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NAVIGATING THE REVOLUTION: POLICY RECOMMENDATIONS FOR INCLUSIVE AI

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Navigating the Revolution: Policy Recommendations for Inclusive AI

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About CERRE

Providing high quality studies and dissemination activities, the Centre on Regulation in Europe (CERRE) is a not-for-profit think tank. It promotes robust and consistent regulation in Europe's network and digital industry and service sectors as well as in those impacted by the digital and energy transitions. CERRE's members are regulatory authorities and companies operating in these sectors, as well as universities.

CERRE's added value is based on:

- its original, multidisciplinary and cross-sector approach covering a variety of markets, e.g., energy, mobility, sustainability, tech, media, telecom, etc.;

- the widely acknowledged academic credentials and policy experience of its research team and associated staff members;

- its scientific independence and impartiality; and,

- the direct relevance and timeliness of its contributions to the policy and regulatory development process impacting the relevant industry players and the markets for their goods and services.

CERRE's activities include contributions to the development of norms, standards, and policy recommendations related to the regulation of service providers, to the specification of market rules and to improvements in the management of infrastructure in a changing political, economic, technological, and social environment. CERRE's work also aims to clarify the respective roles of market operators, governments, and regulatory authorities, as well as contribute to the enhancement of those organisations' expertise in addressing regulatory issues of relevance to their activities.

About JJN

The JustJobs Network (JJN) is an applied research organization finding evidence-based solutions to one of the most pressing challenges of our time: how to promote better work in a rapidly changing 21st century economy. We produce research on good job creation and workforce development, focusing our work on the critical knowledge gaps in the employment landscape.

JustJobs convenes a global network of diverse stakeholders—including policy shapers, academics, and grassroots leaders — to deepen the practical implications of our research endeavours and amplify their impact. Through the combination of cutting-edge research and global knowledge sharing, we aim to forge a fresh, dynamic channel for policy dialogue on employment at national, regional and international levels.

About CCG

The Center for China and Globalization (CCG) is a non-governmental think-tank based in Beijing, founded by Dr. Henry Huiyao Wang and Dr. Mable Lu Miao in 2008. CCG has been granted the official special consultative status by the Economic and Social Council of the United Nations (ECOSOC) as a non-governmental organization. In the 2020 Global Go To Think Tank Index by the University of Pennsylvania Think Tank and Civil Society Program (TTCSP), CCG ranked 64th of the top think tanks worldwide and among the top 50 "best independent think tanks."

CCG now has more than ten branches and overseas representatives and over 100 full-time researchers and staff engaged in research on globalization, global governance, international economy and trade, international relations and global migration.

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1 Introduction

In September 2023, one of Hollywood's longest labour disputes finally ended. After extensive negotiation, Hollywood writers concluded their strike, securing new contracts with specific safeguards against the use of artificial intelligence (AI). These agreements prohibit studios from employing AI to write or revise scripts already penned by human writers, as well as ban the use of AI-generated content as source material.[1] The writers' primary concern had been the potential for generative AI to undermine their creative rights and compensation, or worse, replace their roles in the industry.[2]

Meanwhile, in Nigeria, several agricultural startups are progressively adopting machines and AI to enhance crop yields and lower labour costs. This transition tends to prioritize technological solutions over human labour, potentially resulting in reduced employment opportunities for smallholder farmers and labourers who depend on traditional farming practices.[3] Initial evidence suggests that the adoption of precision agriculture and AI tools for tasks such as planting, harvesting, and pest control is displacing traditional farming jobs. Integration of advanced farming technologies could displace up to 49 percent of current agricultural jobs in Nigeria by 2030.[4]

These are but two examples of how artificial intelligence is an unstoppable force that is reshaping local communities, national economies, labour markets, and international relations. At some discrete tasks, AI is already surpassing human capabilities, and it seems likely that in the next few years a single AI system could do so in a far broader range of contexts. Use of technology is increasingly a differentiator for economic growth across countries.[5] Estimates about whether and how much AI is improving economic productivity vary widely, but it has potential to contribute to addressing some local and global problems, from overcoming language barriers to helping combat climate change.

Whatever the true potential of the technology, however, its development is accompanied by **concerns about AI's disruptive social and economic impacts**. There is no guarantee that the benefits of AI will be evenly shared – or that the social and economic costs will be evenly distributed. On its current trajectory, the benefits could be concentrated among certain countries, sectors, companies, and workers, while others risk missing out on the benefits and suffering disproportionately from the disruptive costs.

Technologically, AI is evolving quickly. AI deployment is also occurring with unprecedented speed. Its usage is growing much faster than with previous technological revolutions like automation, computing and the Internet, which required businesses to make significant hardware and infrastructure investments before adopting the technology. These factors make it hard to precisely discern what AI's impacts will be. But **given how rapid and profound its impacts could be, decisions about how AI is developed, what uses it is put to, and how we cultivate the human capacity to develop and use it must be made not only by the private sector but also by governments, with input from local**

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[1] Dani Anguiano and Lois Beckett, How Hollywood writers triumphed over AI – and why it matters, The Guardian, (October 20, 2023) https://www.theguardian.com/culture/2023/oct/01/hollywood-writers-strike-artificial-intelligence

[2] Molly Kinder, Hollywood Writers Went on Strike to Protect Their Livelihoods from Generative AI. Their Remarkable Victory Matters for All Workers, Brookings (Oct. 25, 2023) https://www.brookings.edu/articles/hollywood-writers-went-on-strike-to-protect-their-livelihoods-from-generative-ai-their-remarkable-victory-matters-for-all-workers/

[3] World Bank. (2020). "Nigeria: Digital Agriculture in Nigeria - The Future of Agriculture in a Digital World.

[4] McKinsey Global Institute. (2019). "The Future of Work in Africa: Harnessing the Potential of Digital Technologies for All."

[5] Government of India, Ministry of Finance. (2024). Economic Survey 2023-24. https://www.indiabudget.gov.in/economicsurvey/

communities. Policymakers need to understand how AI could affect labour markets, economies and societies and be ready to quickly adopt strategies to steer the technology's direction towards uses that promote inclusion and benefit groups who have previously missed out on the benefits of technological change, minimising any unavoidable disruptive impacts on these groups.

In labour markets, for example, **AI can enhance efficiency and innovation, benefiting some sectors where it is effectively adopted, but it may also lead to job displacement and make some current skills obsolete**. This transition could result in structural workforce changes both within and between countries. For example, deployment of AI could amplify inequalities if income distribution increasingly favours capital owners over workers, and governments do not adopt redistributive policies to compensate.[6] This raises important questions about economic equity, social stability, and the need for new policy frameworks to address these challenges. Countries will need education, skilling and employment transition policies to meet the need of dynamic labour markets. They will also need to share best practices about how to manage the transitional and permanent impacts of AI on labour markets. And developing countries may have unique needs in coping with these challenges.

To avoid exacerbating inequality, **AI also needs to be designed, developed, deployed and governed in ways that are representative and inclusive**. Inclusiveness should be a priority for all governments: recent economic work illustrates that societies enjoy greater economic growth overall when they ensure both the benefits, and the costs of new technology are distributed fairly.

One problem is to ensure the inclusive design, development and deployment of AI. Countries that can take advantage of AI can potentially become more productive and can gain new comparative advantages. This is likely to greatly impact global trade, particularly in services, and governments will need to manage potentially significant changes in their economies. But many parts of the world have fewer capabilities to access, exploit and enjoy the benefits of AI. They lack infrastructure such as access to affordable and reliable energy, connectivity, and computing infrastructure; they may have fewer relevant datasets to train AI for locally relevant uses; their communities may lack requisite levels of education and digital skills to develop or use the technology; and they lack institutional capacity to support AI development and deployment and to regulate the technology so that it reflects local values. These problems risk increasing inequality – both between and within countries.

If AI is developed in ways that are inclusive and locally appropriate, it has some potential to positively reduce inequality, or not exacerbate it. Tools like automatic translation, for example, can help overcome barriers to social and economic inclusion. And if used appropriately, effective use of AI could help countries supplement education and skilling. However, achieving this vision will require policymakers to think carefully about how previous technological changes have often tended to increase, rather than reduce, inequality.

Another problem is ensuring **inclusive global governance of AI**. Many countries are actively involved in shaping the future of AI, through measures like subsidies, regulation and 'softer' measures like making clear their expectations of the sector. International forums to discuss AI governance are proliferating, with different groups of countries pursuing their own interest and values. Many of the

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[6] Acemoglu, D., & Restrepo, P. (2018). The race between man and machine: Implications of technology for growth, factor shares, and employment. American Economic Review, 108(6), 1488-1542
Brynjolfsson, E., & McAfee, A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. W. W. Norton & Company.

challenges of AI will not be easy for countries to collaborate on, because AI has become an area of intense economic competition and geopolitical rivalry. However, many parts of the world, especially developing countries, either do not want to, or cannot afford to, take part in such rivalry. And in the meantime, larger and richer countries remain far more engaged in international forums for AI governance than developing countries – and even when countries are represented in such discussions, not all impacted communities in those countries have a meaningful voice. This risks certain countries and communities becoming subjected to international decisions about AI governance over which they have had little or no influence. That in turn may lead to AI being developed in ways which do not reflect local needs and values, making it harder for some countries and communities to use it in beneficial ways.

Against this backdrop, the Centre on Regulation in Europe (CERRE) and the Center for China and Globalization (CCG), in cooperation with the global research institute JustJobs Network, held a conference on 14 January 2025 discussing AI's impact on skills and employment, and on how to ensure its development, deployment and governance is inclusive. Despite countries having different political systems, development priorities, and values, the conference illustrated that intergovernmental co-operation and knowledge sharing are crucial to help ensure that AI develops in an inclusive way. Participants shared perspectives from around the world about how policymakers can ensure the AI revolution can be harnessed to benefit communities, within countries and between developed and developing countries – and how policy-makers can mitigate negative impacts on equality.

This issue paper outlines current research and thinking on the topics discussed at the conference. It concludes with specific policy recommendations aimed at:

- Promoting inclusive and sustainable labour market transformations;
- Building equity into the development, deployment and governance of AI; and
- Highlighting how governments can manage the challenges of the social and economic transformations AI may provoke.

2 AI, productivity and work: opportunities and challenges

AI's impact on labour markets is complex and multifaceted. While it can boost efficiency and productivity in some sectors, it may also cause job displacement and skill obsolescence. This technological shift could trigger significant workforce restructuring both domestically and internationally. The adoption of AI might exacerbate income inequality if it disproportionately benefits capital owners over workers, especially in the absence of appropriate redistributive policies. [7] However, the interplay between AI, job numbers, productivity, and skills is not uniform. It varies considerably across different occupations, industries, and geographical regions, making its effects highly context-dependent.

2.1 AI and Jobs

As AI systems become more sophisticated, there is a growing fear that they could displace human workers in certain roles, leading to job losses.[8] One estimate suggests that approximately 40 percent of global employment is exposed to the impact of AI, with advanced economies facing higher exposure – approximately 60 percent – because of a higher prevalence of cognitive-intensive jobs. Emerging and developing economies have lower exposure – 40 percent and 26 percent, respectively – but are also less prepared to adapt to the consequences of AI.[9]

What kinds of jobs is generative AI likely to impact? An ILO Working Paper finds that generative AI is likely to affect clerical jobs most significantly. The report draws a correlation between the presence of jobs that are likely to be augmented by generative AI and the countries that have higher shares of these jobs to determine which countries will be most impacted by the rise of AI. It finds that "wealthier countries are likely to face both more disruptive effects in the technological transition and higher net gains from the process."[10] A larger share of the labour force in developing countries is engaged in activities that have little to do with AI, but these countries and populations also stand to lose out on the potential gains, being relegated to low-value add activities in AI value chains.

Available research suggest that AI could bear a significant impact on roles that focus on well-defined tasks that don't require in-person interaction. The service sector is particularly susceptible, especially business services. For instance, AI might contribute to the gradual decline of India's service exports, potentially reducing annual economic growth by 0.3-0.4 percentage points over the next ten years.[11]

While advancements in communication technology have enabled the growth of service outsourcing, emerging technological innovations may eventually disrupt this trend. This poses the risk that foreign

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[7] Acemoglu, D., & Restrepo, P. (2018). The race between man and machine: Implications of technology for growth, factor shares, and employment. American Economic Review, 108(6), 1488-1542

Brynjolfsson, E., & McAfee, A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. W. W. Norton & Company.

[8] OECD. (2019). Artificial Intelligence in Society. OECD Publishing.

[9] Cazzaniga, M., Jaumotte, F., Li, L., Melina, G., Panton, A. J., Pizzinelli, C., Rockall, E., & Tavares, M. M. (2024). *Gen-AI: Artificial intelligence and the future of work.* (Staff Discussion Note, No. SDN/2024/001). International Monetary Fund.

[10] Gmyrek, P., Berg, J., Bescond, D. Generative AI and jobs: A global analysis of potential effects on job quantity and quality. ILO Working Paper 96. Geneva: International Labour Office, 2023.

[11] Via - The Economist. "Will services make the world rich?" The Economist, June 24, 2024. Available at: https://www.economist.com/finance-and-economics/2024/06/24/will-services-make-the-world-rich.

capital and employment opportunities will flow back to developed countries in a process of "work reshoring." This could erode the expectations of potential gains from service led-growth that many developing countries are hoping for.

Artificial intelligence technologies are dependent on the production, supply and maintenance of large quantities of data. For each of these, the use of human labour is required. Here, developing countries have become the repository and supplier of cheap labour. The rise of AI has necessarily implicated the proliferation of work related to data. These include mechanistic and repetitive tasks that have a longer history such as data annotation. While these tasks theoretically present new employment opportunities for workers in developing countries, scholars have highlighted the increased precarity and vulnerability of workers who engage in this kind of work.

The work of data annotation involves labelling data in ways that make information more readable and understandable for machine learning programmes. This work undertaken by data annotators in developing countries is described by journalists as difficult, repetitive, and boring,[12] while simultaneously being underpaid.[13] A 2018 study showed that the median wage for data annotators on a popular platform was around two dollars per hour.[14] Despite this, data annotation work is a growing field, providing income generation opportunities, particularly in smaller towns and even villages.[15] This begs the question about whether these workers providing cheap labour and engaging in grunt work are helping building systems that don't ultimately benefit them.

2.2 AI and productivity

The literature points to the potential of AI to enhance productivity across various sectors.[16] From automating routine tasks to providing data-driven insights for decision-making, AI technologies seemingly offer the prospect of increasing efficiency and innovation that could fuel economic gains for countries, businesses, and workers that can successfully harness these capabilities.[17] Yet, while AI holds significant promise for enhancing productivity, its impact is not uniform; not everybody can realise the gains it offers. Many developing countries, and workers within them, are at a disadvantage.

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[12] Alana Semuels, The Internet Is Enabling a New Kind of Poorly Paid Hell, The Atlantic, January 23, 2018, https://www.theatlantic.com/business/archive/2018/01/amazon-mechanical-turk/551192/

[13] Dzieza, J. (2023). AI is a lot of work. The Verge, 20, 2023, https://www.theverge.com/features/23764584/ai-artificial-intelligence-data-notation-labour-scale-surge-remotasks-openai-chatbots

[14] Hara, K., Adams, A., Milland, K., Savage, S., Callison-Burch, C., & Bigham, J. P. (2018, April). A data-driven analysis of workers' earnings on Amazon Mechanical Turk. In Proceedings of the 2018 CHI conference on human factors in computing systems (pp. 1-14) https://dl.acm.org/doi/10.1145/3173574.3174023

[15] Karishma Mehrotra, Human Touch, Fifty Two (July 22, 2022) https://fiftytwo.in/story/human-touch/

[16] Erik, B., Danielle, L., & Raymond Lindsey, R. (2023). Generative AI at Work. NBER Working Paper, (31161) https://www.nber.org/system/files/working_papers/w31161/w31161.pdf
Based on data from 5,179 customer support agents – a majority from the Philippines, with some others from the United States and other countries, Brynjolfsson et al. find that access to a generative AI tool increased productivity, as measured by issues resolved per hour, by 14% on average, including a 34% improvement for novice and low-skilled workers but with minimal impact on experienced and highly skilled workers.
Acemoglu, D (2024) The Simple Macroeconomics of AI. MIT.
In his recent paper examining the macroeconomic effects of AI, Acemoglu suggests that AI could lead to a modest, though not trivial, increase in total factor productivity between .53 -- .66% within ten years.

[17] Autor, D. H. (2015). Why are there still so many jobs? The history and future of workplace automation. Journal of Economic Perspectives, 29(3), 3-30.

This is perhaps why, in the aggregate, technological advancement has not yet translated into productivity gains to the extent imagined. [18]

Despite the emphasis on efficiency and productivity gains resulting from technology, recent years have seen a global deceleration in labour productivity growth.[19] Data suggests that productivity growth in upper-middle-income countries has remained positive since 2019. Conversely, low-income countries have experienced notable declines in productivity growth in the same period, and it is expected to remain slow for the next couple of years.[20]

As explained in section 3.1 below, many developing countries face a complex array of challenges in building, adopting and using AI, which can significantly impede their ability to harness its productive potential. These challenges span several areas including financial constraints; lack of infrastructure; limited availability of data, technical capacity, and human capital. Moreover, a shortage of well-established research institutions, innovation hubs, and industry-academia collaborations focused on AI can slow the pace of AI innovation and limit the ability to develop locally relevant AI solutions.

Among the reasons low-income countries have experienced notable declines in productivity[21] is because, within countries, there is the difficulty in transitioning workers from subsistence agriculture to more productive sectors -- manufacturing and modern services. Only a small share of the populations in developing countries are employed in higher value add occupations in manufacturing and modern services that are more technology and skill intensive.[22] These factors limit AI diffusion in the economy, relegating firms and workers in developing countries to lower-value activities in global AI value chains.

Developed economies are better positioned to benefit from AI's productivity gains. The Global AI Index, which ranks countries based on their AI capabilities, shows a significant gap between nations like the United States and China on the one hand, and developing countries in Africa and South Asia on the other.[23]

2.3 AI and Skills

AI technologies are creating a growing demand for workers with a higher order of skills, while potentially rendering some traditional skills obsolete.[24] The World Bank's World Development Report 2019 highlights that technology is changing the skills in demand by labour markets, with a growing premium on cognitive skills involved in complex problem-solving, critical thinking, and creativity.[25] Examining the historical patterns of worker reallocation points to the fact that college-educated workers exhibit higher adaptability in transitioning to AI-complementary roles compared to less-

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[18] S. Dewan; E. Ernst and E. Gravel (2021) The World in 2030: "Looking Back Ten Years From Now." In _Managing Work in the Digital Economy: Challenges, Strategies, and Practices for the Next Decade._ Ed. S. Guldenburg; E. Ernst and K. North. Springer.
[19] International Labour Organization (2025) World Employment and Social Outlook. ILO.
[20] International Labour Organization (2025) World Employment and Social Outlook. ILO.
[21] International Labour Organization (2025) World Employment and Social Outlook. ILO.
[22] International Labour Organization (2025) World Employment and Social Outlook. ILO.
[23] International Telecommunication Union. (2022). Measuring digital development: Facts and figures 2022. ITU Publications.
[24] OECD. (2019). Artificial Intelligence in Society. OECD Publishing.
[25] World Bank. (2019). Leveraging Economic Migration for Development: A Briefing for the World Bank Board. World Bank, Washington, DC.

educated workers.[26] Older workers face more significant challenges due to skill obsolescence and reduced mobility.[27] These facts underscore the contention that technology, and AI in particular, is skill-biased.

In many developing countries, not only is there still a digital divide, but a large share of the population still struggles to acquire requisite levels of quality education to build digital skills upon.[28] Unless governments urgently make necessary investments in improving the quality of education it will be difficult to realize further growth in human capital at scale needed to participate in an AI driven world. A relatively smaller share of workers in developing countries have the requisite levels of skills to participate in the AI economy, and many such workers also migrate to developed countries to work there.[29]

As technology and AI is tilting the nature of work to require higher-skill levels that excludes large shares of workers in developing countries, some research on the impact of AI on employment in European countries suggests that employment shares have risen in occupations more exposed to AI.[30] Looking into the future however, as AI evolves and becomes more sophisticated, it stands to disrupt occupations involving more complex tasks the most. Developed countries have a higher share of workers engaged in such occupations involving complex rather than simple tasks. Such skill mismatches could however lead to structural displacement[31] in developed countries and exclusion in developing countries.

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[26] Cazzaniga, M., Jaumotte, F., Li, L., Melina, G., Panton, A. J., Pizzinelli, C., Rockall, E., & Tavares, M. M. (2024). Gen-AI: Artificial intelligence and the future of work. (Staff Discussion Note, No. SDN/2024/001). International Monetary Fund.

[27] Cazzaniga, M., Jaumotte, F., Li, L., Melina, G., Panton, A. J., Pizzinelli, C., Rockall, E., & Tavares, M. M. (2024). Gen-AI: Artificial intelligence and the future of work. (Staff Discussion Note, No. SDN/2024/001). International Monetary Fund.

[28] Dewan, S., & Sarkar, U. (2017). From education to employability: Preparing South Asian youth for the world of work. *JJN, UNICEF*.

[29] World Bank. (2019). World Development Report 2019: The Changing Nature of Work. Washington, DC: World Bank. https://doi.org/10.1596/978-1-4648-1328-3
OECD. (2020). International Migration Outlook 2020. Paris: OECD Publishing. https://doi.org/10.1787/ec98f531-en

[30] Andrés, J., Doménech, R., & Jimeno, J. F. (2021). The Future of Employment in Europe: Technology, Migration, and Demographic Change. In The Economics of the Digital Transformation (pp. 35-59). Palgrave Macmillan, Cham.
Jimeno, J. F. (2019). Fewer babies and more robots: Economic growth in a new era of demographic and technological changes. SERIEs, 10(2), 93-114.

[31] UNDP. (2021). Artificial Intelligence and the Future of Work in Asia and the Pacific. United Nations Development Programme.

3 Ensuring AI fitness for all parts of the world

Beyond its impacts on labour markets, AI should be developed in an inclusive way which takes the needs of the developing world into account. Many parts of the world have fewer capabilities to access, exploit and enjoy the benefits of AI, and to ensure AI services are designed with their needs in mind. This risks fuelling global inequality and worsening the digital divide.[32] In addition, outside the UN system, only a limited number of countries are currently involved in the various discussions on AI global governance.

3.1 Development, availability and take-up of AI

Ensuring equal accessibility of AI is important both within and between countries. At a global level, increasing inequality between the developed and the developing world would risk provoking more global instability and conflict. At the national level, societies enjoy greater economic growth overall when they ensure that both the benefits and the costs of new technology are distributed fairly.[33] And at a more local level, inequality and exclusion risks stoking political populism and resistance to deployment of the technology.

While developed countries today are yet to see a revolutionary increase in productivity from AI, many economists have observed that it takes typically takes many years for businesses to restructure their firms to make best use of a technology.[34] However, this should not encourage developing countries to relax: as Joerg Mayer argues, the adoption of technologies like robots in the developed world "implies greater difficulty for latecomers … and may limit their scope for industrialisation to low-wage and less dynamic (in terms of productivity growth) manufacturing sectors. This could seriously stifle these countries' economic catch-up and leave them with stagnant productivity and per capita income growth."[35]

Policymakers therefore need to ensure AI does not replicate and exacerbate existing inequalities – so poorer areas and communities do not miss out on the opportunities and are not disproportionately exposed to the costs and disruption of AI.[36] If developing countries and poorer communities can take advantage of the technology – rather than simply be subjected to its consequences – AI has some potential, if used effectively and in appropriate contexts, to help tackle global inequality. Tools like automatic translation, for example, can help overcome barriers to social and economic inclusion. The effective and careful use of AI can help developing countries deliver education and other public services more widely, and to potentially enhance productivity in sectors like agriculture which tend to be more important to developing countries.[37]

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[32] Alonso, C., et. al, "Will the AI Revolution Cause a Great Divergence?", IMF Working Paper, 11 September 2020.

[33] Ding, J. (2024). Technology and the Rise of Great Powers: How Diffusion Shapes Economic Competition (Vol. 222). Princeton University Press

[34] Brynjolfsson, E. et. al, "Artificial Intelligence and the Modern Productivity Paradox: A Clash of Expectations and Statistics", 2017, https://doi.org/10.3386/w24001.

[35] Mayer, J. (2018). Robots and industrialization: What policies for inclusive growth. Intergovernmental Group of Twenty Four. Friedrich Ebert Stiftung, 23

[36] LaForge, G., et. al, "Bridging the AI Governance Divide", T20 Policy Brief, 2024.

[37] Jurgens, J. and Kaushik, P., "Farmers in India are using AI for agriculture", World Economic Forum, 16 January 2024.

The question is how to ensure that AI is developed in ways that reflect different countries' development needs and priorities, and how to ensure countries have the infrastructure, skills and capacity to take advantage of it.

Many parts of the world have fewer capabilities to access, exploit and enjoy the benefits of AI, and to ensure AI services are designed with their needs in mind. There are several important barriers to deployment of AI, the key ones being:

- **Lack of infrastructure on which AI depends – s**uch as access to energy, network connectivity, data centres, and computing power. Even where infrastructure exists, it must also be affordable, reliable and high-quality, which can be difficult to achieve in areas of the world where electricity supplies may be intermittent and investments in redundancy are difficult to justify. Electricity demand for AI alone could reach 70 TWh in 2026, requiring massive new energy investments for countries who want to host large-scale AI development.[38] And of the top 100 high-performance computing clusters in the world, only one is hosted in a developing country.[39]

- **Lack of available data**. Poorer countries often have significant linguistic diversity, which means that their languages are often poorly reflected in AI training sets. The vast majority of models are currently trained on data from North America, Europe and China. Furthermore, data in developing countries may be less easily available for AI firms to use to train models for locally relevant uses, for example because of a lack of digitalisation and the size of the informal economy. This risks poorer countries suffering disproportionately from bias, discrimination and incorrect outputs using AI models and makes it harder to effectively measure how AI is being used and its broader economic and social effects. Research highlights how AI models absorb and reflect the biases in their training data.[40]

- **Lack of requisite levels of education and poor digital skills**. As noted earlier many parts of the world still struggle with instituting good quality education that provides requisite levels of literacy. Moreover, education in many parts of the world is not adapted to help boost digital skills in the use and development of emerging technologies. This creates barriers to both the development and use of AI, and to the ability of developing countries and communities to participate in standard-setting and governance processes. According to the ITU, nearly one third of the world's population is not even online,[41] much less able to exploit AI.

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[38] International Energy Agency, "Electricity 2024 - Analysis and Forecast to 2026", 2024.
[39] The sole developing country entry is the Pegaso system in Brazil: https://top500.org/statistics/sublist/ accessed on 7 January 2025.
[40]Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021, March). On the dangers of stochastic parrots: Can language models be too big? In *Proceedings of the 2021 ACM conference on fairness, accountability, and transparency* (pp. 610-623).
[41] ITU, "Population of global offline continues steady decline to 2.6 billion people in 2023", Press release, 12 September 2023.

- **Institutional capacity** – in developing countries, regulators can be less well resourced, and do not have the political or technical resources to use or govern AI effectively. This can lead to AI deployments which don't fully reflect local values and needs, and lack of trust in a technology which is not adequately supervised at a national level. The UN expert advisory body on AI has specifically recommended a 'capacity development network' to help support building local expertise.[42]

- **Capital** – few, if any, firms have been able to make a profit from designing and operating large generative AI models. Firms which design and operate such models largely rely on private investors (in large part, global technology firms, several of whom are major suppliers to AI firms by providing cloud computing services) or on cross-subsidies provided by the firm's other services.[43] As AI models become more expensive to run, the up-front and ongoing finance required are difficult for many countries, particularly in the developing world, to afford. There is a lively debate in the literature about whether smaller and cheaper AI models will become more competitive, which might provide some scope for developing countries to develop sustainable niches in the sector.[44]

There is also a debate over whether developing countries should focus on increasing the use of AI models from elsewhere in the world, or whether they need to focus more on either influencing the overall direction of AI innovation or creating their own indigenous forms of AI. Historically, the majority of the economic benefit from new innovations has come from their widespread dissemination, rather than accruing to those who invent it. Yet there remain concerns that – although there is some development of AI systems in the developing world, including from non-profits, and large tech firms are expanding their investments in the developing world[45] – AI innovation is increasingly concentrated within the private sector, in a small number of countries, and in a few languages. Of the 109 most notable AI models today, only two originate from a developing country;[46] and few AI models are trained or even fine-tuned to reflect the specific needs or interests of developing countries.

This is likely to influence the appropriateness of the outputs of AI systems. Outputs will be less tailored to developing country needs; and harms that are more relevant to developing countries may not be sufficiently mitigated. As an example, the AI Now Institute published a report[47] on the diversity crisis in AI companies recognizing that "AI systems function as systems of discrimination: they are classification technologies that differentiate, rank, and categorize. But discrimination is not evenly distributed. A steady stream of examples in recent years have demonstrated a persistent problem of gender and race-based discrimination (among other attributes and forms of identity)." By examining the lack of diversity within the companies that make AI, the study draws a link between those who create the technology, and the ways in which it is finally deployed. This insight has been repeated in

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[42] United Nations, "Governing AI for Humanity: Final Report", 2024, p 15.

43 Large technology firms collectively provided two thirds of the $27 billion in capital that small AI firms raised in 2023: George Hammond, "Big Tech outspends venture capital firms in AI investment frenzy", *Financial Times*, 29 December 2023.

[44] See, eg, Timo Schick and Hinrich Schütze, "It's Not Just Size That Matters: Small Language Models Are Also Few-Shot Learners", NAACL2021, available at https://arxiv.org/abs/2009.07118.

[45] Chinasa T Okolo, "AI in the Global South: Opportunities and challenges towards more inclusive governance", Brookings Institute, 1 November 2023.

[46] Stanford Institute for Human-Centered Artificial Intelligence, "Artificial Intelligence Index Report" (2024).

[47] West, S.M., Whittaker, M. and Crawford, K., "Discriminating Systems: Gender, Race and Power in AI", AI Now Institute, https://ainowinstitute.org/publication/discriminating-systems-gender-race-and-power-in-ai-2

more recent studies with machine learning researchers calling for increased diversity in the field, and suggests some potential benefits to promoting local investment in AI.[48]

The concentration of AI in a small number of companies and countries also poses broader risks of increasing the concentration of wealth and a shift away from labour and towards providers of capital – and of leading to market concentration where customers of AI ultimately face little choice, and AI innovation is either stifled or directed only at developments that enhance large companies' market positions. Because of AI's enormous potential across different sectors of the economy, and the dependence many companies, economic sectors and countries will have on AI, a highly concentrated market structure poses significant risk. This is a particular concern for developing countries given their currently limited ability to compete in developing cutting edge AI. It is in the interests of both developed and developing countries to ensure a thriving ecosystem where entrepreneurs from around the world have fair opportunities to succeed; where competition drives diversity in AI solutions; and where AI is widely accessible and affordable.

It is unclear whether developing country governments can realistically reverse existing trends towards AI innovation and deployment being concentrated in particular countries, markets and firms. To boost their chances of receiving a fair share of the benefits AI, developing countries will need to:

- Provide long-term policy certainty for AI firms, to help promote private investment and drive that investment towards inclusive outcomes. This may help rebalance investors' focus on the developed world as a more lucrative market for investment in the short term;

- Work together so that developing countries pool resources and expertise to make use of public investments and ensure they can govern AI effectively;

- Collaborate on competition and regulatory regimes that help to combat market concentration – ensuring widespread access to essential inputs to AI and that entrepreneurs from around the world have fair opportunities to succeed; and

- Persuade developed countries of the urgency of providing more international development assistance to boost the enablers of AI in poorer areas.

3.2 Inclusion in global governance

A further challenge relates to inclusive participation in global governance.

International forums, institutions and initiatives to discuss AI governance are proliferating. Many of these have the goal of widening governance to beyond the "usual suspects" of rich countries, in theory giving developing countries more opportunities to contribute to global governance discussions.

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[48] Crowell, R., "Why AI's diversity crisis matters, and how to tackle it", Nature, 19 May 2023, https://www.nature.com/articles/d41586-023-01689-4

BOX 1:

Current forums and initiatives for global AI governance outside the United Nations include:

- *The OECD's 2019 AI Principles*
- *The G20's 2019 AI Principles*
- *The Global Partnership on Artificial Intelligence's 2022 Minister's Declaration*
- *The G7's 2023 Minister's Statement*
- *The 2023 Bletchley Declaration*
- *The Council of Europe's 2024 AI Convention*
- *The Seoul 2024 Ministerial Declaration*

A number of more inclusive forums have emerged through UN agencies including UNESCO's Advisory Committee on Artificial Intelligence; the ITU's AI for Good initiative; and the UN Multistakeholder Body on Artificial Intelligence. In addition, a number of non-UN initiatives have emerged which have greater representation by developing countries. These include, for example, the 2021 Hyderabad Declaration on AI and Digital Wellness, with participation from countries such as Brazil, India, Kenya, Morocco, Peru, South Africa, Uganda and Zimbabwe.

Some established forums for AI governance are also attempting to become more inclusive. The Global Partnership on Artificial Intelligence, for example, has recently begun partnering with the OECD in order to allow broader engagement and participation.

However, larger and richer countries remain far more engaged in international forums for AI governance than countries in developing countries. Of the seven non-UN initiatives listed in the box above, seven developed countries are involved in all of them; while 118 countries – which are primarily developing countries, almost all of which are in Latin America, Africa and the Asia-Pacific – are not participating in any of them.[49] Even when countries are represented in such discussions, not all impacted communities in those countries have a meaningful voice.

This is not because of a lack of desire to participate. Most countries believe that there is a need for governance over AI and that – because AI firms will operate internationally, and the technology will transform economies and societies in ways that have global implication – many aspects of governance should ideally be agreed at the global level. This was illustrated when the UN General Assembly unanimously adopted a Resolution on Enhancing International Cooperation in Capacity-Building of Artificial Intelligence. This resolution was co-sponsored by 143 member states – illustrating that the global South does want to be involved in global AI governance. 193 countries ratified UNESCO's Recommendations on the Ethics of Artificial Intelligence. Developing countries' interest in AI governance is also illustrated by the number of developing countries which have now adopted AI laws, policies or strategies – including countries from Brazil to Rwanda and Sierra Leone.

3.3 Barriers to inclusive participation

What, then explains the lack of inclusive participation in global governance, beyond the constraints which developing countries suffer from in creating and deploying AI, as covered above?

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[49] United Nations, "Governing AI for Humanity: Final Report", 2024, p 8.

One factor is that large forums must accommodate widely varying interests, leading to conclusions which are sometimes overly general. These larger efforts are valuable, but a risk is that in maximise inclusiveness the outcomes of these initiatives lack specificity, follow-through and genuine implementation. This can lead developing countries to conclude that participation should not be a priority. A second, and related factor, is that the growing number of overlapping initiatives means it is difficult for developing countries – which have limited resources and expertise – to decide which efforts to prioritise.

A third important factor is the "geo-politicisation" of global governance. For some large countries AI has become:

- **A key arena for economic competition**. AI will potentially be a source of significant productivity growth, leading to a race for technological supremacy, but making it difficult for some countries to co-operate or share knowledge out of fears of losing an economic advantage;

- **Crucial to national security.** AI creates new opportunities for espionage, intelligence-gathering, and has significant military uses, which limits trust between countries on areas like agreeing limits on AI development to protect safety; and

- **A source of power and influence**. The economic, military and strategic benefits of AI mean that countries which dominate the technology will enjoy outsized influence over other countries which need access to the technology. This is illustrated in the different emphasis provided by a recent US-led UN resolution[50] focused on creating "safe, secure and trustworthy" AI, and a Chinese-led resolution[51] focused on inclusivity and openness.

This competition is leading to increasing efforts by some governments to focus on controlling global supply chains and dominating standard-setting, rather than ensuring maximum global benefits of AI. This leads to some countries pursuing very different values and interests in AI governance. The next US government is likely to double-down on a techno-libertarian approach, for example. China, on the other hand, wants to pursue a path which is more focused on ensuring government control and oversight of the sector, while also using AI to further development outcomes – as illustrated in China's recently announced Global AI Governance Initiative, for example.

This competition matters because, together, the US and China represent the vast bulk of today's AI sector: 73% of large AI models are being developed in the US and 15% are being developed in China, leaving only 12% in the rest of the world, even in economically significant blocs and countries like the EU and India.[52] Truly global efforts need to bring the biggest players together, while also giving developing countries and marginalised communities a strong voice.

It seems clear that most countries want a sensible approach to governance rather than to take sides. Of course, different countries may disagree on details, such as the right balance between innovation

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[50] US Mission to the UN, "Joint Statement on the Proposed UNGA Resolution on Seizing the Opportunities of Safe, Secure, and Trustworthy AI Systems for Sustainable Development", 14 March 2024.

[51] UN General Assembly "Seizing the opportunities of safe, secure and trustworthy artificial intelligence systems for sustainable development" (78/265) and "Enhancing international cooperation on capacity-building of artificial intelligence" (78/311).

[52] Council of the European Union, General Secretariat, "ChatGPT in the Public Sector – overhyped or overlooked?", ART Research Paper, 24 April 2023.

and government control, but there is broad acceptance that there is a role for governments in steering the development of AI – for example, so that it reflects values like equality, inclusion, and safety. And most countries want to follow a middle-ground, recognising that a balance is needed between regulation and control on the one hand and innovation on the other. Such a balance is reflected in the risk-based approach of the EU's Artificial Intelligence Act. Even several US allies have insisted on the need to include China in discussions about AI governance in areas where co-operation is both necessary and fruitful, such as in managing existential risk.

3.4 Consequences of a lack of inclusive participation

Lack of meaningful participation in global governance risks certain countries and communities becoming subject to international decisions about AI governance over which they have had little or no influence – and becoming merely 'bit players' in a battle between global superpowers. Some countries might be able to regulate AI once it is on the market, like the EU and other countries are doing. But their ability to influence the direction of AI innovation will be very limited, especially if they do not have a large and profitable customer base which AI firms will want to access, like the EU has. Most developing countries would see AI being developed in ways which do not reflect local needs and values, making it harder in turn to use it in beneficial ways.

Disempowerment risks creating a self-fulfilling cycle, where AI services are not designed with the values or needs of smaller countries in mind, and the 'digital divide' grows. Poorer countries, for example, are likely to have unique priorities – such as ensuring AI addresses issues like linguistic diversity within countries – and if these are not reflected, it may perpetuate the inability of developing countries to take advantage of the AI revolution. In turn, this risks provoking global instability and resentment – as we saw during Covid where the rich countries' race to acquire vaccines led to frustration on behalf of the global South.

3.5 What alternatives exist?

Given this geopolitical conflict, the most viable approach to global co-operation is to recognise differences between different countries' values and interests and help ensure that, where necessary, those differences can be accommodated or at least can co-exist.[53]

This vision might involve more pragmatic and flexible coalitions focused on areas where multilateral co-operation is indispensable, in particular between developing countries that must work together to maximise their influence. This type of flexible and ad hoc approach may prove the most suitable to the emerging multipolar world. Such an approach can better balance the need to include smaller countries with the need to secure meaningful, specific and binding outcomes. An example of this more flexible approach is recent emergence of bilateral or regional AI governance initiatives. These do not tend to be comprehensive but rather cover different issues on which the parties could agree – such as privacy or AI ethics. A key example is the Digital Forum for Small States (Digital FOSS), which led to Singapore and Rwanda jointly producing an "AI Playbook for Small States". The Playbook helps to share best

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[53] Abecassis, A., "Global Governance of Digital Economy: Artificial Intelligence", CERRE report, September 2024.

practices in formulating AI strategies and shape inclusive global governance on AI. Other areas where developing countries could work together include:

- Coordinating research and financial support for smaller AI models which can be developed and deployed locally;

- Better coordinated public investments in AI – helping developing countries ensure they do not spend scarce public funds on directly competing investments and instead agree to share access to AI-critical assets – in order to lower the barriers to developing countries and deprived communities taking advantage of AI; and

- Agreements to share regulatory capacity so that developing countries can each supervise and govern AI more effectively than they could on their own.

The resulting complex web of forums will involve some challenges for developing countries. It means a more complicated and fragmented international environment and it can leave countries struggling to understand where they should focus their limited resources. However, Digital FOSS shows this model can work for developing countries. To be inclusive, these initiatives need to be designed so that they are not simply 'top down' – instead, they can and should incorporate input from civil society, from different communities within countries, and from industry, think-tanks and academia.

Genuine global governance should continue to be a goal for policy-makers, including persuading countries to engage with each other where this is possible. CERRE has previously proposed the concept of an inclusive global "Digital Stability Board" – which would involve governments, but also industry, NGOs and civil society – to identify and make progress on areas of AI where co-operation is a realistic possibility.[54]

In its final report produced in September 2024,[55] the United Nations High-level Advisory Body on AI advocated an approach not dissimilar to CERRE's proposal, recommending an Independent International Scientific Panel on AI and a Global Dialogue on AI Governance, which would bring together global voices beyond member-states and boost coordination between existing AI governance initiatives. The UN's Global Digital Compact of September 2024 sets out how many of the recommendations in the report will be implemented.[56] However, it remains to be seen whether this initiative will signal a meaningful shift away from an "arms race" and towards more inclusive global governance of AI.

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[54] Pascal Lamy and Bruno Liebhaberg, et. al., "Global governance for the digital ecosystems: Preserving convergence and organising co-existence", CERRE report, November 2022.
[55] United Nations, "Governing AI for Humanity: Final Report", 2024.
[56] UN Document A/79/L.2.

4 Recommendations

Managing the consequences of AI for skills and employment

1. **Governments should fund a research hub to coordinate and disseminate further research on the impacts of AI on labour markets:** given the uncertainty of how AI could change demands for skills and jobs, the complexity and cross-border nature of these effects, and the speed with which Governments may need to respond to these impacts, governments should fund research on the impact of AI on jobs, and ensure this research is adequately disseminated.

   A centralised research hub could act as an "early warning system" to help governments react as impacts become clear, and help them share knowledge and best practices on how to respond to these impacts. The UN High-level Advisory Body on Artificial Intelligence has already recommended an international scientific panel to synthesise research about AI generally. The remit of such a body should include work on identifying impacts on labour markets, particularly cross-border impacts.

2. **Governments should provide incentives and/or regulation to help ensure the private sector makes AI investments – in both R&D and in deployment of the technology – to augment or complement the value of human labour**, rather solely focussing on substitution as the path to efficiency. Further research will be needed to identify the most effective policies to achieve this, but they might include targeting R&D support to particular types of AI investment or aligning tax policy to outcomes that promote human-centric AI. Governments should share best practices about effective policies to achieve this goal.

3. **The private sector should incorporate people and inclusivity into its decision-making about how AI is developed and deployed,** rather than solely trying to retrospectively support workers in the transition. To achieve this, governments could consider requiring firms to adopt more transparency about their intended uses of AI, automated decision making, and big datasets; to formally consult with labour unions and civil society; and to set out detailed plans for retraining and reassigning workers whose jobs will be impacted by a firm's decision to adopt AI.

4. **The public and private sector should both provide support for affected industries, workers and communities.** Although firms should be encouraged to deploy AI in a human and worker centric way, some degree of economic disruption will be likely. In these cases, firms and governments will need to provide transitional support measures for industries heavily impacted by AI, including financial assistance and retraining. Governments should develop sector-specific strategies to identify industries at high risk of automation and exposure to AI, and ensure firms proactively engage in workforce transition planning in those sectors. In addition to transitional support, given the risk that AI will further concentrate wealth, governments also need to consider permanent redistributive policies, such as through tax reform. Governments will also need to adapt their social protection systems to ensure they are sufficiently accessible to informal and formal workers. Measures need to be particularly sensitive to the disproportionate impacts AI may have on social groups such as women and less-educated workers. Developing countries will need support given they may have weaker institutional capacity to enable redistribution.

5. **Developing countries should boost digital skills in their public education and training systems.** AI is creating new demand for workers with certain technology skills (like managing big data), while rendering many existing skills obsolete. Governments need to design policies which reorient education towards skills in demand, thus minimising the extent of structural displacement. Governments also need to be ready to support rapid changes in demand and supply for particular skills. Such policies would need to help workers rapidly reskill and, where necessary, support their transition between occupations.

Ensuring AI fitness for all parts of the world

6. **Developing country governments should adopt "AI strategies" to provide long-term regulatory certainty and encourage more local private investment and entrepreneurship in AI.** It is unclear whether developing countries can realistically reverse the trends towards AI innovation and deployment being concentrated in a few developed countries and among a few firms. However, reversing this trend will require developing countries to attract significant new investment. Long-term commitments by developing countries about the regulatory and policy environment, together with policies that support the private sector to develop the long-term AI potential of developing countries, may attract more investment in the developing world. This would help increase the ability of developing countries to ensure the sector develops in ways that reflect their values and needs.

7. **Developed countries should provide more resources to boost the enablers of AI in poorer areas and in developing countries.** Within developed countries, domestic policies – such as universal service obligations – can help ensure equitable deployment of essential infrastructure to support AI. Developing countries will require much greater levels of development assistance to help ensure the enablers of AI – like reliable electricity, computing power and network connectivity – are in place. Governments should also develop initiatives to boost the availability of data in the developing world which can be used to develop and train AI, in ways which are contextually sensitive. Without significantly scaled up support, developing countries will not have a fair opportunity to participate in the opportunities of AI. This assistance should encompass boosting digital skills and investment in energy, telecoms, data centres, computing infrastructure and data pools.

8. **Developing and developed country governments and competition regulators should collaborate on competition and regulatory regimes to combat market concentration.** Previous tech revolutions have resulted in markets with one or two very large players, creating a perception that certain firms and countries have benefited disproportionately from innovation – and that innovations have largely increased developing countries' dependence on these firms and countries. It also creates concerns about the speed and direction of innovation in the long run. Developed and developing countries should co-operate on competition policy to ensure a thriving and sustainable ecosystem.

9. **Developing country governments should coordinate their public investments and resources.** Given developing countries are unlikely to be able to replicate entire AI supply chains domestically, and many have limited fiscal capacity, their industrial policies would be more

effective if they were tightly coordinated. Pooling resources and expertise would help ensure the most efficient and effective use of limited public investments – for example, by ensuring that developing countries do not compete for scarce talent and resources necessary for AI. A "divide and conquer" strategy could help developing countries focus on their own comparative advantages in the AI supply chain, while securing guaranteed access to the results of public investments in other developing countries.

10. **Developing countries should form coalitions to maximise their voice in global governance of AI**. While some global governance forums for AI are being launched or evolving to become more inclusive, important barriers remain. Given the fragmentation and proliferation of different governance forums, developing countries need to be pragmatic. They should develop coalitions of countries to help set standards, share institutional capacity and expertise. These partnerships should help developing countries maximise their influence in discussions on global governance and ensure the developing world does not become a 'bit player' as AI becomes a target of geopolitical competition between large countries and blocs.