Mistra GEO POLITICS

ARTIFICIAL INTELLIGENCE, SUSTAINABLE DEVELOPMENT AND GEOPOLITICS IN AFRICA

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KEY TAKEAWAYS FROM THIS REPORT:

The field of AI is moving quickly, and African nations are in danger of falling behind. Regional cooperation and external partnerships will be key, and the danger of the giants in the field taking over gives rise to the need for oversight.

Applied AI is changing the conditions of life in all parts of society. Therefore, there is a strong need for decision-makers, as well as those working in legal settings, to understand AI applications' far-reaching societal effects – in Africa and elsewhere.

African nations and communities require support to be able to create innovative strategies and strong ecosystems involving industry, academia, the public sector and civil society.

SUMMARY

By 2050 the African population is expected to have doubled to 2.5 billion people, as much as 60% of whom will be under the age of 25. This huge amount of people can be a disruptive force leading to unrest and migration and, at the same time, help catalyse economic growth.

Along with this demographic reality, Africa is facing a number of other large-scale trends, such as rapid urbanization, where Africa will host the top three biggest cities in the world by 2050. The continent also must deal with climate vulnerability, since around 70% of the countries in the world most at risk from climate change effects are located on the African continent – in spite of the fact that African countries contribute less than 4% of total global greenhouse gas emissions.

As a countering force, the African technology or tech sector has grown substantially in the past near-decade, including breakthrough innovations with mobile-device–based payments and digital healthcare platforms. This development is based on a generally strong entrepreneurial culture that is now fuelling transformative change in sectors such as energy, health services, pharmaceuticals, sustainable agriculture and land use. Along with this is a new openness among African leaders to intracontinental cooperation, as a result of exogenous shocks such as COVID-19 and the subsequent food crisis, based on the fact that Africa needs to become more self-sufficient and reduce its reliance on international support.

To meet these ongoing changes – which could destabilize the whole region and even international geopolitics – there is a strong need to provide basic services such as electricity and education, along with transportation links and digital infrastructure. If investments can occur rapidly enough, then trends like rapid urbanization tends to accelerate GDP and consumer spending, facilitate entrepreneurship and innovation, create new markets, and increase worker productivity.

AI has the potential to drive economic growth and development but can at the same time create dependence on foreign technologies, if not designed and developed within a country or region's own borders. Such dependency can deepen the global technology gap, resulting in serious geopolitical implications – as in Africa.

To unlock the real potential in Africa, there are extensive needs for investments within the AI sector and in AI-related education. Currently, African AI companies run the risk of being less competitive than their multinational rivals – even

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in their own home markets. To create this competitiveness and autonomy, Africa also needs access to the latest and global AI research.

As more and more social and economic activities in Africa take place online, the importance of privacy and data protection is increasingly recognized. Of equal concern is the collection, use and sharing of personal information to third parties (companies or countries) without notice or consent of consumers. A large share of the population on the African continent is still excluded from its basic legal rights, and current safeguard mechanisms are inadequate.

Given that Africa is a testing ground for technologies produced elsewhere in the world, and the personal data from its users constitute a valuable commodity on the global market, the control and ownership of data will become increasingly important. Without proper oversight, this situation could lead to a loss of data sovereignty and a potential misuse of data. Beyond the areas of cybersecurity and military applications, such vulnerability raises a number of ethical concerns, especially when it comes to privacy and bias related issues.

The hope is that AI-enabled technology can act as an enabler to achieve the 2030 Agenda, but it may at the same time also trigger inequalities that inhibit achieving the UN Sustainable Development Goals (SDGs). As a consequence, decision-makers and legislators in Africa – and elsewhere – need to understand the new logic and the effects that come with using AI in different forms and sectors, and to what extent it already affects and will affect people and societies far into the future.

CONTENTS

FUNDING STATEMENT

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1. INTRODUCTION

The use of artificial intelligence (AI) holds the possibility of both huge gains and serious risks for African societies.[1] African nations find themselves poised to make massive economic and social shifts, in which adopting AI would provide opportunities for a better future.[2] At the same time, the potential benefits and risks of AI technology are not equally distributed across the African continent, and significant gaps exist in terms of access to knowledge, data, education, training and human resources required for the development and use of AI.[3]

Added to these regional risks is the global picture: with the introduction of AI technologies, the geopolitical space is no longer just a territory limited by physical or political boundaries. It now encompasses a broader range of "non-national" and "non-territorial" dimensions, such as cyberspace and the sphere of organized and often international crime that operates online.

The emerging frontiers for AI are now also at the forefront of geopolitics, due to new information and communication technologies and financial and globalization forces. They will be important to both real and virtual social and societal interactions – all of which will be impacted as AI enters more sectors.[4]

This study is primarily focused on different geopolitical and sustainable effects of the implementation and use of AI in Africa. This complex intersection will be affected by geography, history and culture; needs and expectations; and – to a large extent – the interaction between Africa and the rest of the world.

We begin with a description of methods and what we mean when we say "AI" and "Africa" in this report. Then we describe the global situation, beginning with AI in the world in general, followed by AI in the context of geopolitics and sustainable development in Africa.

This report is meant to provide a snapshot in time, when this field and the world in which it operates are moving and changing rapidly. Some of the observations made here will remain valid for the foreseeable future; others could be outdated almost immediately.

1.1 BACKGROUND

We define AI as the applications that rely on algorithms to "think better than humans". The current status of AI is not quite there yet, but recent developments in large language models such as ChatGPT have increased the awareness of an approaching tipping point in AI capabilities and the cascade of changes that will follow.

With this in mind, the content presented in this report is a synthesis of available literature and documented experience up to the date of publication of this report, with the acknowledgement that the situation may change dramatically quickly. The findings here are based on published journalistic work in newspapers and other media; reports from governmental, non-governmental and intergovernmental organizations; and discussions with experts, researchers and practitioners within relevant areas, for a survey conducted in 2022.

Our ambition has been to examine sources from different parts of the world, as much as possible. However, differences are inevitable in the availability of open, reliable sources and official documents, depending on the context of the initiatives and engagements described. In this survey of knowledge, the US, China and Russia are the main geopolitical forces shaping AI at a global scale, and therefore also important in African contexts. The availability of information for these major players is particularly varied.

We have not included all the ongoing AI initiatives in Africa, nor considered education, academic work and research within African countries on AI. The vast number of technical applications being developed and used across the region in this fast-growing field would require immense capacity to track and update, and no one repository exists to track this development.

And finally, a note on the use of "Africa" and the broad geographical approach of this study: the continent or region consists of 54 sovereign states, with significant political, economic and cultural differences. Despite this variability and diversity, this study defines Africa as the entire continent or region if not otherwise specified.

The reasons for taking this broad view are severalfold. Cooperation, investments and dependencies within the area of AI fit poorly into the prevalent division of the continent into North Africa and Sub-Saharan Africa. Many of the chal-

1 https://afripoli.org/ai-in-africa-key-concerns-and-policy-considerations-for-the-future-of-the-continent
2 https://aiforgood.itu.int/groundbreaking-report-highlights-artificial-intelligence-in-africa/
3 https://unesdoc.unesco.org/ark:/48223/pf0000375322
4 https://www.iss.europa.eu/sites/default/files/EUISSFiles/CP_173_0.pdf

lenges and opportunities that follow with AI are in many ways relevant for all 54 African nations. If we were to cut the continent into smaller pieces, it would probably be more relevant to abide by the regional sections of eastern, western, southern, northern and central Africa, as used in trade and interregional cooperation. We see the need for further research on AI's use and prospects based on these sub-regions.[5]

2. AI IN THE WORLD

Understanding the potential traps and benefits of AI across Africa requires a global context. Here we provide a general primer on AI technology, the companies active at a global scale, and what AI use means from political and geopolitical perspectives, as well as for development – particularly sustainable development through a global lens.

2.1 AI IN GENERAL

A general description of AI could be a computerized system that can respond or carry out tasks in ways commonly thought to require human intelligence. Such systems have goals related to reasoning, knowledge, learning, communication and perception.

AI consists of a number of different techniques and areas. One branch that has led to many applications lately is machine learning, especially within the domain of deep learning, where there is a need for vast amounts of high-quality training data and processing power to train algorithms.

Once purely an academic research area, AI is increasingly used for commercial purposes and within the welfare sector. In addition to emulating human behaviour, for example for chatbots and image recognition, AI can be used to strengthen human performance in a way that sometimes exceeds human abilities, for "crunching" big data sets and other large-scale endeavours that would take humans a long time to complete.[6] Drawbacks include the fact that AI so far is only as good as the data and training that humans have created for various tools, leading to biases and errors.

We see AI as a general-purpose technology, just like electricity, which means it can transform the sciences, society and the entire "productive system" by profoundly reworking economic models.[7] AI, and primarily deep learning AI, is widely used by large tech companies in the US and China. Companies have created their own platforms and digital ecosystems to develop AI applications. And to accomplish this, they establish close cooperation with leading universities. The so-called tech giants – Microsoft, Amazon, Tencent and so forth – invest not only in applied but also in basic research, and therefore a large proportion of the ongoing AI research is conducted by private industry.[8]

The most prominent AI companies in the US at the moment are Apple, Microsoft, Google, Amazon, Meta, Nvidia and Tesla; their Chinese counterparts are Baidu, Alibaba and Tencent. The capacity of these tech companies to develop and utilize AI has given them their top-ranking positions on the world's stock markets.[9]

Meanwhile, the market for AI startups is growing with tremendous speed. AI algorithms now have access to vast volumes and a rich variety of data sets collected by "smart-sensing" technologies in mobile devices and within urban infrastructure. Combinations of technologies such as facial recognition, gait analysis, closed-circuit television cameras, and mobile device biometrics can analyse the faces and bodies of individuals in moving crowds. Other sources include communications metadata and Internet connection records, location and activity tracking, financial transactions, and social media activity.[10]

5 https://carnegieendowment.org/2022/08/11/new-u.s.-africa-strategy-breaks-from-status-quo-with-some-perplexing-stumbles-pub-87666
6 https://digitaleconomy.stanford.edu/news/the-turing-trap-the-promise-peril-of-human-like-artificial-intelligence/
7 https://www.journalgeneraldeleurope.org/en/2022/03/01/lia-a-le-potentiel-pour-devenir-une-technologie-dusage-general/
8 https://arxiv.org/abs/2102.01648
9 https://www.stratascratch.com/blog/how-faang-companies-are-leveraging-data-science-and-ai/
10 https://www.globalcenter.org/wp-content/uploads/2022/06/GCCS_PB_Safeguarding_Against_Misuse_Artificial_Intelligence_web.pdf

2.2 AI IN SOCIETY

Along with the tremendous opportunities that come with AI are a number of risks of varying extent. One such risk arises when existing economic and social divides in society start to grow because of different kinds of bias in data sets. This problem was identified by the Obama Administration as "winner takes all".[11]

So far, the winners have been companies like Google, Amazon, Meta and Apple – which collect the most data from users.[12] From the very beginning, these companies have had large volumes of user-generated data, which has given them an advantage that has generated fortunes of an incomparable size – a prosperity based on AI applications that has made the so-called harvesting of data possible. In a similar way, companies like Baidu, Alibaba, Tencent and TikTok have grown strong in China. This rationale increases the risk of fortunes becoming more and more concentrated within a few very large, global corporations.

Likewise, unequal representation may accelerate in an exponential way. AI uses data created by people as a starting point, which inherits human flaws such as bias based on age, gender or ethnicity. For example, if there are no women represented in the datasets feeding the algorithms, there will be a lack of women represented in the final results.[13]

The same rationale applies to natural language processing, which is a branch of AI that enables machines to understand human language. Some languages, and particularly English, create enormous amounts of data in digital communication, which is enough to feed and train algorithms for services like Google Translate. But for most of the languages spoken in the world, including the 2000 spoken in Africa alone, there is not even close to enough digital data available to train and develop translation services.

At the same time, this is exactly where AI and natural language processing could make a big difference. Areas with high rates of illiteracy are where automatic translation and text-to-speech services could make a difference in making information, news and literature available for more people. This in turn could contribute to a higher degree of inclusion in society.

Another often sensitive issue related to AI in developing countries is the debate over whether the new technology will replace human workers. This depends on where AI is being implemented. Intelligent automation does displace human workers. But at the same time, the extra income generated by these technological advances can be recycled into the economy, which in turn could generate demand for human work in other sectors. The question is if this shift will have a positive or negative net effect.[14]

A wide range of political dilemmas arise from the fact that digitalization, artificial intelligence, blockchain technology, and ever-increasing access to personal data are no longer isolated "tech issues". When personal information and user-generated data are increasingly "owned" and used by commercial actors – and by states that may be ready to use new technologies to control and manipulate – the outcomes raise questions with regard to democracy, discussed further below.[15,16]

2.3 INTERNATIONAL AI DEVELOPMENT

The development of AI depends on the global economy. Both the US and China have made extensive investments in AI for the industrial as well as the public sector, which in turn has led to a rapid development of AI companies and AI applications.

Despite the dominant position of the US globally in absolute economic terms, China is publishing more scientific papers on AI and securing more patents than US researchers do. This is a potential game changer, given that the US has had a leading position in the field for many years. China's leadership within the AI-research area suggests that China is also ready to take the lead with AI-enhanced businesses and in areas such as speech and image recognition.[17]

However, there are no guarantees. The rationale in AI research is different from other technologies in a few significant ways. On one hand, more of the research in AI is "open", as in open access or available, compared to computer hardware and drug development. Such openness probably means that progress in the field will be relatively faster than in other sectors. In addition, when research and data are shared openly, latecomers to a field have an easier time "catching up" to established entities.

On the other hand, China's strong policies to promote AI and its weak privacy regulations have pushed it to the forefront of AI research and use. The government sends clear signals to entrepreneurs, investors and researchers that AI is being prioritized with policies. And since access to data and talent are crucial in AI research – and since China is rich in both areas – it gives that nation an advantage.

11 https://www.wired.com/2016/10/president-obama-mit-joi-ito-interview/

12 https://www.firstpost.com/tech/news-analysis/google-apple-meta-amazon-twitter-new-report-reveals-who-collects-most-data-from-users-11113021.html

13 https://www.consilium.europa.eu/en/documents-publications/library/library-blog/posts/gender-bias-in-artificial-intelligence/

14 https://www.weforum.org/agenda/2018/09/is-artificial-intelligence-replacing-jobs-truth

15 https://www.hrw.org/news/2022/06/20/beyond-russia-real-threat-human-rights-china

16 https://www.kas.de/documents/273004/10032527/Report+-+The+Anatomy+of+Information+Disorders+in+Africa.pdf/787cfd74-db72-670e-29c0-415cd-4c13936?version=1.0&t=1599674493990

17 https://hbr.org/2021/02/is-china-emerging-as-the-global-leader-in-ai

Given that AI is developed with domain-specific knowledge and needs user-generated data to improve, China has an additional advantage because of its fast-adopting market and practices around data gathering and usage. The ubiquity of surveillance cameras in China – which made it possible for China to specialize in visual and facial recognition – would not have been possible with regulations that more tightly protect privacy.[18]

Privacy challenges are only one of many that countries will face when it comes to their "readiness" for AI. Inequality is also an important consideration. According to Oxford Insights' Government AI Readiness Index 2021,[19] regions such as Sub-Saharan Africa, Latin America, the Caribbean, and South and Central Asia (with some exceptions) are the lowest-scoring in the world for preparedness for AI. Oxford Insights states that if inequalities in government AI readiness translate into inequality in AI implementation, this could entrench economic inequality and leave billions of citizens across the Global South with lower-quality public services.[20]

The inequality in AI is a multifaceted problem. It includes the data that feed algorithms, the coders who build them, the presence of well-funded research institutions, and government capacity to support and provide direction to the development of AI.

The problem will not only be in the Global South and for public services, but also in the Global North and for private services in all sectors, given that the companies with first-mover advantage in AI are shaping all aspects of society. Their access to data, digital infrastructure and capital gives them an edge, but they also have the ability to set the terms by which other actors engage in governance and ethical debates.[21] And as AI global tech giants drive digitalization forward, they also change the rationale in other sectors of society. For example, AI applications in the health sector are changing the focus from reactive therapy to proactive, preventative and precision-based care.[22]

None of this can be done without access to skilled people, primarily within the area of science, technology, engineering and mathematics (STEM). More and more companies and nations are engaged in education in fields related to the AI sector, but also in recruiting from other countries and regions. This development is somewhat aggressive, and the African continent is of growing interest – which could lead to "brain drain".

Specialist skills are not the only knowledge needed: so is a general understanding of the effects of AI in business and society. Top management in the private sector needs an understanding in order to use AI responsibly, but most of all, policymakers, legislators and others in the legal system need to understand AI in order to make sure it is used well and accountably. Above all, there can be an immediate danger if decision-makers lag behind and make wrong decisions, due to a low level of knowledge about the multifaceted and far-reaching social impacts of AI.

Until now, the advances within the field of AI have been driven by the tech sector – in which the big players are investing billions of US dollars in research, development and the deployment of the latest tools – while governments are looking to catch up. Several countries (among them Canada, Israel and Kenya) have formulated AI strategies to foster competitive national innovation systems, but still, the adoption of AI in the public sector remains limited. According to GIZ and the Asian Development Bank, the reasons for the relatively slow uptake could include ethical and legal concerns, as well as scepticism about whether computer-driven decision-making systems are appropriate in the sphere of public policy and administration.[23] Other reasons could include haphazard investment, lacking high-level coordination or recognition of needs, as evidenced in the US.[24]

2.4 AI AND SUSTAINABLE DEVELOPMENT

The concept of sustainable development is based on three pillars:

- social sustainability that largely concerns well-being, justice, power, rights and the needs of the individual
- ecological sustainability that includes everything that is connected with the Earth's ecosystems, such as the stability of climate systems; the quality of air, land and water; land use and soil erosion; and biodiversity and ecosystem services
- economic sustainability that usually is understood as either an economic development that does not have a negative impact on ecological or social sustainability or is equated with economic growth as long as the total amount of capital increases.[25]

Researchers have argued that AI solutions can in many ways be a game changer in the fight against climate change, for instance by optimizing energy use, developing new ma-

18 https://hbr.org/2021/02/is-china-emerging-as-the-global-leader-in-ai
19 https://www.oxfordinsights.com/government-ai-readiness-index2021
20 https://www.oxfordinsights.com/government-ai-readiness-index2021
21 https://www.orfonline.org/research/common-but-different-futures
22 https://www.insiderintelligence.com/insights/big-tech-in-healthcare-report/
23 https://www.adb.org/publications/ai-social-protection-exploring-opportunities-mitigating-risks
24 https://www.brookings.edu/blog/techtank/2022/09/22/understanding-artificial-intelligence-spending-by-the-u-s-federal-government/
25 https://www.kth.se/en/om/miljo-hallbar-utveckling/utbildning-miljo-hallbar-utveckling/verktygslada/sustainable-development/hallbar-utveckling-1.350579

terials, optimizing logistics, forecasting the adverse effects of climate change, or otherwise reducing carbon emissions. Research estimates that by 2030, AI could reduce greenhouse gas emissions by 5% to 10% globally, which corresponds to 2.6 to 5.3 fewer gigatons.

But at the same time, AI has its own carbon footprint. To what extent varies and depends on the type of AI and the techniques used to train it. Among the considerations are the algorithm, processor, data centre, and kind of energy mix.[26,27] One estimate compared the carbon dioxide emissions of training one large language model to about 125 roundtrip flights between New York and Beijing, at 300 000 kg.[28]

Sustainable AI can therefore be described as both AI *for* sustainability and as the sustainability *of* AI. In other words, sustainable AI is not only about how to sustain the development of AI per say, but also about how to develop AI that is compatible with sustaining environmental resources for current and future generations; the economic models for societies; and societal values – with regard to how to safeguard privacy, dignity, fairness and justice – that are fundamental to any given society.[29]

Since AI development and global warming affect and are affected by geopolitical, social and historical contexts, the challenge is to understand the effects and impacts on society.[30] Connections have been documented between AI and the Sustainable Development Goals (SDGs), showing where AI can be an enabler in 79% of the SDGs.[31] One example is the possibility to analyse large-scale interconnected databases to develop joint actions aimed at preserving the environment. On the other hand, SDG 13, on climate action, could be undermined by the high-energy needs for the AI applications used in the analyses.

Given that markets today rely heavily on data analysis – and since these resources are not equally available in developed and developing countries – the economic gap may increase in a significant way, as AI is adopted everywhere. In this sense, AI could negatively impact several SDGs. Furthermore, since the technology is designed and developed for technologically advanced environments, there are concerns that more advanced AI innovations may increase inequalities both between and within countries in ways that counteract the overall purpose of the SDGs.[32]

2.5 AI AND GEOPOLITICS

The economic value of artificial technology is very high. By 2030 AI is expected to have generated more than USD 15 trillion to the world economy. And the way that the US and China invest in these emerging technologies sends clear geostrategic signals.[33]

The global map of power relations is no longer defined only by geography and the control over territories. It is instead delineated by the flow of people, products, money, data, and by exploiting the opportunities that technology creates.

The modern kind of connections between nations – from energy flows to IT standards – have been turned into geopolitical tools. And since technology and communication tools today are developed by a limited number of global tech companies – sometimes unaccountable to the states in which they act – there will likely be higher suspicion among governments. And the more vulnerable states feel, the tighter control they will try to impose and exercise. As a result, we may see a further erosion of interconnection.[34]

The president of the Delhi-based international think tank Observer Research Foundation, Samir Saran, wrote recently:

> The post-pandemic world will have to deal with known and unknown technology-related challenges. These range from implications of emerging domains such as AI and robotics, to increasing cyber-attacks and "Big Tech" challenging national sovereignty.
>
> The imponderables will form the proverbial impossible triangle comprising quest for sustained economic growth, heightened national security concerns and rising demands for individual rights as the three sides. It is an impossible triangle precisely because no government, community or country can serve all three interests to the satisfaction of all.

At the median of this impossible triangle lies the intersection between technology and geopolitics. [35]

26 https://www.techtarget.com/searchenterpriseai/feature/AI-carbon-footprint-Helping-and-hurting-the-environment
27 https://arxiv.org/abs/2104.10350
28 https://arxiv.org/abs/1906.02243v1, https://www.nature.com/articles/s42256-020-0219-9
29 https://link.springer.com/article/10.1007/s43681-021-00043-6
30 https://www.orfonline.org/research/common-but-different-futures
31 https://www.nature.com/articles/s41467-019-14108-y
32 https://www.nature.com/articles/s41467-019-14108-y/
33 https://www.weforum.org/agenda/2021/04/seven-business-leaders-on-how-technology-will-shape-geopolitics/
34 https://www.nature.com/articles/s41467-019-14108-y/; https://www.weforum.org/agenda/2021/04/seven-business-leaders-on-how-technology-will-shape-geopolitics/
35 https://www.weforum.org/agenda/2021/04/seven-business-leaders-on-how-technology-will-shape-geopolitics/

3. AI, GEOPOLITICS AND SUSTAINABILITY IN AFRICA

According to the UN Economic Commission for Africa (UNECA), the relationship between new technology and geopolitics is growing stronger in Africa. In addition to AI, blockchain technology and 5G (the fifth-generation broadband cellular or mobile network technology) constitute in many ways a frontline in global competition as well as in global collaboration.

We selected key geographic and functional spaces based on their potential to transform African geopolitics and due to their impact on power relations on the continent. The four key geographic spaces are:

- the Sahara-Sahel region, for its strategic position between the north and south of Africa and positioning to create stability and connectivity to unite the continent
- maritime regions, in particular the western Indian Ocean and the Gulf of Guinea, for security and trade
- rapidly urbanizing areas, for sustainability due to social pressures, economic transformations, and political mobilization
- physical spaces constructed and occupied by violent extremist groups, for creating hybrid political and social orders and therefore unsecure areas.

The functional spaces are spurred by new technologies and by societal and economic drivers. They can be described as:

- the new African continental free trade area (AfCFTA), established in 2022, for changing how African countries and foreign actors engage
- online spaces, where digitalization and connectivity are key, for driving economic and social development in Africa
- the African labour market, where high unemployment is combined with a large informal employment sector and an expected population increase of 100% by 2050, with a large majority under 25
- the information space – news, social media, advertising, education and so forth – for creating competition between both regional and global powers and for influence over the intersection of knowledge, information and narratives.

The emergence of these geographical and functional spaces in Africa is driven by powerful megatrends such as population growth and climate change, as well as systemic pressures (such as a multipolar world) and exogenous shocks (such as COVID-19). In addition to this, development in Africa is also heavily influenced by trends that originated within the continent, which have gained prominence in recent years and can be summarized as:

- disrupted and uneven economic growth that fragments Africa's economic space, increasing the vulnerability to geopolitical competition
- the highest number of conflicts since 1946 and the involvement of external players for geopolitical or "geo-economic" purposes
- environmental degradation that has geopolitical implications such as greater competition for resource extraction processes
- and the ongoing digital transition.

The last bullet point includes infrastructure development, urban mobility, rural accessibility, green energy and inter-urban connectivity, that in many ways has increased transparency and opened up expectations, but that at the same time makes Africa more exposed to geopolitical challenges, such as an over-reliance on foreign financing that in turn creates a risk of debt traps. It may also lead to state fragility when governments fail to deliver on citizens' expectations.[36]

The geographic and functional spaces, and ongoing African trends, are further explored below, with the aim to better understand the connection between AI, geopolitics and sustainable development on the African continent.

3.1 AI DEVELOPMENT IN AFRICA

Many of the AI initiatives in Africa are still in their infancy, and the landscape will most certainly look different within a few years. The area that is developing most rapidly right now is AI in financial services – so-called fintech (for financial technologies), where the potential to disrupt and augment traditional financial services is considerable. To illustrate the point, cash is still used in around 90% of all economic transactions in Africa.[37]

36 https://www.iss.europa.eu/sites/default/files/EUISSFiles/CP_173_0.pdf

37 https://www.mckinsey.com/industries/financial-services/our-insights/fintech-in-africa-the-end-of-the-beginning

The fintech area constitutes a base for further development in areas such as trade, health, agriculture and education.[38] Blockchain as a technology has the potential to create transparency, resilience and replication (important for security) for authorities, within health and education, for financial markets, in political elections, and for reducing the dependency on a third party (a state or a company).

Access to the engine itself (AI) is not the problem in an African context, but the lack of data is. However, the way of treating data is getting more and more effective, which would compensate for the small amounts of data available in certain areas. This would mean a lot within the AI branch of natural language processing, where computers are trained to understand the way that humans write and speak.

This is especially important for the approximately 2000 different languages spoken in Africa – sometimes used and spoken by no more than 100 persons. The possibility for more people to communicate and be understood in their own language could result in fundamental steps forward towards digital and societal inclusion. Text or voice in their own language allows, for example, illiterate, under-educated or otherwise marginalized groups to access technology tools, information, news and public services. But the challenge with these underrepresented languages is not only a shortfall of daily and interpersonal online communication, but of qualified texts related to research and medicine.[39]

Beyond this need to address the dearth of data, Africa has extensive needs for investments within the AI sector and in AI-related education. Currently, African AI companies run the risk of being less competitive than their multinational rivals in their own home market. To create competitiveness and autonomy, Africa also needs access to the latest and best global AI research. Some progress has been made through multinational companies opening AI labs in different African countries, and by innovative forms of transcontinental collaborations such as Deep Learning Indaba and Zindi, which are scientist networks and platforms with the ambition to solve the continent's toughest challenges.

Inspiration for African countries could come from AI strategies and initiatives in countries as Canada, Israel and Singapore, and where linkages between government, business, academia and civil society have been created in an innovative way. Robust AI ecosystems can improve competitiveness, lower development costs, and reduce dependence on foreign AI companies.[40]

With more and more of these basic pillars in place, AI has great potential to tackle urgent sustainability challenges in Africa, such as:

- preventing and reducing the effects of flooding and wildfires
- protecting wildlife
- making healthcare available in remote areas
- enabling quality education in remote areas
- increasing social mobility.

At the same time – and since new technologies often are pushed too quickly into society, for reasons such as payback of investments – the risk and challenges must be taken into account. These include:

- systems that do not always work as intended, which may lead to bias and social toxicity
- misuse and manipulation of data and information
- unintended effects in society such as imbalances in the labour market.

Similarly, the trade-offs in energy saved and energy needed for AI applications remains unknown.[41] Given the need for energy infrastructure in Africa, a continent wealthy in both fossil fuels and renewable energy sources, the outcomes remain to be seen.

3.2 CONFLICTS, CONTRADICTIONS AND CHALLENGES

We present the following dichotomies to illustrate the geographic and functional spaces, described in the very beginning of this chapter, in order to better understand the complexity and interconnection between AI, geopolitics and sustainable development. These contradictions do not encompass the entire complexity of the situation in Africa and beyond; they are meant to inform and frame debate.

EAST VS WEST

After the end of the Cold War and the fall of the Soviet Union, Africa's importance as a strategic arena for great power politics diminished. However, recently the situation has changed. Countries such as the US, China and Russia are advancing their positions on the African continent, for reasons that are financial, political or military – or related to all three at once. The perceived rewards are access to minerals, natural gas and oil. These actions also relate directly to ongoing conflicts elsewhere that are of strategic importance for the leading powers of the world.

Trade between African nations and the outside world remains asymmetric. Raw materials are exchanged for refined goods. Throughout history, African coffee and oil have been processed somewhere else in the world, a practice that has

38 https://careers.norrskenfoundation.org/people/822194-pascal-murasira

39 https://eu.usatoday.com/story/tech/2021/12/24/ai-enabled-language-translations-made-better-african-researchers/9015895002/

40 https://oecd-development-matters.org/2021/02/09/developing-an-artificial-intelligence-for-africa-strategy/

41 https://www.nature.com/articles/s42256-020-0219-9

continued into modern times – and has transferred to the technology sector. While the raw materials such as coltan or other minerals necessary to create technological tools come from Africa, the digital solutions and AI applications that make these tools "drinkable" are almost always developed and produced outside of Africa.[42]

In August 2022, the US government presented a strategy for Africa focusing on the continent's rapidly growing population and position as one of the world's largest trading blocs, with significant natural resources. Beyond this, it also represents a sizeable voting bloc in the UN, and the US is positioning itself in the power competition with China and Russia for influence in Africa.[43]

By October 2021, China was the second biggest trading partner in Africa, after the EU. China has pursued a tactical expansion in Africa through the new Silk Road, the Belt and Road Initiative, adopted in 2013. Under this ambitious plan to grow China's economic and political power, the Chinese government signs contracts with countries along the way and often offers connecting nations Chinese bank loans for financing large-scale infrastructure initiatives such as roads, ports and 5G networks.[44]

For China, the technological and economic advantage to making these agreements in Africa and elsewhere is significant and multifaceted. The country and its companies have forged a comprehensive suite of corporate collaborations in data infrastructure and biotechnology, getting access to new substantial data markets, including individuals' consumption, behaviour, biometric and biological data; gaining know-how into training visual identification algorithms on darker-skinned people; and perfecting the surveillance function of converging technologies.[45]

Russia lacks its competitors' financial capacities and instead interacts in other ways in Africa. The Russian government targets African information spaces with disinformation and propaganda, and it secures access to natural resources by supporting the military space with mercenaries and private armies.[46]

The Russian engagement and presence in Africa rests on a tradition from the Soviet era, and in 2019, President Putin invited African leaders to an economic forum in Sochi (Sotji). Representatives at the top level from all 54 African states participated, including 47 heads of state.[47]

In absolute figures, Russian trade with African nations is small overall compared to the US, China and the EU, but extensive when it comes to arms exports. About 50% of all arms being imported by African countries come from Russia. Large state-owned Russian companies also make extensive investments within the African energy and mineral sector – companies that are often controlled by oligarchs.[48]

Both China and Russia need allies in global negotiations. As permanent members of the UN Security Council, both countries are well-positioned in African negotiations. When African countries support either nation in complex issues in the UN, China and Russia use their right to veto, for instance, to block sanctions towards countries that do not comply with international conventions such as human rights. These strong and strategic ties give Russia and China priority, for instance, when mining concessions are being distributed in certain African nations.[49]

But despite China's and Russia's already vast and growing importance on the African continent, the economic, diplomatic and military role of the EU is not to be underestimated. The total figure of trade and investments by the EU member states still makes them the number one financial partner with Africa, even though the bloc's relative share is decreasing globally.[50,51]

Still, China has spent the past 20 years cultivating economic and political relationships across Africa and aims to overtake the EU as the biggest trading partner in Africa by 2030.[52] During these two decades, the West's already fragile reputation in Africa has worsened. The re-engagement in Africa by the US and EU has been questioned in Africa: critics see it as a way of stopping China, rather than being truly interested in Africa's development and well-being. But at the same time, and as Chinese loans have become more common in funding major infrastructure projects across the continent, African leaders have expressed concerns that they are becoming too dependent on China.

42 https://afripoli.org/ai-in-africa-key-concerns-and-policy-considerations-for-the-future-of-the-continent

43 https://carnegieendowment.org/2022/08/11/new-u.s.-africa-strategy-breaks-from-status-quo-with-some-perplexing-stumbles-pub-87666

44 https://www.chathamhouse.org/2021/09/what-chinas-belt-and-road-initiative-bri

45 https://www.kas.de/documents/273004/10032527/Report+-+The+Anatomy+of+Information+Disorders+in+Africa.pdf/787cfd74-db72-670e-29c0-415cd-4c13936?version=1.0&t=1599674493990

46 https://www.kas.de/documents/273004/10032527/Report+-+The+Anatomy+of+Information+Disorders+in+Africa.pdf/787cfd74-db72-670e-29c0-415cd-4c13936?version=1.0&t=1599674493990

47 https://au.int/en/pressreleases/20191028/statement-2019-russia-africa-summit-and-economic-forum-0

48 https://foi.se/rest-api/report/FOI-R--5039--SE

49 https://foi.se/rest-api/report/FOI-R--5039--SE

50 https://foi.se/rest-api/report/FOI-R--5039--SE

51 https://foi.se/rest-api/report/FOI-R--4986--SE

52 https://www.theafricareport.com/229297/china-to-overtake-the-eu-as-africas-biggest-trade-partner-by-2030/

In addition to extensive financing and investments, and a complicated colonial history with Europe, other important factors contribute to the growing Chinese dominance in Africa. An important one is the enormous, youthful and cheap pool of African labour, which provides a potential solution for China's needs for its labour-intensive manufacturing sector. The African labour market will become increasingly attractive as China's labour force grows older and becomes more costly.[53]

A survey by the Ichikowitz Family Foundation showed that China recently surpassed the US when it comes to having the biggest positive influence in Africa, among young people 18 to 24 years old – the largest growing segment of the population on the continent, according to the UN. This view could be an effect of China's engagement in Africa, offering affordable consumer goods and digital devices to the most youthful population in the world.[54,55]

The increasing competition between the US and China, on issues ranging from trade to technology, is leading to a more and more polarized global economy. In 2021 the Chinese government decided to reorient its foreign trade policy through the Dual Circulation Strategy. The initiative aims to rein in China's foreign financial footprint, and instead focus on strengthening domestic private consumption. China is also making efforts to diversify its trading partners to ease its dependence on the US.

For Africa, this "dual circulation" approach means less Chinese investments and lending, especially in Sub-Saharan Africa. However, the countries that would suffer most from the withdrawal of Chinese capital would benefit from the withdrawal of Chinese export competition.[56, 57]

DEMOCRACY VS AUTOCRACY

Between 2005 and 2021, the number of countries in the world that are considered "free" have decreased from 46% to 20%, according to Freedom House in their 2022 annual report on civil liberties. The US-based non-profit organization called this a most worrying and global trend, especially in already vulnerable and unstable regions. According to the report, only 15% of African nations can be labelled as "free" countries, 44% are "not free", while the rest (41%) are somewhere in between.[58]

In Africa, three phenomena in particular contributed to this deteriorating trend, alongside increases in widespread impoverishment, instability and conflict. These can be summarized as:

- violent and poorly conducted general elections in combination with undue influence (often intimidation) and manipulated election results
- weak public institutions
- a seizure and perpetuation of power by ruling politicians.

Amending national constitutions in order to create longer terms of office for sitting heads of state is a very effective way of holding back the development of democracy. Of the 10 heads of state in the world who have been in power the longest, 6 are to be found in Africa, with an average of 35 years in the highest position of power.[59]

While these longstanding leaders may have been young to begin with, they are aging on a continent with the fastest growing, youngest population globally. They risk reduced trust in both state and public institutions. People might instead rely on other kinds of leaders, such as within local ethnic and religious communities.[60]

So far, AI has already proven to be the most powerful tool when it comes to monitoring people and processes. In an environment where the cornerstones of democracy – free speech, civil voting rights, and more – cannot be taken for granted, AI applications may amplify existing injustice and exclusion. According to the Collaboration on International ICT Policy for East and Southern Africa (CIPESA), several African countries have enacted laws and policies to regulate the right to data privacy, but "many of the laws enacted do not measure up to international human rights standards and fail to establish clear and appropriate oversight, redress and remedy mechanisms."[61]

Biometric technology can, on one hand, contribute to electoral integrity, voter confidence in the electoral process, and the inclusion of a larger percentage of citizens in the electoral roll. CIPESA expressed concern in its latest report over the growing threats to the right to privacy of personal data and potential violations of digital rights on the conti-

53 https://www.theafricareport.com/229297/china-to-overtake-the-eu-as-africas-biggest-trade-partner-by-2030/
54 https://www.bloomberg.com/news/articles/2022-06-12/china-surpasses-us-in-the-eyes-of-young-africans-survey-shows
55 https://www.bloomberg.com/news/articles/2022-08-03/china-to-deepen-africa-ties-over-next-decade-with-focus-on-trade?leadSource=uverify%20wall
56 https://www.atlanticcouncil.org/blogs/econographics/dual-circulation-in-china-a-progress-report/
57 https://www.lse.ac.uk/ideas/Assets/Documents/reports/LSE-IDEAS-FOCAC-at-21.pdf
58 https://freedomhouse.org/report/freedom-world/2022/global-expansion-authoritarian-rule
59 https://www.reuters.com/article/us-africa-leaders-democracy-factbox/what-limits-how-african-leaders-cling-to-power-for-decades-idUSKBN1WX1KP
60 https://www.reuters.com/article/us-africa-leaders-democracy-factbox/what-limits-how-african-leaders-cling-to-power-for-decades-idUSKBN1WX1KP
61 https://cipesa.org/2022/01/data-privacy-still-a-neglected-digital-right-in-africa/

nent, and that biometric programmes are being implemented in countries with poor digital rights records, declining democracy and rising digital authoritarianism.[62,63] Approximately 50% of the African nations have now implemented Biometric National Identification Systems, registering their populations' biometric data – fingerprints and facial recognition, for example – into centralized national databases.[64]

OLD VS NEW

One of the key issues for African leaders and policymakers is to develop strategies for both physical and digital infrastructure. Lack of electricity and low telephone density together with low levels of internet and broadband penetration, constitutes an obstacle for new technologies to advance.[65]

Internet access and mobility are essential for digitalization and growth, and many initiatives are going on in Africa to strengthen the digital infrastructure. Fibre optic cable networks are being expanded and submarine cables are connecting Africa with the rest of the world. The so-called 2Africa initiative will link 26 countries in Africa with the Middle East and Europe during 2023 and 2024. The African countries that have a coastline of their own will then connect to the inland or landlocked countries.[66] Besides connecting African countries to the global internet, there is a need to deliver last-mile connectivity to businesses, households and individuals, and in particular to serve rural and remote communities.[67]

Chinese tech companies have long dominated the African mobile market, and the Chinese multinational technology corporation Huawei is now the central actor in the expansion of the African 5G networks. Concerns surround Huawei and the impact the company can have on a country's security, exposing military or other sensitive information. As a relatively new phenomenon, digital foreign interference is a challenge for African leadership.[68]

The actual internet penetration in Africa is still very low. While the average use of the internet is 63% globally (2021), the corresponding figure for Africa is 33%. And while the average access to 4G in the world is 88% (for mobile phones and internet), the corresponding figure for the EU is 99% and for Africa 49%. Within Africa, great differences in usage also have been documented between men and women, and between people living in bigger cities and rural areas.[69]

During the COVID-19 pandemic, the value of digitalization became obvious, for remote communication, businesses, healthcare, education and public services in Africa, as in the rest of the world. But at the same time, a number of African governments regularly restrict internet access to control access to information and unrest, among them Uganda, Ethiopia, Tanzania, Zimbabwe, Togo, Burundi, Chad, Mali and Guinea.[70] One example is during elections, during which governments have imposed total or targeted shutdowns. While capricious and old-fashioned, this method is effective – and problematic for many democratic reasons.

In addition to the unstable – or sometimes non-existent – access to the internet, the lack of access to electricity remains widespread. The SDG 7 aims to "ensure access to affordable, reliable, sustainable and modern energy for all". By 2019, Africa was already off track to reach SDG 7 for access to electricity and clean cooking, while the expected outcome has deteriorated markedly as a result of the pandemic, due to project delays and lower household incomes. In 2021, 43% of the population of Africa – around 600 million people out of approximately 1.4 billion people – still lacked access to electricity. Among these, as many as 590 million people live in Sub-Saharan Africa.[71]

There is also a great difference between African countries. In northern Africa, access to electricity is overall almost 100%, while the corresponding figure in the Central African Republic (CAR) is 4.4% and in South Sudan, 7.0%.[72]

African governments and regional institutions may be latecomers to digitalization and digital transformation processes, although the growth rates are considerable. They are putting in place policies and strategies to encourage the uptake of digital technologies as drivers of development and to foster inclusive digital economies and societies.[73]

62 https://cipesa.org/2022/09/state-of-internet-freedom-in-africa-2022-the-rise-of-biometric-surveillance/

63 https://www.ui.se/utrikesmagasinet/analyser/2020/september/coronakris-satter-afrikansk-demokrati-pa-undantag/

64 https://www.kas.de/documents/273004/10032527/Report+-+The+Anatomy+of+Information+Disorders+in+Africa.pdf/787cfd74-db72-670e-29c0-415cd-4c13936?version=1.0&t=1599674493990

65 https://www.brookings.edu/research/the-fourth-industrial-revolution-and-digitization-will-transform-africa-into-a-global-powerhouse/

66 https://techcrunch.com/2021/09/29/facebook-backed-2africa-set-to-be-the-longest-subsea-cable-upon-completion/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAAJYYQ_taqm14gmsYGu2wOMVdwe-kX55auckLG3xaezeZaoZuizgxTwD3-NyKF1npkpJdoiePHgqBYqZZxc6iI-1D7V7jGsB1Sfka4Po-_ah3k-XtYRgrXJs2sMedrCDEN2U9b81ahvgx8puPVhGK7z2GB7QWKxFJ6OBKFCSgcS

67 https://www.ifc.org/wps/wcm/connect/e38561a4-16b1-402b-8013-8fd017e8b164/IFC-Factsheet-Africa-Broadband-connectivity.pdf?MOD=AJPERES&CVID=odHG-pw3

68 https://www.dw.com/en/africa-embraces-huawei-technology-despite-security-concerns/a-60665700

69 https://www.itu.int/itu-d/reports/statistics/global-connectivity-report-2022/

70 https://www.bbc.com/news/world-africa-47734843

71 https://iea.blob.core.windows.net/assets/6fa5a6c0-ca73-4a7f-a243-fb5e83ecfb94/AfricaEnergyOutlook2022.pdf

72 https://www.iea.org/reports/sdg7-data-and-projections/access-to-electricity

73 https://ecdpm.org/work/digital-geopolitics-africa-moving-strategy-action

The EU, US and China are all making efforts to attract African support in initiatives, such as the EU's Declaration for the Future of the Internet (with the US) and China's Jointly Build a Community with a Shared Future in Cyberspace. And all three powers are engaged in various initiatives to support the development of digital infrastructures across the continent, including China's Belt and Road Initiative and its new Global Development Initiative; the G7 Partnership for Global Infrastructure and Investment (spearheaded by the US), and the EU's Global Gateway.

In this digital geopolitical landscape, China's engagement in Africa is expanding from being focused on infrastructural matters, to a more comprehensive approach covering other digital governance issues such as e-commerce and the digital economy, cybersecurity, and capacity building.

The focus for the EU is to support the growth of the digital economy across the continent, including enabling policy and regulatory environments for inclusive and human-centric digital economies and societies.

The US used to be a key actor in Africa's digital growth, but cannot compete alone any longer with China's growing investments and commitments during the last two decades in the digital field. The US is therefore increasingly coordinating its digital approach towards Africa with the EU and its member states. The US Strategy Toward Sub-Saharan Africa (August 2022) is a way for America to put emphasis on democracy and human rights, and thereby countering Chinese and Russian influence.[74]

INTERNATIONAL INSTITUTIONS VS PRIVATE LENDERS

There is a high level of indebtedness all over the African continent. In some cases, the need for debt reconstruction is urgent for economies not to collapse. Over time, loans and credits have been with the World Bank and the International Monetary Fund. But nowadays a large share of the African debts are handled by private institutions that work on a commercial basis and do not always offer debt relief.

As China is Africa's largest economic partner, it is also the largest bilateral lender for public sector loans across the African continent. From reaching a peak around 2017, the lending has declined – between 2018 and 2019 as much as 30%. Chinese lending has become more and more commercial over the years, and the so-called resource-backed finance is evolving, mostly in huge and often high-risk African infrastructure projects. The model implies that the lending country has based its security on future revenues to be earned from its natural resource exports.[75]

The Chinese Belt and Road Initiative offers loans to connecting countries to finance critical infrastructure such as ports and 5G networks, which has led to a debt trap for some participating nations. At the end of 2020, the 97 countries (worldwide and for which data were available) with the highest external debt to China were also involved in the initiative. Ethiopia and Kenya were among the top five countries. The external debt to China for Djibouti and Angola was 43% and 41% respectively, as a percentage of gross national income (in 2020).[76]

The lack of transparency in the Chinese loan agreements has reasonably fuelled scepticism around China's intentions in Africa. One example is the USD 5 billion loan agreement Kenya made with the Export–Import Bank of China to finance the Mombasa-Nairobi railway. An agreement that has raised critical questions about accountability since the agreement for long has been shielded from public view, plus the fact that the Kenyan government has given too much legal authority to China.[77]

In August 2022, China's Ministry of Foreign Affairs though announced extensive debt relief for some of the poorest countries in the world.[78]

BANKED VS UNBANKED

According to the World Bank (2021), 1.4 billion people worldwide remain "unbanked", or without access to financial services such as savings and loans; in Sub-Saharan Africa, 45% of adults do not have a bank account.[79] This obviously is due to a variety of reasons, some of which are lack of proper documents, no legal identity, credibility-oriented issues, limited access to information, and other income-related challenges.

Financial inclusion is positioned prominently as an enabler of other developmental goals in the 2030 SDGs, and growing inclusion creates more stable financial systems and economies, mobilizes domestic resources through national savings, and helps to boost government revenue. A long-term study on the mobile-device–based money service M-PESA in Kenya showed that mobile money has lifted as many as 194 000 households (2% of the Kenyan population) out of poverty,[80] in an example where communication networks offer financial inclusion to those not being served by traditional financial institutions.[81]

74 https://www.diplomac/report-stronger-digital-voices-from-africa/africa-in-digital-geopolitics/
75 https://carnegieendowment.org/2021/06/02/what-do-we-know-about-chinese-lending-in-africa-pub-84648
76 https://www.forbes.com/sites/katharinabuchholz/2022/08/19/the-countries-most-in-debt-to-china-infographic/?sh=38ec1d3461d8
77 https://www.voanews.com/a/kenyan-lawmakers-want-more-details-on-5b-railway-loan-after-contract-partially-released-/6825661.html
78 https://theconversation.com/china-has-waived-the-debt-of-some-african-countries-but-its-not-about-refinancing-189570
79 https://www.worldbank.org/en/publication/globalfindex/Report
80 https://www.uncdf.org/financial-inclusion-and-the-sdgs
81 https://socialprotection.org/sites/default/files/publications_files/GIZ_ADB_AI%20in%20social%20protection.pdf

Fintech – or financial technologies – today implies a wide range of services, from simple, half-digital solutions for payments to advanced cryptocurrencies built on blockchain technology.[82] Often, simple solutions play an important role in implementing e-trade and digital public services. Digital payments and transactions create user data, which in turn constitute a base for further development and more sophisticated digital solutions, and for credit assessments. The latter is of great importance for people without a banking history, and with no financial data on which to base decisions.[83]

Given that only about half of African governments have adopted data-protection laws, a big concern is data privacy particularly for financial technology and individuals. Campaign groups such as Privacy International and others are wary that behavioural data could go beyond credit scoring to mass surveillance.[84]

INFORMATION VS DISINFORMATION

Knowledge, information and narratives circulate in the African information sphere, both in cyberspace and offline. This space is sometimes used by regional and global powers to manipulate information and influence citizens' perceptions for geopolitical gains.[85]

The Swedish Institute of International Affairs stated that COVID-19 has affected digital communication in different ways. First of all, an increasing amount of information has been shared during the pandemic, for good and bad. More voices have been heard, and at the same time, more manipulated and false information has been circulated. According to Africa Check, people in many African countries are more receptive to such manipulation and "fake news", since the level of education is low, the belief in authorities is high, and there is no tradition of criticizing authorities.[86]

Motives for sowing disinformation are many, from controlling individuals and destroying social cohesion, to influencing corporate financial status and government actions. In Africa, "information disorders" during elections show evidence of close ties with China and Russia: social media operators, for example, run campaigns or follow other playbooks in their model of cyber-nationalism that aspires to control technology, information and resource infrastructures. China has the economic power to orchestrate, while Russia has to rely on ad hoc political engineering to degrade social cohesion among African populations, to create instability, and to carve specific sectors for resource capturing.[87]

The potential for AI as a tool in these settings is massive – China has already demonstrated its facial recognition prowess and used it to police minorities' and others' actions. Conventional wisdom says that ChatGPT and other large-language models can convincingly imitate human writers and speed up the pace of creating false information, which could make Russian trolls more believable by improving their grammar and messaging. Paired with biometrics, the fear is great for harmful misuse of these technologies, by local and international actors in Africa.[88]

CENTRE VS PERIPHERY

"Peripheries" can be understood as both social and political spaces as well as geographic locations on the margins of central state power. Katariina Mustasilta, a researcher at the EU Research Programme of the Finnish Institute of International Affairs, has written that peripheries are key arenas of security dynamics due to the spread of violent conflicts.[89]

Africa is a region where extremism has grown stronger in recent years. Many of the ongoing conflicts are related to militant jihadist groups with connections to ISIS and al-Qaida, and where different sub-groups are moving south on the African continent. According to the Uppsala Conflict Data Program, regional shift is happening currently – from the Middle East to the African continent – regarding armed conflicts. One reason is that ISIS has changed focus from Syria and Iraq.[90,91]

Boko Haram and al-Shabaab have for long been settled in northern Africa and in the Sahel region, but lately new formations have developed in central Africa, specifically in Mozambique and the Democratic Republic of the Congo (DRC). This shift is affecting existing political and social tensions in the region. Much of the conflict is about the control over natural resources, which in turn affects the relationships to other parties in power, including to China and Russia. This affects not only security, but also longstanding

82 https://www.brookings.edu/blog/africa-in-focus/2021/09/30/mobile-money-dominates-fintech-investment-in-africa/

83 Interview with Pascal Murasira, Managing Director, Norrsken Foundation East Africa, Kigali, April 2021

84 https://www.theafricareport.com/107432/will-ai-risk-analysis-really-expand-access-to-credit-in-africa/

85 https://www.iss.europa.eu/sites/default/files/EUISSFiles/CP_173_0.pdf

86 https://www.ui.se/utrikesmagasinet/analyser/2020/september/coronakris-satter-afrikansk-demokrati-pa-undantag/

87 https://www.kas.de/documents/273004/10032527/Report+-+The+Anatomy+of+Information+Disorders+in+Africa.pdf/787cfd74-db72-670e-29c0-415cd-4c13936?version=1.0&t=1599674493990

88 https://www.kas.de/documents/273004/10032527/Report+-+The+Anatomy+of+Information+Disorders+in+Africa.pdf/787cfd74-db72-670e-29c0-415cd-4c13936?version=1.0&t=1599674493990

89 https://www.iss.europa.eu/sites/default/files/EUISSFiles/CP_173_0.pdf

90 https://www.uu.se/nyheter/artikel/?id=17132&typ=artikel

91 http://files.webb.uu.se/uploader/1576/UCDP-Bulletin---Organized-violence-during-the-pandemic.pdf

tensions and conflicts between Christians and Muslims, as well as the relation between the states' centres and peripheries. Already-vulnerable states form an arena for great power rivalries and violent extremism.[92]

In this space, AI applications could serve both criminal and extremist actors and legitimate democratic states attempting to reign in discord. In conflicts, hostile actors could use emerging AI technologies to sow disinformation and exacerbate polarization, target individuals and their information systems, manipulate data sets, and attack critical infrastructure. At the same time, AI programmes and machine-learning algorithms can use biometric data – such as fingerprints, photographs and digital data on faces – to accurately identify violent extremists and/or terrorists, as well as for use in predictive monitoring of recurring patterns in hate speech, as early-warning signals. Furthermore, AI tools – using metadata based on social media activity, location information, and financial transactions – can help in identifying money laundering for financing terrorism.[93]

Threats such as terrorism and other forms of political violence are likely to increase due to expected economic recession, growing employment insecurities, and governance challenges – something of particular concern in countries with weak regulatory frameworks and growing cybersecurity and digital divides.[94]

EDGE VS SCANTY LEGISLATION

Africa is a testing ground for technologies produced somewhere else in the world, and the personal data from its users constitute a value and is a commodity on the global market. When Africans go to the polls – for both legislative and presidential elections – their voting preferences are more and more made possible thanks to biometric voting systems. In most cases, the cards and the voting equipment are produced by international companies that obtain lucrative contracts with African governments.

As more and more social and economic activities take place online, the importance of privacy and data protection is increasingly being recognized. Of equal concern is the collection, use and sharing of personal information to third parties (companies or countries) without notice, or consent, of consumers.[95] A large share of the population on the African continent is thereby excluded from its basic legal rights, and the safeguard mechanisms are inadequate.[96]

These privacy threats have worsened as a result of COVID-19. During the pandemic, digital rights were under steady attack through internet shutdowns, criminalization of "false news", misinformation and disinformation campaigns produced and distributed by state and non-state actors, harassment and prosecution of social media users, and an overall growth of state surveillance. Many countries in Africa have adopted both regulations and practices as a response to the pandemic. There have been deployments of surveillance technologies – and sometimes untested applications – to collect and process personal data for purposes of tracing and isolating people suspected to be carrying the COVID-19 virus. These measures have been quickly adopted, but often without adequate regulation or oversight.[97]

By December 2021, 33 out of 54 African nations (61%) had data protection and privacy legislation in place.[98] The EU General Data Protection Regulation (GDPR) from 2016 stands as a model for many of these legal initiatives.[99]

In 2014, the African Union (AU) adopted the African Union Convention on Cyber Security and Personal Data Protection, which sets forth the security rules essential for establishing a credible digital space for electronic transactions, personal data protection and combating cybercrime. For the convention to come into force, there is a threshold of a minimum of 15 member states to ratify the framework. Currently, 14 out of a list of 55 countries have signed the convention, and out of this, 13 have ratified the framework.[100]

In parallel to a growing need for privacy and data protection, work going on in Africa contributes to developing international laws on emerging technologies. Rwanda was the first country to implement the public sector's approach to regulating drones. And in 2017 the World Economic Forum teamed up with the government of Rwanda to develop regulatory frameworks, and airspace management practices, for governing drones at scale. The initiative aims to balance the upsides – with the possibilities of providing food and medicine to sick or crisis-affected populations in remote areas – with the downsides concerning privacy, collisions and other potential dangers.[101]

92 https://doku.nu/2021/04/04/risk-for-decennier-av-jihadistiskt-vald-i-afrika/

93 https://www.globalcenter.org/wp-content/uploads/2022/06/GCCS_PB_Safeguarding_Against_Misuse_Artificial_Intelligence_web.pdf

94 https://www.researchgate.net/profile/Abdul-Basit-14/publication/344553770_Journal_of_Policing_Intelligence_and_Counter_Terrorism_ISSN_Print_COVID-19_a_challenge_or_opportunity_for_terrorist_groups_COVID-19_a_challenge_or_opportunity_for_terrorist_groups/links/5f800458458515b7cf71dcf5/Journal-of-Policing-Intelligence-and-Counter-Terrorism-ISSN-Print-COVID-19-a-challenge-or-opportunity-for-terrorist-groups-COVID-19-a-challenge-or-opportunity-for-terrorist-groups.pdf

95 https://unctad.org/page/data-protection-and-privacy-legislation-worldwide

96 https://privacyinternational.org/long-read/3390/2020-crucial-year-fight-data-protection-africa

97 https://cipesa.org/2021/07/how-surveillance-collection-of-biometric-data-and-limitation-of-encryption-are-undermining-privacy-rights-in-africa-2/

98 https://unctad.org/page/data-protection-and-privacy-legislation-worldwide

99 https://privacyinternational.org/long-read/3390/2020-crucial-year-fight-data-protection-africa

100 https://au.int/en/treaties/african-union-convention-cyber-security-and-personal-data-protection

101 https://www.weforum.org/impact/revamping-drone-regulations-for-innovation-and-safety/

But as data protection laws emerge in Africa, governments have tended to impose tighter national control of the internet. An adoption of the principle of data residency or data localization (as in China), which means requesting data to be stored within the country of origin, can – if implemented in a comprehensive way – leave room for unrestricted government intervention.[102] This is one reason for the race between American and Chinese technological platform companies to build data centres and information infrastructure in a number of strategic places on the African continent.

The regulatory trend towards data localization and cyber-sovereignty is not only a problem for individuals and companies, but for the global community, as agencies such as the World Health Organization rely on global data-sharing to address shared problems, such as mitigating the consequences of pandemics, and for crisis prevention and global development.[103] The concepts of data localization and digital sovereignty have gained prominence due to the emergence of new geopolitical alliances and actors, as well as the growing accumulation of power in large international platform companies.[104]

CONCLUDING REMARKS

Given the challenges Africa faces, harnessing the benefits of AI is of the utmost importance. At the same time, so are mitigating the harms and considering legal protection, bias and violation of human rights, especially since people, economies and political systems are vulnerable.

The COVID-19 pandemic made very clear just how effective algorithms and computing power can be – combined with diverse data streams – to monitor and control bodies and populations. On the positive side, AI technologies have supported policymakers, the medical community, and society at large to manage every stage of the crisis and its aftermath, in detection, prevention, response, recovery and accelerating research.[105]

But in a state of exogenous shock, or just "normal instability", malicious actors (state or non-state) may capitalize on disorder and public distrust to advance their influence. Disinformation campaigns enhanced by AI can be used for political, economic or other reasons to destabilize critical governance institutions, and result in significant, long-term implications for peace and security.[106]

Strategies on different levels in society will have far-reaching effects on most processes and occurrences of AI. Automation that causes savings in one area might lead to disadvantages in another. The new logic is complex. Therefore, an increased responsibility is placed on politicians, the private sector, academia and civil society to manage the changes in a way that benefits the whole of society, and to act in a sustainable way based on the effects of AI-related initiatives. Consequences will differ depending on, for instance, the governance, openness and demographics of a nation.

Across Africa, the need is great for a robust digital infrastructure and renewable energy in order to benefit from AI. There is also a need for extensive investments in education, research and AI start-ups to create competitiveness and autonomy. Since data are crucial in all kinds of AI applications, there is also an urgent need for robust regulatory frameworks concerning how data are being collected, processed, saved and destroyed – for protection and for trust.

And as an inescapable truth, the computing power required for AI is out of reach for many developing countries. Neural networks are data-hungry and need an extremely large amount of historical data to learn how to perform a new task well. This in turn requires data storage capacity and modern computing hardware.

Developing countries often have urgent priorities, such as education, sanitation, healthcare and feeding their population, that override any significant investment in digital transformation – even if such a transformation in many ways can help to solve many of the urgent priorities. These countries are stuck in a sort of Catch-22, or a dilemma from which there is no escape because of mutually conflicting or dependent conditions. The situation risks widening the digital

102 https://jsis.washington.edu/news/chinese-data-localization-law-comprehensive-ambiguous/

103 https://www.kas.de/documents/273004/10032527/Report+-+The+Anatomy+of+Information+Disorders+in+Africa.pdf/787cfd74-db72-670e-29c0-415cd-4c13936?version=1.0&t=1599674493990

104 P. Gehl Sampath & F. Tregenna (Eds.) (2022). Digital Sovereignty: African Perspectives. Johannesburg: DSI/NRF South African Research Chair in Industrial Development. DOI: 10.5281/zenodo.5851685. ISBN: 978-1-77630-398-4 https://digitalsovereigntyafrica.files.wordpress.com/2022/02/digital-sovereignty-african-perspectives-10.pdf

105 https://www.oecd.org/coronavirus/policy-responses/using-artificial-intelligence-to-help-combat-covid-19-ae4c5c21/

106 https://www.globalcenter.org/wp-content/uploads/2022/06/GCCS_PB_Safeguarding_Against_Misuse_Artificial_Intelligence_web.pdf

divide between developing countries and the rest of the world.[107]

On the geopolitical chessboard of Africa, decisions in other parts of the world may change the conditions in both fast and far-reaching ways. If, for instance, China decides not to pursue its export-led growth plans, as a consequence of its Dual Circulation Strategy, and instead performs as a major global consumer, then low- and middle-income countries could enjoy a much more rapid economic development.[108,109]

So what kind of support can developed countries offer to the African continent in the quest for more beneficial AI technologies that harness the benefits and mitigate the harms?

First of all, to be able to contribute to ongoing and future sustainable development on the African continent, there is an immense need to understand the historical and present geopolitical situation. The story told about Africa is often told by the outside world, and in an often limited way. The African relationship with powerful global players – the US, China, Russia and EU – needs to be studied from a number of different angles. And to make realistic assessments, there is a need to appreciate the African perspective – while not forgetting the different needs of the 54 countries on the continent.

At the same time, for AI to contribute to sustainable development, some fundamental needs and initiatives are the same, regardless of a country's geographical position. A modern and free society needs regulatory frameworks that can guarantee human rights and a democratic order in society. The development and deployment of AI require strong societal ecosystems, including the public and private sectors, academia, and civil society.

In the end, everything rests on political will, and concrete actions, on how to move any society in a direction that secures a change based on the three dimensions of economic, social and environmental sustainability. To accomplish that, we all – global South and global North – need knowledgeable decision-makers and policymakers who understand the effects of AI in society.

Consequently, creating sustainable global development, based on present and future innovations and technologies, requires knowledge transfer and an exchange of experiences that opens up for dual capacity building between both nations and regions. In particular, such efforts should not forget the perspective and experiences of the global South.

107 https://www.weforum.org/agenda/2022/04/developing-countries-are-being-left-behind-in-the-ai-race-and-that-s-a-problem-for-all-of-us

108 https://www.lse.ac.uk/ideas/Assets/Documents/reports/LSE-IDEAS-FOCAC-at-21.pdf

109 https://www.chathamhouse.org/2023/01/china-africa-relations

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