

Harnessing Artificial Intelligence for Social Equity and Sustainable Development – A G20 Side Event –



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Executive Summary

In the context of Brazil's G20 presidency, the Digital Economy Working Group (DEWG) is prioritizing "Artificial Intelligence (AI) for Sustainable Development and Inequality Reduction" as one of its key topics. In this context, a side event entitled "Harnessing Artificial Intelligence for Social Equity and Sustainable Development", was held on April 17, 2024, in Brasília.

The Brazilian Government's Ministry of Science, Technology, and Innovation (MCTI) organized the event, supported by UNESCO, B20, T20, C20, NIC.br, CGI.br, the Brazilian National Data Protection Authority (ANPD), and the Brazilian Ministry of Foreign Affairs.² The event, which was broadcasted online via MCTI's YouTube channel, had 150 viewers at its live peak, and totaled more than 2,500 views.³

The event gathered representatives from academia, government, industry, and civil society to explore the potential of artificial intelligence to foster social equity and sustainable development. The discussion was articulated around six main topics.

1. Reducing Inequalities in AI Infrastructure and Access

The discussion highlighted that significant disparities in AI infrastructure and endowment exist between the Global North and the Global South. A consensus regarding the need to foster an equitable access to AI technologies and resources to ensure inclusive and sustainable development for all emerged.

2. Promoting Digital Sovereignty and Strategic Autonomy in AI

While coordination, cooperation and interoperability emerged as key to foster the development and deployment of technologies like AI, the discussion further remarked the importance for countries to foster their autonomy was highlighted as a pathway to enhance national sovereignty in the AI technologies and the digital environment.

3. Ethical AI Development and Societal Impact

All stakeholders, i.e. industry, civil society, academia, and government representatives, emphasized the need for inclusive, unbiased, safe, secure and transparent AI systems. The discussion on the societal impact of AI

² More information can be found on the website <https://www.g20.org/en/calendar/side-events/harnessing-artificial-intelligence-for-social-equity-and-sustainable-development>

³ <https://www.youtube.com/live/YO-oIMyONAc?si=KNI6YD9uLW99kT1D>

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further underlined the need to cater for cultural, linguistic, and social diversity, among others, and to address privacy concerns.

4. Human Resource Development in AI

The efficiency and effectiveness of AI systems hinge on the technology itself and on the expertise of those who develop and manage it. A critical need for skilled human resources in AI was voiced, including in relation to the unique challenges faced by countries in the Global South. The discussion proposed possible solutions to challenges such as brain drain, limited access to quality education and training programs, and the need for collaborative research initiatives.

5. Governance and Regulation

Effective AI governance requires a multi-stakeholder approach that balances innovation and regulation. The discussion underscored the need for international standards and norms to be interoperable, for them to be able to enable the ethical, secure, and inclusive development, deployment and use of AI.

6. Cooperation Among Countries

International cooperation is crucial for more inclusive sustainable development, and to reduce inequalities, especially between the Global North and Global South. A number of strategies related to sharing knowledge, assets, and to identifying good practices related to the ethical, safe, secure, and trustworthy development, deployment and use of AI were discussed.

Finally, this report presents a summary of **the discussion related to reducing global inequalities, enhancing digital sovereignty, and fostering international cooperation in AI governance**, with the aim to would contribute to digital inclusion, the protection and promotion of human rights and fundamental freedoms, and sustainable development.

Reducing Inequalities: the Importance of the Infrastructure for AI

Infrastructure is the backbone of AI development. However, significant disparities between countries persist, often reflecting the broader digital divide that disproportionately affects countries in the Global South. These countries often lack access to high-speed internet, computational resources, and data storage capabilities. Thus, a key concern is the lack of necessary endowments in some countries and the concentration of AI capabilities, datasets, and infrastructures in the hands of relatively few economic actors and regions worldwide.

80% of data centers are based in developed countries. The gap is even more acute if one considers high-performance computing infrastructure. The fact that AI is in a handful of nations mirrors and further exacerbates the connectivity and infrastructure gap.

Concentration may hurt the development, also of AI

The concentration of assets in a global minority with a heavy dependency on Big Tech companies, with the concern of developing countries becoming mere data exporters to the Global North, enhances the risk of perpetuating existing inequalities and placing relatively more vulnerable populations and developing countries at a further disadvantage. Such dynamics can widen disparities within and between nations, potentially impeding inclusive and sustainable development.

The funding for generative AI was 50 million dollars in 2014, whereas nowadays, it is around 10 billion dollars. This AI paradigm has the transformative potential to help face real-world challenges; remarkable examples include drug discovery and synthesis, medical diagnoses, personalized learning, climate models, and improved fraud detection.

The computing power used for AI also emerges as a blind spot, calling for a debate on shared infrastructure and its sustainability. It is key to develop robust AI infrastructure

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across all G20 countries, regardless of their current capabilities. Such a debate needs to be informed by a distinction between the AI we envision, which may be futuristic, highly connected, super intelligent, and high-investments required; and the AI focused on real needs, which contributes to the economy, helps mitigate greenhouse gas emissions, promotes advances in medical care, increases efficiency in agriculture, and helps disaster management, among other applications.

How to reduce inequalities in AI Infrastructure? The role of public policies.

There are several means to tackle the challenges posed by AI, including multi-sectoral, governmental, and regional alliances to strengthen global democracies, which are also related to digital sovereignty (discussed further in this report).

Another path for overcoming inequalities in AI infrastructure may be sharing resources between industry and academia, a practice already implemented in many countries, especially in the Global North. Including countries in the Global South in this approach could have a profound impact, not only on AI development but also on other challenges, such as the brain drain that developing countries have been experiencing, as it may help the mobility of talents without implying the physical relocation, and “for good”, in another country. This could pave the way for the growth of local AI ecosystems, social responsibility projects, international partnerships, voluntary technology transfer, and the establishment of advanced study centers, all of which would benefit all humanity.

In addition, developing each country's AI computing power, alongside increased and enhanced capacity, effectiveness, resilience, and sustainability, can go a long way.

In 2022, data centers globally consumed more electricity than some OECD countries, including countries like Italy and Norway, against patterns of energy use that have largely remained flat for the last decade. Governments should enhance their efforts and investments in research to foster efficiencies in data centers and training models that are being used to develop advanced AI systems, in line with UNESCO's Recommendation on the Ethics of AI Policy, related to the Environment and the Ecosystem (Area 5).

To close the digital divide, governments may want to prioritize investments in AI infrastructure, particularly in developing countries. Translations into public policies and

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domestic regulations may need to accompany regulatory interoperability standards. This interoperability needs to be emancipatory and avoid the mistakes made in the past. An example of such interoperability is related to the need for construction and curation of data and knowledge bases, e.g. by building models in other languages besides English, able to better capture and reflect humanity's richness and diversity.

Cooperation is the key

There is consensus that international cooperation is crucial for sharing knowledge, assets, and best practices, to ensure that all G20 countries, regardless of their current infrastructure, endowment, and level of development can participate in and benefit from the development, deployment and use of Artificial Intelligence. The expansion of the computing infrastructure of Brazil, for instance, is one of the topics being debated at the request of the President of the Republic, with cooperation between and among countries being part of this discussion.

Digital Sovereignty and Strategic Autonomy in AI

Digital sovereignty emerged as a recurrent theme in the discussion, with several aspects and needs to address the global challenges and risks that may emerge in an AI context. Countries expressed the need to govern AI development, deployment, and use, and to be able to decide critical aspects of their digital infrastructure and AI capabilities.

Challenges and Risks

Many countries seem to be grappling with questions of digital sovereignty. While sovereign countries have control over their territories, the fact that technology companies may decide over their "digital territories" challenges AI governance.

Risks related to overlooking issues of AI sovereignty include the possibility that few (geopolitical) platforms/groups dominate the technology, possibly threatening even to democracies; concerns about the emergence of general purpose AI and how to best shape

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it ethically, i.e. that respects human rights, human dignities, and fundamental freedoms; AI vis-a-vis the values of different countries; possible disputes between companies and even increased criminal activities or use of AI by terrorist groups: conflicts between nations and disputes related to greater economic relevance; use of deep fakes; replacement of humans by machines and, consequently, increased inequalities.

AI sovereignty needs to be inclusive

To protect and cater to humanity, AI sovereignty needs to be inclusive, respectful, and include underrepresented and minority groups.

Policies need to recognize and protect all citizens, including racial minorities and indigenous populations, and consider the issue of colonial epistemology, which is also in AI.

Strategic autonomy may help enhance AI sovereignty

Strategic Autonomy refers to the ability to regulate and decide essential aspects of the digital world and steer its influence over the economy, society, and democracy. The path in this direction may entail three fundamental steps: risk management, strategic partnerships (also with multilateral organizations), and global collaboration related to the common good. In particular, for developing countries, four axes emerge as key: the training of qualified human resources; the development and implementation of data governance policies related to the development, deployment, and use of AI systems; investment in computational infrastructure for AI; and the regulation and governance of platforms, services, and data.

In addition, investment in science and technology is key to fostering AI sovereignty, as is leveraging collaborations at different levels. This calls for enhanced scientific collaboration programs and for greater efforts to build global infrastructures that nevertheless incorporate national values, culture, and languages, in and through R&D.

AI sovereignty and sustainability

Digital sovereignty and sustainability are intrinsically linked. AI can help reduce energy consumption and enhance the optimization of many applications, e.g. communication

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networks or energy grids. Increasing countries' efforts to devise strategies able to improve their data centers' efficiency is crucial to making AI sustainable and accessible, particularly for the Global South. In turn, this calls for AI policies devised leveraging and implemented in a multi-stakeholder fashion, involving all relevant agents, which center on fundamental rights and freedoms, and promote human dignity and the consequent reduction of inequalities, within and among countries.

AI sovereignty is key to finding a balance between the governance of AI and fostering innovation for sustainable development.

Ethical AI Development and Societal Impact

Ethical considerations around AI have made up one of the most influential debates in recent years, considering all the UN's sustainable development goals (SDGs). UNESCO has taken the lead in promoting ethical AI governance. Its Recommendation on the Ethics of Artificial Intelligence underscores the importance of upholding human rights, human dignity, fundamental freedoms, sustainability, and gender equality while advocating for the fair distribution of AI benefits to promote sustainable development and strengthen democratic systems.

Building Inclusive and Ethical AI Systems

Ethical considerations regarding representativeness, self-determination, and inclusiveness in the development, deployment, and use of AI are paramount to ensure that AI technologies do not perpetuate existing biases or create new ones and to avoid AI technologies impinging on human rights. As a point in case, Brazil features approximately 274 indigenous languages, a notable decrease from the estimated 1,200 documented languages existing before the European colonization. There is an urgency not only to preserve these languages but also to consider the significant underrepresentation of indigenous languages or minorities in AI-based speech recognition and other AI systems.

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It is necessary to leverage diversity and integrate the wealth of diverse cultures and languages, and to foster the inclusion of groups too often excluded from this discussion, such as Indigenous populations, black people and descendants of enslaved peoples, people of different gender or sexual orientation, and others historically excluded from the debate.

AI can be a driver of inclusion and reduce asymmetries and inequalities, especially through networked and multi-stakeholder governance, from the local to the global and vice versa.

Many limitations hinder the ability of many people worldwide to participate fully in the AI revolution, exacerbating existing societal divides and creating new ones. To this end, data justice, including production, curation, processing, and use of representative and unbiased data becomes key. It is also important to look at the future leveraging approaches including future literacy and foresight, i.e. approaches able to offer more transversal and inclusive perspectives over the collective futures we want, so that AI and other emerging technologies can be drivers of inclusion, rather than triggering additional exclusion.

Towards Responsible AI: Ensuring Transparency and Accountability

Transparency and accountability are critical to building responsible, inclusive, and ethical AI systems. Both users and stakeholders, including AI developers and businesses, need to make AI systems transparent and accountable and devise redressal mechanisms to address the issues that AI systems may trigger, thus making them safe, secure, and trustworthy. The rampant use of AI without proper transparency and accountability poses several risks ranging from educational challenges to plagiarism, to the homogenization of thought and loss of linguistic diversity, to discrimination about essential services such as health or insurance, to fuelling disinformation and misinformation, to mention but a few.

Informed consent for the use of data and explainability modules are among the necessary tools that can lead to responsible AI systems. At present, there is little public scrutiny and understanding of AI's real benefits and most fear AI risks, especially due to the lack of data and digital literacy. This may impinge upon innovativeness and the ability of AI systems to help address individual challenges and societal needs.

Societal Impacts of AI development, deployment, and use in Public Services

When AI development, deployment, and use are applied in public services, it becomes a matter of public policy. Public services that leverage AI may directly affect fundamental rights guaranteed by States, such as access to information, health, education, and culture, among others, and therefore need to be carefully designed, implemented, and monitored.

The use of AI by the Public Sector directly may affect fundamental rights promoted by the State, including citizenship. Its scalability may have important social impacts, thus requiring civil servants to have some degree of ethical awareness and literacy, as well as digital data literacy.

Addressing Global Disparities

The ethical and responsible development, deployment, and use of AI entails the protection and promotion of human and fundamental rights, requires privacy protection, among others, and a quest for the development of socially, culturally, and linguistically diverse databases. These and other factors are essential for the development of AI that can benefit humanity.

For AI to achieve this goal, it is crucial to include the Global South countries, creating policies that reduce global asymmetries and allow equitable, universal access to the opportunities that AI presents.

Human Resource Development in AI

AI models can only be as good as the humans that program them. It is, therefore, crucial to consider AI systems as tools to help people that should be developed considering the human being and its ecology as the center, and pondering the occasions in which it makes sense to leverage AI in the first place. Central to all this is the availability (or lack thereof) of qualified human resources.

A Systemic and human-centered Approach to AI

Developing AI for an inclusive shared future for all humankind cannot be achieved solely or mainly based on data-driven approaches to AI. The limited knowledge the world still has about the essence of human intelligence and cognitive functions calls for extreme caution and careful consideration throughout the development, deployment, and use of AI systems.

"Artificial intelligence, at least the one we know today, is neither intelligent nor artificial. It does not have the multiple attributes that characterize human intelligence in all its richness and complexity. Nor is it artificial. It is, for better or worse, a human creation, the result of inventiveness, accumulated work, experiences, and perspectives of women and men. Therefore, it is up to women and men around the world, to all of us, to develop and apply it under our interests and greater objectives." ⁴

Learning from cognitive psychology, philosophy, and social and human sciences more generally, can foster a better understanding of what it means to be human and how humanity may want to leverage AI for good. This needs to be a social and societal discussion, and not only or mainly a technology-based one, which in addition at present appears to be mainly data-driven, with all that this entails in terms of the biases and lack of representativeness that many data currently used exhibit.

AI awareness and education need to exist at all levels

Artificial intelligence awareness and education are needed at all levels, whether e.g. in networks that seek to retrain people to provide them with digital literacy, or in the form of basic computing and artificial intelligence skills in different education grades.

Without critical knowledge of the rationale behind AI tools, it is very difficult to form citizens who can use AI responsibly.

⁴ Excerpt from Ambassador Maria Laura da Rocha's speech

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It would be important to raise awareness and to educate with fundamental rights guaranteed by the State, such as access to information, health, education, culture, and all others, and to foster a critical understanding of the applications provided by the public and private sectors alike.

Leveraging Diversity to Enrich Humanity and Reduce Inequalities

Issues related to linguistic and cultural loss are unfortunately present in AI and addressing them calls for the need to leverage diversity to enhance and enrich our shared humanity, and to reduce inequalities and inequities.

To this end, quality and inclusive education is key to forming a critical mass of human resources skilled in AI, at different levels. In this respect, countries in the Global South face unique challenges, such as brain drain and limited access to quality education, and would benefit importantly from increasing the diversity of training programs and from collaborative research initiatives.

The ultimate aim is to democratize AI systems, making them accessible and beneficial to every individual and humanity.

There is a need for more AI-literate and aware people, especially but not only in the Global South, as inequalities exist between and among countries.

Enhancing AI awareness and capacity may benefit from actions including: i) building multidisciplinary and diverse teams, and reducing compartmentalization and biases; ii) addressing shortage of specialists, reducing competition among countries, and brain drain; iii) fostering investment in building models with local data, with deliberate concerns for diversity; iv) stepping up data and humanities-literacy related efforts as essential steps in AI literacy; v) fostering collaboration between industry and academia in innovation ecosystems; and, vi) addressing gaps in the public and private sectors alike.

AI Governance and International Cooperation

While regulations can be part of governance, governance is not a synonym for regulations, as it also entails individual and societal choices and actions. Effective AI governance requires coordinated approaches, both within and across countries - also multilateral ones - able to balance innovation-fostering and risk-containment aspects. The UNESCO Recommendation on the Ethics of AI, which applies to all G20 members, explicitly calls for robust national and international regulatory and governance frameworks, to ensure the democratic governance of AI and mitigate its potential misuse or abuse.

Collaboration is key, as is Sharing Past and Current Experiences

Principles such as equity, inclusion, sustainability, and collaboration can help build democratic and inclusive governance mechanisms for AI systems based on a broader and human-centered vision of these technologies, and drawing on previous experience with other disruptive technologies, such as the Internet.

Thus, it is central to broadening the dialogue, bringing together different sectors and perspectives towards a shared understanding and a collaborative approach to how AI can bring benefits and how it can be developed, deployed, and used responsibly by all, including governments, multilateral organizations, civil society, the business sector, and the scientific community. To this end, sharing local experiences related to legislation, regulation, and domestic governance can be helpful to avoid mistakes, replicate success, and caution about common oversights and unforeseen impacts.

It is important to go one step beyond principles and create regulations with the engagement of various stakeholders.

Regulatory Interoperability: towards Agile and Adaptable Systems

The UNESCO Recommendation on the Ethics of Artificial Intelligence underscores some of the essential values for data governance: quality, reliability, security, privacy, availability, and bias mitigation. In addition to these requirements, considering the accelerated pace of AI developments, and, consequently, the possible disruptiveness of AI applications,

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regulations and other governance approaches need to be agile and adaptable. Existing proposals are primarily at national and regional levels, with approaches that generally look only at some of the issues, being them existential risks, human autonomy, or other ethical issues.

Developing countries need to be part of this important debate, which would benefit from having a more positive approach to AI governance for the public interest. This entails addressing issues concerning the distribution of capabilities and access, breaking silos, reducing inefficiencies and improving resource management, and fostering competition.

It is also desirable to have frameworks for positive governance, that is, concerning the positive aspects that can be extracted from AI rather than only preventing the negative ones.

International Standards

To strengthen governance, it can be important to promote interoperability of governance systems and to leverage standards, also technical, that can help foster within and across country data flows, data free flow with trust, making users aware of their rights and able to have them guaranteed.

Numerous international and collaborative efforts are underway to consider impact assessments, risk management mechanisms, and instruments that promote innovation, such as regulatory sandboxes.

Regulatory sandboxes are controlled spaces providing more security for testing models and applications within the limits established in a collaborative space, so that deployment to society can be more carefully designed and implemented. .

If ethical guidelines and human rights frameworks are not effectively translated into standards of different types, technology companies may face ambiguity and uncertainty, which are known to hamper innovation and business dynamics, in addition to negatively affecting individuals and societies alike This underscores the urgency and importance of this task for all relevant stakeholders, including technology industry leaders.

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Democratic Governance

The democratic governance of AI needs to be understood broadly, being participatory and enabling the democratization of this technology. Undeniably, AI opens up countless possibilities for applications that can bring incredible benefits to society and a path to innovation and progress.

However, the uneven global distribution of assets in artificial intelligence infrastructure and how this new technology is currently developed, concentrated in a small group of private companies, raises concerns about the deepening of power asymmetries between nations, and about deepening or new social inequalities, and about the negative impacts on rights and democracy that these technologies may bring.

Many countries, especially those in the Global South, affected by climate change and hunger, hope that the discussion around artificial intelligence and its development can lead to a new ethic and thinking about emerging technologies and help address the existing disparities and inequalities between and within nations.

Also, AI's influence on crucial democratic processes, such as elections, cannot be underestimated, especially in a year when almost half the world population is called to vote, and considering the impact that AI can have on autonomy, strategy development, and implementation, and more broadly on information and societies.

It is crucial to address key issues including infrastructures, multisectoral and multi-stakeholder collaboration, and governmental collaborations - both at the national and regional levels-, and to foster North-South relationships enabling the effective governance of AI.

"Brazil has sought to develop cooperation that can contribute to overcoming inequalities and strengthening global efforts for the responsible and ethical use of Artificial Intelligence. This is aligned with domestic actions since this is a priority topic for the Brazilian government. We began reviewing the Brazilian Artificial Intelligence Strategy to promote the development of the AI-related production chain. (...) This seminar has been of great importance in paving the way for inclusive, equitable, and sustainable solutions."⁵

⁵ Speech by Minister Luciana Santos

Policy implications of the discussion

Fostering digital inclusion and the protection and promotion of human and fundamental freedoms also entails reducing global inequalities, improving digital sovereignty, and fostering international cooperation along several features related to AI governance.

Strategies for Inequality Reduction

- There is an urgent need to prioritize investments in AI infrastructure, particularly in developing countries, **to close the digital divide**, reflecting the need to balance AI capabilities between the Global North and Global South;
- AI should be included in **all education levels to improve data literacy** and promote diversity and inclusiveness;
- Public-private partnerships need to be encouraged, **sharing assets and knowledge** between industry and academia, strengthening **local AI ecosystems**, reducing brain drain, and fostering regional alliances to strengthen global democracies.

Promoting Digital Sovereignty in AI

- **Strategic autonomy** needs to be promoted by managing risks and fostering strategic partnerships, bearing in mind national values and **cultural, linguistic, and social diversity**;
- **Digital sovereignty** and sustainability are intrinsically linked, and there is a need for a global effort to seek solutions to improve data center and HPC efficiency, ensuring that AI development is **environmentally sustainable**;
- **Inclusive AI systems** development needs to recognize and protect the sovereignty of **Indigenous and other minority groups**, guaranteeing inclusive, **representative, and ethical solutions**, ensuring that these systems do not perpetuate biases or infringe on human rights.

Global Collaboration and Governance

- There is an urgency for countries to govern AI development, deployment, and adoption, **deciding critical aspects** of their digital infrastructure and **AI capabilities**.
- It is crucial to consider a **multi-stakeholder approach** at the center of AI governance, **balancing innovation and regulation**, strengthening global dialogue, taking into account **past experiences with disruptive technologies**, and being guided by principles of equity, inclusion, and sustainability;

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- It is required to support the development of **international standards** and norms, ensuring ethical, secure, and beneficial AI development globally. These standards represent **technical tools to guide companies** in implementing regulations in their processes.
- Regulatory interoperability is essential to ensure that governance is **agile and adaptable**, keeping pace with the technological advances involving AI. Moreover, this interoperability needs to be **emancipatory and not colonizing**, considering representativeness, self-determination, and inclusiveness principles.