., & Lehr. D, 'Regulating by Robot: Administrative Decision-Making in the Machine-Learning Era' Op Cit
[68] Azaroual. F., 'Artificial Intelligence in Africa: Challenges and Opportunities' Op Cit
[69] Ibid

choices, embed normative assumptions, and distribute benefits and burdens at scale[70]. Where such systems operate without transparency, accountability, or meaningful oversight, they risk exercising public power without public responsibility[71].

The chapter has also emphasised that Africa's engagement with Artificial Intelligence occurs within a distinctive governance context marked by institutional asymmetries, resource constraints, and historical patterns of inequality. While AI offers significant opportunities to support Sustainable Development, environmental stewardship, and improved service delivery, its uncritical adoption may deepen exclusion, reinforce dependency, and undermine public trust[72]. The challenge is therefore not whether to adopt AI, but *how to govern it* in a manner that aligns with constitutional values and development aspirations[73].

A justice-centred framework for AI governance requires the embedding of core principles—*transparency, accountability, human oversight, and explainability*—across the lifecycle of AI systems[74]. These principles are not optional technical add-ons; they are legal and ethical imperatives that anchor AI within democratic governance and the rule of law. Their effective implementation depends on proactive legal frameworks, institutional capacity-building, and context-sensitive regulatory approaches that respond to African realities[75].

By establishing AI as a matter of governance and public power, this chapter provides the conceptual foundation for the chapters that follow. The analysis now turns to the domain where the stakes of AI governance are most immediate and visible: the justice system. The next chapter examines how Artificial Intelligence is reshaping access to justice, due process, and the administration of law, and considers the safeguards required to ensure that efficiency and innovation do not come at the expense of fairness, accountability, and legal certainty.

[70] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Op Cit
[71] Ibid
[72] Azaroual. F., 'Artificial Intelligence in Africa: Challenges and Opportunities' Op Cit
[73]Ibid
[74] United Nations Educational, Scientific and Cultural Organization., 'Recommendation on the Ethics of Artificial Intelligence' Op Cit
[75] Ibid

# Chapter 2: Science, Data and Algorithmic Decision-Making in Africa

***Abstract***

*This chapter discusses how AI can improve science and governance in Africa through algorithmic decision-making. The chapter defines algorithmic decision-making. It observes that this process is key in strengthening science and governance through analyzing large sets of data for improved and knowledge-based decision making. In particular, the chapter focuses on algorithmic decision-making in Africa. It discusses the benefits of algorithmic decision-making in Africa and examines how this process is shaping science and governance in Africa. Despite its benefits, the chapter notes that algorithmic decision-making in Africa faces challenges related to accountability, bias and transparency. In light of these concerns, the paper discusses how algorithmic-decision making in Africa can be improved towards harnessing science for good governance.*

## 1.0 Introduction

Artificial Intelligence (AI) is revolutionizing science into a data-driven field enabling scientific breakthroughs through its benefits including quick data analysis, formulation of hypotheses and simulation[1]. It has been argued that AI acts as a catalyst for scientific breakthroughs and has become a key tool in many scientific processes[2]. The integration of science and AI has been described as a mutually-beneficial processes[3]. On one hand, AI is transforming science by providing an appropriate and effective means to digest large datasets and answer increasingly complex scientific questions[4]. On the other hand, fundamental scientific concepts are being leveraged to build more efficient and interpretable AI systems for a wide range of applications[5].

Science has become an important governance tool and approach globally. Science is providing evidence-based knowledge that is shaping policies and ensuring sound decision-making processes across all aspects of Sustainable Development[6]. By acting as a source of knowledge and evidence, science enables humanity to navigate complex challenges and design appropriate responses to socio-economic and environmental threats[7]. For example, science has made it

[1] European Commission., 'Artificial Intelligence (AI) in Science' Available at https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/artificial-intelligence-ai-science_en (Accessed on 05/02/2026)

[2] Ibid

[3] Researchers Explore Mutual Benefits of AI and Science., Available at https://science.mit.edu/researchers-explore-mutual-benefits-of-ai-and-science/#:~:text=AI%20is%20enabling%20scientists%20like%20Selin%20to,for%20climate%20variability%20and%20societal%20interactions%20in (Accessed on 05/02/2026)

[4] Ibid

[5] Ibid

[6] Boulton. G., 'Science as a global public good: the roles of the representative bodies of science—a perspective' Available at https://pmc.ncbi.nlm.nih.gov/articles/PMC9575637/ (Accessed on 05/02/2026)

[7] Ibid

possible for humanity to develop essential drugs and improve health and medical care, and achieve food security through sustainable agricultural methods and raising agricultural productivity[8]. In addition, science is improving environmental governance globally. It has been argued that environmental governance requires informed science-based environmental decision-making[9]. Progress in science and innovation is enabling the world achieve sound environmental governance including through effective pollution control, sound climate action and appropriate biodiversity conservation strategies[10].

The interaction between science and AI therefore provides a platform towards improving governance in all spheres of life. In particular, it has been observed that generative AI technologies such as diffusion models and large language models (LLMs) are ensuring the availability of high quality scientific data[11]. These tools integrate data-driven modeling with prior scientific knowledge which leads to automation of hypothesis generation and validation for quicker and more efficient scientific discoveries which take into account large sets of data[12]. The ability of AI to leverage on large quantity of real-time data is therefore beneficial for scientific discoveries and breakthroughs.

This chapter discusses how AI can improve science and governance in Africa through algorithmic decision-making. The chapter defines algorithmic decision-making. It observes that this process is key in strengthening science and governance through analyzing large sets of data for improved and knowledge-based decision making. In particular, the chapter focuses on algorithmic decision-making in Africa. It discusses the benefits of algorithmic decision-making in Africa and examines how this process is shaping science and governance in Africa. Despite its benefits, the chapter notes that algorithmic decision-making in Africa faces challenges related to accountability, bias and transparency. In light of these concerns, the paper discusses how algorithmic-decision making in Africa can be improved towards harnessing science for good governance.

[8] United Nations Committee for Development Policy., 'Science, Technology and Innovation for Sustainable Development.' Available at https://www.un.org/development/desa/dpad/wpcontent/uploads/sites/45/CDP-excerpt-2013-3.pdf (Accessed on 05/02/2026)

[9] United Nations Environment Programme., 'Environmental Governance' Available at https://www.unep.org/regions/west-asia/regional-initiatives/environmental-governance (Accessed on 05/02/2026)

[10] Global Council for Science and the Environment., 'The Imperative Role Science Plays in Global Environmental Governance Today' Available at https://www.gcseglobal.org/gcse-essays/imperative-role-science-plays-global-environmental-governance-today (Accessed on 05/02/2026)

[11] AI for Science 2025., Available at https://www.nature.com/articles/d42473-025-00161-3 (Accessed on 05/02/2026)

[12] Ibid

## 2.0 Algorithmic Decision-Making and Science in Africa: Opportunities and Challenges

### 2.1 Defining Algorithmic Decision-Making

An algorithm has been defined as an unambiguous procedure to solve a problem or a class of problems[13]. An algorithm is usually composed of a set of instructions or rules that take some input data and return outputs[14]. Further, an algorithm has also been described as a set of finite, well-defined steps or instructions designed to solve a problem or perform a computation task[15]. An algorithm performs several functions including automating processes in order to make them expeditious, efficient and reliable, solving complex problems and undertaking tasks that may be difficult for humans[16].

Algorithmic decision-making involves the use of computer algorithms to sift through and analyze large volumes of data in order to support decision-making processes across various fields[17]. It has been observed that algorithmic decision-making supports human beings in making decisions including through predicting outcomes and estimating risks[18]. Through algorithmic decision-making, computer algorithms are used to automate processes and make recommendations that would otherwise involve human judgment[19]. This process analyses large sets of data, detects patterns, make predictions and suggests decisions at a scale and speed beyond human capability[20]. Algorithmic decision-making therefore processes large volumes of information, identifies patterns, and applies predefined rules to arrive at conclusions or suggest actions[21].

It has been observed that algorithmic decision-making is being utilised across various fields to improve governance outcomes[22]. For instance, in healthcare, algorithmic decision-making can assist doctors in identifying diseases in a clinical setting, where data is complex or sparse thus

[13] European Parliament., 'Understanding Algorithmic Decision-Making: Opportunities and Challenges' Available at https://www.europarl.europa.eu/RegData/etudes/STUD/2019/624261/EPRS_STU(2019)624261_EN.pdf (Accessed on 05/02/2026)
[14] Ibid
[15] What is an Algorithm | Introduction to Algorithms., Available at https://www.geeksforgeeks.org/dsa/introduction-to-algorithms/ (Accessed on 05/02/2026)
[16] Ibid
[17] European Parliament., 'Understanding Algorithmic Decision-Making: Opportunities and Challenges' Op Cit
[18] Ibid
[19] Algorithmic Decision-Making., Available at https://verifywise.ai/lexicon/algorithmic-decision-making (Accessed on 05/02/2026)
[20] Ibid
[21] Dare. A., 'The Ethics of Algorithmic Decision-Making: When Code Becomes Judge and Jury' Available at https://medium.com/@afolabidare50/the-ethics-of-algorithmic-decision-making-when-code-becomes-judge-and-jury-d262e4f250c7 (Accessed on 05/02/2026)
[22] European Parliament., 'Understanding Algorithmic Decision-Making: Opportunities and Challenges' Op Cit

aiding them to make correct diagnoses[23]. Further, in finance, algorithmic decision-making can assess creditworthiness, price insurance, enhance customer service, detect fraud, ensure regulatory compliance, and determine eligibility for financial products and services[24]. In addition, it has been observed that algorithmic decision-making is being increasingly embraced in hiring processes enabling organizations to quickly analyze resumes, review academic and professional backgrounds and determine the suitability of candidates for specific positions[25]. This process can also improve security outcomes by guiding surveillance priorities and resource deployment[26]. Algorithmic decision-making also has the potential to strengthen criminal justice systems through risk assessment tools which review previous criminal patterns and makes predictions that can guide bail, sentencing and parole decisions[27]. It can also improve environmental governance through sound environmental monitoring and detection, predictive analysis and optimization which can strengthen actions in areas such as biodiversity conservation, energy efficiency, ecosystem restoration, pollution control and climate action[28].

Algorithmic decision-making therefore has the potential to foster good governance across many fields.

**2.2 Algorithmic Decision-Making and Science in Africa**

Science has been recognised a fundamental tool towards fostering Sustainable Development in Africa. It has been observed that by enhancing their capacities in science, technology and innovation, African countries can effectively address socio-economic and environmental threats in the continent including poverty, diseases, pollution, biodiversity loss, environmental degradation, and climate change[29]. Science provides opportunities for Africa to achieve green growth by de-coupling economic growth from greenhouse gas emissions, biodiversity loss and environmental pollution[30]. Further, breakthroughs in science and innovation are improving healthcare, food security, water conservation, energy efficiency and waste management in Africa in pursuit of sustainability[31].

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[23] Ibud

[24] What is artificial intelligence (AI) in finance?., Available at https://www.ibm.com/think/topics/artificial-intelligence-finance (Accessed on 05/02/2026)

[25] Dare. A., 'The Ethics of Algorithmic Decision-Making: When Code Becomes Judge and Jury' Op Cit

[26] European Parliament., 'Understanding Algorithmic Decision-Making: Opportunities and Challenges' Op Cit

[27] Algorithmic Profiling and Automated Decision-Making in Criminal Justice., Available at https://csl.mpg.de/en/max-planck-fellow-group/algorithmic-profiling-automated-decision-making-in-criminal-justice (Accessed on 05/02/2026)

[28] United Nations Environment Programme., 'AI has an environmental problem. Here's what the world can do about that' Available at https://www.unep.org/news-and-stories/story/ai-has-environmental-problem-heres-what-world-can-do-about (Accessed on 05/02/2026)

[29] The African Manifesto for Science, Technology and Innovation., Available at https://atpsnet.org/wp-content/uploads/2017/05/the_african_manifesto_for_sti.pdf (Accessed on 05/02/2026)

[30] Ibid

[31] Ibid

Science therefore has an important role to play in the quest for Sustainable Development in Africa. For instance, African Union's *Agenda 2063*[32] recognises the role of science in improving governance outcomes in Africa. It seeks to harness science alongside technology and innovation in vital areas such as renewable energy, health, transport, infrastructure, agriculture, water conservation, waste management, and climate change mitigation towards Sustainable Development[33]. In addition, the *Science, Technology and Innovation Strategy for Africa*[34] seeks to accelerate Africa's transition to an innovation-led, knowledge-based economy with emphasis on science, technology and innovation for Sustainable Development[35].

The intersection between science and AI provides opportunities for Africa to improve its governance priorities across key sectors such as agriculture, energy, finance, environment, health, infrastructure development, mining, security and water among others[36]. It has been observed that AI is transforming science in Africa by providing data-driven solutions that are improving food security including through predicting weather conditions and crop yields, strengthening health outcomes through enhanced detection of diseases, and improving environmental governance outcomes including through enhanced monitoring and prediction[37]. It has been argued that by embracing AI systems, it is possible to deepen African science, bolster Africa's voice in global scientific research agendas, encourage regional cooperation on scientific research and development[38].

In particular, algorithmic decision-making provides opportunities to bolster science aand governance in Africa. For instance, many financial institutions in the continent are employing AI tools including algorithmic decision-making to determine credit scoring and loan approval processes[39]. This process is also being employed in agriculture including through precision farming towards improving yields[40]. Further, algorithmic decision-making is bolstering health

[32] African Union., 'Agenda 2063: The Africa we Want' Available at https://au.int/sites/default/files/documents/33126-doc-framework_document_book.pdf (Accessed on 05/02/2026)
[33] Ibid
[34] African Union., Science, Technology and Innovation Strategy for Africa., Available at https://au.int/sites/default/files/newsevents/workingdocuments/33178-wd-stisa-english_-_final.pdf (Accessed on 19/09/2024)
[35] Ibid
[36] African Union., Science, Technology and Innovation Strategy for Africa., Op Cit
[37] Organisation for Economic Co-operation and Development., 'Artificial Intelligence in Science: Challenges, Opportunities and the Future of Research' Available at https://www.oecd.org/en/publications/artificial-intelligence-in-science_a8d820bd-en/full-report/artificial-intelligence-for-science-in-africa_c1244260.html (Accessed on 05/02/2026)
[38] Ibid
[39] Pasipamire. N., & Muroyiwa. A., 'Navigating algorithm bias in AI: ensuring fairness and trust in Africa' Available at https://pmc.ncbi.nlm.nih.gov/articles/PMC11540688/#:~:text=Introduction,for%20information%20fairness%20and%20ethics. (Accessed on 05/02/2026)
[40] Ibid

outcomes in Africa by strengthening disease detection and prediction while also supporting the growth of e-health start-ups[41]. In addition, it has been observed that several African countries are employing algorithmic decision-making tools to tackle electoral disinformation and misinformation[42].

Algorithmic decision-making can therefore improve governance outcomes in Africa. It has the potential to enhance the efficiency and expeditiousness of decision-making processes through access to quality and real-time scientific data while also reducing mundane and repetitive tasks[43].

Despite its many benefits, algorithmic decision-making in Africa is also associated with several concerns.

**2.3 Concerns with Algorithmic Decision-Making in Africa**

Despite its vital role in science and governance, algorithmic decision-making in Africa raises several concerns. In particular, algorithmic decision-making is associated with unlawful discrimination in Africa and the rest of the Global South[44]. It has been observed that while the use of machine-learning algorithms to make hugely consequential predictions and decisions continues to shape and improve governance all over the world, questions arise over fairness of such predictions and questions[45]. Since developing countries often lack sufficient data and statistical analyses of socio-economic disparities and inequalities prevalent in the society, use of algorithmic decision-making can fuel discrimination through predictions and decisions that enhance the well-being for already-privileged groups of people while expanding inequalities suffered by marginalized people[46].

Further, it has been observed that the current legal, policy and institutional frameworks in most African countries are not sufficient to address the challenges of automated decisions[47]. For instance, when evidence is obtained and predictions made through automated decisions, interpreting it requires highly skilled technical expertise, a situation that most African countries are yet to fully invest in[48]. Strengthening legal, policy, institutional and technical capacities in

[41] Ibid
[42] Ibid
[43] Olurunju. N., 'African algorithmic governance: Benefit of a community-based approach' Available at https://researchictafrica.net/2022/04/03/african-algorithmic-governance-benefit-of-a-community-based-approach/ (Accessed on 05/02/2026)
[44] Abungu. C., 'Algorithmic Decision-Making and Discrimination in Developing Countries' *Journal of Law, Technology & the Internet*., Volume 13, No. 1 (2021-2022)
[45] Ibid
[46] Ibid
[47] Nkonge. M.F., 'Legal Challenges Facing Algorithmic Decision-Making in Kenya' Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4787052 (Accessed on 06/02/2026)
[48] Ibid

Africa is therefore vital towards harnessing algorithmic decision-making including through effective interpretation, monitoring and enforcement of decisions.

The use of algorithmic decision-making can also raise fundamental human rights concerns in Africa. For instance, it has been observed that racial and gender bias has been evident in some algorithmic decision-making processes due to historically discriminatory and biased datasets[49]. This has been evidenced through exclusion from loan eligibility in some countries on basis of gender, mass surveillance and racial profiling, and data colonialism where data and information amplify the voice and interests of the Global North while fueling prejudices and bias against the Global South[50]. It has been correctly noted that since algorithms are only as unbiased as the data sets they are trained on, algorithmic decision-making may perpetuate existing biases and discrimination[51]. Consequently, given that most of these systems are designed in the Global North, they may perpetuate bias and prejudices in the Global South unless they are tuned to fit with local circumstances.

Addressing the foregoing challenges is vital in ensuring that algorithmic decision-making is appropriately harnessed in Africa for improved governance.

**3.0 Conclusion**

This chapter has demonstrated that algorithmic decision-making is being adopted to support science and governance in Africa. In particular, algorithmic decision-making is supporting scientific breakthroughs in areas such as healthcare, agriculture, environmental governance, energy and waste management[52]. Integrating algorithmic decision-making with science in Africa can therefore improve governance outcomes through access to high quality and real-time data.

However, concerns relating to discrimination, fairness, bias and human rights undermine the role of algorithmic decision-making in Africa. In light of these challenges, there is need to promote fairness, human rights and non-discrimination in algorithmic decision-making in Africa. Approaches that promote inclusivity, enhance cultural sensitivity, and actively engage the people of Africa including local communities in the development of AI systems can ensure that such systems are appropriate and fit within the needs and interests of Africa[53]. Further, ensuring that algorithmic decision-making in Africa is premised on accurate data that reflects the underlying needs in the continent is key towards preventing bias and discrimination[54]. There is also need for

[49] Olurunju. N., 'African algorithmic governance: Benefit of a community-based approach' Op Cit
[50] Ibid
[51] Orero. L.O., & Kaaniru. J., 'Automated Decision-Making Policies in Africa' Available at https://cipit.strathmore.edu/wp-content/uploads/2023/08/Policy-Brief-Design-Automated-Decision-Making.pdf (Accessed on 06/02/2026)
[52] African Union., Science, Technology and Innovation Strategy for Africa., Op Cit
[53] Pasipamire. N., & Muroyiwa. A., 'Navigating algorithm bias in AI: ensuring fairness and trust in Africa' Op Cit
[54] Ibid

African countries to strengthen their legal, policy, institutional and technical capacities in AI in order to appropriately harness algorithmic decision-making. Effective frameworks can ensure appropriate regulation of AI, sound data protection, accountability in cases of harms and abuses in algorithmic decision-making, and respect for human rights[55].

It is therefore possible to effectively adopt algorithmic decision-making in Africa towards improving science, data and governance.

[55] Orero. L.O., & Kaaniru. J., 'Automated Decision-Making Policies in Africa' Op Cit

# Chapter 3: Technology, Power and Inequality in the Digital Age

***Abstract***

*This chapter discusses how inequalities and injustices can be tackled in the digital age towards Sustainable Development. The chapter observes that technology is a powerful tool that is driving human progress and prosperity all over the world. In particular, it notes that technology is being widely embraced in Africa and the Global South providing immense opportunities to foster Sustainable Development. Despite being a transforming tool with the ability to fast-track progress towards Sustainable Development, the chapter notes that technology is fuelling inequalities especially in Africa and the Global South. Consequently, the chapter argues that closing the digital divide in Africa and the Global South is a key agenda towards strengthening efforts towards Sustainable Development. It examines how inequality can be effectively tackled in the digital age towards harnessing the power of technology for Sustainable Development.*

## 1.0 Introduction

Technology has been described as a disruptive phenomenon that has the capacity to end traditional business models, to cast whole industries into oblivion, and to destroy traditional crafts, arts, and professions[1]. Rapid growth of technology and digitalization is affecting all aspects of life including the way we interact, work, shop and receive services, as well as how value is created and exchanged[2]. It has been argued that if well harnessed, technology can make the world fairer, just, peaceful and prosperous[3]. In particular, technology has the capacity to accelerate progress towards most of the Sustainable Development Goals (SDGs)[4].

Technology is therefore at the heart of Sustainable Development. Technology is deemed vital to catalyzing innovation; promoting industrial and economic growth; and effecting social changes and human development to improve lives[5]. Access to technology is directly correlated with economic, social, and environmental productivity[6]. Technological advancements are driving

[1] Eidemuller. H., & Wagner. G., 'Digital Dispute Resolution.' Available at https://blogs.law.ox.ac.uk/business-law-blog/blog/2021/09/digital-dispute-resolution (Accessed on 06/02/2026)

[2] United Nations Conference on Trade and Development., 'Digital Economy Report: 2021.' Available at https://unctad.org/system/files/official-document/der2021_overview_en_0.pdf (Accessed on 06/02/2026)

[3] United Nations., 'The Impact of Digital Technologies' Available at https://www.un.org/en/un75/impact-digital-technologies (Accessed on 06/02/2026)

[4] Ibid

[5] United Nations Economic Commission for Africa., 'Advancing Technology Transfer for Sustainable Development in Africa' Available at https://www.uneca.org/sites/default/files/TCND/STIF2023/Advancing_Technology_Transfer.pdf (Accessed on 06/02/2026)

[6] African Development Bank Group., 'Technology Transfer for Green Growth in Africa' Available at https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/African%20Development%2

progress to most of the SDGs including through improved agriculture and food security, water conservation, medical and pharmaceutical advancements for better health outcomes, enhanced access to education, and sustainable energy solutions including renewable energy[7]. Further, technology is enabling the world to tackle environmental threats including through reducing greenhouse gas emissions towards confronting climate change, fostering energy efficiency, strengthening biodiversity conservation efforts, tackling pollution and reducing the amount of waste generated[8].

The United Nations *2030 Agenda for Sustainable Development*[9] recognises technology as a transformative tool that can drive progress towards the SDGs including through fostering food security; promoting good health and well-being; fostering access to affordable and clean energy; building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation and combating climate change[10]. SDG 17 recognizes that the Sustainable Development agenda can only be realized through strong global partnerships and cooperation on a number of areas including technology development and transfer[11]. It encourages states to enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation for Sustainable Development[12]. Further, SDG 17 also urges developed countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed in order to bolster their capacity to achieve Sustainable Development[13].

Despite playing a crucial role in driving Sustainable Development, it has been observed that technology can also threaten privacy, erode security and fuel inequality[14]. In particular, the digital divide is prevalent in Africa and the Global South with millions of citizens lacking access to modern technologies and digital tools fuelling inequalities[15]. Addressing inequalities and

0Report%202012%20-%20Technology%20Transfer%20for%20Green%20Growth%20in%20Africa.pdf (Accessed on 06/02/2026)

[7] Ibid

[8] Nichols. M., 'How Can Technology Save the Environment?' Available at https://born2invest.com/articles/technology-save-environment/ (Accessed on 06/02/2026)

[9] United Nations General Assembly., 'Transforming Our World: the 2030 Agenda for Sustainable Development.' 21 October 2015, A/RES/70/1., Available at https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf (Accessed on 06/02/2026)

[10] Ibid

[11] Ibid

[12] Ibid

[13] Ibid

[14] United Nations., 'The Impact of Digital Technologies' Op Cit

[15] van Wyk-Khosa. S., Ndumbu. R., & Kronke. M., 'Africa's digital divide is closing, but participation in the digital(ised) economy remains highly uneven' Available at https://www.afrobarometer.org/wp-content/uploads/2025/08/PP95-Digital-divide-in-Africa-closing-but-participation-in-digitalised-economy-still-uneven-Afrobarometer-23aug25.pdf (Accessed on 06/02/2026)

injustices in the digital age is therefore vital for development especially in Africa and the Global South.

This chapter discusses how inequalities and injustices can be tackled in the digital age towards Sustainable Development. The chapter observes that technology is a powerful tool that is driving human progress and prosperity all over the world. In particular, it notes that technology is being widely embraced in Africa and the Global South providing immense opportunities to foster Sustainable Development. Despite being a transforming tool with the ability to fast-track progress towards Sustainable Development, the chapter notes that technology is fuelling inequalities especially in Africa and the Global South. Consequently, the chapter argues that closing the digital divide in Africa and the Global South is a key agenda towards strengthening efforts towards Sustainable Development. It examines how inequality can be effectively tackled in the digital age towards harnessing the power of technology for Sustainable Development.

## 2.0 Technology, Sustainable Development and Inequality in Africa and the Global South

### 2.1 The Power of Technology to Drive Sustainable Development

Technology is driving digital transformation with positive impacts on people and planet. Digital transformation involves integrating new technologies to redesign activities, products, and services[16]. It has been observed that digital transformation is an important process aimed at improving service delivery by triggering significant changes through combinations of information, computing, communication, and connectivity technologies[17]. It has been argued that digital transformation is vital for development[18]. For instance, connectivity and data are key in powering critical services like healthcare, education and financial services[19]. Further, the adoption of digital technologies is enabling organizations, individuals and countries to evaluate their environmental footprint, enhance energy efficiency, and reduce waste[20].

Due to the foregoing benefits, digitalization has been described as the greatest transformational opportunity of our time[21]. Critical services and sectors, including healthcare, education, finance, energy and agriculture, which support socio-economic growth and human progress all depend

[16] Pellicelli. M., 'The Digital Transformation of Supply Chain Management' Available at https://www.sciencedirect.com/science/article/pii/B9780323855327020016 (Accessed on 06/02/2026)
[17] Kraus. S et al., 'Digital transformation in business and management research: An overview of the current status quo' *International Journal of Information Management*., Volume 63, April 2022
[18] World Bank Group., 'Digital Transformation' Available at https://www.worldbank.org/en/topic/digital (Accessed on 21/05/2025)
[19] Ibid
[20] Alojai. M., & Khan. S.B., 'Impact of Digital Transformation toward Sustainable Development' Available at https://www.mdpi.com/2071-1050/15/20/14697#:~:text=By%20embracing%20sustainable%20practices%20in%20the%20adoption,development%2C%20and%20driving%20economic%20growth%20[4].%201.1. (Accessed on 06/02/2026)
[21] World Bank Group., 'Digital Transformation' Op Cit

on modern technology, connectivity and data[22]. Further, it has been observed that Artificial Intelligence (AI) and the data revolution are accelerating digital capabilities bolstering service delivery across multiple sectors[23].

Digital transformation therefore provides Africa and the Global South with an opportunity to harness the power of technology towards Sustainable Development. It has been observed that digital transformation is gaining traction in Africa with millions of people gaining access to the internet and productively utilizing a wide variety of technologies and digital services including mobile payments, e-health services and online learning platforms for enhanced service delivery[24]. In particular, internet access and mobile connectivity has expanded rapidly in Africa over the past few decades laying the foundation for a more advanced digital economy in Africa[25]. Further, technology is shaping governance in Africa with governments and organizations embracing online service deliveries in order to modernise operations, enhance efficiency and reduce costs[26]. In addition, the adoption of AI is revolutionizing education, healthcare, finance, environmental governance and logistics in Africa with positive impacts on people and planet[27].

Technology is therefore improving governance and service delivery in Africa thus driving progress towards Sustainable Development. The *Digital Transformation Strategy for Africa*[28] acknowledges that technology is a powerful driving force for innovative, inclusive and sustainable growth in Africa[29]. It notes that technological innovations and digitalization are stimulating job creation and contributing to addressing poverty, reducing inequality, facilitating the delivery of goods and services, and contributing to the achievement of African Union's Agenda 2063 and the global SDGs[30]. The Strategy seeks to harness digital technologies and innovation to transform African societies and economies through inclusive economic growth, job creation, poverty eradication and a vibrant and dynamic digital economy in Africa[31].

[22] Ibid
[23] Ibid
[24] World Bank Group., 'Digital Transformation Drives Development in Africa' Available at https://www.worldbank.org/en/results/2024/01/18/digital-transformation-drives-development-in-afe-afw-africa (Accessed on 06/02/2026)
[25] Africa's digital transformation: Building the new digital economy., Available at https://blog.ascertia.com/africas-digital-transformation-building-the-new-digital-economy (Accessed on 06/02/2026)
[26] Ibid
[27] Ibid
[28] African Union., 'The Digital Transformation Strategy for Africa 2020-2030' Available at https://au.int/sites/default/files/documents/38507-doc-dts-english.pdf (Accessed on 06/02/2026)
[29] Ibid
[30] Ibid
[31] Ibid

Technology therefore has the power to transform Africa towards an inclusive, prosperous and sustainable future for people and planet. However, inequalities and injustices threaten to undermine digital transformation in Africa.

**2.1 Inequality in the Digital Age**

Despite the power of technology to drive Sustainable Development, inequality is widespread in the digital age undermining inclusivity, fairness and justice. In particular, the digital divide is prevalent in Africa and the Global South. Digital divide refers to inequality in access, affordability and quality of modern technologies and digital tools[32]. It has also been defined as the gap between those who have access to and use of information and communication technologies (ICTs) including internet connectivity, internet-enabled devices and digital literacy skills and those who do not[33]. It has been observed that the digital divide can amplify existing socio-economic inequalities by locking marginalized groups out of the digital transformation hindering their ability to access essential services such as education, healthcare and financial services which have increasingly become digitalized[34].

The digital divide is prevalent all over the world fuelling inequality in the digital age. It has been observed that the availability, access and affordability of internet connectivity, internet-enabled devices and digital literacy skills is fundamental for individuals and communities to establish a robust and sustainable connection to the digital world, especially with fundamental pillars of society such as education, workforce development and innovation move online[35]. However, billions of people all over the world lack access to robust, affordable, sustainable and inclusive internet connectivity and modern technologies and digital tools with many more lacking basic digital literacy skills[36]. This situation is particularly severe in Africa where it is estimated that less than half of the population has access to modern technologies and digital tools including computers. Further, inequality is evidenced in access to such technologies with men, urban residents, youth, the wealthy, and well-educated people being able to own modern technologies when compared to other segments of the African population[37]. This means that women, rural residents, less educated citizens, the elderly and the poor in Africa face inequalities in the digital

[32] Muller. C., 'What is the Digital Divide?' Available at https://www.internetsociety.org/blog/2022/03/what-is-the-digital-divide/#:~:text=The%20digital%20divide%20is%20the%20gap%20between,**Health%20disparities**%20*%20**Social%20determinants%20of%20health (Accessed on 07/02/2026)

[33] United Nations University., 'Examining the Causes and Consequences of the Digital Divide(s)' Available at https://unu.edu/merit/blog-post/examining-causes-and-consequences-digital-divides (Accessed on 07/02/2026)

[34] Ibid

[35] United Nations Habitat., 'Addressing the Digital Divide: Taking Action towards Digital Inclusion' Available at https://unhabitat.org/sites/default/files/2021/11/addressing_the_digital_divide.pdf (Accessed on 07/02/2026)

[36] Ibid

[37] van Wyk-Khosa. S., Ndumbu. R., & Kronke. M., 'Africa's digital divide is closing, but participation in the digital(ised) economy remains highly uneven' Op Cit

age[38]. In addition, it has been observed that Africa's digital infrastructure coverage, access, and quality still lags behind other regions causing inequality. For instance, internet coverage and quality in the continent is still low undermine the effective participation of individuals and communities in the digital economy[39].

Inequality in the digital age is driven by several factors. For example, it has been observed that Africa faces several challenges including underdeveloped digital infrastructure, lack of accessible, affordable and quality internet connectivity, a wide digital gender gap, limited digital skills among individuals and organisations, and inadequate regulatory and policy environments causing inequalities and injustices in the digital age[40]. The availability, accessibility, affordability and quality of digital technologies is strongly linked to economic growth, innovation, job creation, and inclusion, at both the national and regional levels[41]. Consequently, inequality in the digital age fuels underdevelopment and injustices with disproportionate impacts on vulnerable groups including women, rural residents, the poor and the elderly[42]. It is therefore vital to tackle inequality in the digital age in order to harness the power of technology for inclusive and equitable Sustainable Development.

**3.0 Tackling Inequality in the Digital Age for Sustainable Development**

Technology is driving digital transformation all over the world with positive impacts on people and planet. The rapid growth of technology is transforming governance and service delivery in vital sectors including education, healthcare, finance, agriculture, energy and environmental governance[43]. Technology has positive impacts on people including through fostering economic growth, innovation, job creation, inclusion and efficient and affordable access to essential services including education, finance and healthcare[44]. Further, technology has positive impacts on the planet by providing environmental-friendly solutions to global challenges such as climate change, biodiversity loss and pollution[45]. Harnessing the power of technology can therefore drive Sustainable Development for the benefit of both people and planet. However, inequality is prevalent in the digital age undermining inclusive and equitable Sustainable Development.

It is therefore necessary to tackle inequality in the digital age. This requires all countries especially the Global South to invest in digital transformation. In particular, it has been observed that closing the digital divide through increased accessibility of broadband services, accompanied by enhanced affordability and service quality will lead to digital inclusion with positive impacts on

[38] Ibid
[39] World Bank Group., 'Digital Transformation Drives Development in Africa' Op Cit
[40] Ibid
[41] Ibid
[42] van Wyk-Khosa. S., Ndumbu. R., & Kronke. M., 'Africa's digital divide is closing, but participation in the digital(ised) economy remains highly uneven' Op Cit
[43] Africa's digital transformation: Building the new digital economy., Op Cit
[44] World Bank Group., 'Digital Transformation Drives Development in Africa' Op Cit
[45] Nichols. M., 'How Can Technology Save the Environment?' Op Cit

poverty reduction, job creation and socio-economic growth[46]. African countries have been urged to invest in digital infrastructure including through improving internet access and reducing connectivity costs in order to foster inclusivity in the digital age[47]. Further, supporting technology startups can strengthen innovation and development of user-friendly digital solutions that can fast-track the digital transformation in Africa and the Global South[48]. Investing in digital literacy programmes targeting marginalized groups including women and girls, rural residents and the elderly can also ensure inclusion and justice in the digital age[49]. Enhancing technology development and transfer including through North-South and South-South cooperation can also strengthen the capacity of all countries to adopt modern technologies and digital tools towards Sustainable Development[50].

**4.0 Conclusion**

This chapter has demonstrated that technology is a powerful tool that can drive Sustainable Development. However, inequality in the digital age undermines inclusive and equitable development with disproportionate impacts on vulnerable populations. The chapter posits that tackling the digital divide especially in Africa and the Global South is key towards justice, equity and inclusivity in the digital age. Achieving this goal involves investing in digital transformation by ensuring accessibility, reliability, affordability and quality of modern technologies and digital tools[51]. Fostering digital literacy is also vital in building the capacity of individuals, societies and organisations to utilise modern technologies and digital tools[52]. Technology development and transfer can also strengthen the capacity of all countries to access modern technologies and digital tools for Sustainable Development[53].

Tackling inequality in the digital age is a crucial agenda whose attainment is necessary towards harnessing the power of technology for Sustainable Development.

[46] World Bank Group., 'Digital Transformation Drives Development in Africa' Op Cit
[47] Lund. S., & Cruz. M., 'Bridging the digital divide in Africa: Enhancing technology adoption for economic growth' Available at https://www.brookings.edu/articles/bridging-the-digital-divide-in-africa-enhancing-technology-adoption-for-economic-growth/ (Accessed on 07/02/2026)
[48] Ibid
[49] World Bank Group., 'Digital Transformation Drives Development in Africa' Op Cit
[50] Intergovernmental Panel on Climate Change., 'Technology Development and Transfer' Available at https://archive.ipcc.ch/ipccreports/far/wg_III/ipcc_far_wg_III_chapter_08.pdf (Accessed on 07/02/2026)
[51] World Bank Group., 'Digital Transformation Drives Development in Africa' Op Cit
[52] Ibid
[53] Intergovernmental Panel on Climate Change., 'Technology Development and Transfer' Op Cit

## SECTION II: ARTIFICIAL INTELLIGENCE, THE RULE OF LAW, AND JUSTICE SYSTEMS

*This section examines the implications of Artificial Intelligence for the rule of law, access to justice, and the administration of justice. It analyses how algorithmic systems intersect with courts, legal practice, and alternative dispute resolution mechanisms.*

# Chapter 4: Artificial Intelligence, the Rule of Law, and Access to Justice

***Abstract***

*This chapter examines the role of AI in the rule of law and access to justice discourses. It argues that technology in general is a powerful tool that is strengthening access to justice and the rule of law for development. The chapter focuses on AI and explores how it is shaping access to justice and the rule of law. Due to its benefits, the chapter posits that leveraging on AI and other technologies is crucial towards strengthening the rule of law and access to justice at national and international levels. Despite its efficacy in transforming the rule of law and access to justice, the chapter observes that AI brings along its own challenges that must be adequately addressed. It discusses the key challenges that undermine the efficacy of AI in the rule of law and access to justice discourses. In light of these concerns, the chapter suggests how AI can be effectively leveraged towards strengthening the rule of law and access to justice at all levels for development.*

## 1.0 Introduction

Access to justice is a fundamental tenet under the rule of law. The rule of law has been described as a principle of governance in which all persons, institutions and entities, both public and private, including the State itself, are accountable to laws that are publicly promulgated, equally enforced and independently adjudicated, and which are consistent with international human rights norms and standards[1]. It has been observed that the rule of law envisages adherence to the principles of supremacy of the law, equality before the law, accountability to the law, fairness in the application of the law, separation of powers among the various arms of government, participation in decision-making, legal certainty, avoidance of arbitrariness, and procedural and legal transparency[2]. The rule of law envisages an ideal society where no one is above the law; everyone is treated equally under the law; everyone is held accountable to the same laws; there are clear and fair processes for enforcing laws; there is an independent judiciary; and human rights are guaranteed for all persons[3].

The United Nations observes that access to justice is a basic principle of the rule of law[4]. The idea of access to justice refer to the right of citizens to obtain effective and appropriate remedies under international, regional and national laws for harm suffered including human right violations[5]. It

[1] United Nations., 'What is the Rule of Law.' Available at https://www.un.org/ruleoflaw/what-is-the-rule-of-law/ (Accessed on 09/02/2026)
[2] Ibid
[3] American Bar Association., 'Rule of Law.' Available at https://www.americanbar.org/groups/public_education/resources/rule-of-law/ (Accessed on 09/02/2026)
[4] United Nations., 'Access to Justice' Available at https://www.un.org/ruleoflaw/thematic-areas/access-to-justice-and-rule-of-law-institutions/access-to-justice/ (Accessed on 09/02/2026)
[5] Scottish Human Rights Commission., 'Access to Justice for Everyone' Available at https://www.scottishhumanrights.com/media/2496/access-to-justice-for-everyone-a-discussion-paper.pdf (Accessed on 09/02/2026)

involves the ability of every citizen to seek and obtain effective remedies through both formal and informal institutions of justice[6]. Access to justice encompasses the ability of citizens to exercise their rights through the availability of adequate, effective, and prompt reparation/damages for harm suffered[7].

Access to justice is therefore vital in upholding the rule of law. For example, through access to justice, citizens have an avenue to seek and obtain legal remedies and prevent abuse of their rights[8]. On the other hand, without access to justice, people are unable to have their voice heard, exercise their rights, challenge discrimination or hold decision-makers accountable[9]. Strengthening access to justice ensures fair, equitable, inclusive, transparent and democratic societies for Sustainable Development[10]. The Rule of law and access to justice have been recognised as fundamental pillars of development under the United Nations *2030 Agenda for Sustainable Development*[11]. Under the Agenda, Sustainable Development Goal (SDG) 16 seeks to promote peaceful and inclusive societies for Sustainable Development, *provide access to justice for all* and build effective, accountable and inclusive institutions at all levels[12] (Emphasis added). In particular, SDG 16.3 seeks to promote the rule of law at the national and international levels and ensure equal access to justice for all[13].

However, fostering access to justice remains a challenge globally undermining the rule of law. It has been observed that many countries, especially in Africa and the Global South, are still struggling to establish functional, timely, affordable, responsive and credible justice systems[14]. In particular, challenges such as high legal costs, bureaucracy, complex legal procedures, illiteracy, corruption, distance from formal courts, backlog of cases in courts and lack of legal knowhow

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[6] United States Institute of Peace., 'Necessary Condition: Access to Justice' Available at https://www.usip.org/guiding-principles-stabilization-and-reconstruction-the-web-version/rule-law/access-justice (Accessed on 09/02/2026)

[7] Scottish Human Rights Commission., 'Access to Justice for Everyone' Available at https://www.scottishhumanrights.com/media/2496/access-to-justice-for-everyone-a-discussion-paper.pdf (Accessed on 09/02/2026)

[8] Logan. C., 'Ambitious SDG goal confronts challenging realities: Access to justice is still elusive for many Africans' Available at https://www.afrobarometer.org/wp-content/uploads/2022/02/ab_r6_policypaperno39_access_to_justice_in_africa_eng.pdf (Accessed on 09/02/2026)

[9] United Nations., 'Access to Justice' Op Cit

[10] Organisation for Economic Co-operation and Development., 'Access to Justice' Available at https://www.oecd.org/en/topics/sub-issues/access-to-justice.html (Accessed on 09/02/2026)

[11] United Nations General Assembly., 'Transforming Our World: the 2030 Agenda for Sustainable Development.' 21 October 2015, A/RES/70/1., Available at https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf (Accessed on 09/02/2026)

[12] Ibid

[13] Ibid

[14] Uwazie. E., 'Alternative Dispute Resolution in Africa: Preventing Conflict and Enhancing Stability.' *Africa Security Brief*, No. 16 of 2011

undermine the quest towards access to justice through court processes in Africa[15]. In light of these challenges, strengthening access to justice is vital towards upholding the rule of law for development. In order to achieve this goal, it has been pointed out that the emergence of digital technologies including Artificial Intelligence (AI) offers enormous potential to broaden access to justice[16]. Harnessing technology is therefore vital towards broadening access to justice and the rule of law for development.

This chapter examines the role of AI in the rule of law and access to justice discourses. It argues that technology in general is a powerful tool that is strengthening access to justice and the rule of law for development. The chapter focuses on AI and explores how it is shaping access to justice and the rule of law. Due to its benefits, the chapter posits that leveraging on AI and other technologies is crucial towards strengthening the rule of law and access to justice at national and international levels. Despite its efficacy in transforming the rule of law and access to justice, the chapter observes that AI brings along its own challenges that must be adequately addressed. It discusses the key challenges that undermine the efficacy of AI in the rule of law and access to justice discourses. In light of these concerns, the chapter suggests how AI can be effectively leveraged towards strengthening the rule of law and access to justice at all levels for development.

## 2.0 Artificial Intelligence, Rule of Law and Access to Justice: Promises and Pitfalls

### 2.1 Role of Artificial Intelligence in Strengthening Rule of Law and Access to Justice

Technology in general has emerged as a vital solution towards strengthening the rule of law and access to justice. For example, it has been observed that the rapid growth of technology has permeated into all aspects of life including the field of dispute resolution[17]. Technology holds the promise for an improved dispute resolution landscape that is based on fewer physical, conceptual, psychological and professional boundaries, while enjoying a higher degree of transparency, participation and change[18]. Technology has permeated into the sphere of dispute resolution which has led to the adoption of practices such as online court sessions, electronic filing of pleadings and online delivery of judgments and rulings that are strengthening access to justice and the rule of law[19]. The use of technology has also been embraced into the field of Alternative

[15] Ojwang. J.B , "The Role of the Judiciary in Promoting Environmental Compliance and Sustainable Development," 1 *Kenya Law Review Journal* 19 (2007), pp. 19-29: 29

[16] The Judiciary of Kenya., 'Leveraging on Information and Communication Technology (ICT) to promote Access to Justice' Available at https://judiciary.go.ke/leveraging-on-information-and-communication-technology-ict-to-promote-access-to-justice/ (Accessed on 09/02/2026)

[17] Muigua. K., 'The Evolving Alternative Dispute Resolution Practice: Investing in Digital Dispute Resolution in Kenya' Available at https://kmco.co.ke/wp-content/uploads/2022/04/The-EvolvingAlternative-Dispute-Resolution-Practice-Investing-in-Digital-Dispute-Resolution-in-Kenya-KariukiMuigua.pdf (Accessed on 10/02/2026)

[18] Rabinovich-Einy..O., & Katsh. E., 'Reshaping Boundaries in an Online Dispute Resolution Environment.' *International Journal of Online Dispute Resolution*, Volume 1, No. 1 (2014)

[19] Muigua. K., 'Legal Practice and New Frontiers: Embracing Technology for Enhanced Efficiency and Access to Justice' available at http://kmco.co.ke/wp-content/uploads/2020/06/Legal-Practice-and-New-

Dispute Resolution (ADR) with practices such as online mediation, online arbitration, smart contracts and block chain arbitration being embraced[20]. These practices are enhancing access to justice through ADR by ensuring expeditiousness, efficiency and cost-effectiveness of dispute resolution.

Due to its advantages, it has been argued that when harnessed effectively and in line with human rights, technology can serve the interest of people and ensure that they access justice in a timely, participatory and efficient manner[21]. Further, it has been observed that technology can ensure scalable, transparent, responsive, innovative and data-driven transformation of justice systems as long as principles of openness, inclusiveness and accountability are taken into account[22]. In particular, AI is a modern technological solution that is transforming and strengthening the rule of law and access to justice. For example, AI has the ability to quickly sift through the mass of complex facts and evidence to identify the key issues at the heart of each dispute thus enhancing the efficiency and speed of dispute resolution[23]. AI systems are also enhancing efficiency in cross border dispute resolution through international arbitration and mediation by facilitating language translation[24]. AI is also being harnessed in text summarization and production of relevant case notes thus aiding the process of dispute resolution[25].

AI is therefore a valuable solution towards strengthening access to justice and the rule of law. It has the ability to automate legal tasks, sift through previous cases to generate legal analyses, undertake legal research, and generate legal documents and communications more quickly[26]. The Judiciary of Kenya acknowledges that when harnessed appropriately, AI has the capacity to enhance case management, legal research, predictive analytics and administrative support thus

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Frontiers-EmbracingTechnology-for-Enhanced-Efficiency-and-Access-to-Justice-Kariuki-Muigua-Ph.D-June-2020.pdf (Accessed on 10/02/2026)

[20] Yeoh. D., 'Is Online Dispute Resolution the future of Alternative Dispute Resolution.' Available at https://arbitrationblog.kluwerarbitration.com/2018/03/29/online-dispute-resolution-future-alternative-dispute-resolution/ (Accessed on 10/02/2026)

[21] United Nations., 'Advancing Rule of Law, Justice for All through Technology Must Include Equal Internet Access, Human Rights Compliance, Sixth Committee Speakers Stress' Available at https://mail.google.com/mail/u/0/#inbox/FMfcgzQbfVGtksmCfmrlxLQbCCknVLCW (Accessed on 10/02/2026)

[22] Ibid

[23] Kumtepe. C., 'A Brief Introduction to Blockchain Dispute Resolution.' *John Marshall Law Journal*, Volume 14, No. 2 (2021)

[24] ArbTech., 'Practical Implications of ChatGPT for Arbitration Practitioners.' Available at https://www.arbtech.io/blog/practical-implications-of-chatgpt-for-arbitration-practitioners (Accessed on 10/02/2026)

[25] Ibid

[26] Monachino. C., 'Chat GPT: A Look into the Future (Litigation).' Available at https://www.clemetrobar.org/?pg=CMBABlog&blAction=showEntry&blogEntry=91543#:~:text=Chat%20GPT%20and%20similar%20platforms,navigate%20the%20quickly%20changing%20environment (Accessed on 10/02/2026)

strengthening access to justice and the rule of law[27]. It has been argued that justice systems, particularly in the Global South, which are challenged by backlogs, lengthy procedural requirements and limited accessibility, can gain immensely from AI integration[28]. The integration of AI into justice systems can improve efficiency and responsiveness, enhance the delivery of services tailored to people's needs, support routine tasks and expand capabilities across a variety of justice domains[29]. In particular, it has been observed that AI algorithms can help to ensure that judicial processes and outcomes are more consistent, predicable, transparent and free from human biases[30]. They can also help courts to monitor efficiency and resources. Further, AI algorithms can also improve accountability by flagging inconsistencies and potential biases in real time[31].

AI therefore has the potential to strengthen access to justice and the rule of law. However, the use of AI also raises several concerns that can potentially undermine the rule of law and access to justice.

**2.2 Challenges and Ethical Concerns in AI**

One of the major challenges that can undermine the rule of law and access to justice through AI is bias and discrimination. For instance, since AI systems rely on data to generate predictions and recommendations, it has been observed that algorithms trained on biased data sets can perpetuate discrimination leading to unjust outcomes[32]. AI systems can worsen existing biases in the justice system, particularly regarding race, sex and socio-economic status thus undermining the rule of law and access to justice[33]. The digital divide can also prevent the effective integration of AI into justice systems. The digital divide refers to the gap between those who have access to and use of information and communication technologies (ICTs) including internet connectivity, internet-enabled devices and digital literacy skills and those who do not[34]. The digital divide is particularly prevalent in the Global South where vulnerable and marginalized groups including women, the

[27] Judiciary of Kenya., 'Judiciary to Leverage AI to Enhance Justice' Available at https://judiciary.go.ke/judiciary-to-leverage-ai-to-enhance-justice/ (Accessed on 10/02/2026)

[28] Organisation for Economic Co-operation and Development., 'AI in Justice Administration and Access to Justice' Available at https://www.oecd.org/en/publications/2025/06/governing-with-artificial-intelligence_398fa287/full-report/ai-in-justice-administration-and-access-to-justice_f0cbe651.html (Accessed on 10/02/2026)

[29] Ibid

[30] Ibid

[31] Ibid

[32] American Bar Association., 'Access to Justice 2.0: How AI-powered software can bridge the gap' Available at https://www.americanbar.org/groups/journal/articles/2025/access-to-justice-how-ai-powered-software-can-bridge-the-gap/ (Accessed on 10/02/2026)

[33] Organisation for Economic Co-operation and Development., 'AI in Justice Administration and Access to Justice' Op Cit

[34] United Nations University., 'Examining the Causes and Consequences of the Digital Divide(s)' Available at https://unu.edu/merit/blog-post/examining-causes-and-consequences-digital-divides (Accessed on 10/02/2026)

poor, rural residents and the elderly face challenges in accessing and using modern technologies and digital tools[35]. Therefore, reliance on AI and other digital tools risks excluding marginalized and vulnerable groups thus undermining access to justice[36].

Further, the use of AI in access to justice can undermine the fundamental tenets of the rule of law including transparency, accountability and due process[37]. The rule of law envisions transparent and accountable decision-making processes and due process requirements including the right to a fair hearing[38]. It has been observed that algorithmic decision-making through AI makes it difficult to understand how legal decisions are made which undermines transparency, accountability and due process requirements under the rule of law[39]. The idea of rule of law emerged to prevent arbitrary exercise of powers[40]. Therefore, if AI is allowed to exercise judicial powers unchecked by humans, this strains the core tenets of the rule of law[41].

It is imperative to address the foregoing challenges in order to effectively harness AI towards strengthening the rule of law and access to justice.

**3.0 Harnessing Artificial Intelligence towards Strengthening the Rule of Law and Access to Justice**

Technology provides valuable solutions that can bolster the rule of law and access to justice. In particular, AI can automate and simplify court processes for enhanced access to justice[42]. It can also aid in legal research and legal analysis making legal information readily and widely available thus strengthening access to justice[43]. The integration of AI into legal systems can therefore bolster the rule of law and access to justice. However, challenges relating to bias, accuracy, transparency, accountability, due process and the digital divide, can undermine the suitability of AI in advancing the rule of law and access to justice.

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[35] van Wyk-Khosa. S., Ndumbu. R., & Kronke. M., 'Africa's digital divide is closing, but participation in the digital(ised) economy remains highly uneven' Available at https://www.afrobarometer.org/wp-content/uploads/2025/08/PP95-Digital-divide-in-Africa-closing-but-participation-in-digitalised-economy-still-uneven-Afrobarometer-23aug25.pdf (Accessed on 10/02/2026)

[36] Organisation for Economic Co-operation and Development., 'AI in Justice Administration and Access to Justice' Op Cit

[37] Judiciary of Kenya., 'Judiciary to Leverage AI to Enhance Justice' Op Cit

[38] United Nations., 'What is the Rule of Law.' Op Cit

[39] Burgess. P., 'AI and the Rule of Law' Available at https://www.bloomsbury.com/us/ai-and-the-rule-of-law-9781509963171/ (Accessed on 10/02/2026)

[40] Ibid

[41] Ibid

[42] American Bar Association., 'Task Force on Law and Artificial Intelligence' Available at https://www.americanbar.org/groups/centers_commissions/center-for-innovation/artificial-intelligence/access-to-justice/ (Accessed on 10/02/2026)

[43] Ibid

In light of the foregoing, there is need to ensure safe, ethical and purposeful adoption of AI in justice systems. In particular, there is need to minimize the risk of bias, and ensure fair and accessible AI-driven legal tools and services[44]. If not well implemented, AI can intentionally or unintentionally automate bias and magnify inequality including racial, gender and socio-economic disparities[45]. It is therefore necessary to ensure careful design and implementation of AI systems and algorithms including through training on accurate and fair data sets in order to prevent bias[46]. It is also vital to ensure protection of the right to privacy. It has been suggested that AI systems should be trained to identify and categorise data, including text containing personal information (including name, address and contact information) from court documents and transcripts[47]. This can be used to protect sensitive information and maintain privacy towards upholding the rule of law and strengthening access to justice[48].

Further, in order to ensure transparency, accountability and due process, there is need to ensure human oversight in algorithmic decision-making. It has been argued that AI should not replace human-led judicial reasoning which is paramount in upholding the tenets of the rule of law including transparency, accountability and due process[49]. Rather, AI should be adopted as an assistive tool to expand access to legal information, enhance efficiency in access to justice, and support equitable justice, always under human supervision and ethical review[50]. Through this, it is possible to eliminate potential biases and ensure transparency, accountability and due to process including through judicial reasoning and the availability of review and appeal processes[51].

Bridging the digital divide is also key towards harnessing the transformative power of AI for enhanced access to justice and the rule of law. For instance, ensuring the accessibility, affordability and quality of modern technologies and digital tools including AI systems can ensure widespread adoption and use of these tools and services across multiple sectors such as dispute resolution for enhanced access to justice[52]. Further, investing in digital literacy programmes targeting marginalized groups including women and girls, rural residents and the elderly can build the capacity of all individuals and societies to utilise AI and other digital solutions towards strengthening access to justice and the rule of law[53].

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[44] Simshaw. D., 'Interoperable Legal AI for Access to Justice' *The Yale Law Journal,* Volume 134, 2025
[45] Ibid
[46] Ibid
[47] Organisation for Economic Co-operation and Development., 'AI in Justice Administration and Access to Justice' Op Cit
[48] Ibid
[49] United Nations Educational, Scientific and Cultural Organization., 'Guidelines for the use of AI systems in courts and tribunals' https://unesdoc.unesco.org/ark:/48223/pf0000396582 (Accessed on 10/02/2026)
[50] Ibid
[51] Ibid
[52] Organisation for Economic Co-operation and Development., 'AI in Justice Administration and Access to Justice' Op Cit
[53] Ibid

Through the foregoing, it is possible to harness the power of AI towards strengthening the rule of law and access to justice.

**4.0 Conclusion**

This chapter has critically examined the relationship between AI, the rule of law and access to justice. It has demonstrated that AI is a powerful tool that can strengthen the rule of law and access to justice including through automating legal tasks, enhancing case management, aiding in legal research and predictive analytics and ensuring administrative support[54]. Further, the chapter has also shown that despite the advantages of AI, concerns relating to bias, privacy, digital divide, transparency, accountability and due process can undermine the rule of law and access to justice. In light of these concerns, the chapter has suggested that the integration of AI into justice systems should be done in a manner that avoids bias, safeguards judicial independence, ensures privacy, bridges the digital divide and embraces human oversight for transparency, accountability and due process[55].

Adopting AI into justice systems is a real and practical solution towards strengthening the rule of law and access to justice.

[54] Judiciary of Kenya., 'Judiciary to Leverage AI to Enhance Justice' Op Cit

[55] Organisation for Economic Co-operation and Development., 'AI in Justice Administration and Access to Justice' Op Cit

# Chapter 5: Artificial Intelligence, Digital Dispute Resolution, and Alternative Dispute Resolution

***Abstract***

*This article examines the impact of Artificial Intelligence (AI) on Digital Dispute Resolution and Alternative Dispute Resolution (ADR). The article argues that AI is transforming the landscape of Digital Dispute Resolution and ADR thus improving access to justice. It discusses the positive impacts of AI on Digital Dispute Resolution and ADR. Despite its transformative power, the article observes that the integration of AI into Digital Dispute Resolution and ADR raises several concerns. The article examines some of the key challenges arising from the adoption of AI into Digital Dispute Resolution and ADR. In light of these concerns, the article posits that there is need to harness the benefits of AI and address its challenges in order to strengthen access to justice through Digital Dispute Resolution and ADR. It suggests reforms towards achieving this objective for enhanced access to justice towards Sustainable Development.*

## 1.0 Introduction

Digital dispute resolution and Alternative Dispute Resolution (ADR) have emerged as appropriate solutions in enhancing access to justice. Digital dispute resolution is the process of managing disputes on the internet through the use of suitable technology or platforms[1]. It involves the use of technology to facilitate the rapid, cost effective and specialised resolution of disputes involving digital technology including crypto assets, cryptocurrency, smart contracts, distributed ledger technology, and fintech applications[2]. Digital Dispute Resolution is often compared to Online Dispute Resolution (ODR) which refers to a set of processes that allow for the resolution of disputes via online mechanisms such as the internet or some form of technology that allows for virtual communication[3].

ADR on the other hand is an umbrella term that refers to a set of processes that are applied to manage disputes without resort to adversarial litigation[4]. ADR has also been defined as a term that encompasses a series of mechanisms for resolving disputes that are linked to but function outside formal court litigation processes[5]. The United Nations defines ADR as a set of approaches

[1] Sadushi. M., 'The Theory And Practice Of Dispute Resolution In The Digital Age.' Available at https://eajournals.org/gjplr/vol-5-issue-7-december-2017/theory-practice-dispute-resolution-digital-age/ (Accessed on 10/02/2026)

[2] AShurst., 'Digital Dispute Resolution Rules Published.' Available at https://service.betterregulation.com/sites/default/files/digital-dispute-resolution-rules-published.pdf (Accessed on 10/02/2026)

[3] Mania. K., 'Online Dispute Resolution: The Future of Justice.' *International Comparative Jurisprudence*, No. 1 of 2015, (pg 76-86)

[4] Muigua. K., 'Alternative Dispute Resolution and Access to Justice in Kenya.' Glenwood Publishers Limited, 2015

[5] Uwazie. E., 'Alternative Dispute Resolution in Africa: Preventing Conflict and Enhancing Stability.' *Africa Security Brief*, No. 16 of 2011

and techniques aimed at resolving disputes in a non-confrontational way[6]. These processes include negotiation, mediation, arbitration, conciliation, adjudication, expert determination, early neutral evaluation, and Traditional Dispute Resolution Mechanisms (TDRMs) among others[7].

The growth of Digital Dispute Resolution and ADR provides numerous benefits towards access to justice. For instance, Digital Dispute Resolution is linked to improved accessibility, cost and time efficiency, transparency and scalability in managing disputes[8]. Further, ADR processes provide several benefits including informality, privacy, confidentiality, flexibility and the ability to promote expeditious and cost-effective management of disputes[9]. Most ADR processes, including negotiation, mediation and conciliation, also allow for more creative and collaborative solutions than those available in traditional litigation thus ensuring sustainable and long-term outcomes that address the root causes of conflicts[10].

Embracing Digital Dispute Resolution and ADR therefore holds the promise of an improved dispute resolution landscape for enhanced access to justice. At the heart of this agenda is the growth of technology including Artificial Intelligence (AI). It has been observed that technology holds the promise for an improved Digital Dispute Resolution landscape that is based on fewer physical, conceptual, psychological and professional boundaries, while enjoying a higher degree of transparency, participation and change[11]. Modern technologies and digital tools such as AI have led to the growth of Digital Dispute Resolution that is strengthening access to justice[12]. Further, it has been observed that advances in technology and digital tools such as AI are reshaping the use of ADR in dispute resolution[13]. For instance, AI is revolutionizing ADR providing vital solutions from document review to predictive analytics among other tasks[14].

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[6] United Nations., 'Alternative Dispute Resolution Approaches and their Application in Water Management: A Focus on Negotiation, Mediation and Consensus Building' Available at https://www.un.org/waterforlifedecade/water_cooperation_2013/pdf/adr_background_paper.pdf

[7] Muigua. K., 'Alternative Dispute Resolution and Access to Justice in Kenya.' Op Cit

[8] Gupta. T., 'Dispute Resolution in a Digital Age: Challenges and Opportunities' Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5339274#:~:text=Online%20Dispute%20Resolution%20(ODR)%20is,digitally%20interconnected%20and%20globalized%20world. (Accessed on 10/02/2026)

[9] Muigua. K., 'Alternative Dispute Resolution and Access to Justice in Kenya.' Op Cit

[10] JAMS ADR., 'What is ADR' Available at https://www.jamsadr.com/adr-spectrum/ (Accessed on 10/02/2026)

[11] Rabinovich-Einy..O., & Katsh. E., 'Reshaping Boundaries in an Online Dispute Resolution Environment.' *International Journal of Online Dispute Resolution*, Volume 1, No. 1 (2014)

[12] Organisation for Economic Co-operation and Development., 'AI in Justice Administration and Access to Justice' Available at https://www.oecd.org/en/publications/2025/06/governing-with-artificial-intelligence_398fa287/full-report/ai-in-justice-administration-and-access-to-justice_f0cbe651.html (Accessed on 10/02/2026)

[13] Integration of Technology in Dispute Resolution., Available at https://www.schreiberadr.com/integration-of-technology-in-dispute-resolution#:~:text=Advances%20in%20artificial%20intelligence%20(AI,essence%20of%20alternative%20dispute%20resolution. (Accessed on 10/02/2026)

[14] Ibid

Harnessing the transformative power of AI is therefore key towards upscaling access to justice through Digital Dispute Resolution and ADR.

This article examines the impact of AI on Digital Dispute Resolution and ADR. The article argues that AI is transforming the landscape of Digital Dispute Resolution and ADR thus improving access to justice. It discusses the positive impacts of AI on Digital Dispute Resolution and ADR. Despite its transformative power, the article observes that the integration of AI into Digital Dispute Resolution and ADR raises several concerns. The article examines some of the key challenges arising from the adoption of AI into Digital Dispute Resolution and ADR. In light of these concerns, the article posits that there is need to harness the benefits of AI and address its challenges in order to strengthen access to justice through Digital Dispute Resolution and ADR. It suggests reforms towards achieving this objective for enhanced access to justice towards Sustainable Development.

**2.0 Artificial Intelligence and Digital Dispute Resolution**

The growth of technology has permeated into the sphere of dispute resolution leading to the emergence of new and novel ways of managing disputes. It has been observed that technology the ability to make dispute resolution more efficient[15]. Further, it has been pointed out that technology is transforming the landscape of dispute resolution by generating an ever- growing number of disputes and at the same time challenging the effectiveness and reach of traditional dispute resolution avenues such as courts[16]. Technology has led to the emergence of Digital Dispute Resolution processes including ODR which leverage of digital platforms and tools to manage disputes usually the without physical presence of parties[17]. It has been observed that this form of dispute resolution covers a wide range of tools and practices including video conferencing, e-filing systems, AI-based negotiation systems, and digital documentation[18].

AI is shaping the landscape of Digital Dispute Resolution providing an efficient and effective means of accessing justice. For instance, it has been observed that AI systems ensure effective management of cases in the digital space while also supporting parties by dealing with complex calculations and algorithms that may be beyond human capacity[19]. In addition, it has been pointed out that algorithmic decision-making can be used in Digital Dispute Resolution to create solutions to highly complex disputes in order to overcome problems such as emotive discussions and impassioned viewpoints which are associated with human decision-making[20]. Due to the

[15] Mania. K., 'Online Dispute Resolution: The Future of Justice.' Op Cit
[16] Rabinovich-Einy..O., & Katsh. E., 'Reshaping Boundaries in an Online Dispute Resolution Environment.' Op Cit
[17] Gupta. T., 'Dispute Resolution in a Digital Age: Challenges and Opportunities' Op Cit
[18] Ibid
[19] Alessa. H., 'The Role of Artificial Intelligence in Online Dispute Resolution: A brief and critical overview' Available at https://www.tandfonline.com/doi/full/10.1080/13600834.2022.2088060#abstract (Accessed on 11/02/2026)
[20] Ibid

dynamic nature of the Digital Dispute Resolution which often involves multiple parties from different jurisdictions, it has been observed that the integration of AI is vital in facilitating language translation in order to help parties communicate effectively, without any potential language barriers for efficiency in dispute resolution[21]. AI is also enhancing efficiency in Digital Dispute Resolution through automated summarizing tools[22]. These tools are being utilised to create a summary of a given text automatically thus enhancing efficiency especially where large volumes of data are involved[23].

The integration of AI into Digital Dispute Resolution therefore creates a more efficient platform for accessing justice. AI tools can be used in text summarization, language translation, predictive analysis and case management thus ensuring efficiency in Digital Dispute Resolution. Despite its suitability in bolstering Online Dispute Resolution, one of the major concerns with AI is the substantial volume of high-quality data required to train AI systems effectively[24]. Therefore, if AI systems are not trained adequately with sufficient data, algorithmic decision-making processes in Digital Dispute Resolution may be flawed[25]. There is also a risk of perpetuating biases and generating non-existent legal precedents or norms[26]. In addition, it has been observed that in the context of Digital Dispute Resolution, AI-generated predictions and decisions can be opaque and difficult to interpret, making it challenging for parties to determine if such outcomes are fair and just[27]. The digital divide is also a pertinent concern in integrating AI into Digital Dispite Resolution. It has been argued that just like other technologies, AI-assisted ODR will only be accessible by wealthier clients and firms, and will therefore fail to enhance access to justice for those who cannot afford them[28].

Addressing the foregoing concerns is vital towards effectively integrating AI into Digital Dispute Resolution for enhanced access to justice.

**3.0 Artificial Intelligence and ADR**

Technology is shaping the practice of ADR. It has been argued that ADR, with its diverse range of methods such as mediation, arbitration, and negotiation, presents a viable option that aligns with the dynamic nature of technological advancement while addressing the specific demands of

[21] Amin. N.H., 'A New Frontier in Online Dispute Resolution: Combining AI and Mindfulness' *Journal of Law, Technology & the Internet*., Volume 15, Issue 2 (2024)
[22] Ibid
[23] Ibid
[24] Nicuesa. A.E., & Saldana. M.G., 'AI-Driven Alternative and Online Dispute Resolution in the European Union: An analysis of the Legal Framework and a Proposed Categorization' *Computer Law & Security Review*., Volume 57, July 2025
[25] Ibid
[26] Ibid
[27] Ibid
[28] Alessa. H., 'The Role of Artificial Intelligence in Online Dispute Resolution: A brief and critical overview' Op Cit

disputes in the cyberspace[29]. The use of technology has permeated into the field of ADR with practices such as online mediation, online arbitration, smart contracts and block chain arbitration being widely embraced[30]. It has been observed that when combined with technology, ADR can reach broader populations by reducing reliance on physical processes, streamlining documentation and enabling participation from any location[31]. Technology can therefore support the fundamental attributes of ADR including expeditiousness, flexible and cost-effective management of disputes[32].

AI has emerged as a modern technological solution that is revamping ADR. It has been observed that AI is significantly impacting ADR by automating and enhancing various aspects of the dispute resolution process[33]. For instance, AI algorithms have the ability to analyse vast amounts of legal data to predict outcomes and suggest resolutions based on historical trends and case law[34]. It has been argued that this capacity is key in not only expediting dispute resolution but also aiding arbitrators and mediators in making more informed decisions[35]. AI is being increasingly integrated into ADR through systems such as AI-powered tools that assist with document review and predictive analytics, automated negotiation platforms and smart contracts[36]. It has been observed that document review and predictive analysis tools are very vital especially in the context of international arbitration and mediation where arbitrators, mediators, counsel, and parties have to deal with huge volumes of data, a situation that can result in delay in dispute resolution[37]. Further, AI-assisted negotiation has the capacity to streamline negotiations, reduce costs, and address language barriers ensuring efficiency in the process[38].

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[29] Singh. B., 'Unleashing Alternative Dispute Resolution (ADR) in Resolving Complex Legal-Technical Issues arising in Cyberspace Lensing E-Commerce and Intellectual Property' Available at https://rbadr.emnuvens.com.br/rbadr/article/view/183 (Accessed on 11/02/2026)

[30] Yeoh. D., 'Is Online Dispute Resolution the future of Alternative Dispute Resolution.' Available at https://arbitrationblog.kluwerarbitration.com/2018/03/29/online-dispute-resolution-future-alternative-dispute-resolution/ (Accessed on 11/02/2026)

[31] Scaling justice: How AI and ADR are reshaping legal access., Available at https://www.thomsonreuters.com/en-us/posts/ai-in-courts/scaling-justice-ai-adr-reshaping-legal-access/ (Accessed on 11/02/2026)

[32] Ibid

[33] Shaheen. M. S., 'Technology in ADR: An Overview of Transformative Tools' Available at https://www.linkedin.com/pulse/technology-adr-overview-transformative-tools-saleem-shaheen-j4j3e/ (Accessed on 11/02/2026)

[34] Ibid

[35] Ibid

[36] Chauhan. P.K., 'The Transformative Impact Of Technology on ADR' Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5160393 (Accessed on 11/02/2026)

[37] Ibid

[38] Eidenmuller. H., 'Game Over: Facing the AI Negotiator' Available at https://lawreview.uchicago.edu/online-archive/game-over-facing-ai-negotiator (Accessed on 11/02/2026)

Further, smart contracts have emerged as a major development in dispute resolution and ADR[39]. These contracts execute automatically when predetermined conditions are met, therefore minimizing disputes[40]. Smart contracts can also automate a workflow, triggering the next action when conditions are met[41]. Smart contracts are versatile and can be embraced in Digital Dispute Resolution and ADR in order to enhance speed, efficiency, accuracy, transparency and cost effectiveness[42].

AI therefore has the power to strengthen access to justice through ADR. It can bolster ADR mechanisms including arbitration, mediation and negotiation by streamlining tasks such as document review; aiding in language translation especially in international arbitration and mediation; sifting through vast amounts of case law, arbitration awards, and negotiation patterns to provide valuable insights into dispute resolution; enabling novel ADR practices such as block chain arbitration and the use of smart contracts; and strengthening ODR for enhanced access to justice[43]. However, the use of AI in ADR raises the same challenges as those in Digital Dispute Resolution. These challenges relate to bias, due process and fairness and the digital divide[44]. There is need to tackle these concerns in order to harness the power of AI for enhanced access to justice through ADR.

**4.0 Integrating Artificial Intelligence into Digital Dispute Resolution and ADR for Enhanced Access to Justice**

AI holds the promise of improving access to justice through Digital Dispute Resolution and ADR. By adopting AI, it is possible to enhance efficiency, accessibility, and effectiveness of dispute resolution processes including Digital Dispute Resolution and ADR[45]. It is therefore imperative to effectively integrate AI into Digital Dispute Resolution and ADR while addressing its challenges. It has been observed that AI can support Digital Dispute Resolution and ADR, but it must be harnessed and used with care[46].

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[39] Ibid

[40] Shaheen. M. S., 'Technology in ADR: An Overview of Transformative Tools' Op Cit

[41] Ibid

[42] Smart Contracts Vs Blockchain., Available at https://zebpay.com/blog/difference-between-smart-contract-vs-blockchain (Accessed on 11/02/2026)

[43] Integration of Technology in Dispute Resolution., Available at https://www.schreiberadr.com/integration-of-technology-in-dispute-resolution#:~:text=Advances%20in%20artificial%20intelligence%20(AI,essence%20of%20alternative%20dispute%20resolution (Accessed on 11/02/2026)

[44] Shaheen. M. S., 'Technology in ADR: An Overview of Transformative Tools' Op Cit

[45] The Impact of Digital Technologies on Alternative Dispute Resolution., Available at https://rbadr.emnuvens.com.br/rbadr/article/view/175#:~:text=Abstract,various%20aspects%20of%20ADR%20processes (Accessed on 11/02/2026)

[46] AI Risks Legal Sector Must Consider in Dispute Resolution., Available at https://www.whitecase.com/insight-our-thinking/ai-risks-legal-sector-must-consider-dispute-resolution (Accessed on 11/02/2026)

It has been argued that in order to effectively harness AI and other technologies into Digital Dispute Resolution and ADR, concerns around data privacy and the potential for algorithmic bias must be addressed to maintain the integrity of these processes[47]. It is imperative to enhance data privacy and security in Digital Dispute Resolution and ADR in order to effectively harness the power of AI and tackle its challenges[48]. Measures such as enforcing communication via secure channels, performing strong identity verification to ensure devices are not compromised, limiting the use of third-party software and browsing to unsafe websites and encrypting data on devices to protect against device compromise and theft is vital towards harnessing the transformative power of technologies such as AI for enhanced access to justice in digital age[49].

There is also need to ensure diverse and representative training data for digital tools including AI in order to avoid potential biases and discrimination[50]. It has been observed that AI models are only as good as the data they are trained on and thus if the data is biased, incomplete, or inaccurate, the AI model's predictions and decisions will also be biased, incomplete, or inaccurate[51]. Therefore, ensuring training on accurate, diverse and representative data is key towards tackling algorithmic bias and discrimination that can undermine the use of technology in fostering access to justice. In addition, it has been suggested that implementing regular audits of AI algorithms can aid in detecting and correcting biases[52]. Addressing algorithmic bias has been identified as a crucial process towards maintaining the integrity and fairness of dispute resolution processes in the age of technology[53].

Closing the digital divide is also crucial towards ensuring equity and accessibility of technologies and digital tools including AI for enhanced access to justice[54]. It has been observed that the digital divide can prevent vulnerable groups including the poor, the elderly, women, indigenous peoples and local communities from accessing justice[55]. It is therefore necessary to foster access

[47] Shaheen. M. S., 'Technology in ADR: An Overview of Transformative Tools' Op Cit
[48] Muigua. K., 'Navigating the Digital Dispute Resolution Landscape: Challenges and Opportunities' Available at https://kmco.co.ke/wp-content/uploads/2023/08/Navigating-the-Digital-DisputeResolution-Landscape-Challenges-and-Opportunities-.pdf (Accessed on 27/08/2024)
[49] Ebner. N., & Zeleznikow. J., 'Fairness, Trust and Security in Online Dispute Resolution.' *Journal of Public Law and Policy*, Volume 36, Issue 2 (2015)
[50] Hoppin. B., 'Ethics in Online Dispute Resolution: Balancing Technology and Human Judgment' Available at https://odr.com/ethics-in-online-dispute-resolution-balancing-technology-and-human-judgment/#:~:text=3.,refine%20AI%20models%20without%20consent (Accessed on 11/02/2026)
[51] Vinciullo. A., 'The Risk of Law Firms Relying on Chat GPT to Perform Contract analysis and Legal Research.' Available at https://www.linkedin.com/pulse/risk-law-firms-relying-chat-gpt-perform-contract-legal-vinciullo/ (Accessed on 11/02/2026)
[52] Ibid
[53] Shaheen. S., 'Technology in ADR: An Overview of Transformative Tools' Op Cit
[54] Ibid
[55] The Rise of Online Dispute Resolution: How Technology is Changing Conflict Resolution., Available at https://vservesolution.com/blogs/the-rise-of-online-dispute-resolution-how-technology-is-changing-conflict-resolution/ (Accessed on 11/02/2026)

to technology and enhance digital literacy in order to strengthen access to justice through Digital Dispute Resolution and ADR in the age of technology[56].

Through the following, it is possible to effectively integrate AI into Digital Dispute Resolution and ADR for enhanced access to justice.

**5.0 Conclusion**

This article has critically examined the role of AI in Digital Dispute Resolution and ADR. The article notes that AI has the potential to enhance access to justice through Digital Dispute Resolution and ADR by improving efficiency, accessibility, and effectiveness of dispute resolution processes. However, concerns around data privacy, algorithmic bias and discrimination, and the digital divide can undermine the effective use of AI in Digital Dispute Resolution and ADR[57]. In light of these concerns, the article suggests that there is need to enhance data privacy and security[58]; ensure training on accurate, diverse and representative data in order to tackle algorithmic bias and discrimination[59]; and close the digital divide by investing in technology and enhancing digital literacy[60].

Integrating AI into Digital Dispute Resolution and ADR is a crucial agenda that can be realised in an ethical, responsive, and appropriate manner towards improving access to justice in the age of technology.

[56] Ibid
[57] Shaheen. S., 'Technology in ADR: An Overview of Transformative Tools' Op Cit
[58] Ibid
[59] Hoppin. B., 'Ethics in Online Dispute Resolution: Balancing Technology and Human Judgment' Op Cit
[60] Shaheen. S., 'Technology in ADR: An Overview of Transformative Tools' Op Cit

## SECTION III: ARTIFICIAL INTELLIGENCE, ENVIRONMENT, AND SUSTAINABLE DEVELOPMENT

*This section explores the role of Artificial Intelligence in advancing environmental governance, climate action, and sustainable development. It situates AI within broader sustainability, One Health, and environmental justice frameworks.*

# Chapter 6: Artificial Intelligence and Environmental Governance in Africa

***Abstract***

*This chapter critically examines how Artificial Intelligence (AI) can be harnessed to bolster environmental governance in Africa. The chapter observes that Africa faces several obstacles in building robust environmental governance frameworks. It examines the current status of environmental governance in Africa and identifies the key challenges thereof. The chapter notes that failure to build effective environmental governance frameworks in Africa is contributing to environmental threats including climate change, pollution, biodiversity loss and environmental degradation with negative impacts on people and planet. In light of these challenges, the chapter notes that it is imperative to build robust environmental governance frameworks in Africa for Sustainable Development. In particular, the chapter notes that harnessing AI is key towards strengthening environmental governance in Africa. It discusses how AI can assist African countries in building robust environmental governance frameworks. Despite its efficacy, the chapter notes AI is yet to be fully harnessed for sound environmental governance in Africa. It discusses the key challenges undermining the use of AI in environmental governance in Africa. In light of these concerns, the chapter suggests how AI can be effectively embraced for sound environmental governance in Africa towards Sustainable Development.*

## 1.0 Introduction

Achieving sound environmental governance is vital for people and planet. The United Nations Environment Programme (UNEP) notes that environmental governance is a broad concept that encompasses laws, policy, rules and norms that govern human behavior in respect of the environment, while also addressing who makes environmental decisions, how such decisions are made and carried out, the scientific information needed for environmental decision-making and how the public and major stakeholders can participate in environmental decision-making processes[1]. Environmental governance has also been described as a framework that entails policy, rules and norms that govern human behavior in respect of the environment[2]. It can also be defined as the processes of decision-making involved in controlling and managing the environment and natural resources[3].

[1] United Nations Environment Programme., 'Environmental Governance' Available at https://www.unep.org/regions/west-asia/regional-initiatives/environmental-governance (Accessed on 11/02/2026)

[2] United Nations Environment Programme., 'Environmental Governance' Available at https://www.unep.org/regions/west-asia/regional-initiatives/environmental-governance (Accessed on 11/02/2026)

[3] What is Environmental Governance., Available at https://acrobat.adobe.com/id/urn:aaid:sc:EU:a6a47b07-e9e0-4590-8a49-9e55a3bb2a75 (Accessed on 11/02/2026)

It has been observed that environmental governance includes a wide range of legal and other tools employed in both the private and public sectors to foster environmental protection[4]. This concept extends beyond government regulations and interventions to involve other stakeholders including the private sector, non-governmental organizations (NGOs), and the public in environmental decision-making processes[5]. Environmental governance focuses on who makes environmental decisions, how such decisions are made and whether resultant policies and processes lead to environmentally and socially sustainable outcomes[6].

Effective environmental governance is key in maintaining and improving the ability of environmental systems to function and to produce ecosystem services through the persistence of species, habitats or biodiversity towards Sustainable Development[7]. It has been argued that by building robust environmental governance systems, it is possible to achieve environmental goals including sound biodiversity conservation, pollution control, effective management of natural resources and strong climate action both globally and at regional, national and local levels[8]. UNEP notes that through robust environmental governance systems, we can safeguard people and planet and accelerate progress towards the 17 Sustainable Development Goals (SDGs)[9]. By pursuing sound environmental governance, it is possible to achieve effective management of the environment and natural resources in a sustainable and transparent manner for Sustainable Development, peace and justice[10]. Strong environmental governance regimes including effective legal, institutional, and policy frameworks have been identified as crucial towards protecting and restoring our planet and forging a sustainable tomorrow[11].

The United Nations *2030 Agenda for Sustainable Development*[12] identifies good governance as one of the key measures towards realizing Sustainable Development in all its three dimensions

[4] Environmental Law Institute., 'Environmental Governance' Available at https://www.eli.org/environmental-governance (Accessed on 11/02/2026)

[5] Environmental Governance., Available at https://www.manglai.io/en/glossary/environmental-governance (Accessed on 11/02/2026)

[6] Bennett. N., & Satterfield. T., 'Environmental governance: A Practical Framework to Guide Design, Evaluation, and Analysis' Available at https://conbio.onlinelibrary.wiley.com/doi/10.1111/conl.12600 (Accessed on 11/02/2026)

[7] Ibid

[8] United Nations Environment Programme., 'Environmental Law and Governance' Available at https://www.unep.org/topics/environmental-law-and-governance (Accessed on 11/02/2026)

[9] United Nations Environment Programme., 'About environmental rights and governance' Available at https://www.unep.org/explore-topics/environmental-governance/about-environmental-rights-and-governance (Accessed on 11/02/2026)

[10] Bennett. N., & Satterfield. T., 'Environmental governance: A Practical Framework to Guide Design, Evaluation, and Analysis' Op Cit

[11] United Nations Environment Programme., 'Environmental Law and Governance' Op Cit

[12] United Nations General Assembly., 'Transforming Our World: the 2030 Agenda for Sustainable Development.' 21 October 2015, A/RES/70/1., Available at https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf (Accessed on 11/02/2026)

including economic development, social progress, and environmental conservation[13]. It has been argued that by building robust governance systems across all dimensions including in the environmental context, we can safeguard the environment and human rights and work toward all the 17 Sustainable Development Goals (SDGs)[14]. Sound environmental governance has been identified as an overarching means to address national, regional, and global environmental problems towards Sustainable Development[15].

Despite playing a crucial role in protecting people and planet, achieving sound environmental governance remains an elusive goal in many countries undermining progress towards Sustainable Development. For instance, it has been observed that environmental governance systems in most countries strained, with marginalized groups including indigenous peoples, local communities and women often excluded from environmental decision-making processes[16]. Many countries, particularly those in the Global South, are facing numerous legal, political, financial, capacity and technical challenges which undermine their ability to build robust environmental governance frameworks[17]. Failure to put in place sound environmental governance systems undermines Sustainable Development by fuelling challenges such as climate change, pollution, biodiversity loss and environmental degradation[18]. In light of these challenges, strengthening environmental governance is necessary for people and planet. In particular, it has been observed that harnessing science and technology can bolster environmental governance towards Sustainable Development[19].

This chapter critically examines how Artificial Intelligence (AI) can be harnessed to bolster environmental governance in Africa. The chapter observes that Africa faces several obstacles in building robust environmental governance frameworks. It examines the current status of environmental governance in Africa and identifies the key challenges thereof. The chapter notes that failure to build effective environmental governance frameworks in Africa is contributing to environmental threats including climate change, pollution, biodiversity loss and environmental degradation with negative impacts on people and planet. In light of these challenges, the chapter

[13] Ibid
[14] United Nations Environment Programme., 'Environmental Law and Governance' Op Cit
[15] Bennett. N., & Satterfield. T., 'Environmental Governance: A Practical Framework to Guide Design, Evaluation, and Analysis' Op Cit
[16] United Nations Development Programme., 'Environmental Governance: Bolstering Inclusive and Effective Governance Systems that Champion Environmental Justice and Sustainability' Available at https://www.undp.org/nature/our-work-areas/environmental-governance (Accessed on 11/02/2026)
[17] Tsitohery. M., & Zafimahova. C., 'Environmental Governance in The Division of Roles International Institutions and Government Institutions in African Countries' *Journal of Management and Administration Provision*, Volume 2, No. 2 , (2022), pp 58-64
[18] United Nations Development Programme., 'Environmental Governance: Bolstering inclusive and effective governance systems that champion environmental justice and sustainability' Op Cit
[19] Global Council for Science and the Environment., 'The Imperative Role Science Plays in Global Environmental Governance Today' Available at https://www.gcseglobal.org/gcse-essays/imperative-role-science-plays-global-environmental-governance-today (Accessed on 11/02/2026)

notes that it is imperative to build robust environmental governance frameworks in Africa for Sustainable Development. In particular, the chapter notes that harnessing AI is key towards strengthening environmental governance in Africa. It discusses how AI can assist African countries in building robust environmental governance frameworks. Despite its efficacy, the chapter notes AI is yet to be fully harnessed for sound environmental governance in Africa. It discusses the key challenges undermining the use of AI in environmental governance in Africa. In light of these concerns, the chapter suggests how AI can be effectively embraced for sound environmental governance in Africa towards Sustainable Development.

**2.0 The Need for Sound Environmental Governance in Africa**

Fostering sound environmental governance is a vital agenda for Africa. It has been argued that through robust environmental governance frameworks, it is possible to build peace, security, stability and development in Africa[20]. Africa is endowed with natural resources ranging from arable land, water, oil, natural gas, minerals, forests, wildlife and biodiversity[21]. It has been observed that the continent holds a huge proportion of the world's natural resources, both renewables and non-renewables[22]. These resources are at the heart of Sustainable Development in Africa supporting livelihoods, job creation and economic growth. Sound environmental governance is therefore key towards leveraging Africa's vast natural resources for Sustainable Development and green growth[23]. It has been argued that by embracing sound environmental governance, Africa can manage its natural assets efficiently and sustainably and use its abundant arable land, water, forest and mineral resources for socio-economic growth while maintaining its biodiversity and ecosystems[24]. According to UNEP, the undivided nature of the environment and its inextricable links with the social and economic dimensions of Sustainable Development relies on good decision- making processes, effective institutions, policies, laws, standards and norms[25]. Sound environmental governance is therefore key for Sustainable Development in Africa.

However, the ideal of sound environmental governance is yet to be achieved in Africa. It has been noted that environmental governance in Africa has not been as successful when compared to other continents such as Europe and North America[26]. Among the key challenges that are

[20] African Union., 'Africa Environment and Wangari Maathai Day.' Available at https://au.int/en/wangari-maathai-day (Accessed on 11/02/2026)

[21] United Nations Environment Programme., 'Our Work in Africa.' Available at https://www.unep.org/regions/africa/our-work-africa (Accessed on 11/02/2026)

[22] Ibid

[23] Ibid

[24] African Development Bank Group., 'Environment' Available at https://www.afdb.org/en/topics-and-sectors/sectors/environment (Accessed on 11/02/2026)

[25] United Nations Environment Programme., 'Environmental Rights and Governance Overview' Available at https://www.unep.org/explore-topics/environmental-governance/about-environmental-governance/environmental-governance (Accessed on 11/02/2026)

[26] Environmental Governance in Africa., Available at https://www.connect4climate.org/learn/article/environmental-governance-in-

hindering effective environmental governance in Africa include lack of effective coordination among various stakeholders including governments and the civil society[27]. In most African countries, there is lack of coordination among implementing agencies and unclear responsibilities and roles among ministries and between ministries and subnational agencies therefore hindering effective environmental governance[28]. This affects the implementation of environmental laws and policies in Africa therefore hindering effective environmental governance[29]. Further, it has been observed that weak institutions and capacity, lack of political incentives, and insufficient public awareness including limited access to information related to environmental rights and limited access to the appropriate decision-making forums, especially at the local level undermines effective, inclusive and accountable environmental governance framework in Africa[30]. Sound environmental governance in Africa is also constrained by weak governance systems which fail to integrate governance principles of inclusion, accountability and responsiveness in environmental decision-making processes[31]. As a result, key stakeholders including the civil society, women, indigenous peoples and local communities are often excluded from decision-making processes undermining sound environmental governance[32].

The foregoing challenges are fuelling environmental threats in Africa. For instance, it has observed that Africa continues to face mounting environmental problems including climate change, desertification, deforestation, biodiversity loss, water scarcity, and pollution which have been attributed to poor environmental governance among other factors[33]. For instance, Sub-Saharan Africa has been identified as one of the most vulnerable regions in the world to biodiversity loss, environmental degradation and climate change[34]. According to the African Union, the unfolding phenomena of climate change, biodiversity depletion, desertification, land degradation and unsustainable use of finite natural resources remain a serious risk for Africa posing real impediments to achieving the SDGs and Africa's Agenda 2063[35]. Poor environmental governance in Africa also contributes to and worsens conflicts in Africa threatening peace,

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africa#:~:text=Environmental%20governance%20is%20about%20political,elements%20needed%20to%20achieve%20sustainability. (Accessed on 11/02/2026)

[27] Ibid

[28] The Access Initiative., 'The Road to Realizing Environmental Rights in Africa: Moving from Principles to Practice' Available at https://accessinitiative.org/wp-content/uploads/2022/10/22.01_rep_access_initiative_v583-4.pdf (Accessed on 11/02/2026)

[29] Ibid

[30] Ibid

[31] United Nations Development Programme., 'Environmental Governance' Available at https://www.undp.org/governance/environmental-governance (Accessed on 11/02/2026)

[32] Ibid

[33] Ikeke. M.O., & Ukutsemuya. J.I., 'The Afrocentric Imperative in Tackling African Environmental Challenges: Afroecosolidarity Perspectives' *East African Journal of Environment and Natural Resources*, Volume 7, Issue 1, 2024

[34] Schwaiger. J et al., 'Customary Authorities and Environmental Governance in Africa: A Systematic Review' Available at https://www.tandfonline.com/doi/full/10.1080/08941920.2024.2338781#abstract (Accessed on 11/02/2026)

[35] African Union., 'Africa Environment and Wangari Maathai Day.' Op Cit

security, and stability[36]. Consequently, strengthening environmental governance in Africa is key towards Sustainable Development.

## 3.0 Artificial Intelligence and Environmental Governance in Africa: Opportunities and Challenges

Technology has emerged as a vital solution towards strengthening environmental governance for Sustainable Development. It has been observed that technology is improving environmental governance globally by providing appropriate tools for enhanced data collection, policy enforcement, and environmental monitoring[37]. For instance, technologies such as big data, cloud computing and other internet technologies are being utilized to dynamically monitor environmental information in real time, and intelligently supervise governance of the environment[38]. In addition, it has been noted that integrating environmental monitoring data not only provides a basis for recognizing environmental and tackling environmental problems, but also provides technological support for decision making on issues such as emission reduction, biodiversity conservation and pollution control therefore strengthening environmental governance[39]. Hard technologies such drones can help detect illegal logging or hunting in protected areas towards effective environmental protection while soft technologies such as AI can be used to analyse satellite images and detect changes in biodiversity, land or water quality towards strengthening conservation efforts[40]. Renewable energy technologies are also key in reducing greenhouse gas emissions therefore strengthening environmental governance by confronting climate change[41].

Harnessing technology is therefore key towards strengthening environmental governance by enhancing environmental data collection, policy enforcement, and monitoring[42]. Modern technologies including AI, big data analytics, geographic information systems (GIS), and remote sensing are enhancing environmental data collection, tracking and monitoring of environmental changes thus improving environmental governance by providing a basis for sound and accurate decision-making[43].

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[36] Ibid

[37] The Role of Technology in Environmental Governance., Available at https://www.igi-global.com/chapter/the-role-of-technology-in-environmental-governance/363225 (Accessed on 11/02/2026)

[38] Guo. J., & Shen. X., 'Does Digitalization Facilitate Environmental Governance Performance? An Empirical Analysis Based on the PLS-SEM Model in China' *Sustainability* 2024, *16*(7)

[39] Ibid

[40] Technology and the Environment: A Battle between Harm and Benefit., Available at https://www.telefonica.com/en/communication-room/blog/technology-environment-a-battle-between-harm-benefit/ (Accessed on 11/02/2026)

[41] Ibid

[42] Jha. M.K et al., 'The Role of Technology in Environmental Governance' Available at https://www.igi-global.com/chapter/the-role-of-technology-in-environmental-governance/363225 (Accessed on 11/02/2026)

[43] Ibid

In particular, it has been observed that AI can provide tools and systems that can support climate action, biodiversity conservation, sustainable waste management, and ecosystem monitoring[44]. For example, AI tools can help to detect greenhouse gas emissions thus enabling sound action towards tackling climate change[45]. In addition, AI has been identified as a powerful tool in reducing the cost and expanding the scale of biodiversity monitoring and analysis[46]. It has been observed that AI tools including remote sensing and analysis platforms can operate continuously and across a broader area of ecosystems providing accurate data on threats such as habitat degradation, illegal logging, illegal hunting, human-wildlife conflict, and species migration therefore informing sound biodiversity conservation approaches[47]. Further, AI tools are revolutionizing waste management by predicting trends in waste composition, forecasting an increased demand for certain materials, anticipating equipment problems, pointing out unsafe waste conditions and helping individuals and companies make sustainable decisions[48]. It has also been observed that AI tools are improving waste collection and enhancing efficiency in recycling thus playing a key role in tackling the environmental problem of pollution and waste[49].

Harnessing modern technologies can therefore enable Africa to strengthen its environmental governance frameworks for Sustainable Development. However, it has been observed that inadequate investments, funding, capacity, and ineffective government policies are some of the key challenges hindering the application of science and technology including AI in environmental governance in Africa[50]. In addition, barriers to technology development and transfer including capacity constraints and inadequate infrastructure are also hindering effective application science and technology in promoting sound environmental governance in Africa[51].

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[44] United Nations Educational, Scientific and Cultural Organization., 'AI for Environment and Ecosystems Toolkit for Policymakers' Available at https://www.unesco.org/ethics-ai/en/node/288#:~:text=While%20AI%20can%20support%20climate,dynamics%20is%20no%20longer%20optional. (Accessed on 11/02/2026)

[45] United Nations Environment Programme., 'AI has an environmental problem. Here's what the world can do about that' Available at https://www.unep.org/news-and-stories/story/ai-has-environmental-problem-heres-what-world-can-do-about (Accessed on 11/02/2026)

[46] United Nations Development Programme., 'People-Centric AI for Conserving Biodiversity' Available at https://www.undp.org/sites/g/files/zskgke326/files/2025-12/people-centric-ai-for-conserving-biodiversity.pdf (Accessed on 11/02/2026)

[47] Ibid

[48] How AI Is Revolutionizing the Recycling Industry., Available at https://news.climate.columbia.edu/2025/06/18/how-ai-is-revolutionizing-the-recycling-industry/#:~:text=In%20addition%2C%20the%20data%20AI,people%20how%20to%20recycle%20properly. (Accessed on 11/02/2026)

[49] Ibid

[50] United Nations., 'Science, Technology and Innovation for Sustainable Development in the Global Partnership for Development Beyond 2015.' Available at https://www.un.org/en/development/desa/policy/untaskteam_undf/thinkpieces/28_thinkpiece_science.pdf (Accessed on 11/02/2026)

[51] Johnson. D., & Kristina. M. L., 'Challenges to Technology Transfer: A Literature Review of the Constraints on Environmental Technology Dissemination.' *Colorado College Working Paper* No. 2009-07

Further, it has been observed that AI can have negative environmental impacts[52]. For example, most large-scale AI deployments are housed in data centres, including those operated by cloud service providers[53]. These systems rely on vast amounts of energy and water for cooling while also generating large quantities of electronic waste thus creating environmental concerns[54]. Further, it has been observed that AI can introduce significant bias into environmental monitoring systems[55]. For example, it has been argued that AI systems are only as good as the data they are trained on, and many existing biodiversity datasets are geographically skewed in favour of the Global North[56]. Thus, placing reliance on such systems in Africa and the Global South can undermine sound environmental governance including through misclassification of species and failure to detect important ecological changes[57]. The use of AI in environmental monitoring can also fuel privacy concerns. For example, AI systems that monitor environmental conditions or track wildlife movement may inadvertently capture sensitive information about human activity which could be used to monitor vulnerable communities without their consent[58].

Tackling the foregoing challenges is key towards effectively harnessing AI for sound environmental governance both globally and in Africa.

**4.0 Harnessing Artificial Intelligence for Sound Environmental Governance in Africa**

Technology is a transformative tool that can strengthen environmental governance in Africa for Sustainable Development. Consequently, it has been suggested that boosting Africa's capacity in science and technology at all levels through education, training, research, and innovation is key for sound environmental governance[59]. The Science, Technology and Innovation (STI) Strategy for Africa, recognises that an overall enabling environment for STI must be created by African countries and Regional Economic Communities (RECs) in order to effectively harness the potential of STI in all areas including environmental governance[60]. This involves formulation of laws, policies, frameworks and programmes that encourage STI development[61]. It also entails building capacity at all levels through education, training, research, and innovation[62].

[52] United Nations Environment Programme., 'AI has an environmental problem. Here's what the world can do about that' Op Cit
[53] Ibid
[54] Ibid
[55] United Nations Development Programme., 'People-Centric AI for Conserving Biodiversity' Op Cit
[56] Ibid
[57] Ibid
[58] Ibid
[59] The African Manifesto for Science, Technology and Innovation., Available at https://atpsnet.org/wp-content/uploads/2017/05/the_african_manifesto_for_sti.pdf (Accessed on 11/02/2026)
[60] African Union., 'Science, Technology and Innovation Strategy for Africa'., Available at https://au.int/sites/default/files/newsevents/workingdocuments/33178-wd-stisa-english_-_final.pdf (Accessed on 11/02/2026)
[61] Ibid
[62] Ibid

In particular, harnessing AI is paramount towards strengthening environmental governance in Africa. In particular, there is need to invest in AI tools through appropriate legal, policy, and institutional frameworks and bolster digital literacy in order to effectively utilise AI in environmental governance[63]. Further, it has been suggested that there is need to make AI algorithms more efficient, reducing their demand for energy, while recycling water and reusing components where feasible in order to adhere with the core tenets of sound environmental governance and protection[64].It is also of utmost importance to ensure that AI systems are trained on environmental data sets specific to Africa and the Global South, including indigenous and traditional ecological knowledge for sound analysis and prediction[65]. It has been suggested that policymakers will need to collaborate with ecologists, computer scientists, local communities and indigenous peoples in order to develop AI technologies that are not only scientifically robust but also socially and contextually appropriate for the specific environmental governance needs in the Global South[66]. Technology development and transfer including through North-South and South-South cooperation is also crucial in in ensuring that the power of AI in environmental governance flows in multiple directions, including from leading AI countries to less advanced ones for sound environmental governance[67].

Through the foregoing, it is possible to effectively harness AI and other emerging technologies for sound environmental governance in Africa.

**5.0 Conclusion**

This chapter has critically examines the role of AI in environmental governance in Africa. The chapter has pointed that strengthening environmental governance in Africa is vital towards Sustainable Development. Despite the need for sound environmental governance in Africa, the chapter has highlighted that legal, policy, institutional, and technical challenges are undermining sound environmental protection in Africa leading to environmental threats such as climate change, desertification, deforestation, biodiversity loss, water scarcity, and pollution[68]. In light of these concerns, the chapter has suggested that there is need to adopt AI and other modern technologies for sound environmental governance in Africa including through adequate investments, sound legal, policy and institutional frameworks, technology development and transfer, and adopting efficient AI algorithms that are both scientifically robust and socially and contextually appropriate[69].

[63] United Nations Environment Programme., 'AI has an environmental problem. Here's what the world can do about that' Op Cit
[64] Ibid
[65] United Nations Development Programme., 'People-Centric AI for Conserving Biodiversity' Op Cit
[66] Ibid
[67] Ibid
[68] Ikeke. M.O., & Ukutsemuya. J.I., 'The Afrocentric Imperative in Tackling African Environmental Challenges: Afroecosolidarity Perspectives' Op Cit
[69] United Nations Development Programme., 'People-Centric AI for Conserving Biodiversity' Op Cit

Integrating AI into environmental governance in Africa is therefore possible towards Sustainable Development.

# Chapter 7: Artificial Intelligence, Climate Change and Sustainable Resource Management

***Abstract***

*This article discusses how Artificial Intelligence (AI) can be utilised towards confronting climate change in Africa and the Global South. The article observes that climate change is having disproportionate impacts in Africa and the Global South. It examines how climate change undermines Sustainable Development efforts especially in Africa. In light of these concerns, the article posits that tackling climate change is an urgent priority for Africa and the Global South if the Sustainable Development agenda is to be realised. It notes that AI provides effective solutions towards combating climate change and ensuring sustainable resource management in Africa and the Global South. The article explores how AI can be utilised towards strengthening climate action in Africa. Despite its efficacy, the article observes that AI is inadequately utilised in climate action in Africa. It examines some of the factors limiting the adoption of AI towards combating climate change in Africa and the Global South. In light of these concerns, the paper proposes how AI can be effectively harnessed towards combating climate change and ensuring sustainable resource management in Africa.*

## 1.0 Introduction

Climate change has become a major global environmental and development challenge with adverse impacts on people and planet. Climate change has been described as one of the greatest challenges of our time whose adverse impacts undermine the ability of all countries to achieve Sustainable Development[1]. The impacts of climate change including intense droughts, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms and declining biodiversity are on the rise globally undermining development efforts[2]. These adverse events are causing dangerous and widespread disruption, depletion and degradation of nature while also affecting the lives, health, livelihoods and well-being of billions of people all over the world[3]. It has been argued that climate change affects realization of the Sustainable Development agenda across the world by affecting the sustainability of the planet's ecosystems, the stability of the global economy and the future of humankind[4].

[1] United Nations General Assembly., 'Transforming Our World: the 2030 Agenda for Sustainable Development.' 21 October 2015, A/RES/70/1., Available at https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf (Accessed on 12/02/2026)

[2] United Nations., 'What is Climate Change?' Available at https://www.un.org/en/climatechange/what-is-climate-change (Accessed on 12/02/2026)

[3] Intergovernmental Panel on Climate Change., 'Climate change: a threat to human wellbeing and health of the planet. Taking action now can secure our future' Available at https://www.ipcc.ch/report/ar6/wg2/downloads/press/IPCC_AR6_WGII_PressRelease-English.pdf (Accessed on 12/02/2026)

[4] Climate Change., 'Meaning, Definition, Causes, Examples and Consequences.' Available at https://youmatter.world/en/definition/climate-change-meaning-definition-causes-and-consequences/ (Accessed on 12/02/2026)

In light of its adverse effects on people and planet, confronting climate change is paramount in the pursuit of Sustainable Development. It has been argued that if left unchecked, climate change will undo a lot of the development progress made over the past years and will also provoke mass migrations that will lead to insecurity, instability and wars[5]. The United Nations *2030 Agenda for Sustainable Development*[6] acknowledges that climate change undermines efforts towards sustainability[7]. Sustainable Development Goal (SDG) 13 under the Agenda urges all states to take urgent action to combat climate change and its impacts[8].

Despite climate change being a global problem, its impacts are felt disproportionately across individuals, communities and regions[9]. In particular, Africa and the Global South are highly vulnerable to climate change[10]. Confronting climate change is therefore an urgent priority in Africa and the Global South towards environmental justice and Sustainable Development.

This article discusses how Artificial Intelligence (AI) can be utilised towards confronting climate change in Africa and the Global South. The article observes that climate change is having disproportionate impacts in Africa and the Global South. It examines how climate change undermines Sustainable Development efforts especially in Africa. In light of these concerns, the article posits that tackling climate change is an urgent priority for Africa and the Global South if the Sustainable Development agenda is to be realised. It notes that AI provides effective solutions towards combating climate change and ensuring sustainable resource management in Africa and the Global South. The article explores how AI can be utilised towards strengthening climate action in Africa. Despite its efficacy, the article observes that AI is inadequately utilised in climate action in Africa. It examines some of the factors limiting the adoption of AI towards combating climate change in Africa and the Global South. In light of these concerns, the paper proposes how AI can be effectively harnessed towards combating climate change and ensuring sustainable resource management in Africa.

**2.0 Impacts of Climate Change on Sustainable Development in Africa and the Global South**

It has been observed that the consequences of climate change including extreme flooding, severe droughts, warmer temperatures, rising sea levels, declining biodiversity and resource scarcity, are not distributed equally, with the poor, marginalized and disadvantaged populations often

[5] United Nations., 'Goal 13: Take Urgent Action to Combat Climate Change and its Impacts.' Available at https://www.un.org/sustainabledevelopment/climate-change/ (Accessed on 12/02/2026)

[6] United Nations General Assembly., 'Transforming Our World: the 2030 Agenda for Sustainable Development.' 21 October 2015, A/RES/70/1., Op Cit

[7] Ibid

[8] Ibid

[9] Bandera. G., 'How climate colonialism affects the Global South' Available at https://www.fairplanet.org/story/how-climate-colonialism-affects-the-global-south/ (Accessed on 12/02/2026)

[10] Ibid

bearing the brunt of these effects despite their little contribution to the climate crisis[11]. People and communities who have contributed the least to climate change are being affected by it the most, and are likely to be less able to protect themselves from its impacts[12]. In particular, climate change has disproportionate impacts on vulnerable groups and communities including women, the youth, the elderly, people of colour, persons with disabilities and people and communities developing countries[13]. It has been observed that due to geographic and economic vulnerability, people and communities in the Global South are extremely vulnerable to climate change and its impacts[14].

Africa is particularly vulnerable to climate change and its impacts. It has been pointed out that Africa is responsible for only a fraction of global greenhouse gas emissions but is suffering disproportionately from climate change and its impacts[15]. The United Nations Environment Programme (UNEP) notes that despite having the least greenhouse gas emissions, Africa stands out disproportionately as the most vulnerable region in the world to climate change and its impacts[16]. It has been observed that Africa is already facing adverse impacts of climate change and is amongst the regions that will experience the most devastating consequences of projected climate trends in the future[17].

Climate change is a major threat to Sustainable Development in Africa. Climate change affects Sustainable Development in Africa by fuelling economic losses, affecting socio-economic growth and pushing millions of people into extreme levels of poverty[18]. In addition, climate change is also impacting food and water security, ecosystems and economies, fueling displacement and

[11] Climate Justice Global Alliance., Available at https://sdgs.un.org/partnerships/climate-justice-global-alliance (Accessed on 12/02/2026)
[12] Oxfam., 'Climate Justice.' Available at https://www.oxfam.org.au/what-we-do/climate-justice/ (Accessed on 12/02/2026)
[13] Center for Climate Justice., 'What is Climate Justice?' Available at https://centerclimatejustice.universityofcalifornia.edu/what-is-climate-justice/ (Accessed on 12/02/2026)
[14] Giles. M., 'The Principles of Climate Justice at CoP27.' Available at https://earth.org/principles-ofclimatejustice/#:~:text=That%20response%20should%20be%20based,the%20consequences%20of%20climate%20change (Accessed on 12/02/2026)
[15] World Meteorological Organization., 'Africa suffers disproportionately from climate change' Available at https://wmo.int/media/news/africa-suffers-disproportionately-from-climate-change (Accessed on 12/02/2026)
[16] United Nations Environment Programme., 'Responding to Climate Change' Available at https://www.unep.org/regions/africa/regional-initiatives/responding-climate-change (Accessed on 12/01/2026)
[17] African Development Bank Group., 'Africa and Climate Change' Available at https://www.afdb.org/en/topics-and-sectors/sectors/climate-change/our-strategy (Accessed on 12/02/2026)
[18] African Development Bank Group., 'Climate Change in Africa' Available at https://www.afdb.org/en/cop25/climate-change-africa (Accessed on 12/02/2026)

migration and worsening the threat of conflict over dwindling natural resources in Africa[19]. It has been observed that many parts of Africa are warming at a faster rate than the global average and facing an above-average sea-level rise[20]. Climate change is profoundly impacting African countries and communities in numerous ways by fuelling water scarcity, damaging agricultural harvests, affecting lifestyles, and amplifying gender and other dimensions of inequality[21].

Climate change is therefore a major threat to Sustainable Development in Africa. It affects people in Africa by destroying livelihoods, fuelling food and water insecurity, undermining economic development, causing the spread of diseases and leading to forced displacements and migration with impacts on peace and security[22]. Climate change is also devastating the environment in Africa by causing and worsening threats such as biodiversity loss, ecosystem degradation, natural resource depletion and desertification[23]. Confronting climate change is therefore an urgent priority for Africa and the Global South in the quest towards Sustainable Development.

**3.0 The Role of Artificial Intelligence in Tackling Climate Change and Ensuring Sustainable Resource Management in Africa**

The rapid advancement in technology has led to the emergence of new and novel solutions that are bolstering climate action all over the world. Technology is bolstering the global response to climate change through tools and systems that enable emissions reduction which involves tackling climate change by reducing greenhouse gas emissions[24]; sequestration which entails removing carbon dioxide from the atmosphere into permanent geological, biological or oceanic reservoirs[25]; adaptation through responding to and coping with climate change as it occurs, in either a planned or unplanned way[26]; and solar geoengineering through large-scale engineered modifications to limit the amount of sunlight reaching the earth, in an attempt to offset the effects of ongoing greenhouse gas emissions[27]. Technological advancements in areas such as renewable energy, sustainable transport and infrastructure, and sustainable agriculture are enabling countries to adopt low-carbon development pathways towards tackling climate change[28]. It has been observed that by adopting technology, it is possible to strengthen climate mitigation and

[19] World Meteorological Organization., 'Africa suffers disproportionately from climate change' Op Cit
[20] African Development Bank Group., 'Africa and Climate Change' Op Cit
[21] Fonjong. L., Matose. F., & Sonnenfeld. D., 'Climate change in Africa: Impacts, adaptation, and policy responses' *Global Environmental Change.*, Volume 89, December 2024
[22] African Development Bank Group., 'Africa and Climate Change' Op Cit
[23] Ibid
[24] Australian Academy of Science., 'What does Science Say About Options to Address Climate Change?' Available at https://www.science.org.au/learning/general-audience/science-climate-change/9-what-does-science-say-about-climate-change-options (Accessed on 12/02/2026)
[25] Ibid
[26] Ibid
[27] Ibid
[28] Yuan. H, Zhou. P, & Zhou. D., 'What is Low-Carbon Development? A Conceptual Analysis.' *Energy Procedia*, 5 (2011) 1706–1712

adaptation through clean energy solutions, energy-efficient practices, carbon capture and storage, early warning systems and the use drought-resistant crops[29].

Technology is therefore at the heart of effective climate action. AI has emerged as a modern technological solution that is strengthening climate action globally. For instance, AI tools are driving improvements in energy efficiency, generation and storage unlocking potential for data-driven power options that are conserving energy and reducing greenhouse gas emissions[30]. AI tools are enabling accurate data collection and analysis which leads to more efficient energy outcomes[31]. It has been argued that AI technologies can significantly accelerate climate action through solutions to reduce greenhouse gas emissions[32]. For instance, technologies that minimize energy waste, optimize energy consumption and distribution, and identify emission hotspots in industrial processes can enhance efforts towards tackling climate change[33]. The energy sector which is dominated by fossil fuels such as oil, gas and coal is the leading cause of climate change. It has been pointed out that fossil fuels are by far the largest contributor to global climate change, accounting for over 75 percent of global greenhouse gas emissions and nearly 90 percent of all carbon dioxide emissions[34]. The integration of AI into the energy sector is therefore crucial in tackling the climate crisis by reducing greenhouse gases associated with the production, distribution and consumption of energy[35]. It has been observed that AI-powered energy management systems can improve grid efficiency, forecast power demand, and optimize the deployment of renewable energy sources such as solar and wind towards confronting climate change[36].

AI tools can also be integrated into the transport sector to foster sustainable transport systems. In addition to the energy sector, the transport sector is one of the leading causes of climate change. This is due to the fact that motorised transport on land, sea and air remains dependent on internal combustion engines that run on fossil fuels[37]. It has been argued that since the transport sector

[29] Climate and Technology., Available at https://ecasiafrica.org/climate-and-technology/ (Accessed on 12/02/2026)
[30] Artificial Intelligence: One answer to reducing greenhouse gases at industrial facilities., Available at https://www.stantec.com/en/ideas/topic/energy-resources/artificial-intelligence-one-answer-to-reducing-greenhouse-gases-at-industrial-facilities (Accessed on 12/01/2026)
[31] Ibid
[32] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Available at https://unfccc.int/news/ai-and-climate-action-opportunities-risks-and-challenges-for-developing-countries (Accessed on 12/01/2026)
[33] Ibid
[34] United Nations., 'Renewable Energy – Powering a Safer Future' Available at https://www.un.org/en/climatechange/raising-ambition/renewable-energy (Accessed on 12/01/2026)
[35] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit
[36] Ibid
[37] International Energy Agency., 'Transport' Available at https://www.iea.org/energy-system/transport (Accessed on 12/02/2026)

significantly generates greenhouse gas emissions due to burning of fossil fuels, its transformation is an urgent priority towards confronting climate change[38]. The adoption of AI into the transport sector is key towards minimizing its environmental footprint. For instance, AI tools can analyze transportation data to optimize traffic flow and route planning, reducing fuel consumption and emissions[39]. AI tools including applications that process real time traffic information are enhancing the use of technology in the transport sector towards confronting climate change[40].

In addition, AI provides solutions that can enable individuals and communities to effectively adapt to the impacts of climate change. For instance, AI tools can strengthen early warning systems by correctly predicting extreme weather events such as droughts and floods enabling proactive disaster risk management[41]. In addition, it has been observed that AI-driven urban resilience planning can help identify infrastructure vulnerabilities and optimize land use towards bolstering climate action[42].

The integration of AI into climate policies therefore provides a vital solution towards confronting climate change and protecting people and planet. UNEP notes that the power of AI lies in its ability to accurately detect patterns in data, such as anomalies and similarities, and use historic knowledge to accurately predict future outcomes[43]. Through this, AI has become a powerful tool for monitoring the environment, and helping governments, businesses, communities and individuals make more planet-friendly choices[44].

In addition to its potential to bolster climate action, AI can also enable Africa to achieve sustainable resource management. The climate crisis in Africa drives and worsens the destruction of nature through biodiversity loss, ecosystem degradation, natural resource depletion and

[38] United Nations Development Programme., 'What is sustainable transport and what role does it play in tackling climate change?' Available at https://climatepromise.undp.org/news-and-stories/what-sustainable-transport-and-what-role-does-it-play-tackling-climate-change#:~:text=Why%20is%20transforming%20the%20transport,adults%20aged%205%E2%80%9329%20years. (Accessed on 12/02/2026)

[39] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit

[40] Verma. R., 'Role of Science, Technology and Innovation in addressing Climate Change.' Available at https://thesciencepolicyforum.org/articles/perspectives/role-of-science-technology-and-innovation-inaddressing-climate-change-a-perspective/ (Accessed on 12/02/2026)

[41] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit

[42] Ibid

[43] United Nations Environment Programme., 'AI has an environmental problem. Here's what the world can do about that' Available at https://www.unep.org/news-and-stories/story/ai-has-environmental-problem-heres-what-world-can-do-about#:~:text=Why%20are%20people%20excited%20about,gas%20that%20drives%20climate%20change. (Accessed on 12/02/2026)

[44] Ibid

desertification[45]. Achieving sustainable resource management is therefore crucial towards protecting natural resources and especially vulnerable ecosystems from adverse climatic events. At the same time, human activities including illegal logging, illegal trade in wildlife, overfishing, deforestation and illegal mining are fuelling the loss and degradation of natural resources in Africa[46]. In light of these challenges, it has been observed that AI can strengthen efforts towards ensuring sustainable resource management[47]. For example, when combined with satellite imagery, AI can support biodiversity conservation, sustainable water use, and land restoration efforts[48]. AI tools can enable sustainable resource management by detecting threats such as illegal logging, illegal hunting, overfishing and illegal mining while also analyzing changes in biodiversity, land or water quality[49].

Harnessing modern technologies especially AI is therefore vital towards confronting climate change and ensuring sustainable resource management in Africa. However, it has been observed that bias and inequity in AI systems can affect its effective use particularly in Africa and the Global South[50]. When AI algorithms are not designed inclusively taking into account the peculiar needs of developing countries, they can perpetuate social inequalities and bias undermining trust and their role in environmental governance[51]. In particular, it has been observed that most environmental and biodiversity datasets are geographically skewed in favour of the Global North[52]. Such biases can undermine the role of AI in climate action and environmental governance in developing countries through misclassification of species and failure to detect important ecological changes[53]. In addition, it has been observed that the energy and water consumption of AI systems raises sustainability concerns, particularly in Africa and the Global South where most countries are already facing resource constraints[54]. Most developing countries are also facing significant barriers in adopting AI-driven climate solutions including limited digital infrastructure as evidenced by unreliable internet connectivity, inadequate computing

[45] African Development Bank Group., 'Africa and Climate Change' Op Cit
[46] United Nations Environment Programme., 'Our Work in Africa' Available at https://www.unep.org/regions/africa/our-work-africa (Accessed on 12/02/2026)
[47] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit
[48] Ibid
[49] Technology and the Environment: A Battle between Harm and Benefit., Available at https://www.telefonica.com/en/communication-room/blog/technology-environment-a-battle-between-harm-benefit/ (Accessed on 12/02/2026)
[50] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit
[51] Ibid
[52] United Nations Development Programme., 'People-Centric AI for Conserving Biodiversity' Available at https://www.undp.org/sites/g/files/zskgke326/files/2025-12/people-centric-ai-for-conserving-biodiversity.pdf (Accessed on 12/02/2026)
[53] Ibid
[54] United Nations Environment Programme., 'AI has an environmental problem. Here's what the world can do about that' Op Cit

power, and capacity shortage[55]. Inadequate access to high-quality, comprehensive climate data essential for training AI models also hinders the effective application of AI for sound climate action in Africa and the Global South[56].

Addressing the foregoing barriers is key towards harnessing AI for sound climate action and sustainable resource management in Africa.

**4.0 Embracing Artificial Intelligence for Sound Climate Action and Sustainable Resource Management in Africa**

With Africa facing a mounting climate crisis, strengthening climate action is crucial in protecting people and planet towards Sustainable Development. Further, Africa's abundant natural resources, including arable land, water, forests, wildlife, minerals, oil and gas, are being damaged and degraded due to climate-induced and human activities. Ensuring sustainable resource management is also crucial in safeguarding Africa's natural capital for Sustainable Development[57].

AI provides tools that can strengthen climate action and ensure sustainable resource management in Africa[58]. It is therefore necessary to harness the power of AI towards combating climate change and fostering sustainable resource management in Africa. Achieving this goal involves closing the digital divide by investing in infrastructure and AI capacity-building programmes in Africa and the Global South in order to empower local experts and institutions[59]. Further, ensuring that AI systems are trained on environmental and climate data sets specific to Africa and the Global South, including indigenous and traditional ecological knowledge is key towards sound analysis and prediction while also harnessing local solutions to tackle climate change and foster sustainable resource management[60]. Developing countries have also been urged to invest in climate data collection in order to ensure the availability of quality and accurate information to support AI deployment[61]. Countries have also been urged to develop and adopt energy and water efficient AI systems in order to optimize resource conservation and sustainability[62]. Further, due to the disproportionate impacts of climate change on vulnerable groups including women, the youth, the elderly, persons with disabilities, indigenous peoples and local communities, there is

[55] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit
[56] Ibid
[57] United Nations Environment Programme., 'Our Work in Africa' Op Cit
[58] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit
[59] Ibid
[60] United Nations Development Programme., 'People-Centric AI for Conserving Biodiversity' Op Cit
[61] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit
[62] United Nations Environment Programme., 'AI has an environmental problem. Here's what the world can do about that' Op Cit

to design and adopt AI systems with inclusive approaches in order to deliver equitable climate benefits towards climate justice[63]. International, regional and national collaborations involving governments, academia, the civil society, and the private sector especially technology companies can lead to knowledge exchange, capacity building and uniform standards towards effectively harnessing AI for sound climate action[64].

**5.0 Conclusion**

This article has critically examined the role of AI confronting climate change and ensuring sustainable resource management in Africa. The article has highlighted that Africa is disproportionately impacted by climate change. The discussion has demonstrated that climate change undermines Sustainable Development in Africa with negative impacts on people and the environment[65]. Consequently, confronting climate change is key towards ensuring sustainability in Africa. The article has demonstrated that AI provides practical solutions towards strengthening climate action and ensuring sustainable resource management in Africa[66]. However, it has been shown that AI is yet to be fully harnessed in Africa and the Global South due to legal, capacity, technical, and sustainability concerns[67]. The article proposes that there is need to effectively adopt AI for sound climate action and sustainable resource management in Africa including through adequate investments in technology, capacity building, tackling algorithmic bias, investing in climate data collection, designing inclusive AI systems for climate justice and fostering international, regional and national collaborations[68].

Harnessing AI is a transformative approach that should be embraced in Africa towards combating climate change and ensuring sustainable resource management.

[63] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit
[64] Ibid
[65] African Development Bank Group., 'Africa and Climate Change' Op Cit
[66] United Nations Climate Change., 'AI and Climate Action: Opportunities, Risks and Challenges for Developing Countries' Op Cit
[67] Ibid
[68] Ibid

# Chapter 8: Artificial Intelligence and the One Health Approach

***Abstract***

*This article focuses on the intersection between Artificial Intelligence (AI) and the One Health approach. The article observes that AI has the potential to power the One Health approach. It argues that AI has the capacity to support the One Health approach through tools and applications such as early warning systems, zoonotic disease surveillance, environmental monitoring, and predictive modelling among others. Despite its efficacy, the article notes the use of AI in the One Health approach raises concerns related to equity, ethics, capacity, fairness and privacy. In light of these concerns, the article proposes how AI can be effectively integrated into the One Health approach towards Sustainable Development.*

## 1.0 Introduction

The World Health Organization (WHO) defines One Health as an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems[1]. According to WHO, the One Health approach acknowledges that the health of people, domestic and wild animals, plants, and the environment at large (including ecosystems) are closely linked and interdependent[2]. One Health has also been defined as an approach that considers the interconnections of and the impacts on the health of all living organisms[3]. It has been observed that this concept cuts across boundaries of animal, human, plant and environmental health systems and sectors, for effective prevention, preparedness, control and mitigation of disease threats and to promote health, sustainability and equity for people, animals, plants, and ecosystems[4].

Charting a One Health approach is vital in protecting people and planet for Sustainable Development. For instance, it has been observed that by linking humans, plants, animals and the environment, the One Health approach can help to address the full spectrum of disease control – from prevention to detection, preparedness, response and management – and contribute to global health security[5]. The One Health approach focuses on improving global health outcomes, minimising health risks and taking a holistic approach on the interaction between human, animal

[1] World Health Organization., 'One Health' Available at https://www.who.int/health-topics/one-health#tab=tab_1 (Accessed on 12/02/2026)
[2] Ibid
[3] Food and Agriculture Organization of the United Nations., 'One Health and the United Nations Sustainable Development Cooperation Framework: Guidance for United Nations Country Teams 2023' Available at https://wedocs.unep.org/bitstream/handle/20.500.11822/43772/one_health_UNSDCF.pdf?sequence=3&isAllowed=y (Accessed on 12/02/2026)
[4] Ibid
[5] World Health Organization., 'One Heath' Op Cit

and environmental health[6]. The United Nations Environment Programme (UNEP) notes that the One Health path mobilizes all sectors, disciplines and communities at varying levels of society to work together to foster human well-being and tackle threats to human and ecosystem health while addressing the collective need for clean air and water, sustainable energy, safe and nutritious food while taking action on climate change and fostering Sustainable Development[7].

The One Health approach emphasizes a harmonious balance between human–animal–environment interaction in ecosystems while acknowledging the need for sound biodiversity conservation and management of natural resources for human, animal and ecosystem health[8]. It has been argued that this approach encourages environmental stewardship and the responsibility of humans to change behaviour and adopt sustainable solutions towards safeguarding nature for the well-being of current and future generations[9]. Pursuing the One Health path is at the heart of the Sustainable Development agenda due to its potential to accelerate progress towards realising several Sustainable Development Goals (SDGs) including ending poverty (SDG 1), achieving food security (SDG 2), fostering good health and well-being for all (SDG 3), clean water and sanitation (SDG 6), climate action (SDG 13), and the conservation of marine and terrestrial ecosystems (SDGs 14 and 15)[10]. In addition, it has been argued that the health of all living organisms relies on the achievement of the SDGs tied to adequate services and resources, including food security and agricultural production (SDG 2), as well as sustainable cities and communities (SDG 11[11]). Charting a One Health path can therefore contribute towards sustainable health and food systems, effective climate action, sound biodiversity conservation, pollution control, reduction of global health threats and sound ecosystem management for Sustainable Development[12].

This article focuses on the intersection between Artificial Intelligence (AI) and the One Health approach. The article observes that AI has the potential to power the One Health approach. It argues that AI has the capacity to support the One Health approach through tools and applications such as early warning systems, zoonotic disease surveillance, environmental

[6] One Health: Integrated health for humans, animals and the environment., Available at https://www.malteser-international.org/en/current-issues/our-response/health/one-health.html (Accessed on 12/02/2026)

[7] United Nations Environment Programme., 'One Health' Available at https://www.unep.org/topics/chemicals-and-pollution-action/pollution-and-health/unep-one-health (Accessed on 12/02/2026)

[8] The One Health Definition and Principles Developed by OHHLEP., Available at https://cdn.who.int/media/docs/default-source/one-health/ohhlep/one-health-definition-and-principles-translations.pdf?sfvrsn=d85839dd_5&download=true (Accessed on 12/02/2026)

[9] Ibid

[10] Food and Agriculture Organization of the United Nations., 'One Health and the United Nations Sustainable Development Cooperation Framework: Guidance for United Nations Country Teams 2023' Op Cit

[11] Ibid

[12] Ibid

monitoring, and predictive modelling among others. Despite its efficacy, the article notes the use of AI in the One Health approach raises concerns related to equity, ethics, capacity, fairness and privacy. In light of these concerns, the article proposes how AI can be effectively integrated into the One Health approach towards Sustainable Development.

**2.0 Artificial Intelligence and the One Health Approach: Opportunities and Challenges**

AI provides effective solutions towards the One Health approach. It has been argued that in the face of growing global health challenges, particularly those arising from the complex interactions between humans, animals, and the environment, technological solutions can foster One Health by connecting data across human, animal, plant, and environmental health sectors[13]. It has been observed that emerging infectious diseases and pandemics including the recent COVID-19 pandemic; the burden of zoonotic diseases; the upsurge of food, land and water safety hazards; the impacts of pollution; the growing threat of antimicrobial resistance; and the degradation of natural ecosystems and biodiversity create multidimensional health challenges that affect human health, plant health, animal health, and environmental health[14]. In addition, environmental degradation due to both natural and human-induced events is a root cause of several health threats that are invariably complex and negatively impact human health and that of other species including plants and animals[15]. In particular, the triple planetary crisis of biodiversity loss, climate change, and pollution is fueling interlinked health risks affecting both humanity and nature[16].

In light of the complex interactions between human and ecosystem health, AI has emerged as a powerful tool that foster synergies including through collection and integration of data across human, plant, animal, and environmental health sectors to guide informed and coordinated decision-making for One Health[17]. For example, through real-time monitoring systems, AI improves how data is collected, shared, and analyzed, helping decision-makers act faster and more strategically towards tackling complex and interlinked global health challenges[18]. It has been observed that AI can improve pandemic preparedness by analyzing datasets from diverse sources including climate, land use, animal production, transport, population movements, and socio-economic structures[19]. Through this, it is possible to reveal patterns and detect pathogens

[13] Food and Agriculture Organization of the United Nations., 'The role of information and communication technology in One Health intelligence' Available at https://www.fao.org/one-health/highlights/the-role-of-ict-for-one-health/en (Accessed on 12/02/2026)

[14] Ibid

[15] World Organisation for Animal Health., 'Global Plan of Action for One Health' Available at https://rr-middleeast.woah.org/app/uploads/2021/12/gpa_15-december-2021.pdf (Accessed on 12/02/2026)

[16] Ibid

[17] Food and Agriculture Organization of the United Nations., 'The role of information and communication technology in One Health intelligence' Op Cit

[18] Ibid

[19] AI combined with the One Health approach can improve pandemic preparedness., Available at https://www.news-medical.net/news/20251003/AI-combined-with-the-One-Health-approach-can-improve-pandemic-

before they spread thus strengthening pandemic preparedness[20]. AI tools including machine learning also have the ability to detect and analyze transmission patterns for diseases[21]. For example, through environmental monitoring, AI can predict and forecast health risks associated with pollution, climate change and habitat alteration[22]. This enhances our ability to monitor, diagnose, and predict diseases thus enabling sound decision-making processes for One Health[23].

AI is therefore crucial in advancing the One Health approach. In particular, it has been observed that emerging zoonotic diseases cut across the intersection of human, animal and environmental health[24]. Zoonotic disease are diseases shared between animals – including livestock, wildlife, and pets – and human beings[25]. It has been observed that zoonotic diseases can pose serious risks to both animal and human health and may have far-reaching impacts on economies and livelihoods[26]. Zoonotic diseases therefore represent a major public health problem. These diseases are commonly spread at the human-animal-environment interface – where people and animals interact with each other in their shared environment[27]. In light of the adverse impacts of zoonotic diseases, it has been argued that there is an urgent need for integrated surveillance systems connecting human, animal, and environmental health[28]. It has been observed that traditional surveillance approaches are insufficient for detecting emerging zoonotic threats in time since they treat human, animal and environmental health as different sectors[29]. However, AI tools and platforms enable efficient monitoring and data collection across the human-animal-and environmental health sectors towards effectively predicting and tackling the spread of zoonotic diseases[30].

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preparedness.aspx#:~:text=The%20better%20we%20become%20at,and%20track%20emerging%20infectious%20diseases. (Accessed on 12/02/2026)

[20] Ibid

[21] Pandey. S.K., Kulshreshtha. A., & Mishra. A., 'Artificial Intelligence in the Management of One Health: An Update' Available at https://pubmed.ncbi.nlm.nih.gov/41163283/#:~:text=In%20this%20regard%2C%20current%20developments,health;%20treatment;%20zoonosis (Accessed on 12/02/2026)

[22] Ibid

[23] Ibid

[24] Mukherjee. D et al., 'Filling the gap: artificial intelligence-driven one health integration to strengthen pandemic preparedness in resource-limited settings' Available at https://pmc.ncbi.nlm.nih.gov/articles/PMC12727988/ (Accessed on 12/02/2026)

[25] United Nations Office for Disaster Risk Reduction., 'Zoonotic Diseases' Available at https://www.undrr.org/understanding-disaster-risk/terminology/hips/bi0113 (Accessed on 12/02/2026)

[26] Ibid

[27] Ibid

[28] Mukherjee. D et al., 'Filling the gap: artificial intelligence-driven one health integration to strengthen pandemic preparedness in resource-limited settings' Op Cit

[29] Ibid

[30] Ibid

AI therefore provides effective solutions towards One Health. It has been observed that AI is being increasingly utilised globally to identify risks, conduct predictive modeling and provide evidence-based recommendations for public health policy and action[31]. Through AI, it is possible to improve public health preparedness and response to emerging and re-emerging infectious disease outbreaks[32]. However, the integration of AI into the One Health approach raises several concerns. For instance, it has been observed that inadequate digital health infrastructure especially in developing countries and rural areas undermine the adoption of AI and other technological solutions for One Health[33]. Consequently, it has been observed that developing countries may face delayed outbreak response due to fragmented and analogue data systems making them highly vulnerable to the spread of pandemics and zoonotic diseases[34]. The use of AI in One Health can also create privacy and data governance concerns in cross-border health surveillance especially where individuals and communities are subjected to unauthorised surveillance[35]. The fragmented nature of the health sector in most countries can also hinder effective adoption of AI for One Health[36]. The human, animal and environmental health sectors in most countries are split across different institutions and legal frameworks often without effective coordination[37]. It has been observed that even in developed countries with robust digital infrastructure, incompatible databases, siloed institutions, and lack of common data standards can hinder progress towards harnessing AI for One Health[38].

Tackling the foregoing concerns is therefore crucial towards integrating AI into the One Health approach for people and planet.

**3.0 Integrating Artificial Intelligence into the One Health Approach for Sustainability**

Fostering the One Health approach is vital in the quest towards Sustainable Development. It has been observed that with humanity and nature facing mounting challenges including the triple planetary crisis of climate change, biodiversity loss and pollution, there is need to chart the One Health path since the health of human-beings is closely connected to the health of animals, plants

[31] AI Solutions for One Health Approaches to Epidemic and Pandemic Prevention and Response: Scale, Inclusion and Impact., Available at https://www.ai4d.ai/projects/ai-solutions-for-one-health-approaches-to-epidemic-and-pandemic-prevention-and-response-scale-inclusion-and-impact (Accessed on 12/02/2026)

[32] Ibid

[33] Mukherjee. D et al., 'Filling the gap: artificial intelligence-driven one health integration to strengthen pandemic preparedness in resource-limited settings' Op Cit

[34] Ibid

[35] Ibid

[36] Food and Agriculture Organization of the United Nations., 'The role of information and communication technology in One Health intelligence' Op Cit

[37] Ibid

[38] Ibid

and our shared environment[39]. The One Health approach focuses on tackling threats to human, animal, plant and ecosystem health using an integrated approach[40]. It fosters collaboration among various sectors, disciplines and communities to work together towards ensuring human and planetary well-being and addressing threats to our health and that of ecosystems[41]. AI provides viable solutions towards charting the One Health approach including through enhanced ability to monitor, diagnose, and predict diseases thus enabling sound decision-making processes for One Health[42].

Integrating AI into One Health can therefore ensure sustainable outcomes for both people and planet towards Sustainable Development. Achieving this goal involves enhancing synergies and collaborations across different health sectors for efficient data collection and analysis. It has been observed that the One Health path requires coordinated responses involving experts in human, animal, plant and environmental health, and other relevant disciplines and sectors in monitoring and controlling public health threats[43]. However, the siloed approach of the health sectors in most countries undermines effective adoption of AI due to lack of coordination in respect of data collection and analysis[44]. Consequently, it has been suggested that there is need for cooperation across sectors, including through establishing data standards that facilitate the consistent collection, sharing, and analysis of information for effective adoption of AI towards One Health[45].

It is also vital to address data privacy concerns in One Health. It has been observed that cross-border health surveillance through AI tools can infringe on the right to privacy by disclosing individuals' sensitive health data to decision-makers[46]. This creates ethical challenges around equity, consent, exploitation, and cultural sensitivity of health data especially in developing countries[47]. It is therefore imperative to address data privacy concerns including through involving individuals and communities in the implementation of AI systems towards effectively charting the One Health path[48].

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[39] About One Health., Available at https://www.cdc.gov/one-health/about/index.html#:~:text=One%20Health%20is%20a%20collaborative,plants%2C%20and%20their%20shared%20environment. (Accessed on 12/02/2026)

[40] World Health Organization., 'UN Environment Programme joins alliance to implement One Health approach' Available at https://www.who.int/news/item/18-03-2022-un-environment-programme-joins-alliance-to-implement-one-health-approach (Accessed on 12/02/2026)

[41] Ibid

[42] Pandey. S.K., Kulshreshtha. A., & Mishra. A., 'Artificial Intelligence in the Management of One Health: An Update' Op Cit

[43] About One Health., Op Cit

[44] Food and Agriculture Organization of the United Nations., 'The role of information and communication technology in One Health intelligence' Op Cit

[45] Ibid

[46] Mukherjee. D et al., 'Filling the gap: artificial intelligence-driven one health integration to strengthen pandemic preparedness in resource-limited settings' Op Cit

[47] Ibid

[48] Ibid

It is also vital to strengthen capacity on AI and other digital tools, especially in developing countries, for One Health. It has been observed that connectivity, infrastructure gaps and inadequate technical expertise undermine the ability of developing countries to effectively integrate AI into the One Health approach[49]. As result, there is need to close the digital divide in Africa and the Global South by prioritizing the expansion of internet access and mobile networks access and investing in maintenance, training, and system upgrades for digital technologies in order to harness the power of AI towards One Health[50]. In addition, it has been pointed out that strengthening the technical capacity of local communities and healthcare workers in Africa and the Global South through training programs is vital in bridging the digital divide and ensuring the successful integration of AI into the One Health approach[51]. International and regional collaboration is also vital in building the capacity of all countries, especially developing countries, to harness AI for One Health including through effective and efficient technology development and transfer measures[52].

Through the foregoing, it is possible to adequately and efficiently harness AI for One Health.

**4.0 Conclusion**

This article has critically examined the role of AI in the One Health approach. The article has highlighted that AI can advance the One Health path by enhancing the ability to monitor, diagnose, and predict diseases thus enabling sound decision-making processes for One Health[53]. Despite its ability to bolster the One Health approach, the article has demonstrated that concerns such as lack of effective coordination across health sectors, ethical challenges including data privacy concerns, and the digital divide especially in developing countries, undermine the effective integration of AI into the One Health approach[54]. In light of these concerns, the article proposes collaboration across different health sectors at the interface of human-animal-and environmental health, developing inclusive AI systems to address data privacy concerns, and bridging the digital divide including through investing in technology and building the capacity of developing countries towards effectively harnessing AI for One Health[55].

[49] Ibid

[50] Food and Agriculture Organization of the United Nations., 'The role of information and communication technology in One Health intelligence' Op Cit

[51] Ibid

[52] Pandey. S.K., Kulshreshtha. A., & Mishra. A., 'Artificial Intelligence in the Management of One Health: An Update' Op Cit

[53] Pandey. S.K., Kulshreshtha. A., & Mishra. A., 'Artificial Intelligence in the Management of One Health: An Update' Op Cit

[54] Mukherjee. D et al., 'Filling the gap: artificial intelligence-driven one health integration to strengthen pandemic preparedness in resource-limited settings' Op Cit

[55] Food and Agriculture Organization of the United Nations., 'The role of information and communication technology in One Health intelligence' Op Cit

Harnessing the power of AI is vital towards charting the One Health approach for people and planet.

## SECTION IV: ETHICS, INDIGENOUS KNOWLEDGE, AND HUMAN AGENCY

*This section interrogates the ethical dimensions of Artificial Intelligence, with a strong African perspective. It explores the interface between AI systems, indigenous knowledge, data sovereignty, and human dignity.*

# Chapter 9: Ethical Artificial Intelligence and Human Dignity

***Abstract***

*This chapter examines the ethical dimensions of Artificial Intelligence. The chapter observes that despite its capacity to strengthen governance across many spheres of human life, AI raises several ethical concerns. The chapter discusses some of the key ethical concerns arising from the adoption of AI. It notes that if not appropriately harnessed, AI can undermine human dignity, violate human rights and create inequalities. Consequently, the chapter argues that there is need to foster ethical artificial intelligence for human dignity. It explores how ethics can be integrated into AI towards upholding human dignity for justice, equity, sustainability and development.*

## 1.0 Introduction

The recent emergence and growth of Artificial Intelligence (AI) is revolutionizing and shaping all aspects of human life. AI has led to the development and use of tools and systems that are capable of performing tasks that would have usually required human intelligence[1]. It has been observed that AI has the ability to accurately predict and execute a desired outcome leading to its integration in many industries[2]. AI has been described as transformational technology that can bring meaningful and positive change to people and societies and the world[3]. Due to its exposure and ability to analyze and interpret vast amounts of data, AI is enabling sound decision-making processes[4].

In light of its advantages, AI is being integrated into many aspects of governance. For instance, in healthcare, AI is enabling doctors to identify, predict and monitor diseases by analyzing vast amounts of data[5]. Further, it has been observed that in finance, AI tools such as algorithmic decision-making can assess creditworthiness, price insurance, enhance customer service, detect fraud, ensure regulatory compliance, and determine eligibility for financial products and

[1] World Economic Forum., 'What is artificial intelligence—and what is it not?' Available at https://www.weforum.org/stories/2023/03/what-is-artificial-intelligence-and-what-is-it-not-ai-machine-learning/?gad_source=1&gad_campaignid=22228224717&gbraid=0AAAAAoVy5F5jTUoRGIo_LxcQJ9TwsXjbc&gclid=CjwKCAiAtLvMBhB_EiwA1u6_PraoTdn4Xiw0qd0wOtbusLspiezKQHXFaa1nYRTiVa17U2O4IosAThoCbqUQAvD_BwE (Accessed on 12/02/2026)

[2] Ibid

[3] Artificial intelligence (AI): a simple-to-understand guide., Available at https://cloud.google.com/learn/what-is-artificial-intelligence (Accessed on 13/02/2026)

[4] Ibid

[5] European Parliament., 'Understanding Algorithmic Decision-Making: Opportunities and Challenges' Available at https://www.europarl.europa.eu/RegData/etudes/STUD/2019/624261/EPRS_STU(2019)624261_EN.pdf (Accessed on 13/02/2026)

services[6]. AI is also strengthening environmental governance by providing appropriate tools for enhanced data collection, policy enforcement, and environmental monitoring[7]. It has been argued that AI has the capacity to dynamically monitor environmental information in real time, and intelligently supervise governance of the environment thus providing effective solutions to global environmental challenges including climate change, biodiversity loss, pollution and environmental degradation[8]. AI is also being adopted to strengthen criminal justice systems through risk assessment tools which review previous criminal patterns and makes predictions that can guide bail, sentencing and parole decisions[9].

AI is therefore a powerful tool that can strengthen governance processes in virtually all areas of human life. However, the adoption and use of AI raises several ethical concerns. For instance, it has been observed that if not harnessed appropriately, AI can raise profound ethical concerns including through embedding biases, fuelling inequalities, violating human rights and undermining sustainability[10]. Consequently, it has been observed that there is need to adopt AI ethically and responsibly for human dignity, justice and equality[11].

This chapter examines the ethical dimensions of Artificial Intelligence. The chapter observes that despite its capacity to strengthen governance across many spheres of human life, AI raises several ethical concerns. The chapter discusses some of the key ethical concerns arising from the adoption of AI. It notes that if not appropriately harnessed, AI can undermine human dignity, violate human rights and create inequalities. Consequently, the chapter argues that there is need to foster ethical artificial intelligence for human dignity. It explores how ethics can be integrated into AI towards upholding human dignity for justice, equity, sustainability and development.

**2.0 Ethical Concerns in Artificial Intelligence**

The rapid growth of AI is causing several ethical issues with negative impacts on human dignity. For example, it has been observed that unregulated development and misuse of AI can potentially impact human dignity including through perpetuating biases, subjecting individuals and

[6] What is artificial intelligence (AI) in finance?., Available at https://www.ibm.com/think/topics/artificial-intelligence-finance (Accessed on 13/02/2026)

[7] The Role of Technology in Environmental Governance., Available at https://www.igi-global.com/chapter/the-role-of-technology-in-environmental-governance/363225 (Accessed on 13/02/2026)

[8] Guo. J., & Shen. X., 'Does Digitalization Facilitate Environmental Governance Performance? An Empirical Analysis Based on the PLS-SEM Model in China' *Sustainability* 2024, *16*(7)

[9] Algorithmic Profiling and Automated Decision-Making in Criminal Justice., Available at https://csl.mpg.de/en/max-planck-fellow-group/algorithmic-profiling-automated-decision-making-in-criminal-justice (Accessed on 13/02/2026)

[10] United Nations Educational, Scientific and Cultural Organization., 'Ethics of Artificial Intelligence' Available at https://www.unesco.org/en/artificial-intelligence/recommendation-ethics (Accessed on 13/02/2026)

[11] Ibid

communities to surveillance and worsening inequalities and discrimination[12]. It has been argued that algorithmic decision-making in key areas such as finance, healthcare, hiring and justice systems reduces human beings to mere data points undermining the very nature of human dignity[13]. AI risks dehumanising individuals by reducing them to data points detached from their inherent worth and dignity[14].

Further, it has been argued that algorithmic decision-making fuels biases including racial and gender biases due to historically discriminatory and biased datasets[15]. For instance, it has been observed that people have been excluded from loan eligibility and job opportunities on basis of their race and gender, with mass surveillance through AI tools also contributing to racial profiling[16]. Algorithmic decision-making also risks worsening existing discrimination and inequalities. For instance, it has been observed that technologies such as facial recognition and language modelling have shown prejudice against racial and ethnic minorities, leading to injustices and discrimination through false arrests and accusations[17]. Further, due to the digital divide, AI and other technologies are perpetuating disparities in access to information and opportunities[18]. For example, it has been observed that in many parts of the world, the poor and marginalized communities face significant barriers to accessing and utilizing technology, worsening existing inequalities[19]. This situation locks vulnerable populations from accessing information and opportunities in education, healthcare, employment and government services among other sectors that have become increasingly digitalized[20]. The digital divide can therefore significantly amplify existing global inequalities undermining human dignity and justice.

In addition, it has been observed that AI can potentially violate human rights. For example, the increasing use of AI and automation is disrupting the global job market and significantly

[12] Randazzo. M.S., & Hill. G., 'Human dignity in the age of Artificial Intelligence: an overview of legal issues and regulatory regimes' Available at https://www.tandfonline.com/doi/full/10.1080/1323238X.2025.2483822#:~:text=Contributing%20to%20the%20emergent%20scholarship,fundamental%20rights%20and%20democratic%20values. (Accessed on 13/02/2026)

[13] Ibid

[14] Key Human Rights Challenges of AI., Available at https://ennhri.org/ai-resource/key-human-rights-challenges/ (Accessed on 13/02/2026)

[15] Olurunju. N., 'African algorithmic governance: Benefit of a community-based approach' Available at https://researchictafrica.net/2022/04/03/african-algorithmic-governance-benefit-of-a-community-based-approach/ (Accessed on 13/02/2026)

[16] Ibid

[17] Key Human Rights Challenges of AI., Op Cit

[18] The Intersection of Technology and Human Rights: Navigating Challenges and Ensuring Protections., Available at https://hakiafrica.or.ke/2023/03/09/the-intersection-of-technology-and-human-rights-navigating-challenges-and-ensuring-protections/#:~:text=The%20delicate%20balance%20between%20technological,access%20to%20information%20and%20opportunities (Accessed on 13/02/2026)

[19] Ibid

[20] Ibid

impacting the right to fair and decent work[21]. It has been noted that AI is currently meeting or exceeding human performance in a significant number of domains and could potentially replace human labour in a number of sectors[22]. The International Labour Organization (ILO) points out that if not appropriately harnessed, technology including AI can result in massive job loss due to automation thus affecting the human right to fair and decent work[23]. Further, cases of data breaches, unauthorized surveillance, and unauthorized data exploitation continue to threaten individuals' fundamental rights to privacy and freedom of expression[24]. It has been observed that there have been instances of cyber repression through mass surveillance, censorship, and social media monitoring through digital tools including AI threatening the right to privacy and freedom of expression in some countries[25].

Transparency and accountability concerns in AI also raise ethical concerns. It has been observed that algorithmic decision-making through AI makes it difficult to understand how decisions are made which undermines transparency, accountability and due process requirements under the rule of law[26]. In particular, the integration of AI and other technologies into the public sphere raises concerns over accountability and transparency due to the secretive nature of algorithmic decision-making[27]. As a result, citizens often lack insight into the decision-making processes and therefore struggle to challenge outcomes[28]. This situation undermines the right of citizens to be heard and the right to an effective remedy which violates the core tenets of the rule of law[29].

Addressing the foregoing ethical concerns is vital towards appropriately harnessing AI for human dignity and prosperity.

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[21] World Economic Forum., 'How are Today's Biggest Tech Trends Affecting our Human Rights?' Available at https://www.weforum.org/agenda/2017/12/how-are-today-s-biggest-tech-trends-affecting-human-rights/ (Accessed on 13/02/2026)
[22] Ibid
[23] International Labour Organization., 'Artificial Intelligence' Available at https://www.ilo.org/artificial-intelligence (Accessed on 13/02/2026)
[24] The Intersection of Technology and Human Rights: Navigating Challenges and Ensuring Protections., Op Cit
[25] Digital Disruption of Human Rights., ., Available at https://www.hrw.org/news/2016/03/25/digital-disruption-human-rights#:~:text=One%20traditional%20human%20rights%20concern,technology%2C%20rather%20than%20technology%20itself (Accessed on 13/02/2026)
[26] Burgess. P., 'AI and the Rule of Law' Available at https://www.bloomsbury.com/us/ai-and-the-rule-of-law-9781509963171/ (Accessed on 13/02/2026)
[27] Key Human Rights Challenges of AI., Op Cit
[28] Ibid
[29] Ibid

**3.0 Upholding Ethics in Artificial Intelligence for Human Dignity**

AI has emerged as powerful tool that is revolutionizing many industries. The integration of AI into governance promises to transform many sectors and industries including healthcare, finance, agriculture, education and environmental governance towards human progress. However, if not appropriately harnessed, AI can fuel ethical concerns relating to bias, discrimination, privacy, human rights, transparency and accountability[30]. Upholding ethics in AI is therefore vital towards human dignity.

It has been argued that protection of human rights and dignity is the cornerstone of ethical AI. Consequently, respect, protection and promotion of human dignity and rights as established by international law, including international human rights law should be a key priority throughout the life cycle of AI systems[31]. This requires AI systems to be free from bias and discrimination and embrace racial, cultural and gender diversity[32]. Further, it is imperative to uphold the right to privacy including through comprehensive data protection laws that prioritize individuals' privacy while also ensuring inclusive processes in order to avoid violation of the right to privacy especially in cases of unauthorized surveillance[33].

Ensuring transparency and accountability in AI is also key towards upholding ethics and human dignity. It has been observed that there is need for human oversight in algorithmic decision-making especially in critical areas such as healthcare and law enforcement in order to ensure that decisions uphold human rights and dignity[34]. Further, proactive regulation of AI through effective and responsive legal and policy frameworks and collaboration with developers is key in ensuring that the adoption of AI does not infringe on human rights and dignity[35].

Bridging the digital divide is also key towards appropriately harnessing AI while upholding ethics and human dignity. For instance, it has been observed that the digital divide locks vulnerable individuals and communities from essential services such as education, healthcare and finance which are becoming increasingly digitalized[36]. Consequently, closing the digital divide including through investing in AI and other modern technologies and expanding digital

[30] United Nations Educational, Scientific and Cultural Organization., 'Ethics of Artificial Intelligence' Op Cit
[31] Ibid
[32] Ibid
[33] The Intersection of Technology and Human Rights: Navigating Challenges and Ensuring Protections., Op Cit
[34] United Nations Educational, Scientific and Cultural Organization., 'Ethics of Artificial Intelligence' Op Cit
[35] Ibid
[36] van Wyk-Khosa. S., Ndumbu. R., & Kronke. M., 'Africa's digital divide is closing, but participation in the digital(ised) economy remains highly uneven' Available at https://www.afrobarometer.org/wp-content/uploads/2025/08/PP95-Digital-divide-in-Africa-closing-but-participation-in-digitalised-economy-still-uneven-Afrobarometer-23aug25.pdf (Accessed on 13/02/2026)

literacy is key towards empowering all individuals to embrace technology towards human dignity and progress[37].

**4.0 Conclusion**

This chapter has critically examined ethical concerns in AI. The chapter observes that despite its transformative potential, AI fuels ethical challenges including bias, discrimination, inequalities, human rights violations, and ineffective transparency and accountability measures[38]. These challenges undermine human dignity. Consequently, the chapter has suggested that there is need to inculcate ethics into AI by fostering human rights, preventing bias and discrimination, ensuring inclusive AI systems and fostering transparency and accountability[39].

[37] Ibid

[38] United Nations Educational, Scientific and Cultural Organization., 'Ethics of Artificial Intelligence' Op Cit

[39] Ibid

# Chapter 10: Indigenous Knowledge Systems, Data Sovereignty and Artificial Intelligence

***Abstract***

*This chapter examines how indigenous knowledge in Africa and the Global South can be effectively integrated with Artificial Intelligence (AI) for sustainability. The chapter notes that Africa and the Global South is endowed with indigenous knowledge. It observes that this knowledge is providing valuable insights towards Sustainable Development including through fostering food security, strengthening climate action and ensuring sound biodiversity conservation. The chapter argues that indigenous knowledge can be effectively harnessed in the era of technology in order to strengthen efforts towards Sustainable Development. It examines how indigenous knowledge intersects with AI. The chapter also explores the challenges arising from the integration of indigenous knowledge with AI. In particular, the chapter notes that AI can undermine indigenous data sovereignty. In light of these concerns, the chapter proposes how indigenous knowledge can be effectively and appropriately integrated with AI including through upholding indigenous data sovereignty.*

## 1.0 Introduction

Indigenous knowledge also referred to as traditional knowledge or aboriginal knowledge has been broadly defined as a cumulative, collective body of knowledge, experience, and values held by societies with a history of subsistence[1]. Indigenous knowledge has also been defined as any knowledge originating from a local or traditional community that is the result of intellectual activity and insight in a traditional context, including know-how, skills, innovations, practices and learning, where the knowledge is embodied in the traditional lifestyle of a community, or contained in the codified knowledge systems passed on from one generation to another[2]. The United Nations Educational, Scientific and Cultural Organization (UNESCO), defines indigenous knowledge as the understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings[3]. It has been argued that indigenous knowledge is a collective term to represent the many place-based knowledges accumulated across generations within myriad specific cultural contexts[4]. Further, it has been observed that

[1] Ellis, S.C., "Meaningful consideration? A review of traditional knowledge in environmental decision making," *Arctic* (2005): 66-77, at p. 66.

[2] African Regional Intellectual Property Organization (ARIPO), *Swakopmund Protocol on the Protection of Traditional Knowledge and Expressions of Folklore,* Adopted by the Diplomatic Conference of ARIPO at Swakopmund (Namibia) on August 9, 2010.

[3] United Nations Educational, Scientific and Cultural Organization., 'Local and Indigenous Knowledge Systems (LINKS)' Available at https://en.unesco.org/links (Accessed on 13/02/2026)

[4] Jessen. T et al., 'Contributions of Indigenous Knowledge to ecological and evolutionary understanding' Available at https://esajournals.onlinelibrary.wiley.com/doi/10.1002/fee.2435 (Accessed on 13/02/2026)

indigenous knowledge is usually accumulated and transmitted across generations within specific cultural contexts[5].

Indigenous knowledge is at the heart of Sustainable Development. For instance, it has been observed that indigenous knowledge is rooted in the deep connection that indigenous peoples and local communities have with their land, resources and environment[6]. Indigenous knowledge encompasses a deep understanding of local ecosystems, the behavior of wildlife, the medicinal properties of plants, weather patterns, and the complex interconnections between nature and human society among other phenomena[7]. Therefore, indigenous knowledge is not only an accumulation of practical knowledge but also a way of life, deeply intertwined with cultural traditions, rituals, and beliefs[8]. It has been observed that indigenous peoples and local communities have practiced environmental stewardship for millennia, guided by knowledge that is deeply rooted in the local context and has been passed down through generations often emphasizing harmony with nature[9]. Local knowledge of plants, animals, ecosystem, landscapes, and resource management systems has enabled indigenous peoples to work with nature for many centuries towards tackling environmental threats including climate change, environmental degradation and biodiversity loss[10].

Harnessing indigenous knowledge is therefore crucial in pursuit of Sustainable Development. This knowledge systems holds a prevailing view that nature is sacred[11]. It has been observed that indigenous knowledge and traditional practices are rooted in a deep understanding of and respect for the environment and ecological systems and promote sustainable use of natural resources towards Sustainable Development[12]. Indigenous peoples and local communities have

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[5] Ibid

[6] Filho. W et al., 'The Role of Indigenous Knowledge in Climate Change Adaptation in Africa' Available at https://doi.org/10.1016/j.envsci.2022.06.004 (Accessed on 13/02/2026)

[7] The Role of Indigenous Knowledge in Environmental Conservation., Available at https://www.linkedin.com/pulse/role-indigenous-knowledge-environmental-conservation-eurasia-carbon?utm_source=share&utm_medium=member_android&utm_campaign=share_via (Accessed on 13/02/2026)

[8] Ibid

[9] International Institute for Sustainable Development., 'For Nature-Based Solutions to Be Effective, We Need to Work with Indigenous Peoples and Local Communities' Available at https://www.iisd.org/articles/insight/nature-based-solutions-indigenous-peoples (Accessed on 13/02/2026)

[10] Sinthumule. N., 'Traditional Ecological Knowledge and its Role in Biodiversity Conservation: A Systematic Review' *Frontiers in Environmental Science*., Volume 11 (2023)

[11] United Nations Environment Programme., 'How indigenous knowledge can help prevent environmental crises' Available at https://www.unep.org/news-and-stories/story/how-indigenous-knowledge-can-help-prevent-environmental-crises#:~:text=Experts%20say%20that%20is%20due,Story (Accessed on 13/02/2026)

[12] United Nations Development Programme., 'Indigenous Knowledge is Crucial in the Fight against Climate Change – here's why' Available at https://climatepromise.undp.org/news-and-stories/indigenous-knowledge-crucial-fight-against-climate-change-heres-why (Accessed on 13/02/2026)

been identified as crucial agents of change, whose livelihood practices, traditional knowledge and ways of life are fundamental for sound environmental governance, protecting biodiversity, combating climate change and realizing the ambitious vision of the United Nations 2030 Agenda for Sustainable Development[13]. With the world witnessing a technologic revolution, it has been argued that integrating indigenous knowledge with modern technologies such as Artificial Intelligence (AI) is key towards providing holistic, appropriate and culturally-sensitive solutions towards sustainability[14].

This chapter examines how indigenous knowledge in Africa and the Global South can be effectively integrated with Artificial Intelligence (AI) for sustainability. The chapter notes that Africa and the Global South is endowed with indigenous knowledge. It observes that this knowledge is providing valuable insights towards Sustainable Development including through fostering food security, strengthening climate action and ensuring sound biodiversity conservation. The chapter argues that indigenous knowledge can be effectively harnessed in the era of technology in order to strengthen efforts towards Sustainable Development. It examines how indigenous knowledge intersects with AI. The chapter also explores the challenges arising from the integration of indigenous knowledge with AI. In particular, the chapter notes that AI can undermine indigenous data sovereignty. In light of these concerns, the chapter proposes how indigenous knowledge can be effectively and appropriately integrated with AI including through upholding indigenous data sovereignty.

**2.0 Indigenous Knowledge and Artificial Intelligence in Africa: Promises and Pitfalls**

Africa is endowed with indigenous knowledge. It has been observed that indigenous peoples and local communities in Africa and the Global South have, for many centuries, utilised indigenous knowledge for their livelihoods, social cohesion and sound environmental governance[15]. Traditional knowledge systems, practices and values continue to be important driving forces in the decision-making and development activities for many communities in Africa[16]. It has been pointed out that the African way of knowing is largely communitarian in terms of discovery and experimentation and the mode of transmission and sharing is often collective rather than individualistic[17]. This world view affirms that the universe is a spiritual and a material whole in

[13] International Labour Organization., 'Sustainable Development Goals: Indigenous Peoples in Focus' Available at https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_emp/@ifp_skills/documents/publication/wcms_503715.pdf (Accessed on 13/02/2026)

[14] Blending Indigenous Knowledge and Artificial Intelligence to Enable Adaptation., Available at https://www.arcticwwf.org/the-circle/stories/blending-indigenous-knowledge-and-artificial-intelligence-to-enable-adaptation/ (Accessed on 13/02/2026)

[15] The Role of Indigenous Knowledge in Environmental Conservation' Op Cit

[16] Naamwintome. B.A., & Millar. D., 'Indigenous Knowledge and the African Way Forward: Challenges and Opportunities' Available at https://www.scirp.org/journal/paperinformation?paperid=68164#:~:text=Some%20aspects%20of%20indigenous%20knowledge,the%20limitations%20and%20negative%20aspects. (Accessed on 14/02/2026)

[17] Ibid

which all beings are organically interrelated and interdependent[18]. Indigenous knowledge in Africa therefore emphasizes harmony between humanity and nature.

Due to its efficacy, indigenous knowledge continues to be widely applied in Africa in areas such as climate action, biodiversity conservation, ecosystem management and sustainable agriculture, especially among indigenous peoples and local communities[19]. With the world witnessing a rapid digital transformation, modern technologies such as AI provide a platform to effectively harness and integrate indigenous knowledge into the Sustainable Development discourse[20]. For example, designing and training AI models based on indigenous knowledge data sets can ensure accurate predictions and decisions particularly on issues touching indigenous peoples and local communities[21]. It has been observed that merging indigenous knowledge systems with AI provides tangible solutions for problems such as climate change and biodiversity loss with continue to affect many indigenous peoples and local communities all over the world[22].

Further, it has been observed that due to its ability to analyze and interpret vast amounts of data, AI can be harnessed for the preservation of indigenous knowledge systems and cultural heritage by providing an accessible and interactive tool to learn about indigenous cultures, practices and customs[23]. AI through its automatic speech recognition systems can also enable translation of indigenous languages enabling decision-makers to harness the wisdom of indigenous peoples in areas such as environmental governance[24]. It has also been observed that AI can be utilised to bolster indigenous education which is vital in promoting and safeguarding indigenous knowledge systems[25].

AI can therefore bolster indigenous knowledge systems. When harnessed appropriately, AI can support indigenous education, cultural preservation, translation of indigenous languages, and the use of indigenous knowledge systems in key sectors such as environmental governance. However, AI can also potentially threaten indigenous knowledge systems. For instance, it has been observed that most AI-models are Western-centric and can thus perpetuate biases and stereotypes against indigenous knowledge systems[26]. Further, it has been observed that AI tools have often been used to extract data from indigenous peoples and local communities usually

[18] Ibid
[19] Filho. W et al., 'The Role of Indigenous Knowledge in Climate Change Adaptation in Africa' Op Cit
[20] Blending Indigenous Knowledge and Artificial Intelligence to Enable Adaptation., Op Cit
[21] Ibid
[22] Ibid
[23] Perera. M et al., 'Indigenous peoples and artificial intelligence: A systematic review and future directions' Available at https://journals.sagepub.com/doi/10.1177/20539517251349170#:~:text=Abstract,discuss%20literature%20under%20each%20category. (Accessed on 14/02/2026)
[24] Ibid
[25] Ibid
[26] How AI can adapt to Indigenous knowledge., Available at https://medium.com/blog/how-ai-can-adapt-to-indigenous-knowledge-2ae3cd442096 (Accessed on 14/02/2026)

without their Free, Prior and Informed Consent (FPIC)[27]. For example, AI tools such as drones, facial recognition, and predictive policing are being used to monitor indigenous and local communities, often misidentifying people and reinforcing existing biases[28].

AI can therefore undermine indigenous data sovereignty. The concept of data sovereignty posits that data should be subject to the laws and regulations of its physical location and source[29]. This idea affirms that data, such as intellectual property, financial data, or personal information, collected or stored in a particular geographic location, should be subject to the laws of that location[30]. Fostering data sovereignty is key in preventing misappropriation of data while also upholding human rights including the right to privacy[31]. It has been observed that AI can violate indigenous data sovereignty including through extraction and commodification of indigenous data without the meaningful involvement of indigenous peoples and local communities[32].

In light of the foregoing concerns, there is need to appropriately integrate indigenous knowledge systems with AI including through upholding indigenous data sovereignty.

## 3.0 Integrating Indigenous Knowledge Systems with Artificial Intelligence for Sustainable Development

Indigenous knowledge systems provide valuable solutions that can foster progress towards Sustainable Development. It has been observed that indigenous knowledge and traditional practices are rooted in a deep understanding of and respect for the environment and ecological systems and promote sustainable use of natural resources towards Sustainable Development[33]. Indigenous knowledge systems in Africa and the Global South provide effective solutions including sound climate action, biodiversity conservation, sustainable agriculture and ecosystem management[34]. Harnessing indigenous knowledge systems is therefore vital in pursuit of Sustainable Development. In particular, AI provides opportunities to effectively harness, interpret and apply indigenous knowledge systems for Sustainable Development.

It is therefore necessary to blend indigenous knowledge with AI while addressing challenges such as bias and breach of indigenous data sovereignty. In particular, it is imperative to involve

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[27] Ibid
[28] Ibid
[29] What is Data Sovereignty?., Available at https://aws.amazon.com/what-is/data-sovereignty/ (Accessed on 14/02/2026)
[30] What is data sovereignty?., Available at https://www.cloudflare.com/learning/privacy/what-is-data-sovereignty/ (Accessed on 14/02/2026)
[31] What is data sovereignty?., Available at https://www.ibm.com/think/topics/data-sovereignty (Accessed on 14/02/2026)
[32] Perera. M et al., 'Indigenous peoples and artificial intelligence: A systematic review and future directions' Op Cit
[33] United Nations Development Programme., 'Indigenous Knowledge is Crucial in the Fight against Climate Change – here's why' Op Cit
[34] Ibid

indigenous peoples and local communities in the design and implementation of AI models that rely on indigenous data[35]. Fostering the right to FPIC is vital in ensuring indigenous data sovereignty by avoiding misuse and exploitation of indigenous data without consent[36]. It has been argued that indigenous peoples and local communities should be important decision-makers when evaluating the benefits, potential harms, and future applications of their data with AI tools, by aligning these assessments with their own cultural values, traditional practices and ethical principles[37].

Collaborating with indigenous peoples and local communities is therefore crucial towards upholding indigenous data sovereignty. It is also vital to support cultural preservation through AI and other modern technologies[38]. For instance, it has been observed that AI can be effectively utilised in preserving and transmitting indigenous languages thus ensuring that the practices, customs and beliefs of indigenous peoples and local communities are widely known and transferred to future generations[39]. In addition, there is need to empower indigenous peoples and local communities through access to technology and digital literacy skills[40]. Indigenous peoples and local communities are usually among the most marginalized and poor populations in most countries who lack access to modern technology and digital tools[41]. This situation can fuel loss of culture, indigenous languages and knowledge systems in the long-term[42]. Bridging this digital divide including through enhancing access to technology and digital literacy skills for indigenous peoples is vital in ensuring that indigenous knowledge systems and languages are safeguarded and effectively integrated into modern technologies[43].

**4.0 Conclusion**

This chapter has critically examined the relationship between indigenous knowledge systems and AI. The chapter observes that blending indigenous knowledge with AI provides vital solutions towards sustainability. However, concerns relating to bias, marginalisation of indigenous knowledge, breach of indigenous data sovereignty and the digital divide undermine the

[35] Perera. M et al., 'Indigenous peoples and artificial intelligence: A systematic review and future directions' Op Cit
[36] Ibid
[37] Ibid
[38] United Nations Educational, Scientific and Cultural Organization., 'Exploring the impact of Artificial Intelligence and Intangible Cultural Heritage' Available at https://ich.unesco.org/en/news/exploring-the-impact-of-artificial-intelligence-and-intangible-cultural-heritage-13536 (Accessed on 14/02/2026)
[39] Ibid
[40] Li. J., Brar. A., & Roihan. N., 'The use of digital technology to enhance language and literacy skills for Indigenous people: A systematic literature review' *Computers and Education Open*, Volume 2, December 2021
[41] Ibid
[42] Ibid
[43] Perera. M et al., 'Indigenous peoples and artificial intelligence: A systematic review and future directions' Op Cit

successful integration of indigenous knowledge systems and AI[44]. Consequently, the chapter advocates for respect of indigenous data sovereignty, collaboration with indigenous peoples and local communities, investing in cultural preservation, strengthening indigenous education and closing the digital divide in order to effectively blend indigenous knowledge systems with AI[45].

Integrating indigenous knowledge systems with AI while upholding indigenous data sovereignty is a practical and vital approach towards Sustainable Development.

[44] Perera. M et al., 'Indigenous peoples and artificial intelligence: A systematic review and future directions' Op Cit
[45] Ibid

## SECTION V: POLICY, LAW REFORM, AND THE FUTURE OF AI GOVERNANCE IN AFRICA

*The final section advances policy, legislative, and institutional pathways for governing Artificial Intelligence in Africa. It positions Africa as a norm-shaper in global AI governance.*

# Chapter 11: Digital Colonialism, Inclusion and Africa's Technological Future

***Abstract***

*This chapter focuses on digital colonialism in Africa. The chapter observes that the rapid deployment of technologies and digital tools from the Global North to Africa is fuelling digital colonialism. It discusses how digital colonialism manifests itself in Africa. The chapter argues that digital colonialism in Africa is a negative phenomenon that perpetuates foreign dominance, undermines human rights, widens the digital divide and leads to the erosion of African cultural values and knowledge systems. Due to its negative impacts, the chapter posits that addressing digital colonialism in Africa is crucial in ensuring that the continent charts its own development agenda in the age of technology. It suggests how digital colonialism in Africa can be tackled towards ensuring inclusion in the digital age while shaping Africa's technological future.*

## 1.0 Introduction

Digital colonialism has emerged as the world continues to witness a rapid technological transformation. It has been observed that digital colonialism mirrors the historic patterns of colonization where Western powers occupied and dominated territories in the Global South[1]. However, digital colonialism operates in the virtual realm where Western software, embedded with foreign values, dominates local digital ecosystems in the Global South[2].

Digital colonialism therefore refers to the domination of digital ecosystems by technology companies from the Global North which often leads to the appropriation of data and deployment of digital tools to the Global South without modification to local needs and cultural contexts[3]. It has been observed that rapid digitalization has led to significant disparities between the Global North and the Global South a situation that triggers digital colonialism and worsens regional inequalities[4]. This situation has led to data extraction and exploitation in the Global South, increased surveillance in the Global South, dominance of digital infrastructure by technology companies from the Global North, monopolistic practices in data monetization, and algorithmic control by the Global North[5].

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[1] How to Break Digital Colonialism in African Software Development., Available at https://www.ictworks.org/digital-colonialism-african-software-development/#:~:text=Defining%20Digital%20Colonialism%20in%20Software,serve%20its%20communities'%20best%20interests. (Accessed on 16/02/2026)

[2] Ibid

[3] Ibid

[4] United Nations Educational, Scientific and Cultural Organization., 'Addressing digital colonialism: A path to equitable data governance' Available at https://community.unesco.org/inclusivepolicylab/s/thinkpiece/addressing-digital-colonialism-a-path-to-equitable-data-governance-MCILJ2OCE56JB5ZCY2ZY4M7AZUYE (Accessed on 16/02/2026)

[5] Ibid

It has been argued that the growth of technology, especially Artificial Intelligence (AI), has led to digital colonialism whereby powerful technology companies from the Global North are using algorithms, data and digital technologies to exert power over the Global South including through extracting data from individuals without consent[6]. Digital colonialism fuels injustices and inequalities in the Global South. Tackling digital colonialism is therefore vital for justice, inclusion, human rights and development in the age of technology.

This chapter focuses on digital colonialism in Africa. The chapter observes that the rapid deployment of technologies and digital tools from the Global North to Africa is fuelling digital colonialism. It discusses how digital colonialism manifests itself in Africa. The chapter argues that digital colonialism in Africa is a negative phenomenon that perpetuates foreign dominance, undermines human rights, widens the digital divide and leads to the erosion of African cultural values and knowledge systems. Due to its negative impacts, the chapter posits that addressing digital colonialism in Africa is crucial in ensuring that the continent charts its own development agenda in the age of technology. It suggests how digital colonialism in Africa can be tackled towards ensuring inclusion in the digital age while shaping Africa's technological future.

**2.0 Digital Colonialism in Africa**

Digital colonialism is a widespread phenomenon in Africa. Digital colonialism has been described as the modern-day scramble for Africa where large technology companies from the Global North extract, analyze and own user data from the Global South for profit and market influence without tangible benefits to developing countries[7]. It has been observed that today, technology companies from the Global North are deciding the digital future of Africa without the continent's needs and interests being taken into account[8]. It has pointed out that data centres have been established with the purpose of extracting and transferring data generated in Africa to servers located in Silicon Valley[9]. The Silicon Valley, a region in Northern California in the United States of America, is a global centre for high technology and innovation. This area is home to many of the largest and most influential technology and innovation companies in the world including Apple, Amazon, Alphabet (Google), Meta and Intel among others[10].

[6] Digital colonialism': how AI companies are following the playbook of empire., Available at https://theconversation.com/digital-colonialism-how-ai-companies-are-following-the-playbook-of-empire-269285 (Accessed on 16/02/2026)

[7] Coleman. D., 'Digital Colonialism: The 21st Century Scramble for Africa through the Extraction and Control of User Data and the Limitations of Data Protection Laws' *Michigan Journal of Race & Law*., Volume 24, Issue 2 (2019)

[8] Ajeboriogbon. T., 'Digital Colonialism is the New Scramble for Africa' Available at https://www.e-ir.info/2026/01/12/digital-colonialism-is-the-new-scramble-for-africa/ (Accessed on 16/02/2026)

[9] Ibid

[10] A Tech Professional's Guide to Silicon Valley., Available at https://www.builtinsf.com/articles/founders-entrepreneurship/silicon-valley (Accessed on 16/02/2026)

Digital colonialism has been described as the enforcement of Silicon Valley software values and systems on African countries and the rest of the Global South[11]. It has been observed that this situation imposes values that can undermine local traditions and socio-political systems in Africa[12]. The rise of digital data has transformed social, economic and political circumstances globally. For example, businesses and organisations in the Global North use data to optimise processes by analyzing user behaviour and preferences for enhanced efficiency[13]. Further, it has been observed that data facilitates precise predictions about individual and collective behaviour, therefore offering a competitive edge in economic and political spheres[14]. Data has also played a key role in the growth of AI where extensive datasets are employed to train and enhance AI models, thus boosting productivity in the Global North[15]. The utilisation of data is therefore skewed towards the Global North entrenching power imbalances and contributing to the growth of digital colonialism[16].

Digital colonialism in Africa occurs in various forms. For example, it has been observed that health informatics systems, educational software, and financial platforms frequently used in Africa reflect foreign norms and model of governance[17]. Therefore, when these platforms are applied in Africa without necessary modifications to align them with local circumstances, they can perpetuate biases, undermine indigenous knowledge systems and undermine innovation at the local scale[18]. In particular, health informatics systems reflect Western medical knowledge and can thus undermine indigenous healing practices in Africa[19]. In addition, education software and platforms reflect Western education values and can therefore sideline and marginalize indigenous knowledge systems in Africa[20]. It has also been pointed out that the use of algorithmic decision-making in agriculture undermines Traditional Ecological Knowledge (TEK) which has been a valuable resource in fostering sustainability in Africa and the Global South for many centuries[21]. Further, it has been observed that when local farmers use digital platforms to search for information, this creates a data footprint where this data is extracted, transferred to servers in

[11] How to Break Digital Colonialism in African Software Development., Available at https://www.ictworks.org/digital-colonialism-african-software-development/#:~:text=Defining%20Digital%20Colonialism%20in%20Software,serve%20its%20communities'%20best%20interests. (Accessed on 16/02/2026)
[12] Ibid
[13] United Nations Educational, Scientific and Cultural Organization., 'Addressing digital colonialism: A path to equitable data governance' Op Cit
[14] Ibid
[15] Ibid
[16] Ibid
[17] Ibid
[18] How to Break Digital Colonialism in African Software Development., Op Cit
[19] Ibid
[20] Ibid
[21] How Digital Colonialism Threatens Kenya's Silicon Savannah., Available at https://www.techpolicy.press/how-digital-colonialism-threatens-kenyas-silicon-savannah/ (Accessed on 16/02/2026)

foreign countries and incremental knowledge obtained from it without value to the source of such data[22]. It has been argued that this situation mirrors the classic patterns of resource extraction where local knowledge becomes proprietary algorithms controlled by foreign entities[23]. Furthermore, this ownership, where desired, comes at a cost since the same farmers have to purchase the synthesized information[24].

In addition, digital colonialism also manifests through coercive relinquishing of data when users are forced to accept certain information, such as cookies, before being allowed to use certain digital platforms[25]. Further, it has been observed that the resource-intensive nature of AI development leaves a heavy environmental footprint in Africa[26]. For instance, unsustainable extraction of rare earth minerals needed to support AI hardware is linked to environmental degradation in Africa and the Global South[27].

Digital colonialism in Africa is therefore an undesirable phenomenon. In addition to fuelling economic exploitation of data from Africa, digital colonialism also undermines indigenous values, practices and knowledge systems while also reinforcing biases and inequalities in the Global South[28]. Addressing digital colonialism is therefore key towards ensuring inclusion and enabling Africa to determine its own technological future.

**3.0 Addressing Digital Colonialism for Inclusion and Africa's Digital Future**

Digital colonialism is a prevalent phenomenon in Africa's digital space. Digital colonialism is evidenced by foreign control over Africa's digital data flows, infrastructure and platforms creating technological dependencies and exploitation that mirrors patterns of colonialism in Africa and the Global South[29]. It has been observed that foreign companies continue to feed on African data without involving local actors fuelling digital colonialism[30]. Further, algorithmic decision-making fuels biases and discrimination against Africa by undermining indigenous knowledge systems in key areas such as education, healthcare and agriculture[31]. Digital colonialism therefore represents a new form of control by global technology powers over the

[22] Ajeboriogbon. T., 'Digital Colonialism is the New Scramble for Africa' Op Cit
[23] How Digital Colonialism Threatens Kenya's Silicon Savannah., Op Cit
[24] Ibid
[25] Digital colonialism': how AI companies are following the playbook of empire., Op Cit
[26] African Digital Colonialism is the New Face of Worker Exploitation., Available at https://www.ictworks.org/african-digital-colonialism/ (Accessed on 16/02/2026)
[27] Ibid
[28] How to Break Digital Colonialism in African Software Development., Op Cit
[29] Toure. M., 'Digital Colonialism in Africa' Available at https://www.researchgate.net/publication/394466350_Digital_Colonialism_in_Africa (Accessed on 16/02/2026)
[30] United Nations., 'Interview: AI Expert Warns of 'Digital Colonization' in Africa' Available at https://www.un.org/pl/nairobi-unis/interview-ai-expert-warns-digital-colonization-africa (Accessed on 16/02/2026)
[31] How to Break Digital Colonialism in African Software Development., Op Cit

digital landscape in Africa and the Global South[32]. Digital colonialism in Africa has both economic and cultural implications[33]. It fuels inequalities and dependencies, undermines Africa's data sovereignty, and leads to exploitation of data from Africa by foreign corporations which can be equated to resource exploitation during the colonial era[34].

Addressing digital colonialism is therefore key in ensuring justice, equity and inclusion by giving Africa a chance to shape its technological future. In order to achieve this goal, it is imperative to strengthen the voice of Africa and the Global South in the global digital economy[35]. In particular, it has been observed that there is need to strengthen data governance and align data governance laws and policies in Africa with global standards and best practices[36]. Empowering Africa and the Global South through international initiatives to ensure data ownership and protection and promoting North-South knowledge sharing can bolster the capacity of Africa to strengthen its data governance regime towards tackling digital colonialism[37].

Bridging the digital divide between the Global North and the Global South is also vital towards addressing digital colonialism. For instance, it has been suggested that fostering comprehensive digital literacy initiatives, targeting all stakeholders including local communities, that go beyond basic computer skills to include critical understanding of digital rights, online privacy, and the role of digital data in modern economies can strengthen data protection in Africa and the Global South[38]. Further, developing adequate digital infrastructure that aligns with local needs can ensure that Africa charts its own technological future towards tackling digital colonialism[39]. Technology companies have also been urged to comply with ethical practices with regards data harvesting and monetization in order to address digital colonialism in the Global South[40].

Through the foregoing, it is possible to uphold data sovereignty in Africa and the Global South towards tackling digital colonialism.

**4.0 Conclusion**

This chapter has examined how digital colonialism impacts the digital landscape in Africa. The chapter observes that digital colonialism occurs in Africa through various forms including

[32] Centre for International Governance Innovation., 'Navigating Digital Neocolonialism in Africa' Available at https://www.cigionline.org/static/documents/DPH-paper-Stevenson_1.pdf (Accessed on 16/02/2026)
[33] Ibid
[34] Ibid
[35] United Nations Educational, Scientific and Cultural Organization., 'Addressing digital colonialism: A path to equitable data governance' Op Cit
[36] Ibid
[37] Ibid
[38] African Digital Colonialism is the New Face of Worker Exploitation., Op Cit
[39] United Nations Educational, Scientific and Cultural Organization., 'Addressing digital colonialism: A path to equitable data governance' Op Cit
[40] Ibid

extraction of data from Africa without involving local actors and biases in AI algorithms[41]. The chapter notes that digital colonialism is a negative phenomenon that perpetuates inequalities, injustices and foreign dependency at the expense of Africa's development. Therefore, it is imperative to address digital colonialism including through strengthen data governance in Africa, promoting North-South capacity building and knowledge sharing, ensuring ethical extraction and monetization of data with adequate and fair compensation to providers and bridging the digital divide through investments in digital infrastructure and literacy programs[42].

Addressing digital colonialism is a vital agenda in the era of technology towards fostering data sovereignty, inclusion and charting an appropriate and just technological future for Africa.

[41] United Nations Educational, Scientific and Cultural Organization., 'Addressing digital colonialism: A path to equitable data governance' Op Cit
[42] Ibid

# Chapter 12: Regulating Artificial Intelligence in Africa: Law and Policy Pathways

***Abstract***

*This chapter discusses how AI can be effectively regulated in Africa. The chapter observes that Africa is increasingly adopting AI in many sectors. It notes that the increased adoption of AI promises to improve governance outcomes in many fields in Africa including education, healthcare, agriculture, finance, transport, environmental governance and dispute resolution among others. Despite its viability, the chapter notes the adoption of AI in Africa also raises several concerns. It discusses some of the key challenges associated with the use of AI in Africa. In light of these concerns, the chapter argues that there is need to regulate AI in Africa in order to harness its positive impacts while addressing risks and ethical issues. The chapter examines law and policy pathways towards regulating AI in Africa for development.*

## 1.0 Introduction

Artificial Intelligence (AI) has emerged as a transformative technology. AI is redefining many sectors including business operations, healthcare, education, agriculture and government services enhancing efficiency, effectiveness, customer experience and improved service delivery[1]. It has been observed that the positive impacts of AI can be noticed in education, transportation, finance, data storage, communications, healthcare, environmental governance and law enforcement among other fields[2]. In addition, it has been pointed out that the adoption of AI has become one of the highest priorities for public organisations[3]. For example, governments all over the world are increasingly trying to digitize their services through AI and other digital tools because of growing public expectations for quick and efficient service delivery[4].

AI is therefore a powerful tool that can strengthen governance outcomes in many fields. It has been observed that AI can help both public and private entities to automate services, reduce operation costs, improve decision-making and enhance customer

[1] European Parliament., 'Understanding Algorithmic Decision-Making: Opportunities and Challenges' Available at https://www.europarl.europa.eu/RegData/etudes/STUD/2019/624261/EPRS_STU(2019)624261_EN.pdf (Accessed on 17/02/2026)

[2] Ibid

[3] United Nations Educational, Scientific and Cultural Organization., 'Artificial intelligence and digital transformation' Available at https://www.unesco.org/en/articles/artificial-intelligence-and-digital-transformation (Accessed on 17/02/2026)

[4] Ibid

experience[5]. If well adopted, AI can not only enhance efficiency and personalization of services but can also allow anticipation and minimization of risks for improved decision-making processes[6]. The increased adoption of AI therefore promises to strengthen governance outcomes for the benefit of both people and planet.

However, the adoption of AI also raises fundamental concerns that must be addressed in order to ensure its efficacy. For instance, if not well harnessed, AI can embed biases, cause and widen socio-economic inequalities, violate human rights and undermine environmental sustainability[7]. Further, it has been observed that skewed data in AI systems can cause harmful decisions, while lack of transparency in algorithmic decision-making erodes accountability[8]. In addition, it has been argued that overreliance on AI can widen digital divides and propagate errors[9]. In light of these challenges, it is vital to regulate AI in order to harness its opportunities and manage associated risks and ethical concerns.

This chapter discusses how AI can be effectively regulated in Africa. The chapter observes that Africa is increasingly adopting AI in many sectors. It notes that the increased adoption of AI promises to improve governance outcomes in many fields in Africa including education, healthcare, agriculture, finance, transport, environmental governance and dispute resolution among others. Despite its viability, the chapter notes the adoption of AI in Africa also raises several concerns. It discusses some of the key challenges associated with the use of AI in Africa. In light of these concerns, the chapter argues that there is need to regulate AI in Africa in order to harness its positive impacts while addressing risks and ethical issues. The chapter examines law and policy pathways towards regulating AI in Africa for development.

[5] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Available at https://www.oecd.org/en/publications/2025/06/governing-with-artificial-intelligence_398fa287.html (Accessed on 17/02/2026)
[6] Mapfre. R., 'The importance of good governance in the adoption of AI' Available at https://www.mapfre.com/en/insights/innovation/adoption-ai/ (Accessed on 17/02/2026)
[7] United Nations Educational, Scientific and Cultural Organization., 'Ethics of Artificial Intelligence' Available at https://www.unesco.org/en/artificial-intelligence/recommendation-ethics (Accessed on 17/02/2026)
[8] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Op Cit
[9] Ibid

## 2.0 The Need to Regulate Artificial Intelligence in Africa

AI is being increasingly adopted in Africa. It has been observed that Africa has immense potential to adopt AI for sector-specific applications designed to tackle local challenges[10]. AI has been identified as an emerging and defining feature of Africa's digital transformation[11]. It has been observed that the AI landscape in Africa is evolving rapidly, with several countries taking positive steps to create enabling environments for AI innovation, research, and adoption[12]. Increased private and public investments in AI reflects a continental shift towards prioritising AI as a key development pillar for Africa[13].

The emergence and adoption of AI in Africa promises to revolutionize governance and improve service delivery across numerous sectors. It has been observed that AI is being integrated into various sectors both globally and in Africa[14]. These include finance, education, health, public services, communications, governance, agriculture, transport, and manufacturing[15]. For instance, it has been observed that in the financial sector, AI powered fintech and banking are driving Africa's development agenda[16]. The integration of AI into fintech and banking is transforming traditional lending systems in Africa by improving credit-risk assessment and instant payments, as well as expanding financial services to remote areas[17]. Further, it has been observed that AI is improving the health sector in Africa including through enhanced detection of diseases such as malaria and tuberculosis while also fostering access to medical and health information through online health platforms[18]. The integration of AI into education systems in Africa is also ensuring individualized, accessible and efficient learning tools aimed to address challenges such as teacher shortages, infrastructure gaps in education and inadequate learning

[10] AI in Africa: Adoption Challenges, Impact, and Growth Opportunities., Available at https://www.verivafrica.com/insights/ai-in-africa-adoption-challenges-impact-and-growth-opportunities#:~:text=According%20to%20a%20Statista%20report,globally%20regarding%20their%20AI%20capacity (Accessed on 17/02/2026)

[11] The Centre for Intellectual Property and Information Technology Law., 'The State of AI in Africa Report' Available at https://aiconference.cipit.org/documents/the-state-of-ai-in-africa-report.pdf (Accessed on 17/02/2026)

[12] Ibid

[13] Ibid

[14] AUDA-NEPAD., 'A New Dawn: Embracing Ethical Adoption and Adaptation of Artificial Intelligence (AI) in Africa' Available at https://www.nepad.org/blog/new-dawn-embracing-ethical-adoption-and-adaptation-of-artificial-intelligence-ai-africa (Accessed on 17/02/2026)

[15] Ibid

[16] AI-powered fintech and banking are driving Africa's development. Here's how., Available at https://www.developmentaid.org/news-stream/post/202004/ai-powered-fintech-in-africa (Accessed on 17/02/2026)

[17] Ibid

[18] Owoyemi. A et al., 'Artificial Intelligence for Healthcare in Africa' Available at https://pmc.ncbi.nlm.nih.gov/articles/PMC8521850/ (Accessed on 17/02/2026)

materials[19]. It has been observed that AI can foster individualized education, support vulnerable students including those with disabilities, support curricula development and streamline school-level administrative tasks[20].

In addition, AI is improving agriculture, a key economic sector in most African countries. It has been observed that the integration of AI into agriculture in Africa is driven by a need for more sustainable farming practices, labour shortages and a rising demand for food due to an increasing population[21]. It has been observed that AI technologies such as precision farming enable farmers to optimize resources and maximize crop yields[22]. In addition, satellite imagery, drones with high-resolution sensors, and geographic information systems help monitor crop health, soil moisture, and nutrient levels in real time[23]. As a result, AI has been described as the future of farming in Africa due to its potential to enhance efficiency, productivity and sustainability[24].

AI is also improving environmental governance in Africa. For instance, it has been observed that AI provides tools and systems that support climate action, biodiversity conservation, sustainable waste management, and ecosystem monitoring towards sound environmental governance in Africa[25]. AI powered tools in Africa are strengthening climate action through enhanced detection of greenhouse gases[26]; fostering sound biodiversity conservation through remote sensing and analysis platforms which provide accurate data on threats such as habitat degradation, illegal logging, illegal hunting, human-wildlife conflict, and species migration[27]; and revolutionizing waste management

[19] International Development Research Centre., 'From commitment to action: Advancing the use of AI in education in Africa' Available at https://idrc-crdi.ca/en/research-in-action/commitment-action-advancing-use-ai-education-africa (Accessed on 17/02/2026)
[20] Ibid
[21] World Bank Group., 'Is Artificial Intelligence the future of farming? Exploring opportunities and challenges in Sub-Saharan Africa' Available at https://blogs.worldbank.org/en/agfood/artificial-interlligence-in-the-future-of-sub-saharan-africa-far (Accessed on 17/02/2026)
[22] Ibid
[23] Ibid
[24] Ibid
[25] United Nations Educational, Scientific and Cultural Organization., 'AI for Environment and Ecosystems Toolkit for Policymakers' Available at https://www.unesco.org/ethics-ai/en/node/288#:~:text=While%20AI%20can%20support%20climate,dynamics%20is%20no%20longer%20optional. (Accessed on 17/02/2026)
[26] United Nations Environment Programme., 'AI has an environmental problem. Here's what the world can do about that' Available at https://www.unep.org/news-and-stories/story/ai-has-environmental-problem-heres-what-world-can-do-about (Accessed on 17/02/2026)
[27] United Nations Development Programme., 'People-Centric AI for Conserving Biodiversity' Available at https://www.undp.org/sites/g/files/zskgke326/files/2025-12/people-centric-ai-for-conserving-biodiversity.pdf (Accessed on 17/02/2026)

by predicting trends in waste composition, forecasting an increased demand for certain materials, anticipating equipment problems, pointing out unsafe waste conditions and helping individuals and companies make sustainable decisions[28]. Harnessing AI can therefore bolster environmental governance in Africa including through enhancing efforts to tackle the triple planetary crisis of climate change, biodiversity loss and pollution.

The adoption of AI in Africa can therefore accelerate the continent's development agenda across many sectors including finance, education, food security, health and environmental governance. However, the integration of AI in Africa also several concerns necessitating its regulation. For instance, it has been observed that risks such as data misuse, breach of privacy through AI tools and increased surveillance on individuals and communities require effective regulation of AI platforms[29]. The ethical concerns arising out of the use of AI in Africa also requires effective regulatory frameworks. Issues such as algorithmic biases, discrimination including from a gender and racial perspective, and lack of transparency and accountability measures raise ethical concerns when adopting AI[30]. In light of these challenges, it is imperative to ensure effective regulation of AI in Africa in order to harness its positive attributes for development while addressing its risks and challenges.

**3.0 Regulating Artificial Intelligence in Africa through Law and Policy**

Regulating AI in Africa is a key continental priority towards harnessing the transformative power of technology for development. It has been observed that the transformative potential of AI can reshape business operations, spur innovation, strengthen governance processes and uplift millions of lives across Africa towards achieving the Sustainable Development agenda and the goals and aspirations of African Union's Agenda 2063[31]. However, despite its immense potential, AI presents significant

[28] How AI Is Revolutionizing the Recycling Industry., Available at https://news.climate.columbia.edu/2025/06/18/how-ai-is-revolutionizing-the-recycling-industry/#:~:text=In%20addition%2C%20the%20data%20AI,people%20how%20to%20recycle%20properly. (Accessed on 17/02/2026)

[29] Okolo. C., 'Reforming data regulation to advance AI governance in Africa' Available at https://www.brookings.edu/articles/reforming-data-regulation-to-advance-ai-governance-in-africa/#:~:text=As%20artificial%20intelligence%20(AI)%20development,viable%20pathway%20toward%20regulating%20AI. (Accessed on 17/02/2026)

[30] United Nations Educational, Scientific and Cultural Organization., 'Ethics of Artificial Intelligence' Available at https://www.unesco.org/en/artificial-intelligence/recommendation-ethics (Accessed on 17/02/2026)

[31] AUDA-NEPAD., 'A New Dawn: Embracing Ethical Adoption and Adaptation of Artificial Intelligence (AI) in Africa' Op Cit

challenges for African governments, authorities, organisations, communities and individuals particularly with regards to ethics, human rights, transparency and accountability[32]. Consequently, regulating AI in Africa including through ethical governance is vital in spurring development through the power of technology[33]. African countries have been urged to not only develop their AI capacity but also ensure effective regulation[34].

The need to regulate AI in Africa is recognised under the African Union Continental Artificial Intelligence Strategy[35]. The Strategy acknowledges that AI is profoundly changing African economies and societies[36]. It notes that AI is being integrated into most aspects of governance producing new efficiencies and enhancing human capacities[37]. According to the Strategy, if well harnessed, AI can support economic growth, create new industries, drive innovation, generate employment opportunities, generate new businesses for women and youth, support the preservation of Africa's cultural heritage and help solve some of Africa's most complex and urgent challenges in healthcare, agriculture, education, finance and public service delivery[38]. Despite its potential, the Strategy acknowledges that AI is associated with several risks. These include extensive energy consumption and high demand for water raising environmental sustainability concerns, bias and discrimination, data privacy and security concerns, digital divide, gender and socio-economic inequalities, job displacement, and subversion of indigenous knowledge systems and African cultural heritage[39]. Consequently, the Strategy calls for effective regulation of AI in order to address these risks and challenges. In particular, it urges African countries to adopt and implement robust AI governance, regulations, standards, codes of conduct and best practices in order to manage its risks and promote its growth[40].

In order to achieve the foregoing continental vision, African countries have been urged to design and implement sound laws and policies on AI. In particular, it has been argued that in order to strengthen AI governance initiatives, African countries should consider

[32] Ibid
[33] Ibid
[34] Ibid
[35] African Union., 'Continental Artificial Intelligence Strategy' Available at https://au.int/sites/default/files/documents/44004-doc-EN-_Continental_AI_Strategy_July_2024.pdf (Accessed on 17/02/2026)
[36] Ibid
[37] Ibid
[38] Ibid
[39] Ibid
[40] Ibid

data governance as a viable pathway toward regulating AI by facilitating its responsible utilization and development[41]. Data is the supporting system for AI enabling models to train, learn patterns, generate insights and make predictions[42]. Consequently, good data governance can ensure effective regulation and adoption of AI both in Africa and globally[43]. African countries should therefore strengthen their laws and policies on data protection in order to effectively harness AI[44].

Further, African countries have been urged to prioritise context-specific laws and policies in order to effectively regulate AI[45]. For instance, since most AI systems are designed in the Global North, effective regulation is necessary to ensure that AI suits to the underlying needs and circumstances in Africa and the Global South[46]. Consequently, it has been observed that laws and policies that respect indigenous knowledge systems and empower vulnerable groups including indigenous peoples, local communities, persons with disabilities and women can ensure that AI is effectively adopted in Africa while fostering inclusivity[47].

Strengthening Intellectual Property (IP) laws and policies can also ensure effective regulation of AI in Africa[48]. For instance, it has been observed that Africa's rich indigenous knowledge is being misappropriated into AI systems in areas such as healthcare and agriculture often without the Free, Prior and Informed Consent (FPIC) of indigenous peoples and local communities who are the custodian of such knowledge[49]. Consequently, strengthening IP protection including through formal recognition of indigenous data can prevent misappropriation of indigenous knowledge systems by requiring the FPIC of indigenous peoples and local communities to be obtained before their data is harnessed and utilised.

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[41] Okolo. C., 'Reforming data regulation to advance AI governance in Africa' Op Cit
[42] The Role of Data in AI., Available at Available at https://wp.oecd.ai/app/uploads/2025/05/role-of-data-in-ai.pdf (Accessed on 17/02/2026)
[43] Ibid
[44] Okolo. C., 'Reforming data regulation to advance AI governance in Africa' Op Cit
[45] African Union., 'Continental Artificial Intelligence Strategy' Op Cit
[46] Ibid
[47] Ibid
[48] Formal Recognition of Indigenous Data in AI: The Role of the WIPO Treaty on IP, Genetic Resources & Traditional Knowledge., Available at https://cipit.strathmore.edu/formal-recognition-of-indigenous-data-in-ai-the-role-of-the-wipo-treaty-on-ip-genetic-resources-traditional-knowledge/ (Accessed on 17/02/2026)
[49] Ajeboriogbon. T., 'Digital Colonialism is the New Scramble for Africa' Available at https://www.e-ir.info/2026/01/12/digital-colonialism-is-the-new-scramble-for-africa/ (Accessed on 17/02/2026)

Further, it has been observed that since most AI models are designed in the Global North, developing mechanisms to regulate foreign technology companies that operate in Africa is key in ensuring effective adoption of AI[50]. Laws and policies that emphasize on ethics in AI, collaboration with local stakeholders, compliance with national values and principles and respect for human rights can ensure that the development of AI in Africa by foreign companies fits well within local needs and circumstances for development[51].

Through the foregoing, it is possible to effectively regulate AI in Africa for development.

**4.0 Conclusion**

This chapter has analysed how AI can be regulated in Africa through law and policy. The chapter notes that the adoption of AI in Africa can accelerate progress towards Sustainable Development and Agenda 2063 by revolutionizing key sectors including healthcare, agriculture, education, environmental governance, finance and public service delivery. However, the chapter has highlighted that challenges such as algorithmic bias and discrimination, data privacy and security concerns, digital divide, gender and socio-economic inequalities, job displacement, and subversion of indigenous knowledge systems and African cultural heritage requires effective regulation of AI in order to harness its benefits and address risks[52]. From the foregoing discussion, it has been pointed out that law and policy provide effective pathways towards regulating AI in Africa. Consequently, it is imperative for African countries to develop and implement effective laws and policies on key aspects such as data protection, empowerment and inclusion of vulnerable individuals and communities in AI, IP protection, transparency and accountability, ethical governance of AI, and North-South collaboration in order to effectively harness AI for development while addressing its risks and challenges[53].

Regulating AI in Africa through law and policy pathways is therefore possible towards harnessing the transformative power of technology for development.

[50] African Union., 'Continental Artificial Intelligence Strategy' Op Cit
[51] Ibid
[52] African Union., 'Continental Artificial Intelligence Strategy' Op Cit
[53] Ibid

# Chapter 13: Building Institutional, Judicial and Professional Capacity for Artificial Intelligence Governance

***Abstract***

*This chapter examines the need for sound AI governance in Africa and the Global South. The chapter posits that the rapid adoption of AI in Africa and the Global South necessitates effective governance frameworks. The chapter observes that some progress has been made towards putting in place AI governance frameworks in Africa and the Global South. However, it notes that Africa and the Global South still face several governance challenges that undermine the effective adoption and use of AI. In light of such challenges, the chapter argues that it is imperative to strengthen AI governance frameworks in Africa and the Global South in order to harness its transformative power while addressing risks and ethical concerns. The chapter discusses how AI governance can be strengthened in Africa and the Global South by building institutional, judicial and professional capacity.*

## 1.0 Introduction

Artificial Intelligence (AI) governance covers laws, policies, institutional frameworks and ethical guidelines aimed to ensure that AI is developed and deployed in safe and responsible manner. AI governance has been defined as a set of practices for developing, deploying, and monitoring AI applications in a safe, trustworthy, and ethical manner that ensures appropriate functionality of AI over the entire lifecycle[1]. AI governance has also been described as processes, standards and frameworks that help to ensure AI systems and tools are safe and ethical[2]. It has been observed that AI governance directs AI research, development and application to help ensure safety, fairness and respect for human rights[3].

Strengthening AI governance is vital in harnessing the transformative power of technology for development. For instance, AI is revolutionizing many industries and sectors including education, transportation, finance, data storage, communications, healthcare, environmental governance, dispute resolution and law enforcement among others[4]. The adoption of AI can help both public and private entities to automate services, reduce operation costs, improve decision-making and enhance customer experience[5]. However, concerns such as biases, discrimination, errors and inadequate transparency and accountability measures can undermine the effective

[1] Papagiannidis. E., Mikalef. P., & Conboy. K., ' Responsible artificial intelligence governance: A review and research framework' *The Journal of Strategic Information Systems*., Volume 34, Issue 2, 2025

[2] What is AI Governance?., Available at https://www.ibm.com/think/topics/ai-governance (Accessed on 18/02/2026)

[3] Ibid

[4] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Available at https://www.oecd.org/en/publications/2025/06/governing-with-artificial-intelligence_398fa287.html (Accessed on 18/02/2026)

[5] Ibid

adoption and use of AI with severe consequences including human right violations[6]. Consequently, sound AI governance is key towards addressing the flaws, errors and ethical concerns inherent in AI systems[7]. It has been observed that AI governance focuses on fairness, accountability, respect for human rights and explainability in order to ensure safe, responsible and ethical adoption of AI[8]. Bolstering AI governance is therefore crucial towards harnessing its transformative potential while addressing inherent risks and ethical concerns.

This chapter examines the need for sound AI governance in Africa and the Global South. The chapter posits that the rapid adoption of AI in Africa and the Global South necessitates effective governance frameworks. The chapter observes that some progress has been made towards putting in place AI governance frameworks in Africa and the Global South. However, it notes that Africa and the Global South still face several governance challenges that undermine the effective adoption and use of AI. In light of such challenges, the chapter argues that it is imperative to strengthen AI governance frameworks in Africa and the Global South in order to harness its transformative power while addressing risks and ethical concerns. The chapter discusses how AI governance can be strengthened in Africa and the Global South by building institutional, judicial and professional capacity.

**2.0 Artificial Intelligence Governance in Africa: Promises and Pitfalls**

Governing AI in Africa and the Global South is key towards harnessing the transformative power of technology for development. It has been observed that AI is being increasingly adopted in Africa and the Global South in both public and private spheres[9]. AI is being utilised in Africa and the Global South to address traditional development challenges in key sectors including education, healthcare and agriculture[10]. According to the United Nations, the use of AI is no longer the sole preserve of developed countries in the Global North[11]. The United Nations observes that the application of AI in the Global South, in areas ranging from health, agriculture and industry, is having a transformative effect on the lives of people and communities[12].

AI is therefore a powerful technology that can drive economic growth and prosperity in Africa and the Global South. For instance, in Africa, it has been observed that AI is revolutionizing finance, education, health, public services, communications, governance, agriculture, transport,

[6] Ibid
[7] What is AI Governance?., Op Cit
[8] Papagiannidis. E., Mikalef. P., & Conboy. K., ' Responsible artificial intelligence governance: A review and research framework' Op Cit
[9] AI in the Global South: Opportunities and challenges towards more inclusive governance., Available at https://www.brookings.edu/articles/ai-in-the-global-south-opportunities-and-challenges-towards-more-inclusive-governance/ (Accessed on 18/02/2026)
[10] Ibid
[11] United Nations., 'In the hands of innovators from the Global South, AI can transform lives' Available at https://news.un.org/en/story/2026/02/1166959 (Accessed on 18/02/2026)
[12] Ibid

and manufacturing[13]. It has been argued that the transformative potential of AI can reshape business operations, spur innovation, strengthen governance processes and uplift millions of lives across Africa[14]. The adoption of AI in Africa is therefore a viable approach towards achieving the Sustainable Development agenda and the goals and aspirations of African Union's Agenda 2063[15].

Effective AI governance in Africa is vital towards harnessing its benefits while addressing its risks and challenges. It has been argued that the need for sound governance of AI in Africa and the Global South is informed by its rapid growth and transformative potential as well as concerns about societal implications[16]. For instance, if well governed, AI can drive growth and prosperity by transforming key sectors including education, environmental governance, healthcare, agriculture, finance, manufacturing, transport, dispute resolution and law enforcement[17]. However, on the other hand, AI can also embed biases through algorithmic decision-making, cause and widen socio-economic inequalities, fuel discrimination, violate human rights and undermine environmental sustainability due to huge demand of water and energy in data centres[18]. Governing AI is therefore key in maximising its benefits and mitigating its risks and ethical concerns.

There has been progress towards fostering AI governance in Africa. For example, continental efforts such as the adoption of the *African Union Continental Artificial Intelligence Strategy*[19] demonstrate commitment towards ensuring that AI is effectively regulated and governed in Africa. The Strategy recognises the need to regulate AI in order to foster development in Africa while addressing risks and ethical concerns such as extensive energy consumption and high demand for water in data centres, bias and discrimination, data privacy and security concerns, digital divide, gender and socio-economic inequalities, job displacement, and subversion of indigenous knowledge systems and African cultural heritage[20]. Further, it has been observed that

[13] AUDA-NEPAD., 'A New Dawn: Embracing Ethical Adoption and Adaptation of Artificial Intelligence (AI) in Africa' Available at https://www.nepad.org/blog/new-dawn-embracing-ethical-adoption-and-adaptation-of-artificial-intelligence-ai-africa (Accessed on 18/02/2026)
[14] Ibid
[15] Ibid
[16] Understanding Africa's AI Governance Landscape: Insights From Policy Practice and Dialogue., Available at https://carnegieendowment.org/russia-eurasia/posts/2025/09/understanding-africas-ai-governance-landscape-insights-from-policy-practice-and-dialogue (Accessed on 18/12/2026)
[17] Organisation for Economic Co-operation and Development., 'Governing with Artificial Intelligence' Op Cit
[18] United Nations Educational, Scientific and Cultural Organization., 'Ethics of Artificial Intelligence' Available at https://www.unesco.org/en/artificial-intelligence/recommendation-ethics (Accessed on 18/02/2026)
[19] African Union., 'Continental Artificial Intelligence Strategy' Available at https://au.int/sites/default/files/documents/44004-doc-EN-_Continental_AI_Strategy_July_2024.pdf (Accessed on 18/02/2026)
[20] Ibid

several African countries have enacted laws and policies as part of national efforts towards governing AI[21]. In particular, it has been pointed out that some African countries have enacted data protection legislations which are playing an important role in regulating the personal data used in the AI life cycle[22]. For instance, Kenya enacted the *Data Protection Act*[23] to regulate the processing of personal data and to protect the privacy of individuals[24]. The Act establishes the legal and institutional mechanisms to protect personal data in Kenya[25].

Despite the foregoing efforts, the ideal of effective AI governance is yet to be attained in Africa and the Global South. For instance, it has been observed that challenges such as historical violations of data privacy laws and policies, lack of adequate sanctions, unchecked mass concentration of data, inadequate enforcement of laws and policies and uninformed consent during data extraction continue to undermine AI governance in Africa leading to challenges such as digital colonialism and breach of data sovereignty[26]. Consequently, it is imperative to strengthen AI governance in Africa for development.

## 3.0 Building Institutional, Judicial and Professional Capacity for Artificial Intelligence Governance in Africa

There is need to strengthen AI governance in Africa in order to maximise its potential and tackle related risks and challenges towards utilising technology for development. In order to achieve this goal, it is imperative for African countries to bolster their institutional capacities[27]. It has been observed that due the rapid development and evolving nature of AI and other digital technologies, creating specialised institutions focused specifically on AI governance can ensure that countries bolster their capacity in regulating emerging technologies[28]. Specialised institutions can ensure that countries have the technical expertise to ensure sound AI governance. It has been observed that such institutions can design and shape relevant regulatory frameworks and ethical standards to ensure that AI is effectively harnessed and utilised[29]. Building robust and dynamic institutions with adequate human, technical and financial capacity can therefore strengthen AI governance including through establishing governing standards and polices, ensuring

[21] AI Governance in Africa: An overview of regulation and policy work on Artificial Intelligence in Africa., Available at https://ai.altadvisory.africa/wp-content/uploads/AI-Governance-in-Africa-2022.pdf (Accessed on 18/02/2026)
[22] Ibid
[23] The Data Protection Act., Cap 411 C., Government Printer, Nairobi
[24] Ibid, S 3
[25] Ibid
[26] Coleman. D., 'Digital Colonialism: The 21st Century Scramble for Africa through the Extraction and Control of User Data and the Limitations of Data Protection Laws' *Michigan Journal of Race and Law*., Volume 24, Issue 2 (2019)
[27] Governing AI: Evolving Institutional Responses., Available at https://istanbulinnovationdays.org/governing-ai-evolving-institutional-responses/ (Accessed on 18/02/2026)
[28] Ibid
[29] Ibid

accountability and ethical use of AI and facilitating regional and global cooperation on the ethical and responsible use of AI[30]. The African Union Continental Artificial Intelligence Strategy envisages the development of specialised institutions at the regional and national levels towards effective AI governance[31]. Building institutional capacity both at national and continental levels is therefore crucial towards bolstering AI governance in Africa.

Strengthening judicial capacity is also key towards sound AI governance in Africa and the Global South. It has been observed that the judiciary can ensure sound AI governance including through upholding human rights in AI such as the right to privacy, fostering transparency by holding AI developers and decision-makers accountable and providing an avenue for citizens whose rights have been violated to access justice[32]. With the widespread adoption of AI, the judiciary is expected to play an important role in addressing legal issues concerning the implications of AI on human rights, oversight, and accountability among others[33]. Furthermore, the judiciary is increasingly employing AI in decision-making processes, raising concerns about fairness, accountability, and transparency in judicial decisions made by automated or AI-based system[34]. It is therefore imperative to build judicial capacity through measures such as training judicial officers on AI and other digital technologies, integrating AI into judicial systems and establishing specialised judicial bodies focusing on technology and AI in order to strengthen AI governance for development[35].

It is also necessary to build professional capacity on AI. The African Union Continental Artificial Intelligence Strategy acknowledges that while AI skills in Africa are improving, the continent still lacks enough developers with the right AI skills and also faces challenges in attracting and retaining AI talent in a context of high global demand for AI professionals[36]. Consequently, it has been observed that many countries and organisations in Africa and the Global South are facing a widening AI talent gap, a shortage of the skills and competencies required to implement, manage,

[30] United Nations Development Programme., 'Artificial Intelligence for Development: Institutional Foundation for an Inclusive Digital Transformation' Available at https://www.undp.org/latin-america/digitalhub4/projects/artificial-intelligence-development-institutional-foundations-inclusive-digital-transformation (Accessed on 18/02/2026)
[31] African Union., 'Continental Artificial Intelligence Strategy' Op Cit
[32] United Nations Educational, Scientific and Cultural Organization., 'Artificial Intelligence and the Rule of Law: Building Capacity for Judicial Systems' Available at https://www.unesco.org/ar/artificial-intelligence/rule-law/mooc-judges#:~:text=Role%20of%20Judicial%20Actors%20in%20AI%20Governance&text=The%20potential%20of%20AI%20is,stakeholders%20from%20the%20judicial%20ecosystem. (Accessed on 18/02/2026)
[33] Ibid
[34] Ibid
[35] Ibid
[36] African Union., 'Continental Artificial Intelligence Strategy' Op Cit

and scale AI successfully[37]. It is therefore necessary to build professional capacity including through investing in research and training on AI, adequate remuneration for AI professionals, and fostering collaboration among national, regional and global academic and research institutions in order to ensure effective governance of AI in Africa and the Global South[38].

Through the foregoing, it is possible to build institutional, judicial and professional capacity for sound AI governance in Africa and the Global South.

**4.0 Conclusion**

This chapter has critically examined the need to strengthen AI governance in Africa and the Global South. The chapter notes that bolstering AI governance in Africa and the Global South is key towards harnessing its transformative potential while tackling risks and ethical concerns including bias, discrimination, human rights violations and environmental sustainability challenges[39]. Despite progress being made to govern AI including through data protection laws and policies, the chapter notes that governing AI continues to be a challenge for countries in Africa and the Global South[40]. Consequently, the chapter posits that building institutional, judicial and professional capacity is vital for effective AI governance in Africa and the Global South for development.

[37] AI Talent Gap: How CEOs Can Build a Future-Ready Workforce., Available at https://ronalds.co.ke/ai-talent-gap-how-ceos-can-build-a-future-ready-workforce/#:~:text=Leadership%20training%20on%20responsible%20AI,5. (Accessed on 18/02/2026)
[38] African Union., 'Continental Artificial Intelligence Strategy' Op Cit
[39] African Union., 'Continental Artificial Intelligence Strategy' Op Cit
[40] AI Governance in Africa: An overview of regulation and policy work on Artificial Intelligence in Africa., Op Cit

# Chapter 14: Africa as a Norm-Shaper in Global Artificial Intelligence Governance

***Abstract***

*This chapter focuses on how the voice of Africa and the Global South can be enhanced in global AI governance. The chapter observes that Africa and the Global South continue to be underrepresented in global AI governance. It examines the current landscape of global AI governance and discusses the challenges faced by Africa and the Global South. The chapter notes that Africa has unique and vital ideas, knowledge systems and capacities that can strengthen global AI governance. Consequently, it argues that there is need to recognise Africa as a key player in global AI governance. The chapter discusses how Africa can become a norm-shaper in global AI governance towards ensuring that AI is developed and adopted in a safe, ethical, responsible and culturally-sensitive manner all over the world for development and prosperity.*

## 1.0 Introduction

Governance of Artificial Intelligence (AI) is a key global agenda. The United Nations observes that the explosive growth and adoption of AI tools around the world has yet to be matched by effective, internationally agreed rules, policies and frameworks on how this powerful technology is governed[1]. It has been argued that since the challenges and opportunities presented by AI are global in nature, the responses also need to be far more comprehensive and collaborative than the fragmented and siloed solutions that have been embraced so far[2]. Embracing a common global approach on AI governance is therefore vital towards harnessing this powerful and transformative technology for development and prosperity all over the world.

It has been observed that global AI governance relies on the ability of state and non-state actors to set common universal standards on technological risks, the boundaries to be drawn, and the principles to be safeguarded when developing and adopting AI[3]. Global AI governance aims to promote the safe development and adoption of AI that is universal, adapted to cultural diversities all over the world, free from biases and discrimination, and respectful of democratic values and fundamental rights and freedoms for every person[4]. Global AI governance is therefore key in fostering international cooperation towards effectively responding to the rapid pace at which AI is developing[5]. It has been observed that global AI governance is vital in broadening access to AI for governments, industry, and civil society especially for developing countries while also

[1] United Nations., 'UN moves to close dangerous void in AI governance' Available at https://news.un.org/en/story/2025/09/1165898 (Accessed on 18/02/2026)
[2] Ibid
[3] French Institute of International Relations., 'Artificial Promises or Real Regulation? Inventing Global AI Governance' Available at https://www.ifri.org/en/studies/artificial-promises-or-real-regulation-inventing-global-ai-governance (Accessed on 18/02/2026)
[4] Ibid
[5] Network architecture for global AI policy., Available at https://www.brookings.edu/articles/network-architecture-for-global-ai-policy/ (Accessed on 18/02/2026)

ensuring that the adoption of AI responds to differing AI needs among regions, countries, communities and individuals[6]. Strengthening global AI governance is therefore key towards harnessing its transformative potential while minimising risks through common universal standards.

This chapter focuses on how the voice of Africa and the Global South can be enhanced in global AI governance. The chapter observes that Africa and the Global South continue to be underrepresented in global AI governance. It examines the current landscape of global AI governance and discusses the challenges faced by Africa and the Global South. The chapter notes that Africa has unique and vital ideas, knowledge systems and capacities that can strengthen global AI governance. Consequently, it argues that there is need to recognise Africa as a key player in global AI governance. The chapter discusses how Africa can become a norm-shaper in global AI governance towards ensuring that AI is developed and adopted in a safe, ethical, responsible and culturally-sensitive manner all over the world for development and prosperity.

**2.0 Role of Africa in Global Artificial Intelligence Governance**

The Global South has a key role to play in shaping AI governance. It has been argued that the Global South should be recognised not merely as a passive recipient of AI technologies but as a crucial partner in improving global AI governance[7]. The current landscape of AI governance is dominated by discourses emanating from countries and institutions in the Global North[8]. This inequality is having negative impacts on the Global South undermining the ability of developing countries to effectively and appropriately adopt AI. For instance, AI is undermining data sovereignty in the Global South. In particular, it has been observed that the extraction and commodification of data including indigenous knowledge systems from the Global South without the meaningful involvement of indigenous peoples and local communities is undermining indigenous data sovereignty[9].

AI is also fuelling digital colonialism in the Global South. It has been observed that the domination of digital ecosystems by technology companies from the Global North contributes to digital colonialism through the appropriation of data and deployment of digital tools to the Global South without modification to local needs and cultural contexts[10]. Digital colonialism is

[6] Ibid

[7] Png. M-T., 'The Critical Roles of Global South Stakeholders in AI Governance' Available at https://academic.oup.com/edited-volume/41989/chapter-abstract/377785114?redirectedFrom=fulltext (Accessed on 19/02/2026)

[8] Ibid

[9] Perera. M et al., 'Indigenous peoples and artificial intelligence: A systematic review and future directions' Available at https://journals.sagepub.com/doi/10.1177/20539517251349170#:~:text=Abstract,discuss%20literature%20under%20each%20category (Accessed on 19/02/2026)

[10] United Nations Educational, Scientific and Cultural Organization., 'Addressing digital colonialism: A path to equitable data governance' Available at

evidenced by data extraction and exploitation in the Global South, increased surveillance through AI in the Global South, dominance of digital infrastructure by technology companies from the Global North, monopolistic practices in data monetization, and algorithmic control by the Global North[11].

Further, the adoption and use of AI raises ethical concerns in the Global South. In particular, it has been observed that algorithmic-biases, violation of human rights including the right to privacy, discrimination against particular groups, inequalities caused by the digital divide, and sustainability concerns including huge demand for water and energy in data centres are fundamental ethical concerns hindering the effective adoption of AI in the Global South[12].

In light of the foregoing concerns, it has been argued that there is need for inclusive global AI governance in order to enhance the uptake of technology for development while minimising its risks and ethical concerns especially in the Global South[13]. Without inclusive and collaborative approaches in AI governance involving both the Global North and the Global South, there is a real risk that regulatory asymmetries will widen the global AI divide, leaving developing countries at a disadvantage and deepening existing economic disparities[14]. It has been correctly noted that AI risks vary across cultural contexts and evolve over time with the rapid advancement of technology[15]. Consequently, AI regulations and policies can neither be copied from one jurisdiction to another, nor remain static over time[16]. An inclusive global approach is therefore vital in giving the Global South a voice towards identifying its unique AI needs and risks towards effectively adopting technology for development.

It is therefore vital to give Africa and the Global South an enhanced role in global AI governance. It has been argued that Africa has immense capacity to become an active and influential participant in global AI governance[17]. By involving Africa, it is possible to develop an effective and appropriate global AI governance framework that promotes safe and transparent AI, upholds human rights, respects different cultural contexts and mitigates risks such as algorithmic

https://community.unesco.org/inclusivepolicylab/s/thinkpiece/addressing-digital-colonialism-a-path-to-equitable-data-governance-MCILJ2OCE56JB5ZCY2ZY4M7AZUYE (Accessed on 19/02/2026)

[11] Ibid

[12] United Nations Educational, Scientific and Cultural Organization., 'Ethics of Artificial Intelligence' Available at https://www.unesco.org/en/artificial-intelligence/recommendation-ethics (Accessed on 19/02/2026)

[13] Png. M-T., 'The Critical Roles of Global South Stakeholders in AI Governance' Op Cit

[14] How Leaders in the Global South Can Devise AI Regulation that Enables Innovation., Available at https://institute.global/insights/tech-and-digitalisation/how-leaders-in-the-global-south-can-devise-ai-regulation-that-enables-innovation (Accessed on 19/02/2026)

[15] Ibid

[16] Ibid

[17] How Africa and Europe could create global AI governance rules., Available at https://ecdpm.org/work/how-africa-and-europe-could-create-global-ai-governance-rules (Accessed on 19/02/2026)

biases[18]. It has been observed that through active and meaningful involvement of Africa in global AI governance, past and ongoing tensions around data governance and digital sovereignty can be adequately addressed therefore ensuring effective and appropriate development and adoption of AI[19].

Africa should therefore be recognised as a norm-shaper and not merely a recipient of AI.

**3.0 Bolstering the Voice of Africa in Global Artificial Intelligence Governance**

Africa is underrepresented in global AI governance. It has been observed that monopolization of AI ecosystems by the Global North undermines effective adoption and use of these technologies in the Global South[20]. This has been linked to legal and ethical concerns in AI including digital colonialism, breach of data sovereignty, human right violations, environmental sustainability concerns and algorithmic-biases which are having disproportionate impacts on individuals and communities in the Global South[21].

Africa and the Global South have unique insights that can bolster global AI governance. For instance, strengthening the voice of Africa in global AI governance is key towards recognising context-specific risks such as algorithmic-biases, language diversity, data privacy and security and socio-economic impacts which are usually overlooked by AI developers in the Global North[22]. Further, giving Africa an increased role in global AI governance can facilitate the ethical development and adoption of AI in a manner that upholds human rights, avoids biases and respects cultural diversity inherent in the Global South[23]. In addition, Africa is home to rich and diverse indigenous knowledge systems in key sectors such as healthcare, agriculture and environmental conservation[24]. Indigenous knowledge systems have enabled communities in Africa to live sustainably for many centuries by emphasizing harmony with nature[25]. Bolstering the voice of Africa in global AI governance is therefore key in harnessing indigenous data sets to support Sustainable Development in key areas such as food security, public health, biodiversity conservation and climate action[26].

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[18] Ibid
[19] Ibid
[20] Png. M-T., 'The Critical Roles of Global South Stakeholders in AI Governance' Op Cit
[21] United Nations Educational, Scientific and Cultural Organization., 'Addressing digital colonialism: A path to equitable data governance' Op Cit
[22] Png. M-T., 'The Critical Roles of Global South Stakeholders in AI Governance' Op Cit
[23] Ibid
[24] Naamwintome. B.A., & Millar. D., 'Indigenous Knowledge and the African Way Forward: Challenges and Opportunities' Available at https://www.scirp.org/journal/paperinformation?paperid=68164#:~:text=Some%20aspects%20of%20indigenous%20knowledge,the%20limitations%20and%20negative%20aspects (Accessed on 20/02/2026)
[25] Ibid
[26] United Nations Educational, Scientific and Cultural Organization., 'Exploring the impact of Artificial Intelligence and Intangible Cultural Heritage' Available at https://ich.unesco.org/en/news/exploring-the-impact-of-artificial-intelligence-and-intangible-cultural-heritage-13536 (Accessed on 20/02/2026)

Recognising Africa as a norm-shaper is therefore key in strengthening global AI governance. It is therefore vital for African countries to invest in AI infrastructure at national levels[27]. It has been observed that bolstering their national AI capacities can help African countries to reduce dependency on foreign developers towards fostering data sovereignty and addressing digital colonialism[28]. This is also key in ensuring that African countries build AI ecosystems that are culturally appropriate and fit well within underlying socio-economic needs and interests[29]. Building and empowering national institutions such as data protection authorities and supporting locally developed AI models is vital towards effectively governing AI in Africa through African-centric datasets that reduce bias and external dependence[30].

Fostering South-South cooperation is also key in giving Africa and the Global South an opportunity to shape global AI governance. It has been observed that South-South cooperation is vital in ensuring AI norms and policies that prioritize local needs in areas such as agriculture, health, education and environmental governance[31]. It is therefore necessary to bolster South-South cooperation including through collaboration among institutions, knowledge sharing and capacity building programs in order to give developing countries an opportunity to shape global AI governance[32].

**4.0 Conclusion**

This chapter has critically examined the role of Africa in global AI governance. The chapter notes that Africa and the Global South is underrepresented in global AI governance. The discussion notes that failure to give developing countries an opportunity to shape global AI governance is fuelling challenges such as digital colonialism and breach of data sovereignty[33]. The chapter has demonstrated that Africa has the potential to become a norm-shaper in global AI governance. It notes that giving Africa a voice in global AI governance is key towards addressing context-specific risks, ensuring ethical development and adoption of AI, reducing inequalities and harnessing indigenous data sets for sustainability[34]. It is therefore vital to build national AI capacities in Africa, enhance innovation including through African-centric AI models and data sets and strengthen South-South cooperation in order to bolster the role of Africa in global AI

[27] United Nations Educational, Scientific and Cultural Organization., 'Addressing digital colonialism: A path to equitable data governance' Op Cit
[28] Ibid
[29] How Africa and Europe could create global AI governance rules., Op Cit
[30] Ibid
[31] Png. M-T., 'The Critical Roles of Global South Stakeholders in AI Governance' Op Cit
[32] Ibid
[33] United Nations Educational, Scientific and Cultural Organization., 'Addressing digital colonialism: A path to equitable data governance' Op Cit
[34] Png. M-T., 'The Critical Roles of Global South Stakeholders in AI Governance' Op Cit

governance[35]. Through this, Africa can become an important norm-shaper in global AI governance.

[35] How Africa and Europe could create global AI governance rules., Op Cit

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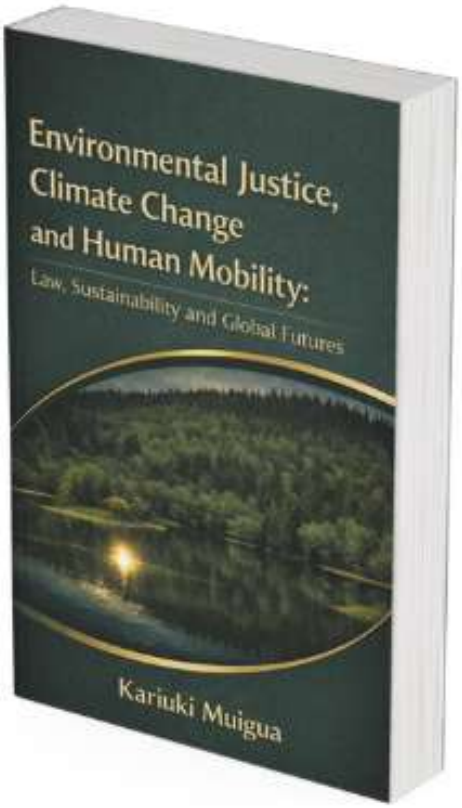
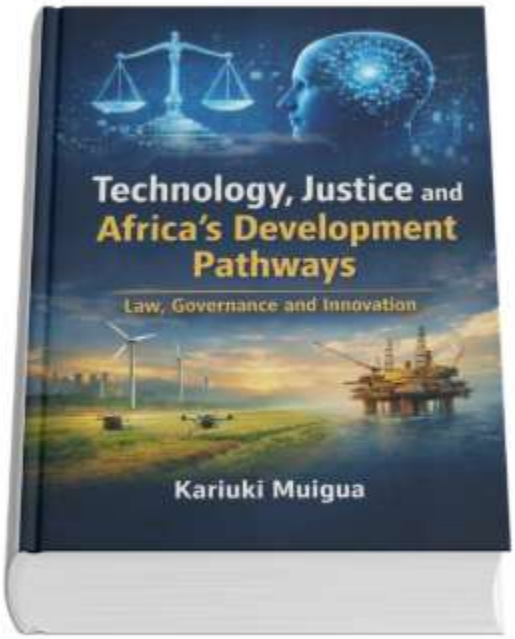
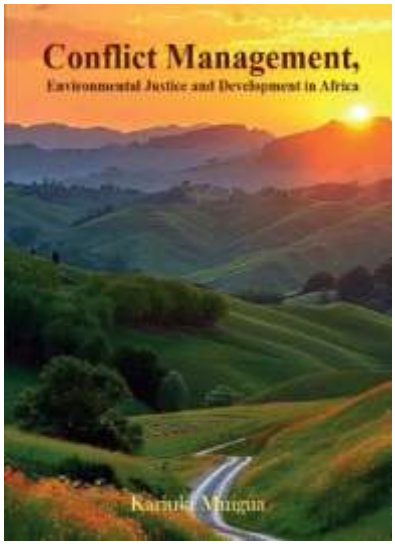
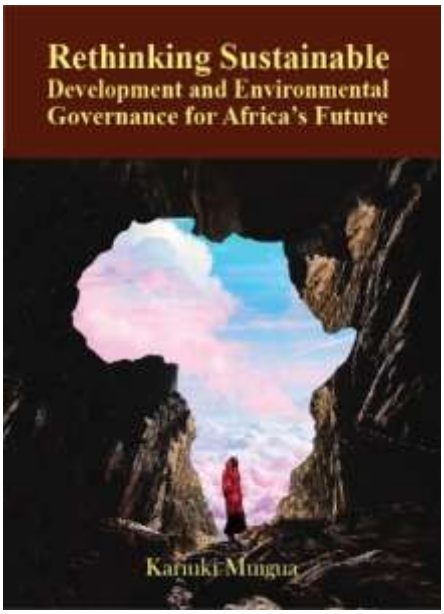



Conflict Management,
Environmental Justice and Development in Africa
Kariuki Muigua


Rethinking Sustainable
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Governance for Africa's Future
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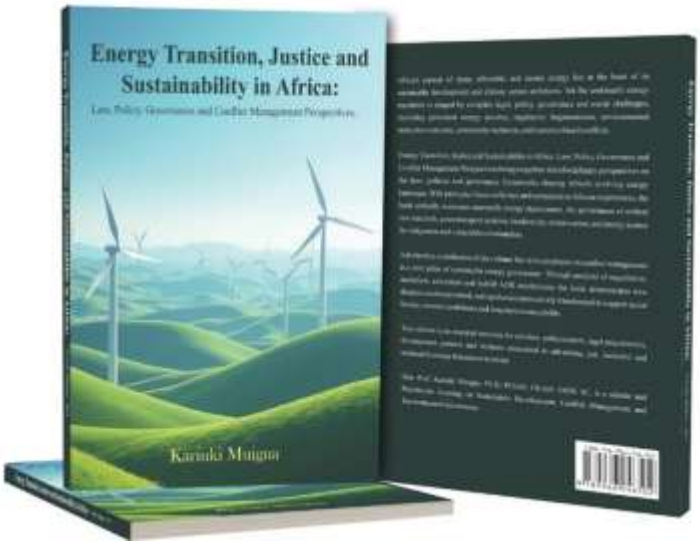
Energy Transition, Justice and Sustainability in Africa:
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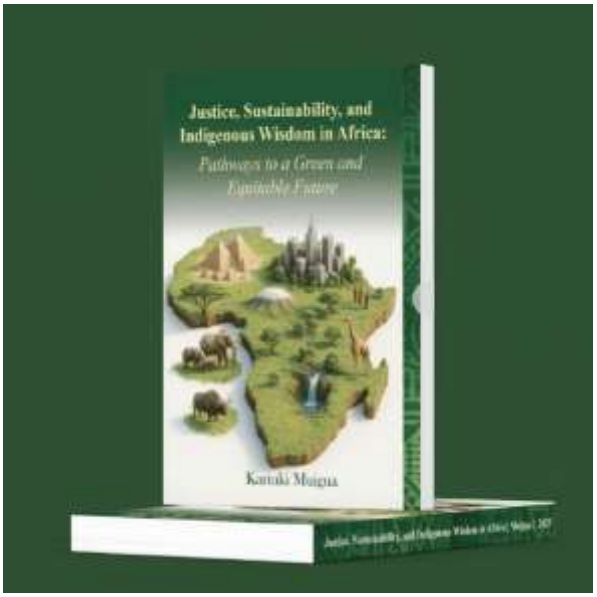
Justice, Sustainability, and Indigenous Wisdom in Africa:
Pathways to a Green and Equitable Future
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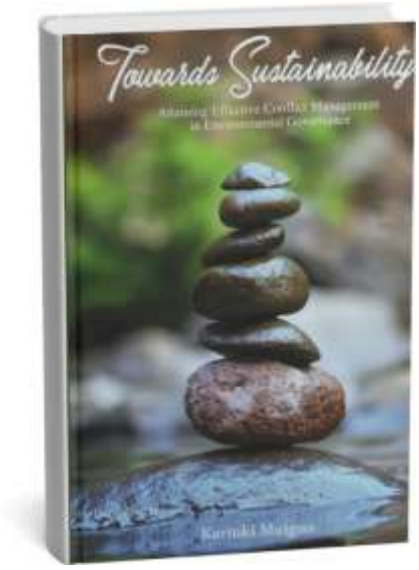
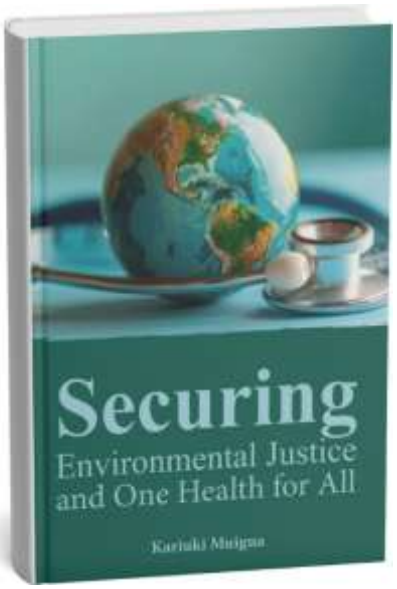
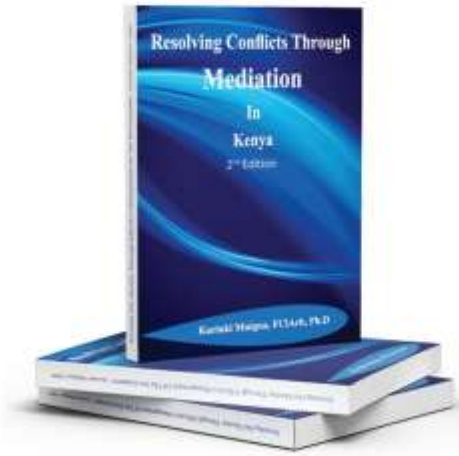

Towards Sustainability

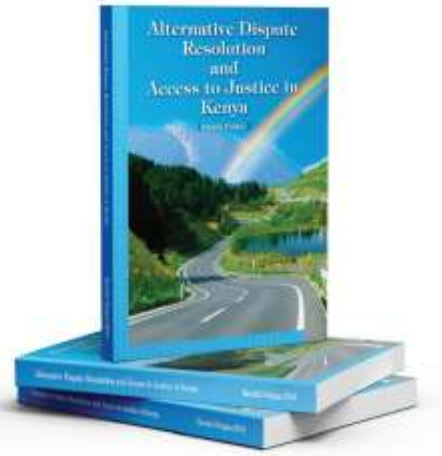

Securing
Environmental Justice
and One Health for All
Kariuki Muigua


Nurturing Healthy
Ecosystems for People
and Planet
Kariuki Muigua


Integrating Sustainability into
Arbitration and ADR for
Justice and Development


Securing Lasting Peace and
Justice in Africa
through
Appropriate Dispute Resolution
Kariuki Muigua


Resolving Conflicts Through
Mediation
In
Kenya


Alternative Dispute
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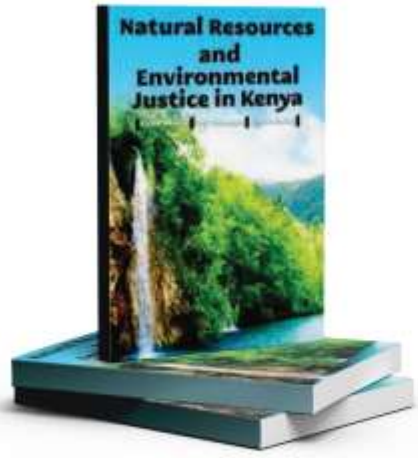
Access to Justice in
Kenya


Natural Resources
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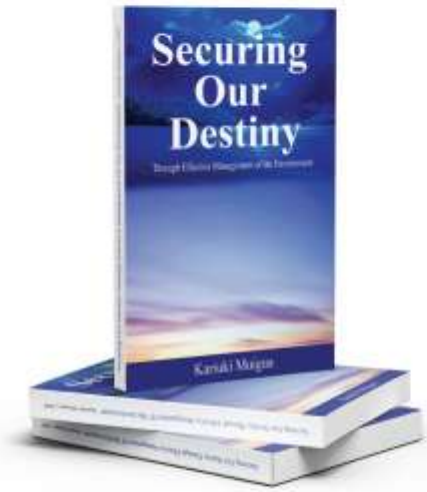
Justice in Kenya


Nurturing Our
Environment
For Sustainable Development


Securing
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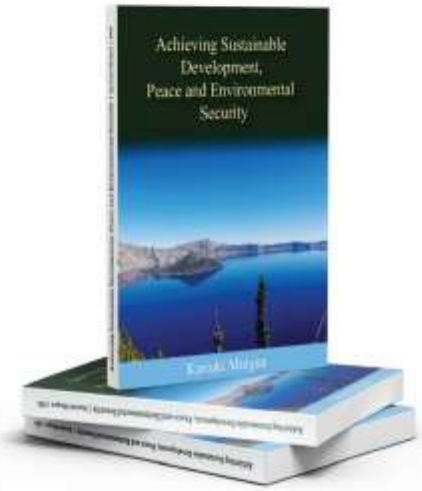
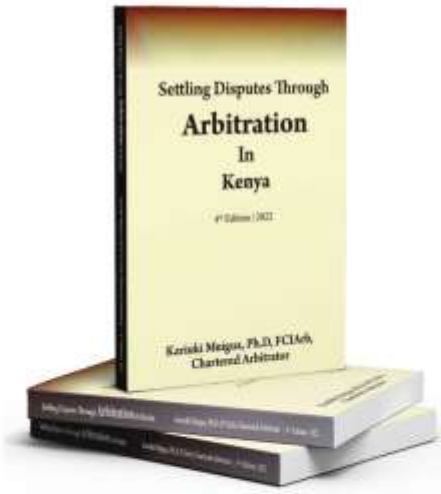
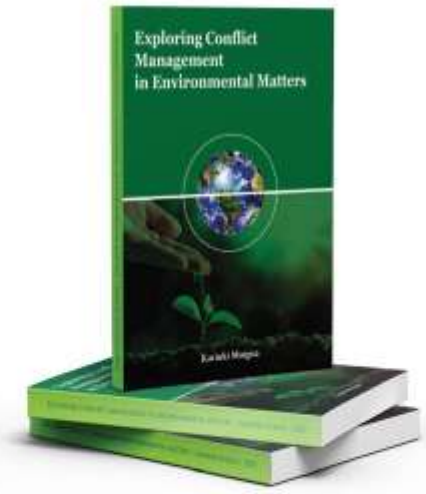
Destiny
Kariuki Muigua


Achieving Sustainable
Development,
Peace and Environmental
Security
Kariuki Muigua


Settling Disputes Through
Arbitration
In
Kenya
Kariuki Muigua, Ph.D, FCIArb,
Chartered Arbitrator


Exploring Conflict
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in Environmental Matters
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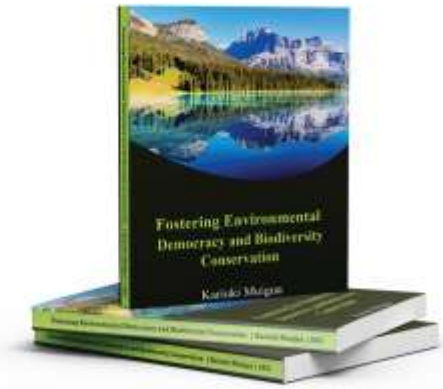
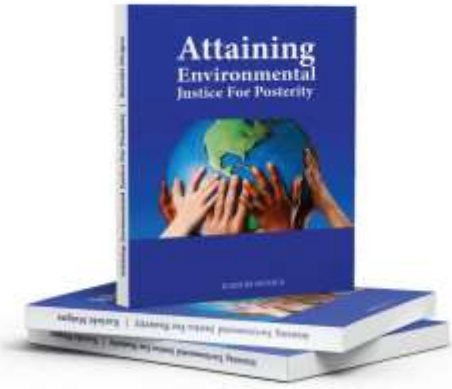

Fostering Environmental
Democracy and Biodiversity
Conservation


Attaining
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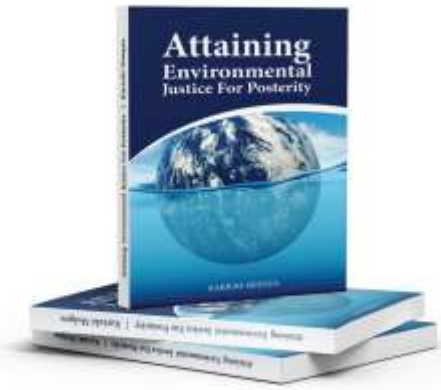
Justice For Posterity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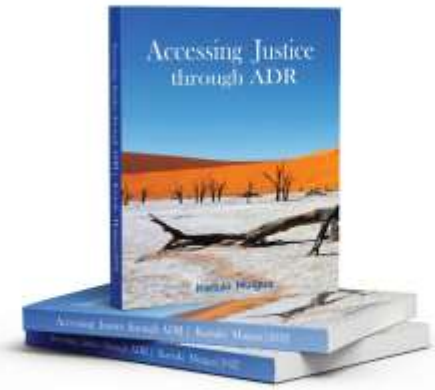
Accessing Justice
through ADR


Nurturing Our
Environment


Embracing Environmental,
Social and Governance (ESG)
Tenets for Sustainable Development


Realising True


Combating Climate Change
for Sustainability


Achieving
Climate Justice
for Development
Kariuki Muigua


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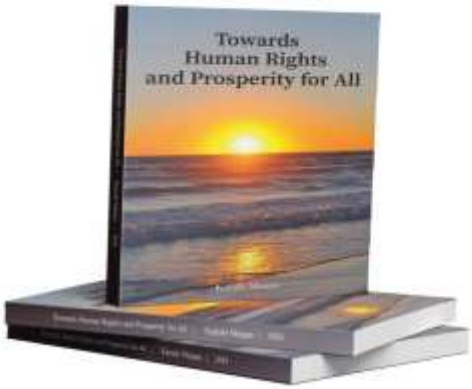
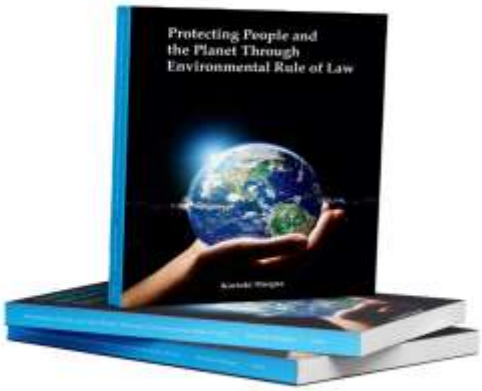
Delivering Justice
for
Environmental Sustainability


Actualizing the Right
to a Clean and Healthy
Environment


Realising
Environmental
Rights for All


Towards
Human Rights
and Prosperity for All


Protecting People and
the Planet Through
Environmental Rule of Law


Attaining Gender Equity for
Inclusive Development in Africa

## About the Book

*Artificial Intelligence is rapidly reshaping governance systems across the globe. In Africa, where digital transformation intersects with complex legal, ethical, and developmental realities, the stakes are particularly high.*

***Governing Artificial Intelligence in Africa: Law, Science, Ethics and Sustainable Development*** provides a comprehensive and forward-looking examination of how AI technologies are influencing legal systems, dispute resolution mechanisms, environmental governance, and sustainable development policy across the continent.

Moving beyond technological optimism and alarmism, the book advances a justice-centred governance framework grounded in the rule of law, constitutionalism, accountability, and human dignity. It interrogates algorithmic decision-making in justice systems, digital dispute resolution, data governance, regulatory design, and the ethical risks embedded in automated systems.

**Bridging law, science, ethics, and policy,**
the book positions Africa not merely as a consumer of global AI regulatory models, but as an emerging norm-shaper capable of articulating context-sensitive and development-oriented approaches to responsible innovation.

## About the Author

Prof. Kariuki Muigua, Ph.D. SC, C.Arb, OGW, is a scholar, legal practitioner, and arbitrator specialising in environmental law, sustainable development, and governance in Africa. He has published widely on environmental justice, climate governance, natural resources management,and Appropriate Dispute Resolution, and is actively engaged in regional and international sustainability initiatives.

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