

Gender Mainstreaming into African Artificial Intelligence Policies: Egypt, Rwanda and Mauritius as Case Studies

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Abstract

Bias, particularly gender bias, is common in artificial intelligence (AI) systems, leading to harmful impacts that reinforce existing negative gender stereotypes and prejudices. Although gender mainstreaming is topical and fashionable in written discourse, it is yet to be thoroughly implemented in practice. While the clamour for AI regulation is commonplace globally, most government policies on the topic do not adequately account for gender inequities. In Africa, Egypt, Rwanda and Mauritius are at the forefront of AI policy development. By exploring these three countries as case studies, employing a feminist approach and using the African Union Strategy for Gender Equality & Women's Empowerment for 2018–2028 as a methodological guide, this study undertakes a comparative analysis of the gender considerations in their policy approaches to AI. It found that a disconnect exists between gender equality/responsiveness and the AI strategies of these countries, showing that gender has yet to be mainstreamed into these policies. The study provides key recommendations that offer an opportunity for African countries to be innovative leaders in AI governance by developing even more robust policies compared with Western AI policies that fail to adequately address gender.

Keywords: Gender mainstreaming; artificial intelligence; African artificial intelligence policies; AI governance; gender and AI.

1. Introduction

Gender mainstreaming is the incorporation of a gendered perspective into the preparation, design, implementation, monitoring and evaluation of laws and policies to promote equality between women and men and combat discrimination.¹ Gender mainstreaming aims to achieve more informed and better policy-making, more effective legislation and policies, and better-performing institutions that are effective for all genders. There are several pitfalls in adequately mainstreaming gender into laws and policies, such as misconceptions,² inadequate representation of women in policy-making,³ patriarchal structures and ideologies in Africa, mainstreaming gender without adequate tools and techniques,⁴ and interpreting gender at the surface level of politics.⁵ As elaborated in the next part of this article, patriarchy is the major limitation of gender mainstreaming into legislation, policies and institutions in Africa.⁶ A vague understanding of the concept and justification of gender mainstreaming is also an obstacle in policy-making in Africa.⁷ Gender bias and inequalities are common in artificial intelligence (AI)

¹ World Health Organization, "Gender"; United Nations, "Gender Mainstreaming."

² Daly, "Gender Mainstreaming in Theory and Practice," 433–50.

³ Report on the Implementation of the OECD Gender Recommendations.

⁴ Nwafor, "National Cyber Policies."

⁵ Lee, "Beyond the Policy Rhetoric," 379–95.

⁶ Parpart, "Gender, Patriarchy and Development in Africa."

⁷ Kelkay, "Gender Mainstreaming Challenges and Opportunities."



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technologies such as Generative AI tools (Midjourney, DALL-E 2 and ChatGPT),⁸ facial recognition systems, natural language processing and AI recruitment tools.⁹ For instance, flawed facial recognition algorithms¹⁰ used in digital identification systems in South Africa have misidentified Black women's faces, leading to exclusion from the entire process.¹¹ Research on the deployment of AI in the African financial technology ecosystem in South Africa, Nigeria, Ghana and Kenya found several factors that perpetuate gender disparity in the sector, including weak algorithmic transparency and opacity, biased datasets, data limitations and poorly designed algorithms.¹² The growing issue of AI gender bias, leading to harmful impacts that reinforce existing negative gender stereotypes and, in extreme cases, endangering women's lives, requires mainstreaming of gender into African AI policies to ensure algorithmic justice.

The number of pieces of national legislation relating to AI that were passed into law rose from one in 2016 to 37 in 2022, among 127 nations analysed.¹³ There has also been a significant increase in AI governance discussions in various countries' legislative proceedings where, for example, the future agenda¹⁴ and AI governance have been explored in relation to the public sector¹⁵ and healthcare.¹⁶ Within the context of policy discourse on AI, gender mainstreaming has received considerable attention.¹⁷ Indeed, the successes, drawbacks¹⁸ and equivocal conceptualisation¹⁹ of gender mainstreaming in national and international organisations²⁰ and development agencies²¹ have been analysed.²² Foster²³ investigated AI governance in South Africa with a specific focus on gender. The study developed a technoscience approach to critically examine the 2020 South African Report of the Presidential Commission on the 4th Industrial Revolution (PC4IR report) to determine South Africa's vision for regulating AI. It explored 'techno-legal optimism', a narrative that promotes the promise of AI technologies and policies as inherently positive and progressive, often shielding them from critical examination. The study offered recommendations for how the PC4IR report can be bolstered to address gender as intersectional and multiple rather than just binary. Ronnblom explored whether and how gender equality regarding AI and digitalization is represented in Swedish national policy.²⁴ The study found that, despite the enduring aspiration to include gender mainstreaming in all facets of Swedish politics, there are few traces of this strategy in the national Swedish AI and digitisation policy documents.

Given these findings, an analysis of relevant academic articles shows that gender mainstreaming of AI policies has been considered extensively in certain developed countries. However, there is a scarcity of gender mainstreaming-related studies of African AI policies. The assessment of gender responsiveness of African AI policies for women, a group of people who stand to be hugely impacted by whatever means is chosen for protection, has been afforded little attention. This study fills this gap by investigating an essential yet understudied element of AI protection: the analysis of African AI policies through the lens of gender. It adopts a comparative methodology by juxtaposing the AI policies of Egypt, Rwanda and Mauritius. It brings the gender perspective to bear on assessing the policies, which has not previously been done in this way. Deploying the pillars of the African Union (AU) Strategy as the core methodological guide, this study analyses the national AI policies of the case study countries to determine whether and to what extent these policies have achieved gender mainstreaming. The AU is a continental organisation founded in July 2002.²⁵ Its core organisational structure includes the assembly of all heads of state,²⁶ the executive council²⁷ and the AU Commission.²⁸ The AU has established several structures, policies and mechanisms to achieve its

⁸ Lamensch, "Generative AI Tools are Perpetuating Harmful Gender Stereotypes."

⁹ Manasi, "Addressing Gender Bias to Achieve Ethical AI."

¹⁰ Data sets employing white faces.

¹¹ Olivia, "The Gender Equality Mirage."

¹² Ahmed, "A Gender Perspective on the Use of AI in the African Fintech Ecosystem."

¹³ Maslej, "Artificial Intelligence Index Report."

¹⁴ Birkstedt, "AI Governance," 133–67; Vocolka, "AI Governance for a Prosperous Future," 17–90.

¹⁵ Kuziemski, "AI Governance in the Public Sector."

¹⁶ Khanna, "AI Governance in Healthcare," 130–43.

¹⁷ Van Eerdewijk, "Substantive Gender Mainstreaming," 491–504.

¹⁸ Onditi, "Gender Equality," 146–67.

¹⁹ Butale, "Conceptualisation of Gender Mainstreaming," 713–27.

²⁰ Moser, "Gender Mainstreaming Since Beijing," 11–22.

²¹ Razavi, "Gender Mainstreaming in Development Agencies," 144–47.

²² Moser, "Has Gender Mainstreaming Failed?" 576–90.

²³ Foster, "A Technoscience Approach to Law as Technology."

²⁴ Ronnblom, "Gender Equality in Swedish AI Policies," 1–17.

²⁵ African Union, "The African Union."

²⁶ Composed of the heads of states and government of all member states. It is the supreme decision-making organ of the Union.

²⁷ Composed of foreign ministers from member states.

²⁸ The Commission is the Secretariat of the Union, assigned with executive functions.

objectives,²⁹ promote gender equality and mainstream gender in various sectors of life across the continent. Its commitments to actualising gender equality include the AU Gender Equality and Women's Empowerment (GEWE) Strategy, the Solemn Declaration on Gender Equality in Africa, the Protocol to the Africa Charter on Human and Peoples' Rights on the Rights of Women in Africa, the Women, Gender and Youth Directorate and the Gender Management System.

Egypt, Rwanda and Mauritius were chosen for comparative analysis because of their recent AI policy developments in the African region. While other policy documents address AI in these countries, this article applies a narrow policy definition, focusing exclusively on their national AI policies.

The remainder of this article consists of four parts. Part 2 provides an overview of gender mainstreaming, the parameters for measurement and the dynamics of African AI governance. Part 3 consists of a comparative analysis of the AI policies of Egypt, Rwanda and Mauritius with regard to the AU's strategy. Part 4 provides recommendations for gender-sensitive AI policy-making. The article ends in Part 5 with a concluding discussion.

2. Gender Mainstreaming, and the Parameters for Measuring Gender into Policies and Laws

To better understand gender mainstreaming into African AI policies, it is important to discuss the meaning of gender bias and mainstreaming as well as the structures of the AU regarding gender equality ambitions.

2.1 Gender Bias

The term 'gender' has been challenging to define and conceptualise accurately. Gender is a social and cultural identity typically but not always related to an individual's biological sex.³⁰ It refers to socially constructed roles, behaviours, norms and expressions constituting understandings of men, masculinity, women and femininity.³¹ It positions culturally accepted roles among men and women based on the societal perceptions of masculine and feminine behaviour.³² The narrative of gender is rapidly changing. The meaning has evolved as culture, viewpoints and impressions have changed. There are numerous arguments that gender should not be strictly classified as just binary but include non-binary groups, recognising genders that do not fall into the gender binary category.³³ The third gender/sex category, distinct from male or female, is increasingly gaining legal recognition in developed countries.³⁴ For this article, the gender analysis will be limited to two gender constructs: male and female. Although there are various historical views, core aspects, waves and types of feminism, there is no singular method or methodology to a feminist approach generally accepted in contemporary and scientific scholarship.³⁵ This study takes a feminist approach, focusing on women due to longstanding inequities.

Gender bias is the preference or prejudice towards one gender over the other.³⁶ It can take the form of bias in word embedding in Natural Language Processing,³⁷ algorithmic discrimination,³⁸ phenotypic misrepresentation in face datasets/algorithmic evaluation,³⁹ ChatGPT listing CEOs' attire as business suits before mentioning dresses⁴⁰ and gender representation gap in AI medical algorithms, leading to life-threatening cases when algorithms are biased due to limited datasets based hugely on men. Borokini et al.⁴¹ examined the use and integration of gendered chatbots in Nigerian institutions, particularly the financial sector, and focused on the potential impact of this deployment on Nigerian women. The study found that ten out of Nigeria's 22 commercial banks had either currently or in the past incorporated chatbots into their products and service delivery. Seven out of the ten chatbots were gendered female, perpetuating biases and societal perceptions. Since gender is hierarchical and breeds inequalities,⁴² it usually intersects with other forms of bias and discrimination. It suffices to point out that intersectional bias may exist, and women are mostly the victims of these biases. Women suffer intersecting bias and marginalisation based on

²⁹ Including to promote unity and solidarity of African states, defend their sovereignty and territorial integrity, eradicate colonialism and harmonise member states' policies.

³⁰ Chrisler, "Gender, Definitions of," 553–69.

³¹ Boerner, "Conceptual Complexity of Gender," 2137–41.

³² Oriakhogba, "Empowering Rural Women Crafters," 145–72.

³³ Morgenroth, "Defending the Sex/Gender Binary," 731–40; Schudson, "Non-Binary Gender/Sex Identities."

³⁴ Wickham, "Gender Identification," 1073–93; Schudson, "Variation in Gender Definitions," 488.

³⁵ Doucet, "Feminist Methodologies and Epistemology," 36–43.

³⁶ Moss-Racusin, "Gender Biases Favor Male Students."

³⁷ Sun, "Mitigating Gender Bias."

³⁸ Caliskan, "Semantics Derived Automatically," 183–86.

³⁹ Buolamwini, "Gender Shades," 77–91.

⁴⁰ Gross, "What ChatGPT Tells Us About Gender," 435.

⁴¹ Borokini, "The Use of Gendered Chatbots in Nigeria."

⁴² World Health Organization, "Gender."

race, religion, disabilities, sexual orientation and economic status. This study acknowledges the importance of intersectionality, recognising the power dynamics on multiple intersecting identities and accommodating all races, ages, genders, abilities and ethnic groups. An in-depth discussion on gender mainstreaming relating to the vulnerabilities of men and boys, people with multiple identities, and those with diverse sexual orientation is beyond the scope of this study.

Rising gender bias in AI tools and models, negatively affecting women in particular, takes various forms and happens significantly across countries and all regions.⁴³ Gender inequality and bias in AI systems negatively impact women's access to education and healthcare,⁴⁴ decision-making, policy-making, human development and economic growth.⁴⁵ The significant issues of gender bias and inequality have become a component of national and global discussion, informing the need for mainstreaming gender in laws and policies.

2.2 Gender Mainstreaming

Gender mainstreaming is a strategic approach integrating a gendered perspective across government action and policy decisions to promote gender equality.⁴⁶ The strategy of mainstreaming a gendered perspective is defined in the Economic and Social Council (ECOSOC) agreed conclusions 1997/2 as:

The process of assessing the implications for women and men of any planned action, including legislation, policies, or programmes, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality.⁴⁷

It is clear that an effective strategy does not end with integrating a gendered lens in policy-making. It extends to implementing, monitoring and evaluating policies and programmes in all sectors to ensure gender equality. Accordingly, the primary goal of gender mainstreaming is for policies, laws and institutions to be more effective for women as well as men, and particularly to achieve gender equality. The next section covers this study's methodological approach to investigate the AI policies of the case studies to determine the extent to which these policies have achieved gender mainstreaming.

2.3 Parameters for Measuring Gender Mainstreaming into Policies and Laws

Gender mainstreaming can be measured in various ways, such as using gender impact assessments (GIA) conducted before or after implementing a policy or programme.⁴⁸ Examples of GIA methodologies include the Gender-based Analysis Plus, the Canadian analytical tool⁴⁹ that assesses the effects of policies on women, men and gender-diverse individuals, and the New Zealand online gender analysis tool,⁵⁰ which assists policy-makers with useful database links and the right questions to gauge initiatives considering gender differences. Another example is the Organisation for Economic Cooperation and Development (OECD) Toolkit for Mainstreaming and Implementing Gender Equality 2023.⁵¹ The Toolkit is a valuable and practical guide to help governments and policy-makers implement the OECD Recommendation on Gender Equality in Public Life. It provides self-assessment tools to steer governments and law-makers in assessing the strengths and weaknesses of their policies, mechanisms and frameworks for gender equality and in setting improvement priorities.⁵²

It has been argued that international AI ethics deliberations are modelled without Africa in mind.⁵³ It is essential to add that there are implications of legal transplants of Western values and laws into African legislation. Against that background, this

⁴³ Maliki, "Gender Inequality in Artificial Intelligence"; Gupta, "Questioning Racial and Gender Bias," 1465–81.

⁴⁴ United Nations, "Women and Girls: Closing the Gender Gap."

⁴⁵ Ensor, "Inequality: Bridging the Gap."

⁴⁶ Carroll, "Gender Mainstreaming"; OECD, "Gender Mainstreaming in Policymaking."

⁴⁷ United Nations, "Coordination of the Policies of the United Nations System."

⁴⁸ OECD, "Gender Mainstreaming in Policymaking: Measuring Gender Mainstreaming."

⁴⁹ Government of Canada, "What is Gender-based Analysis Plus."

⁵⁰ New Zealand Family Violence Clearinghouse, "New Online Tool looks at Gender Analysis in Developing Policy."

⁵¹ OECD, "Toolkit for Mainstreaming Gender Equality."

⁵² OECD, "Toolkit for Mainstreaming Gender Equality," 1–167. The discussion from the perspective of gender mainstreaming and equality by the Ad Hoc Committee (AHC) of the Comprehensive International Convention on Countering the Use of Information and Communications Technology for Criminal Purposes (the Cybercrime Convention) is noteworthy.

⁵³ Eke, "Introducing Responsible AI in Africa," 6.

study deploys the AU Strategy as the core methodological guide for investigating the national AI policies of the case study countries because it is a regional strategy with laid-down inputs for member states made with African realities in mind.⁵⁴

2.4 The African Union Gender Equality and Women's Empowerment Strategy

The commitments of the AU to gender equality is rooted in its gender structures and strategies to mainstream gender into policies and institutions to achieve effective laws for women and men. The AU has exhibited its commitment to gender parity by ensuring equal representation of women and men in most official positions and leadership roles in the AU Commission.⁵⁵ Additionally, the AU's African Charter on Human and Peoples' Rights on the Rights of Women in Africa requires state members to combat discrimination against women through adequate legislative measures. The Women, Gender and Youth Directorate is responsible for implementing the AU's efforts to achieve gender equality and women's empowerment and meet with the AU's Solemn Declaration on Gender Equality in Africa. The Declaration includes promoting and protecting human rights for women and girls, including the right to education, land, property and inheritance; expanding the gender parity principle to all AU organs, regional economic communities, and national and local levels.

The goal of the AU Strategy is to achieve total gender equity in all sectors of society. The principles of the AU Strategy are in line with Aspiration 6 of the AU's Agenda 2063,⁵⁶ with the primary goal of achieving 'full gender equality in all spheres of life' and the principles enshrined in Article 4(1) of the AU's Constitutive Act: 'promotion of gender equality' in addition to continental and global commitments.⁵⁷ The AU's Agenda 2063 envisages 'non-sexist Africa, an Africa where girls and boys can reach their full potential, where men and women contribute equally to the development of their societies'.⁵⁸ It drew lessons from the AU 2009 Gender Policy.

The AU 2009 Gender Policy refers to gender mainstreaming in all sectors, including legislation, legal protection, economic empowerment, peace and security. It stresses that legislative reform is a prerequisite for gender-responsive governance and transforming institutions through gender governance systems, including gender responsive budgeting. The AU also uses its Gender Scorecard Index to monitor and evaluate African countries with high levels of gender equality.

From a gendered perspective, the AU has made concerted efforts to promote gender equality in its legislation and programmes. The AU Strategy seeks to serve several purposes, including bridging the policy harmonisation gaps in the region, providing an actionable roadmap for the entire AU and serving as an accountability mechanism for women and girls on the continent. The gender-sensitive parameters highlighted in the four pillars of the AU Strategy inform this study's investigation of the national AI policies of Egypt, Rwanda and Mauritius to see how they translate to gender equality and women's empowerment.

The AU Strategy focuses on four pillars:

1. maximising opportunities, outcomes and e-tech dividends
2. dignity, security and resilience
2. effective laws, policies and institutions
4. leadership voice and visibility.

Pillar 1 of the AU Strategy focuses on maximising opportunities, outcomes and e-tech dividends for women and girls. The foundations of Pillar 1 are the precise outcomes to be achieved through targeted actions and interventions. The targeted outcomes are education and care work, economic empowerment and financial inclusion, and technology and e-inclusion. Interventions that strive to ensure women's education enrolment and retention, the mitigation or elimination of gender gaps, biases and stereotypes in education, ensuring gendered economies and the inclusion of women and girls in the technology ecosystem are the foundations of achieving Pillar 1.

Research findings show that Africa's limitation to attaining its full potential growth is hinged on not utilising a sizeable portion of its growth reserve, which is women.⁵⁹ The AU Strategy seeks to harness the full potential of women by empowering women and girls early through free education, income autonomy and social protection, and by setting up the Fund for African Women.⁶⁰

⁵⁴ As stated in the Strategy, the AU has a comparative advantage of an indisputable convener, relationship builder, influencer and knowledge of the continent to bring as many African countries as possible to great levels of gender equality.

⁵⁵ AU Parity Policy.

⁵⁶ "An Africa where development is people driven, relying upon the potential offered by people, especially its women and youth and caring for children."

⁵⁷ The AU Strategy for Gender Equality & Women's Empowerment.

⁵⁸ African Union, "African Union Priorities."

⁵⁹ UNDP, "Accelerating Gender-Equality and Women's Empowerment in Africa."

⁶⁰ African Union, "African Union Commission Inaugurates Committee on the Fund for African Women."

Additionally, the Strategy seeks to change the narrative of boys prioritised for technology-related courses in tertiary institutions and technology use at home. The AU mobilises technical experts and funding to develop accountability tools to ensure effective gender mainstreaming into major continental policies and projects. It encourages member states to endorse and fund technological hubs, experts and innovations that promote gendered solutions and increase women's and girls' equal and effective participation in the technology ecosystem.

Pillar 2 centres on dignity, security and resilience, which the AU Strategy stresses are crucial in attaining gender equality. Girls and women in some African countries are subjected to violence and violations in the context of harmful traditional practices such as early child marriage, female genital mutilation and gender-based violence.⁶¹ The pillar focuses on the areas of health, sexual and reproductive health and rights (SRHR), harmful traditional practices (HTP), violence against women and girls (VAWG) and peace processes and human security.

Eliminating the symptomatic social norms in many African countries relating to VAWG and related harmful practices through building a continental coalition and global commitments to ending and penalising VAWG and promoting women's participation in peace processes are some actions to achieve this pillar. AI technologies such as Generative AI can lead to increased VAWG in instances like automation of online abuse, deep fakes and image/video abuse, as well as a lack of adequate legal and regulatory frameworks that match the rapidly evolving AI ecosystem.⁶² The AU requires member states to criminalise and penalise VAWG in their legal frameworks, which will in turn ensure algorithmic justice.

Pillar 2 makes commitments to gender equality and women's empowerment in humanitarian action and migration. It highlights the gender dimensions of climate change and how it exacerbates sexual violence, nutrition-related diseases and epidemics. The Strategy encourages member states to develop and fund initiatives and innovations that ensure women's rights to defence, and to mitigate or eliminate issues affecting their dignity, security and resilience.

Pillar 3 focuses on effective laws, policies and institutions. The specific outcomes of Pillar 3, and the intervention actions that will generate them, include the Maputo Protocol Norm Setting and Institutional Gender Governance Systems. The Maputo Protocol ensures the comprehensive promotion, protection and realisation of women's and girls' rights in Africa. The major interventions of Pillar 3 include lobbying for the ratification of the Maputo Protocol, upgrading national laws to align with AU's Protocols for the Flagship and other transformational projects (norm setting). This pillar stresses that legislative reform is a prerequisite for gender-responsive governance, which should include taking deliberate measures to transform institutions through gender governance systems and gender-responsive budgeting.

Although African countries have developed laws and policies to promote and protect women's rights, the issues of effective implementation, monitoring and accountability remain a huge challenge.⁶³ The Strategy stresses that "institutions and organs of the African Union, Member States, Regional Economic Communities and Civil Society Organisation have the requisite capacity to implement existing commitments, pro-actively forecast and address new challenges and demonstrate accountability." The AU adopts a rights-based approach to development and the Maputo Protocol, for instance, guarantees women's choice in all key areas. The Strategy employs all member states to apply a gender parity approach and implement programmes and initiatives that progressively remove all legal and policy impediments to women's full enjoyment of resources and projects. Mainstreaming gender in African AI policies will lead to achieving more effective laws, policies and institutions for women as well as men, and address algorithmic injustice in the AI ecosystem.

Pillar 4 focuses on leadership, voice and visibility. This pillar stresses that women can have the voice needed to be equally represented and participate impactfully in all decision-making levels to eliminate formal and informal barriers. Representation, participation, increased portrayal of women in politics, media, literature and cultural resources and the implementation of laws that promote women's equal representation and visibility, are some of the interventions adopted by Pillar 4 to achieve gender equality. The AU Strategy incorporates gender in rewriting the African narrative.

The key objectives of this pillar include advocating gender-responsive policies and accountability mechanisms, and challenging harmful sociocultural norms and stereotypes that constrain women's leadership roles. Stakeholders should lend a voice to the design, development, implementation and regulation of AI to suit their peculiar circumstances. Involving all stakeholders, including women who may be disproportionately impacted by AI technologies, will assist policy-makers with the correct

⁶¹ UNDP, Africa Human Development Report 2016.

⁶² Ward, "Gender-Based Violence and Artificial Intelligence."

⁶³ Nwafor, "Cybercrime and the Law."

analyses to gauge gender differences/implications and formulate effective policies that ensure trustworthy AI and algorithmic justice for women and men.

3. African Nations' AI Policies

As AI advances, African nations recognise the importance of developing AI policies and strategies to harness the potential benefits of AI while mitigating the harms and risks. Amidst the dialogue and efforts on AI governance in African countries lies the question of patriarchy, which is an underlying issue in mainstreaming gender into African nations' laws and policies. The dynamics of AI governance in Africa and national AI policies of Egypt, Rwanda and Mauritius are discussed below.

3.1 AI Governance Dynamics in Africa

Globally, a proliferation of national AI strategies, guides, frameworks and principles exist for AI governance. AI governance refers to regulation efforts with varying degrees of impact that seek to ensure that AI technologies such as generative AI systems, automated decision-making systems, robotics and so on are created and used to minimise risks and align with ethical, legal and societal implications.

The dynamics of AI governance globally include balancing the benefits and risks of AI, the battle between leading powers to regulate technology,⁶⁴ competing digital governance frameworks, inconsistencies among national-level and institutional frameworks, the requirements of political legitimacy of global AI governance,⁶⁵ a race for novel AI development among tech companies and countries, and policy-makers' lag in responding to rapid AI advancement.⁶⁶

In Africa, the dynamics of AI governance are progressing, with an emphasis on advancing innovations and the African economy, low scores in AI readiness indices,⁶⁷ legislation style and the need to incorporate perspectives and voices from the Global South/decolonising global AI governance.⁶⁸ At present, only a few African countries⁶⁹ have a national AI strategy, although 36 out of 54 African countries have a legal and regulatory framework for data protection.⁷⁰ Owing to the vital role of data in AI, it has been suggested that African countries should consider data governance as a pathway towards AI regulation.⁷¹ It is pertinent to note that although AI technologies are much more than just data, data-driven governance can serve as a stepping-stone to regulating AI.

There are various practical challenges to implementing gender mainstreaming into Africa's legislation and policies, which includes AI policies. These challenges include patriarchal power/structures and ideologies, cultural factors, the dearth of sex-disaggregated data and limited political prioritisation of gender and capacity at the national levels in Africa.⁷² A clear link exists between these challenges, as patriarchy appears to be the foundational issue that influences the analyses and use of sex-disaggregated data for evidence-based policies. Likewise, patriarchy can also inform whether the government would genuinely prioritise gender. Patriarchy power refers to the systemic, cultural and institutional dominance of men over women, perpetuated through practices, societal norms and structures that benefit masculinity and male dominance.⁷³ In Africa, male authority and privileged masculinity are perceived as natural, inevitable and justified by cultural and religious beliefs.⁷⁴

Despite all the gender strategies, structures and commitments of the AU, patriarchal power and ideologies in Africa inhibit the design, development and implementation of laws and policies, and AI is no exception. Patriarchy in Africa perpetuates gender inequities and hinders women's empowerment in all sectors of life, including policies. It negatively influences mainstreaming gender into African policies and laws, including AI policies; these limitations are reflected in the national AI policies of the case study countries.

⁶⁴ Bradford, *Digital Empires*.

⁶⁵ Erman, "Artificial Intelligence and Political Legitimacy."

⁶⁶ Miaillhe, "Global Governance of Artificial Intelligence."

⁶⁷ Hankins, "Government AI Readiness Index."

⁶⁸ Ayana, "Decolonizing Global AI Governance."

⁶⁹ Such as Rwanda, Mauritius and Egypt, Ethiopia and Tunisia.

⁷⁰ Nwafor, "Artificial Intelligence Facial Recognition Surveillance," 88.

⁷¹ Okolo, "Reforming Data Regulation to Advance AI Governance in Africa."

⁷² See Espey, "Advancing Gender Data and Statistics in Africa."

⁷³ Pierik, "Patriarchal Power as a Conceptual Tool for Gender History."

⁷⁴ Asian Pacific Institute on Gender-Based Violence, "Patriarchy and Power."

3.2 Egypt

The Egypt National Artificial Intelligence Strategy (Egypt's Strategy),⁷⁵ established in 2021, focuses on government, development, capacity-building and international activities. Its mission is to 'create an AI industry in Egypt, including developing skills, technology, ecosystem, infrastructure, and governance mechanisms to ensure its sustainability and competitiveness'.⁷⁶ The ten highlighted dimensions for achieving the Strategy's vision and mission rest hugely on utilising AI for economic impact and development of AI for government decision-making, research and innovation to safeguard the country's sustainable development strategy. The Strategy aims to strengthen Egypt's leading role in AI at the regional and global levels.

The Egypt Strategy stresses the need to teach AI early from preparatory school. The Egyptian government has opened new and dedicated faculties of AI in universities across Egypt and provides funding to promote AI research. However, the Egypt Strategy did not meet the criteria set out in Pillar 1 of the AU Strategy, which strives to ensure women's and girls' education and enrolment. The Egypt Strategy articulates that it would "utilise AI key developmental sectors to make an economic impact and solve local and regional problems in support of Egypt's sustainable development strategy and line with the United Nations' SDGs for the benefit of all Egyptians".⁷⁷ Although the Egypt Strategy mentions UN Sustainable Development Goal 5, which aims to achieve gender equality and empower all women and girls in its vision and mission, it does not offer mechanisms to promote gender equality. Reference is not made to gender in the framework, and gender-sensitive language is not used. Moreover, Egypt's Strategy does not provide legal protection for marginalised groups, particularly women, or specify who may be negatively impacted by AI technologies. Considerations for ethical AI promote diversity in the creation, use and field of AI, upskilling disadvantaged populations, including women.⁷⁸ The Egypt Strategy does not ensure a gendered economy and inclusivity set out in the AU Strategy. It has been argued that the policy relied primarily on unfavourable foreign agreements incompatible with achieving inclusive development priorities.⁷⁹

Additionally, it is the role of the government to address the challenges and impacts of AI on citizens' lives and livelihoods.⁸⁰ Although the Strategy mentioned its willingness to capitalise on AI as an opportunity for inclusion of the marginalised, it does not provide details of individuals or groups who qualify as marginalised in the framework. It does not set out an inclusive and multisectoral approach like the AU Strategy. The Strategy focuses on AI development from the perspective of the broader Egyptian population⁸¹ and does not explicitly recognise vulnerable groups (including women) or provide protection for these marginalised groups from AI-related risks. In other words, the Strategy does not integrate a gendered approach or ensure gender equality.

In summary, the Egypt AI Strategy does not align with the AU Strategy's four pillars. Although the Egypt AI Strategy focuses on education, economic empowerment, financial inclusion, technology and interventions that strive to ensure women's e-inclusion, the mitigation or elimination of gender gaps, biases and stereotypes in education are not covered. The Egypt Strategy covers healthcare; however, the pillar on healthcare does not align with Pillar 2 of the AU Strategy, which covers health, SRHR, HTP, VAWG, peace processes and human security. The Egypt Strategy does not highlight measures to eliminate symptomatic social norms relating to VAWG and related harmful practices that can be exacerbated through AI technologies. The AU requires member states to criminalise and penalise VAWG in their legal framework, which will in turn ensure algorithmic justice. The Egypt AI Strategy does not highlight how AI can perpetuate VAWG or penalise such acts.

The Strategy does not guarantee comprehensive rights to women, including social and political equality with men, the right to partake in political processes and so on. The Egypt AI Strategy does not cover gender-responsive AI governance or incorporate gender consideration into budgeting processes for AI development. The Strategy does not focus on leadership, or on the voice and visibility of women in the AI ecosystem, as provided in Pillar 4 of the AU Strategy.

3.3 Rwanda

On 20 April 2023, the Rwandan government approved a National Policy that was developed by the Ministry of ICT and Innovation in collaboration with the Rwanda Utilities Regulatory Authority (RURA), GIZ FAIR Forward, the Centre for the 4th Industrial Revolution Rwanda (C4IR), and The Future Society. Rwanda's National AI Policy, the 'National AI Policy for

⁷⁵ Egypt National Artificial Intelligence Strategy, 2021.

⁷⁶ Egypt National Artificial Intelligence Strategy, 2021.

⁷⁷ Second dimension to achieve the vision and mission of the Egypt Strategy.

⁷⁸ Shiohira, "Understanding the Impact of Artificial Intelligence on Skills Development."

⁷⁹ Adams, "AI in Africa."

⁸⁰ Brundage, "Smart Policies for Artificial Intelligence."

⁸¹ OECD, "Egypt's AI Strategy is More About Development."

Responsible AI Adoption',⁸² sets out the country's vision for integrating AI to drive economic growth, improve citizens' lives and position Rwanda as a global innovator for responsible and inclusive AI.⁸³ It recognises AI's transformative potential in critical sectors, including healthcare, finance, transportation, agriculture, public services, education and smart cities, and seeks to leverage it. It underscores six priority policy areas⁸⁴ and 12 policy recommendations to accelerate responsible development and use of AI in Rwanda. The framework recognises both the benefits of AI in enhancing growth and the significant risks associated with this technology. The policy emphasises the need for ethical and responsible AI developments that ensure transparency, accountability, trustworthiness, explainability and inclusivity to balance the pluses and minuses of AI.

The Policy includes a summary of the implementation plan identifying activity descriptions, outputs, primary indicators and responsible agencies.⁸⁵ This mechanism was put in place to evaluate the application of the framework and ensure its efficiency in reaching its goals. It covers a robust data strategy that seeks to increase the availability and accessibility of quality data for AI model training.⁸⁶ The framework outlines AI ethical guidelines⁸⁷ and encourages government and private sector collaboration. The Policy is designed to position Rwanda as a global leader in responsible AI by demonstrating how AI can benefit the economy and society while mitigating risks and harms.

Although the robust Policy sets high-level goals for ethical and responsible AI developments, it does not explicitly integrate women's involvement in developing and using AI technologies. It can be argued that the 30 per cent quota for women's involvement in Rwanda, as provided under the Constitution of the Republic of Rwanda 2023, applies to the Rwandan AI national policy since the Constitution is the grundnorm. Article 10(d) of the Constitution of the Republic of Rwanda 2023 provides for 'building a State governed by the rule of law, a pluralistic democratic Government, equality of all Rwandans and between women and men which is affirmed by women occupying at least 30% of positions in decision making organs'.⁸⁸

From the above, it is clear that the gender quota of at least 30 per cent of women's participation in decision-making organs is a constitutional imperative – unlike other African countries, where gender equality is more of a political statement. It is commendable that the Rwandan Constitutional arrangement provides *at least* a 30 per cent quota for women's involvement in decision-making organs, reflecting that it could be more than 30 per cent. However, equal representation translates to 50–50 participation, one of the outcomes of Pillar 4 of the AU Strategy.

In summary, the Rwandan National AI Strategy does not align with the AU Strategy's four pillars. Although the Policy listed twenty-first century skills and high AI literacy among its priority areas, it did not highlight interventions to ensure gendered economies and the inclusion of women and girls in the technology ecosystem. The policy does not cover gender-responsive AI governance or incorporate gender considerations into budgeting processes for AI development. The Policy does not explicitly include women in the development and deployment of AI technologies. Mainstreaming gender into the Policy should translate to equal opportunities for women and men in all six priority areas of the Rwandan National AI Strategy. The Rwandan policy is a living document subject to review and revision as technology evolves. It is hoped that the policy will be influenced by these research findings to specifically integrate 50 per cent of women's involvement in the development and deployment of AI in Rwanda. In addition, it should include marginalised populations – particularly women and other stakeholders who may be impacted negatively by AI technologies during AI policy-making.

3.4 Mauritius

Mauritius has been at the forefront of Africa's Information Technology and Communication Technology. It ranked first in Africa in the United Nations e-Government Index 2018 for its achievement in the Industrial Revolution 4.0.⁸⁹ It was the first country in Africa to develop an AI strategy.⁹⁰ The Mauritius Artificial Intelligence Strategy (Mauritius's Strategy) was published in 2018.⁹¹ It identifies the prioritisation of sectors/national projects, capacity-building, implementation, AI ethical considerations, sensitisation campaigns, collaboration and strategic alliances in emerging technologies as the key focus area of

⁸² Ministry of IT and Innovation, Rwanda National AI Policy, 2023.

⁸³ National AI Policy.

⁸⁴ 21st Century Skills & High AI Literacy; Reliable Infrastructure & Computer Capacity, Robust Data Strategy; Trustworthy AI Adoption in the Public Sector; Widely beneficial AI Adoption in one Private Sector; and Practical Ethical Guidelines.

⁸⁵ For instance, 21st Century Skills & High AI Literacy is indicated as Priority Area 1. The activities to be conducted include to conduct a skills gap assessment and the institution responsible is the MINEDUC.

⁸⁶ Priority Area 3 of the Framework calls for the protection of all sensitive data including health and financial information.

⁸⁷ Priority Area 6: Practical AI Ethics Guidelines.

⁸⁸ Constitution of the Republic of Rwanda, 2023.

⁸⁹ Jaldi, "Artificial Intelligence Revolution in Africa."

⁹⁰ It was published in 2018 as a report of the national Working Group on AI.

⁹¹ Mauritius Artificial Intelligence Strategy, 2018.

the Strategy. It stresses crucial legal and regulatory framework issues, ethics and data protection for AI in Mauritius. It highlights the strategy's high-level areas, such as business, healthcare, fintech, agriculture, ocean economy, transportation and international developments, similar to the SmartAfrica Blueprint.⁹²

To achieve positive economic and social impacts of AI and other emerging technologies, Mauritius's Strategy advocates recommendations including setting up a coordinating body,⁹³ skills development, research and development (R&D) funding,⁹⁴ international collaboration and government caretaking of AI for universal benefit. It highlights healthcare and biotechnology among its high-level priority areas. The development roadmap includes healthcare services, medical tourism, geriatrics, stem cell treatment and e-health. The healthcare area of the Strategy does not align with the criteria set out in Pillar 2 of the AU GEWE. It does not explore the potential or otherwise of AI technologies such as medical AI to improve the health and nutrition, SRHR and HTP of women and girls, which is the foundation of Pillar 2 of the AU Strategy.

The Mauritius Strategy also identifies fintech as one of its high-level priority areas. However, compared with Pillar 1 of the AU Strategy, Mauritius's Strategy does not endorse an education enrolment/retention technological/e-inclusive platform for women and girls.

The Mauritius Strategy does not identify inclusion in AI policy-making, and creation and use are not identified as priority areas. The provisions of the Strategy does not advance the objective of gender equality. A gendered approach was not implemented in the AI protection regime. Understanding and leveraging women's differentiated knowledge and distinct perspectives, such as coping capacities and sources of resilience, enhances a better gender balance in AI technology development and policy. In this respect, it suffices to point out, from a gendered perspective, that the adequacy of AI policies in safeguarding women from the harmful effects of AI technologies has not been met. Mauritius's Strategy did not adhere to Pillar 4 of the AU Strategy on leadership, voice and visibility. The Mauritius Strategy did not mention or prioritise the equal participation and representation of women in all aspects of AI creation, design and deployment in Mauritius as a vital component of the Strategy. The Mauritius Strategy therefore does not align with Pillars 1, 2, 3 and 4 of the AU Strategy.

In summary, the review of the national AI policies of Egypt, Rwanda and Mauritius shows that these frameworks do not fully mainstream gender into their policies, and do not align with the AU Strategy's four pillars. The study demonstrates a correlation between these policies, but they do not appropriately address inclusivity in policy-making deliberations or the creation and deployment of AI technologies, which is a key component of Pillar 4 of the AU Strategy. Additionally, although these case study strategies prioritise education in their policies, they do not align with the criteria set out in Pillar 1 of the AU Strategy. They do not equally maximise opportunities, outcomes and e-tech dividends for women and girls. Healthcare is similarly prioritised in the case study frameworks, but they do not address the issues of AI and SRHR, HTP and VAWG, which are fundamental to Pillar 2 of the AU Strategy. The strategies do not ensure the comprehensive promotion, protection and realisation of women's rights concerning AI technologies set out in Pillar 3 of the AU Strategy.

The alignment or successful meeting of the AU Strategy pillars by the case study strategies equates to gender mainstreaming into the AI national policies of these countries. Additionally, it translates into taking a gendered approach to addressing the shortcomings of AI with regard to women. The AU Strategy aims 'to mitigate, if not eliminate, the major constraints hindering gender equality and women's empowerment ... Institutions and organs of the African Union (AU) and its partners will implement the strategy.'⁹⁵ Egypt, Rwanda and Mauritius are member states of the AU and have strategic partnerships with the Union. The AU Strategy will serve many purposes for various users, particularly to serve as a bridge for policy coherence and harmonisation towards regional integration and accountability mechanisms for women and girls on the continent. It aims to bring African countries to high levels of gender equality.

As the AU Strategy highlights, there is a huge gap between legislative provisions for gender equality and the daily reality of women in African countries. Although Egypt,⁹⁶ Rwanda⁹⁷ and Mauritius⁹⁸ all have constitutional and other legislative provisions that guarantee gender equality and equal opportunities for men and women, these provisions are not implemented in the daily reality of society.

⁹² Adams, "AI in Africa."

⁹³ The Mauritius Artificial Intelligence Council, to coordinate with stakeholders and oversee the implementation of projects.

⁹⁴ Matching grants, tax credits, fiscal incentives, equity financing, training grants, investment of profits into AI.

⁹⁵ The AU GEWE.

⁹⁶ See Article 9 and 11 of the Constitution of the Arab Republic of Egypt 2014.

⁹⁷ See Article 10 (d) of the Constitution of the Republic of Rwanda 2023.

⁹⁸ Mauritius National Gender Policy 2022–2030.

Within the context of this study, key recommendations are provided for the amendments to these AI policies. The discussion in the next section includes recommendations for how gender can be integrated into AI policies.

4. Recommendations

Based on the analysis in the preceding sections, the following recommendations are drawn:

Recommendation 1: To mitigate gendered issues raised by AI, policymakers should consider the following questions to ensure gender is mainstreamed into AI policies.

- What gender-differentiated data and statistics are available for policy-makers to assess and develop an evidence-based policy?
- How can marginalised populations – particularly women – be adequately represented in the policy-making deliberations to suit their peculiar circumstances?
- How can gender equality and protection concerning AI and digitalisation be integrated into the proposed regime? In other words, how can the proposed AI policy take a gendered dimension to the AI protection regime?
- How can the AI policy approach advance the objective of gender equality? In other words, are the proposed policy's provisions gender-equal, gender-sensitive and gender-responsive?
- Did the deliberations in drafting these AI policies account for gender considerations?
- What should inform an African country's AI policy? Are such policies inspired by African AI protection solutions tailored to African realities and priorities that would necessitate effective, inclusive and ethical AI regulation?

Recommendation 2: AI policies should adopt a multi-track gender mainstreaming approach and ensure public voice/participation in AI policy-making

This approach involves the participation of all relevant decision-makers, the persons most likely to be affected by the proposed project/policy and stakeholders, including women, in designing and implementing AI policies/governance initiatives. This approach has proved successful in the profoundly patriarchal South Sudan, where women actively participated in various capacities in locally led rehabilitation initiatives,⁹⁹ peacebuilding conferences¹⁰⁰ and the signing of the Peace Agreement that officially ended the South Sudanese Civil War.¹⁰¹ Research shows that higher representation of women in decision-making and policy-making translates to more effective policies and ambitious climate goals such as lower emissions.¹⁰²

The governments of African countries should establish a process for meaningful public participation in developing their national AI policies. The public comment process would allow the public to express their views and comments or submit statements regarding AI-related policies. The government must follow the public comment process to allow the public and stakeholders to express their opinions on AI-related policies. There must be a formal request/invitation to submit comments from stakeholders and the public on what should be featured in the proposed national AI policy. Meaningful public voice participation involves providing ample time for comments and transparent means of assessing the collective inputs, which can be gauged against the policy drafts for which public comments were invited.

Recommendation 3: AI policies should take an intersectional approach

AI policies should take an intersectional approach to create a holistic policy that addresses various forms of intersectional bias/inequality, not one identity over another. An intersectional lens acknowledges the power dynamics of multiple intersecting identities and accommodates all races, ages, genders, abilities and ethnic groups. An intersectional approach to AI policy-making is fundamental for ensuring context-specific, inclusive and transformative policies that ensure algorithmic justice for all.

Recommendation 4: Development of gender-disaggregated data and analysis

The dearth of gender-differentiated data and statistics available for policy-makers to assess and develop an evidence-based policy is a major challenge in Africa. Gender-disaggregated data and analysis are pivotal for policy-making as they provide accurate data on how policies impact the genders differently. The use of such data would equip African policy-makers to develop evidence-based policies and monitor the process towards gender equity. Using contextualised data, values and culture

⁹⁹ Beam of Hope Project.

¹⁰⁰ Joint Peace Committee and Traditional Leaders Conference (2018).

¹⁰¹ Ensor and Tai, "Bridging the Gap."

¹⁰² Maviasakalyan and Tarverdi, "Gender and Climate Change."

is essential for developing an effective AI strategy. Balanced gender representation in AI creation, use and law-making would reflect a holistic framework capturing the peculiarities and circumstances of all genders. African countries' constitutional frameworks and AI policies should mandate a 50–50 representation in policy-making and all spheres of life.

Gender-responsive approaches in Africa have succeeded in various sectors such as digital technologies,¹⁰³ education and climate change actions. For instance, gender-responsive education systems have been crucial in advancing a gender-transformative agenda in countries such as Zimbabwe and South Sudan.¹⁰⁴ Additionally, the gender-responsive climate change actions in Africa show how some African countries are moving from policy to action to achieve the effective and long-term sustainability of these actions.¹⁰⁵

Recommendation 5: Binding requirements of the use of gender impact assessments

Mainstreaming gender into legislation and policies starts with information and data-generation/gathering for law and policy-making. The entire law and policy-making process should be tracked to ensure all the data generated or gathered are disaggregated by gender and accurate statistics of the level of participation are generated. The AU Gender Scorecard Index, UNDP Gender and Development Index and World Economic Forum Global Gender Gap Scale can be used.

Although GIA can be conducted before or after implementing a policy or programme, this process should be carried out before policies are made to ensure an effective AI policy. The process of gauging policies after their establishment is not advisable because it is more difficult to accurately investigate stakeholders' involvement and the use of conceptual data. African governments should prioritise the use of GIA for AI policies. The effectiveness of GIAs depends on the quality of data, evidence, and analysis fed into them. This means that a conscious effort must be made to ensure that data are collected and measured correctly.

Fair development and use of AI technologies require an appropriately tailored AI strategy with a gendered dimension and clear legal protection and equality provisions for all marginalised populations, particularly women.

5. Conclusion

AI provides beneficial use to humanity, but unchecked AI developments breed significant issues relating to gender, racial bias, human rights, accountability, transparency, governance and privacy concerns. This study discusses the impact of AI on gender and the importance of mainstreaming gender into AI policies. It considered the best assessment tool to measure gender mainstreaming in Africa. It found the AU Strategy to be the appropriate parameter for interrogating the integration of women in the development, use and protection of AI in Africa. The AU Strategy presents assessment tools rooted in broader African policy-making and global good practices. The study reviewed African AI policies, focusing on Egypt, Rwanda and Mauritius with regard to the AU Strategy. It found that the national AI policies of Egypt, Rwanda and Mauritius do not align with the AU Strategy's four pillars. The alignment of the AU Strategy's four pillars equates to gender mainstreaming into the AI national policies of an African country. Additionally, it translates to taking a gendered approach to harness the opportunities for AI, and address its shortcomings, in relation women. The adequacy of AI policies in safeguarding women from the adverse effects of AI technologies has not been established in any of the policies reviewed. The study provides key recommendations to support policy-makers in meaningfully and adequately articulating gender into AI policies and ensuring their implementation.

¹⁰³ See Alliance for Affordable Internet, 36. The Alliance for Affordable Internet's Affordability Report 2015–16 spotlighted Nigeria's (2013–18) broadband policy as an example of a gender-responsive plan in the consultative process, and targets were eventually set.

¹⁰⁴ See Continental Education Strategy for Africa 2016–2025; Gender Equality Strategy for the Continental Education Strategy for Africa 16–25 (GES4CESA); Unterhalter, "Achieving Gender Equality."

¹⁰⁵ Achakpa, "Gender-Responsive Climate Change Actions."

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