

# GLOBAL INFORMATION SOCIETY WATCH 2019

## *Artificial intelligence: Human rights, social justice and development*



ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS (APC),  
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# Global Information Society Watch

## 2019



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Artificial intelligence: Human rights, social justice and development

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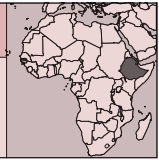
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# ETHIOPIA

## THE THRIVING AI LANDSCAPE IN ETHIOPIA: ITS IMPLICATIONS FOR HUMAN RIGHTS, SOCIAL JUSTICE AND DEVELOPMENT



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### Introduction

Ethiopia, with a population of over 105 million people (2017), is the second most populous nation in Africa after Nigeria, and the fastest growing economy in the region. It is, however, also one of the poorest countries, with a per capita income of USD 783, while aiming to reach lower-middle-income status by 2025. This entails significant investment in, among others, energy, transport, quality basic services, and accelerating agro-based industrialisation by expanding the role of the private sector. To this effect, the role of information and communications technologies (ICTs) is important. However, access to ICTs is one of the lowest, with 37.2% penetration of mobile-cellular subscriptions, and 13.9% and 18.6% penetration of mobile broadband and individuals using the internet, respectively.<sup>1</sup>

Despite the lack of an enabling environment, the artificial intelligence (AI) sector has been a growing phenomenon in Ethiopia over the last five years, with various reports indicating the country is becoming a thriving centre for AI research and development including robotics. This is evident from various initiatives happening, ranging from AI-enabled applications and services to the development of AI-powered robots. While there are promising signs of interest in AI development towards positively contributing to socioeconomic development, there has also been evidence of using the capabilities of AI adversely to violate human rights. In this context, this report tries to explore the thriving AI landscape in Ethiopia to identify its positive contribution to building a better society, as well as how it adversely affects privacy, data protection and social justice issues.

### Setting the scene

Being an area of computer science, AI is devoted to developing systems that can be taught or learn to make decisions and predictions within specific

contexts.<sup>2</sup> The AI currently in use across the world is broadly categorised as “narrow AI”. Narrow AI involves single-task applications for uses such as image recognition, language translation and autonomous vehicles. In contrast, what is known as “artificial general intelligence” refers to systems that exhibit intelligent behaviour across a range of cognitive tasks that are not anticipated to be achieved for at least decades.<sup>3</sup>

AI is creating an increasing range of new services, products and value-adds in various sectors. AI applications can perform a wide number of intelligent behaviours: optimisation (e.g. in supply chains); pattern recognition and detection (e.g. facial recognition); prediction and hypothesis testing (e.g. predicting disease outbreaks); natural language processing; and machine translation.<sup>4</sup>

For AI to take root, the digital components supporting the AI landscape such as the internet of things (IoT), cloud computing, broadband and connectivity, and big data need to be developed in countries like Ethiopia. While there is growing potential for large data sets from commerce, social media, science and other sources to become available, Ethiopia, like most other African countries, has the lowest average level of statistical capacity. The lack of data, or faulty data, severely limits the efficacy of AI systems. In this regard, the government of Ethiopia has recognised the importance of data and commissioned the drafting of the National Open Data Policy for the Government of Ethiopia<sup>5</sup> in January 2018, which is yet to be approved by the parliament.

Ethiopia has also recognised privacy throughout its constitutional history. The most comprehensive privacy safeguards statement was introduced in the constitution of 1995<sup>6</sup> which protects the priva-

1 <https://www.itu.int/net4/itu-d/icteye/CountryProfileReport.aspx?countryID=77>

2 Smith, M., & Neupane, S. (2018). *Artificial intelligence and human development: Toward a research agenda*. Ottawa: IDRC. <https://idl-bnc-idrc.dspacedirect.org/handle/10625/56949>

3 Access Now. (2018). *Human Rights in the Age of Artificial Intelligence*. <https://www.accessnow.org/cms/assets/uploads/2018/11/AI-and-Human-Rights.pdf>

4 Ibid.

5 Ministry of Communication and Information Technology (MCIT). (2018). *Consultation on the Recommendations and Working Text of the National Open Data Policy of the Government of Ethiopia*. Addis Ababa: MCIT. [www.mcit.gov.et/web/guest/-/draft-open-data-policy-and-guideline](http://www.mcit.gov.et/web/guest/-/draft-open-data-policy-and-guideline)

6 <https://www.wipo.int/edocs/lexdocs/laws/en/et/etoo7en.pdf>

cy of persons, their homes and correspondence in a detailed manner. However, this has been undermined in the past almost two decades due to the introduction of some unfriendly laws such as the anti-terrorism law, the freedom of mass media and information law, and the computer crime proclamation. Since April 2018, however, with the change of leadership in the Ethiopian People's Revolutionary Democratic Front (the ruling party) and the new administration of Prime Minister Abiy Ahmed, many positive reforms, including lifting bans on some media outlets and unblocking over 250 websites, together with initiatives to review and revise the legislation that led to these restrictions, have been seen.

### Seizing the AI opportunity in Ethiopia and its implications

Ethiopia is one of the few African countries to deploy AI solutions at scale. It started small, unlike countries in Africa that attracted global technology giants such as Google's AI research lab in Accra, Ghana, IBM's AI-oriented research labs in Kenya and South Africa, and Facebook's African technology hub in Lagos, Nigeria. However, young Ethiopian AI pioneers are still making their mark in global projects.<sup>7</sup> One such initiative is the iCog Labs Software Consultancy,<sup>8</sup> which is an Addis Ababa-based research and development company collaborating with international AI research groups and providing services to customers around the world. The core speciality of iCog Labs includes machine learning-based data analytics, computational linguistics, computer vision, mobile robots and cognitive robotics, and cognitive architecture, and it has a vision that looks towards the widespread introduction of artificial general intelligence.

iCog Labs was launched in 2013 with USD 50,000 capital and four programmers, including the founder and chief executive officer of SingularityNET,<sup>9</sup> a global AI marketplace, and chief scientist of Hanson Robotics, the Hong Kong-based engineering and robotics company known for its development of the interactive humanoid robot "Sophia".<sup>10</sup> One of the achievements of this ambitious company is

its involvement in more than half of the software programming of Sophia.<sup>11</sup> Furthermore, one of its flagship projects is Solve IT<sup>12</sup> (a pun on "solve it") which is a nationwide competition that runs for seven months each year. It includes teaching young Ethiopians about computer coding and IT hardware and entrepreneurship, and challenges them to find technology-based solutions to community problems. Organised by the US Embassy in Addis Ababa in partnership with iCog Labs and Humanity+,<sup>13</sup> Solve IT showcases the work of enthusiastic young inventors, and the potential of using technology to creatively solve pressing social challenges faced by vulnerable groups and communities.<sup>14</sup>

Other labs are blooming in the country, laying a foundation for AI developers to develop, test and incubate ideas for products and services that address real community needs. For example, EthioCloud<sup>15</sup> allows AI developers to work in Ethiopia's native Amharic language, creating advanced Amharic programming code. It runs on Microsoft's .NET and C# platforms, and converts Amharic paper documents into editable text, and includes an Amharic text-to-speech conversion system and Amharic translator. There are also other hubs engaged in one way or another in AI-related activities, including iceaddis<sup>16</sup> and blueMoon,<sup>17</sup> and other established technology-led ventures such as Gebeya,<sup>18</sup> an online marketplace for young talent in the IT sector. Ethio Robo Robotics<sup>19</sup> is another recent AI initiative in Ethiopia. It aims to transform access to robotics training in the country by focusing on children to promote the early adoption of AI technologies. It works in partnership with VEX Robotics,<sup>20</sup> a US-based company whose mission is to create tools that educators and mentors can use to shape the learners of today into the problem-solving leaders of tomorrow.

All these developments in the AI sector are met

7 Gadzala, A. (2018). *Coming to Life: Artificial Intelligence in Africa*. Washington: Atlantic Council. <https://www.atlanticcouncil.org/images/publications/Coming-to-Life-Artificial-Intelligence-in-Africa.pdf>

8 <https://icog-labs.com>

9 SingularityNET is a global decentralised AI network that lets anyone create, share and monetise AI services at scale. <https://singularitynet.io>

10 Lewton, T. (2018, 13 June). Futurists in Ethiopia are betting on artificial intelligence to drive development. *Quartz*. <https://qz.com/africa/1301231/ethiopia-futurists-want-artificial-intelligence-to-drive-the-countrys-development>

11 Sophia is a social humanoid robot developed by Hong Kong-based company Hanson Robotics. It is powered by artificial AI and capable of over 60 different facial mechanisms to create natural-looking expressions. It was activated and made its first public appearance in March 2016 with the ability to display more than 50 facial expressions. Since then Sophia has been covered by media around the world and has participated in many high-profile interviews. [https://en.wikipedia.org/wiki/Sophia\\_\(robot\)](https://en.wikipedia.org/wiki/Sophia_(robot))

12 <https://icog-labs.com/solveit>

13 <https://humanityplus.org>

14 Abdu, B. (2018, 12 October). Optimism amid challenges for IT innovators in Ethiopia. *iCog Labs*. <https://icog-labs.com/optimism-amid-challenges-for-it-innovators-in-ethiopia>

15 <https://www.ethiocloud.com>

16 <http://www.iceaddis.com>

17 <https://www.bluemoonethiopia.com>

18 <https://www.gebeya.com>

19 <https://ethioroborobotics.com>

20 <https://www.vexrobotics.com>

with what has been described as a minimal interest in investing in innovative ideas by the Ethiopian private sector. The young innovators complain that local investors would prefer to build an asset than invest in innovation. On the positive side, the government has invested 87 million euros<sup>21</sup> in a technology park called Ethio ICT Village<sup>22</sup> with the ambition of it becoming a centre of excellence for scientific and technological research. Furthermore, the government has also given priority attention to ICT and innovation driving its transformation agenda, through, for example, imposing a quota requiring 70% of students in universities to study in the fields of science, technology, engineering and mathematics (STEM). At least two universities have devoted themselves to the field of AI. Meanwhile the Artificial Intelligence and Robotics Center of Excellence,<sup>23</sup> promoted by the ministry of science and technology and established under the aegis of the Addis Ababa Science and Technology University, has been set up to create a close collaboration between academia and industry in the fields of AI and robotics.

It is well acknowledged that AI has a tremendous impact on economies and businesses and has the potential to revolutionise societies. However, as with any scientific or technological advancement, there is a real risk that the use of new tools by states or corporations will have a negative impact on human rights.<sup>24</sup> With the Ethiopian industrial parks and integrated agro-industrial parks proliferating across the country, the Ethiopian government aims to enable the manufacturing sector to contribute to 20% of Ethiopia's GDP and 50% of the export volume by 2025. The question is, with the industrial application of AI gaining momentum, what will be the scale of industrial job losses due to automation?

According to World Bank Development Report 2016 estimates, two-thirds of all jobs are susceptible to automation in the developing world, and the share of jobs at risk of being lost to automation and advanced technologies is about 85% for Ethiopia.<sup>25</sup> The implication is that in the absence of adequate policies, many workers are likely to be pushed into lower-wage jobs or become unemployed, even if temporarily. While technologies create new oppor-

tunities and enhance productivity, given the high cost of retooling workers for the future world of work, if the outcome is not mass unemployment, it is likely to be rising inequality. Given the projected effect of automation on jobs<sup>26</sup> and Ethiopia's vision of becoming a lower-middle-income economy by 2025, there is a need to address the impact of automation through education policy, especially now while the policy<sup>27</sup> itself is currently under revision.

In addition to the potential risk of job losses through the adoption of AI in Ethiopia, there are also concerns about privacy and personal data protection. While the CEO of iCog Labs, who was interviewed for this report, confirmed that they had used videos available freely online in their development of the various expressions they developed for the Sophia robot, it does point to the need for AI practitioners to respect privacy and use data responsibly. Ethiopia faces challenges that threaten privacy and data protection like most other African countries. Among others, one of these threats is the absence of adequate legal, regulatory and policy frameworks given the collection of large amounts of personal data by government entities.<sup>28</sup>

For example, the Proclamation on the Registration of Vital Events and National Identity Card<sup>29</sup> allows the collection of personal data and the transfer of this data to various institutions including intelligence authorities without the consent of data subjects. Without regulatory safeguards, the law also authorises the storage of sensitive data in a central database. Likewise, the incumbent telecom operator, Ethio Telecom, collects a lot of personal information to register SIM cards. A customer needs to provide detailed information including name and address, a photo ID, a photograph, and a signature before one can purchase a SIM card.<sup>30</sup> Another concern is the use of surveillance technologies by government law enforcement agencies to gather personal data without putting in place regulatory mechanisms to protect personal data.

<sup>26</sup> Ibid.

<sup>27</sup> Teferra, T., et al. (2018). *Ethiopian Education Development Roadmap (2018-30): An Integrated Executive Summary – Draft for Discussion*. Addis Ababa: Ministry of Education, Education Strategy Center. [https://planipolis.iiep.unesco.org/sites/planipolis/files/ressources/ethiopia\\_education\\_development\\_roadmap\\_2018-2030.pdf](https://planipolis.iiep.unesco.org/sites/planipolis/files/ressources/ethiopia_education_development_roadmap_2018-2030.pdf)

<sup>28</sup> Yilma, K. M. (2015). Data privacy law and practice in Ethiopia. *International Data Privacy Law*, 5(3), 177-189; see also Enyew, A. B. (2016). Towards Data Protection Law in Ethiopia, in A. B. Makullilo (Ed.), *African Data Privacy Laws*. Springer International Publishing.

<sup>29</sup> Federal Democratic Republic of Ethiopia. (2012). A Proclamation on the Registration of Vital Events and National Identity Card, Proclamation No. 760/2012. <https://chilot.files.wordpress.com/2013/04/proclamation-no-760-2012-registration-of-vital-events-and-national-identity-card-proclamation.pdf>

<sup>30</sup> Taye, B., & Teshome, R. (2018). *Privacy and Personal Data Protection in Ethiopia*. CIPESA. [https://cipesa.org/?wpfb\\_dl=301](https://cipesa.org/?wpfb_dl=301)

<sup>21</sup> Karas-Delcourt, M. (2016, 28 January). The Ethiopian AI Geeks Building Cutting-Edge Robots. *iCog Labs*. <https://icog-labs.com/the-ethiopian-ai-geeks-building-cutting-edge-robots/#more-1295>

<sup>22</sup> [ethioicvillage.gov.et/index.php/eng](http://ethioicvillage.gov.et/index.php/eng)

<sup>23</sup> [www.aastu.edu.et/research-and-technology-transfer-vpresident/the-artificial-intelligence-robotics-center-of-excellence](http://www.aastu.edu.et/research-and-technology-transfer-vpresident/the-artificial-intelligence-robotics-center-of-excellence)

<sup>24</sup> Privacy International & ARTICLE 19. (2018). *Privacy and Freedom of Expression in the Age of Artificial Intelligence*. <https://privacyinternational.org/report/1752/privacy-and-freedom-expression-age-artificial-intelligence>

<sup>25</sup> World Bank Group. (2016). *World Development Report 2016: Digital Dividends*. <https://www.worldbank.org/en/publication/wdr2016>



Furthermore, AI also has the potential to impact negatively on freedom of expression. Using irresponsible social media activism and fake news that has recently catalysed ethnic tension and violence in the country as a pretext, the government has proposed to pass a new law on hate speech.<sup>31</sup> Although hate speech is a growing concern, it also has to be handled with care given the potential of new technologies such as AI to manipulate video, audio and images. For example, “deepfake” technology uses machine learning to help users edit videos and add, delete or change the words coming right out of somebody’s mouth.<sup>32</sup> Such emerging technologies can exacerbate the potential risk of AI and its implications for human rights and social justice if not responsibly used by the public, corporations, the state and other stakeholders.

## Conclusion

Ethiopia’s AI landscape is surrounded by both optimism and fear; optimism as to the potential that AI has for economic and social development, and fear of its human rights implications. While increasing youth enrolment in STEM fields and supporting AI innovation brings about economic benefits through the creation of new job streams, AI also has negative consequences with regard to the susceptibility of the country to job losses due to automation. Given the impact on future jobs, there will be demand for retooling, and its associated cost will contribute to rising inequality. While the government is accelerating agriculture-led industrialisation through establishing industrial parks across the country, the anticipated impact on unemployment is likely to be reduced given the take-up of automation in the manufacturing industries. With unemployment ranging at different times between 16% and 26%, the negative impact of AI on jobs would be significant. Furthermore, the increasing rate of unemployment in Ethiopia, particularly among young, college-educated people, presents a challenge to economic development, placing the onus on the government and universities to develop future-ready skills for the technology sector.

Governments have the main responsibility to protect human rights. They act as the primary guarantors of these rights, and should be held accountable when rights are not realised. In this regard, they have both

a positive and negative role to protect and to refrain from interfering in the citizens’ exercise of their rights and freedoms. In many ways, the internet – and particularly emerging technologies – have opened ways for the exercise of many rights and freedoms while at the same time challenging them. Examples include online hate speech, fake news, surveillance, or privacy issues. In this regard, the main role of the government is to ensure the balance between freedom and protection, rights and responsibilities. This maintenance of the right balance requires the government to engage the private sector, civil society and other stakeholders in respecting human rights, including in the design, development and delivery of its own digital services.<sup>33</sup>

## Action steps

Ethiopia can reap the benefits of AI if the Ethiopian government, investors and other stakeholders can equip workers with 21st century skills, and reform laws and education to meet the demands of the digital economy. To this end, the following actions are proposed:

- Ensure that the education development roadmap currently under discussion is forward-looking so that it integrates AI studies in the educational system and meets the demands of tomorrow’s economy.
- Review the national ICT policy so that it embraces new emerging technologies including AI, big data, IoT and cloud computing.
- Put in place legal frameworks with respect to privacy and data protection, taking into account the African Union Convention on Cyber Security and Personal Data Protection.<sup>34</sup>
- Build a sound statistical system that adapts to the emerging data revolution.
- Promote the thriving innovation labs so that they can leverage innovations across industrial parks in the country.
- Manage the industrialisation process in order to ensure gender-responsive outcomes that benefit women and girls,<sup>35</sup> including society as a whole, through the removal of barriers to equity.

31 Tsegaye, Y. (2018, 23 November). Ethiopia Preparing New Bill to Curb Hate Speech. *Addis Standard*. <https://addisstandard.com/news-ethiopia-preparing-new-bill-to-curb-hate-speech>

32 Vincent, J. (2019, 10 June) AI deepfakes are now as simple as typing whatever you want your subject to say. *The Verge*. <https://www.theverge.com/2019/6/10/18659432/deepfake-ai-fakes-tech-edit-video-by-typing-new-words>

33 DiploFoundation. (2018). *Mapping the challenges and opportunities of artificial intelligence for the conduct of diplomacy*. Diplo AI Lab and Ministry of Foreign Affairs of Finland. <https://www.diplomacy.edu/AI-diplo-report>

34 [https://au.int/sites/default/files/treaties/29560-treaty-0048\\_-\\_african\\_union\\_convention\\_on\\_cyber\\_security\\_and\\_personal\\_data\\_protection\\_e.pdf](https://au.int/sites/default/files/treaties/29560-treaty-0048_-_african_union_convention_on_cyber_security_and_personal_data_protection_e.pdf)

35 United Nations Development Programme. (2018). *Ethiopia National Human Development Report 2018: Industrialization with a Human Face*. Addis Ababa: UNDP. [hdr.undp.org/sites/default/files/ethiopia\\_national\\_human\\_development\\_report\\_2018.pdf](http://hdr.undp.org/sites/default/files/ethiopia_national_human_development_report_2018.pdf)

# Artificial intelligence: Human rights, social justice and development

Artificial intelligence (AI) is now receiving unprecedented global attention as it finds widespread practical application in multiple spheres of activity. But what are the human rights, social justice and development implications of AI when used in areas such as health, education and social services, or in building “smart cities”? How does algorithmic decision making impact on marginalised people and the poor?

This edition of Global Information Society Watch (GISWatch) provides a perspective from the global South on the application of AI to our everyday lives. It includes 40 country reports from countries as diverse as Benin, Argentina, India, Russia and Ukraine, as well as three regional reports. These are framed by eight thematic reports dealing with topics such as data governance, food sovereignty, AI in the workplace, and so-called “killer robots”.

While pointing to the positive use of AI to enable rights in ways that were not easily possible before, this edition of GISWatch highlights the real threats that we need to pay attention to if we are going to build an AI-embedded future that enables human dignity.

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