Mind the AI Divide

Shaping a Global Perspective on the Future of Work

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PDF ISBN: 9789211066524

United Nations
Office of the Secretary-General's
Envoy on Technology

International
Labour
Organization

Foreword

The uneven adoption of Artificial Intelligence (AI) is a critical issue that goes beyond economic growth. It impacts global equity, fairness and the social contract that is at the heart of social justice. Disparities in access to robust infrastructure, advanced technology, quality education and training are deepening existing inequalities. As the global economy increasingly shifts towards AI-driven production and innovation, less developed countries risk being left further behind, exacerbating economic and social divides. Without targeted and concerted efforts to bridge this digital divide, AI's potential to foster sustainable development and alleviate poverty will remain unrealized, leaving significant portions of the global population disadvantaged in the rapidly evolving technological landscape.

During the consultations held by the Secretary-General's High-level Advisory Body on Artificial Intelligence, it has become clear that the world of work is at the heart of the adoption of AI. It is thus critical to understand the potential for AI to affect labour demand and transform occupations. It is at the workplace where the potential for productivity gains and improved working conditions for the benefit of workers, their families, and societies at large, can be realized. But such benefits will not happen on their own; they will only be achieved if the right conditions are in place, including the availability of digital infrastructure and skills, but also a culture of social dialogue that fosters a positive integration of technology.

Promoting inclusive growth requires proactive strategies to support AI development in countries on the wrong side of the AI divide. This involves enhancing digital infrastructure, promoting technology transfer, building AI skills, and ensuring that all jobs along the AI value chain are of good quality and improve the lives of working people. By prioritizing international collaboration in AI capacity building, we can create a more equitable and resilient AI ecosystem, unlocking opportunities for shared prosperity and human advancement worldwide.

We look forward to continuing our collaborative efforts to shape the global governance of AI, uphold human dignity and labor standards, and expand economic opportunity for all.

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Introduction

The rapid advancement of Artificial Intelligence (AI) promises widespread transformations for our societies, our economies and the world of work. While such advances offer tremendous opportunities for innovation and productivity, the uneven rates of investment, adoption and use among countries risks exacerbating the already wide disparities in income and quality of life. There is a pronounced "**AI divide**" emerging, where high income nations disproportionately benefit from AI advancements, while low- and medium-income countries, particularly in Africa, lag behind. Worse, this divide will grow unless concerted action is taken to foster international cooperation in support of developing countries. The absence of such policies will not only widen global inequalities, but risks squandering the potential of AI to serve as a catalyst for widespread social and economic progress.

While AI will potentially affect many aspects of our daily lives, its impact is likely to be most acute in the workplace. Wealthier countries are more exposed to the potential automating effects of AI in the world of work, but they are also better positioned to realize the productivity gains it offers. Developing countries, on the other hand, may be temporarily buffered because of a lack of digital infrastructure, but this buffer risks turning into a bottleneck for productivity growth, and more importantly, for the future prosperity of their populations.

Ensuring inclusive growth in the future requires proactive measures to empower AI development in countries at the disadvantaged receiving end of the digital divide, fostering digital infrastructure as well as AI skills, and promoting technology transfer and absorption. Such digital skills can also enable a more positive integration of AI in the workplace, particularly when combined with social

dialogue. Social dialogue on the design, implementation and use of technology at the workplace, as well as in the development of regulations essential for ensuring respect of workers' fundamental rights, is needed. Indeed, whether the integration of technology into work processes spurs productivity growth or improves working conditions in support of social justice depends in large part on the strength of such collaboration and dialogue.

Sovereign efforts play a crucial role in shaping AI capacity building as countries assert their autonomy in developing strategies and policies tailored to their unique socio-economic contexts. Local processes, driven by cultural values, political economies, and societal needs, can significantly impact the effectiveness and sustainability of AI initiatives. However, disparities in resources and expertise remain and can hinder AI development in the Global South. In response, there is a growing recognition of the responsibility of developed countries to support capacity building efforts in resource scarce countries. As outlined in the recent Interim Report of the United Nations Secretary-General's High-level Advisory Body on AI[1], this recognition extends beyond financial aid to include knowledge sharing, skills development, technology transfer, as well as collaborative research and development partnerships. By leveraging their advanced AI ecosystems, the Global North can help bridge the gap and empower countries in the Global South to harness AI for sustainable development, while respecting their sovereignty and promoting local innovation ecosystems. By prioritizing global collaboration for AI capacity building, the international community can nurture a more equitable and resilient global AI ecosystem, unlocking opportunities for shared prosperity and human flourishing across the world.

1   https://www.un.org/ai-advisory-body

Uneven ground

Understanding AI's role in reshaping labour markets

Research on the possible effects of generative AI on employment across the world suggests that while there are likely to be important transformative effects on some occupations, impacts in terms of job losses are much less than headline figures appearing in the media, and certainly do not point to a jobless future. According to an analysis undertaken by the International Labour Organization on the potential exposure of tasks to generative AI technology, clerical support workers are the most exposed occupational group with 24 per cent of the tasks in these jobs associated with high level of exposure to automation and another 58 per cent with medium-level exposure (see Figure 1).[2] Other occupational groups are less exposed, with only 1 to 4 per cent of tasks considered as having high

automation potential, and medium-exposed tasks not exceeding 25 per cent. This means that, while certain tasks in these occupations could potentially be automated, most tasks still require human intervention. Such partial automation could enable efficiency gains, by allowing humans to spend more time on other areas of work.

Importantly, task automation does not necessarily imply redundancies, as the technology can also complement or augment human labour when only certain tasks are automated. Whether the adoption of the technology leads to automation (job loss) or augmentation (job complementarity) depends on the centrality of the automated task to the occupation, how the technology is integrated

Figure 1: Tasks with medium and high-level exposure to generative AI technology by major occupational group (ISCO 1-digit)
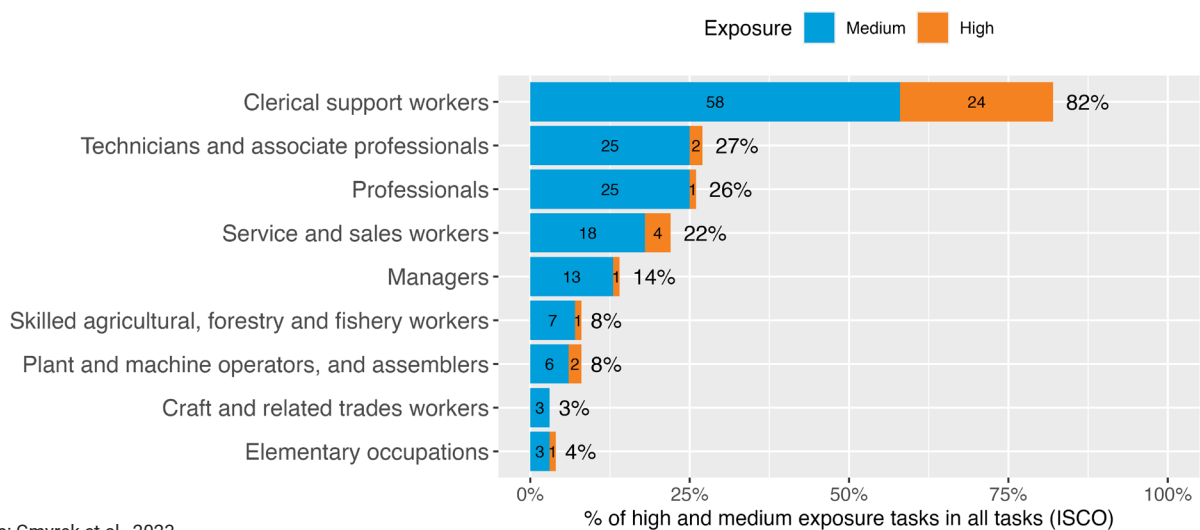
Source: Gmyrek et al., 2023.

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into work processes and management's desire to retain humans to perform or oversee some of the tasks, despite the potential of automation.

The ILO analysis uses occupational exposure scores (the mean exposure of each of the tasks within an occupation) and applies these scores to employment data from labour force surveys of more than 140 countries to assess potential employment impact at the global and regional level. With respect to automation, the share of employment that is exposed is highest in Europe and Northern America, reflecting the greater economic and labour market diversification of these regions. In Latin America, Asia and Africa, the share of employment potential exposed to automation is much smaller, due to the greater share of workers employed in occupations that would not be exposed to generative AI technology such as in agriculture, transport or food vending.

Nevertheless, women's potential exposure to the automating effects of generative AI technology is much higher, due to their over-representation in clerical occupations (see figure 2). In most regions, the potential exposure of women is more than double that of men's exposure. Some of this employment is in business process outsourcing, such as contact or call center work, which is an important part of the economy of several developing countries, including India and the Philippines. The industry is an important source of formal and relatively well-paid employment, particularly for women. While potential exposure does not necessarily translate to displacement, it is clear that the advances in technology may put some of these jobs at risk.[3]

Another finding is that a significantly larger share of total employment is in occupations with high augmentation potential, and this holds across regions, from 10.2 percent in Sub-Saharan Africa to 16.1 percent in Southeastern Asia and the Pacific (See figure 3). Thus, the potential for occupations to benefit from the productivity-enhancing effects of the technology is relatively similar across countries. In practice, however, it is less likely

Figure 2: Potential exposure to automation by global sub-region

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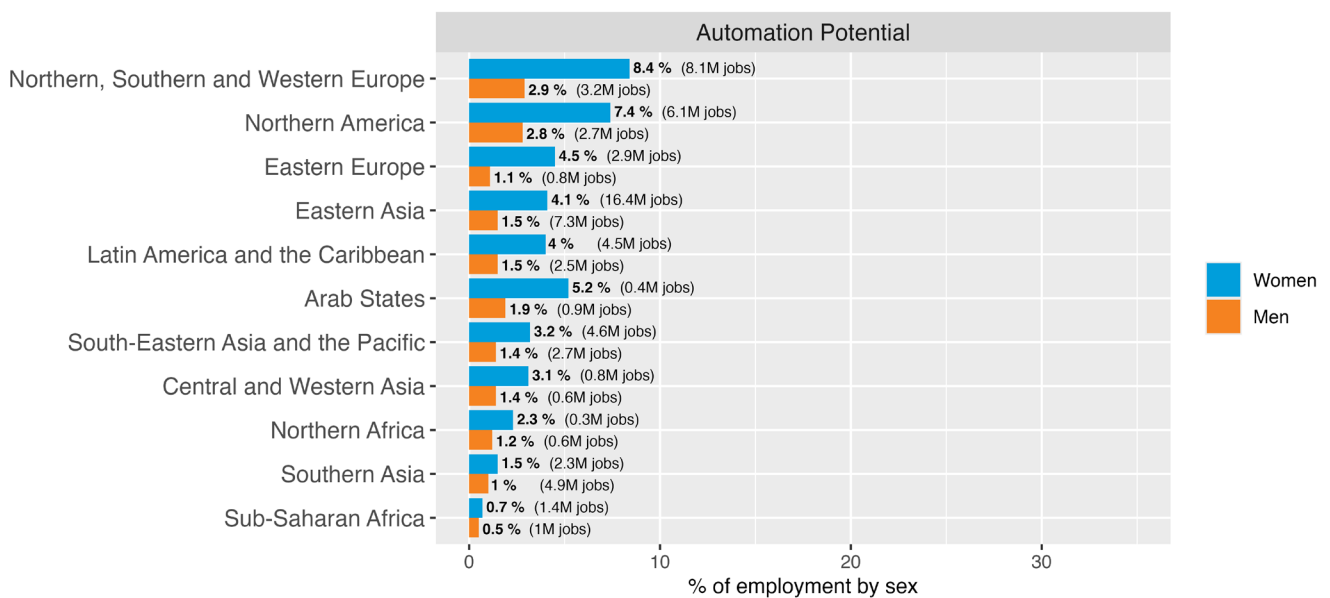
3   'AI Could Kill off Most Call Centres, Says Tata Consultancy Services Head', April 25, 2024.

Figure 3: Potential exposure to augmentation by global sub-region

Augmentation Potential

Region	Women	Men
South-Eastern Asia and the Pacific	15.9 % (23M jobs)	16.3 % (32.2M jobs)
Arab States	21.5 % (1.8M jobs)	13.7 % (6.3M jobs)
Eastern Europe	16.8 % (10.8M jobs)	12.7 % (9.1M jobs)
Central and Western Asia	15.4 % (4.1M jobs)	13.4 % (5.7M jobs)
Northern, Southern and Western Europe	15 % (14.5M jobs)	12.3 % (13.6M jobs)
Eastern Asia	14.6 % (58.3M jobs)	12.4 % (59.5M jobs)
Northern America	15.4 % (12.8M jobs)	11 % (10.6M jobs)
Northern Africa	15.9 % (2.1M jobs)	12.2 % (6.4M jobs)
Latin America and the Caribbean	13.7 % (15.5M jobs)	12.2 % (20.2M jobs)
Southern Asia	11.2 % (17.7M jobs)	12.2 % (60.9M jobs)
Sub-Saharan Africa	10.7 % (20.5M jobs)	9.8 % (21.6M jobs)

% of employment by sex

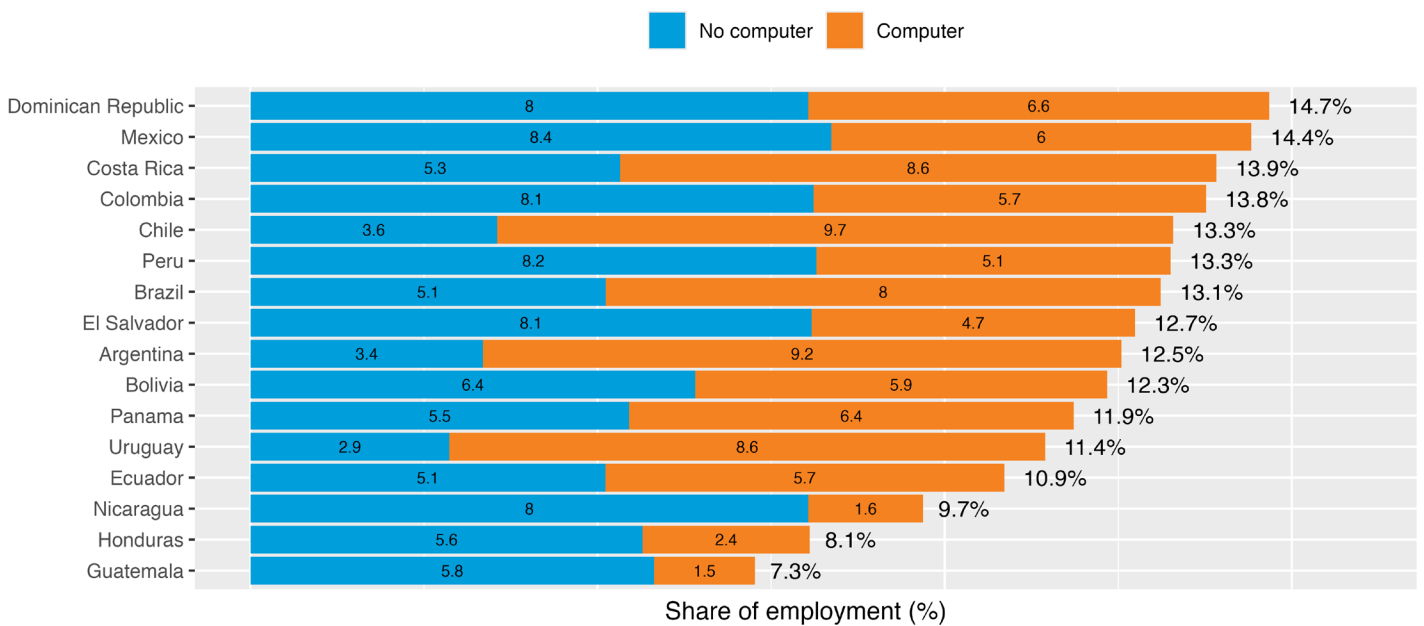to be realized due to constraints in physical infrastructure (electricity access, broadband) as well as digital skills. Indeed, subsequent research that incorporates data on computer use at work [2] reveals that many of the occupations with potential for augmentation have relatively low usage of computer at work, suggesting that the conditions are not in place for realizing the potential productivity gains.

As can be seen in Figure 4, the share of workers without access to a computer at work ("no computer") exceeds those who use a computer in 9 of the 16 countries listed. As

Figure 4: Potential exposure to augmentation and computer use at work

No computer   Computer

Country	No computer	Computer	Total
Dominican Republic	8	6.6	14.7%
Mexico	8.4	6	14.4%
Costa Rica	5.3	8.6	13.9%
Colombia	8.1	5.7	13.8%
Chile	3.6	9.7	13.3%
Peru	8.2	5.1	13.3%
Brazil	5.1	8	13.1%
El Salvador	8.1	4.7	12.7%
Argentina	3.4	9.2	12.5%
Bolivia	6.4	5.9	12.3%
Panama	5.5	6.4	11.9%
Uruguay	2.9	8.6	11.4%
Ecuador	5.1	5.7	10.9%
Nicaragua	8	1.6	9.7%
Honduras	5.6	2.4	8.1%
Guatemala	5.8	1.5	7.3%

Share of employment (%)

Source: Gmyrek, Winkler and Garganta, 2024.

such, the likelihood to realize productivity gains from generative AI technology will be limited.

Figure 5 gives information on the characteristics of those who might be affected by automation from generative AI technology in Latin America. As the data show, it is educated women living in urban areas and belonging to the top fifth of the income distribution that are most exposed. For Latin America, these occupations are overwhelmingly in salaried, formal employment and in the sectors of finance, professional services and public administration. In short, they are good jobs, whose loss would have negative multiplier effects both economically and socially.

The analysis does not address the potential for new job creation. Thus, while middle-income countries such as India and the Philippines, are more exposed to the automating effects

of generative AI technology in their call centre work, their digital infrastructure and skilled workforce can also be an asset for spawning the growth of complementary industries. Harnessing such potential is paramount.

Indeed, with the right conditions in place, a new wave of technology could fuel growth opportunities. In the past, technological advancements have spurred new and successful industries in many developing countries. One such example is the M-Pesa money service, which relied on the diffusion of mobile telephones in Kenya. The service, in turn, increased financial inclusion which helped to propel the growth of SMEs and led to creation of a network of 110,000 agents, 40 times the number of bank ATMs in Kenya [3];[4]. Similarly, a study of the diffusion of 3G coverage in Rwanda between 2002 and 2019 found that increased mobile internet coverage

Figure 5: Characteristics of persons holding occupations most exposed to automation, Latin America

Source: Gmyrek, Winkler and Garganta, 2024 (forthcoming).
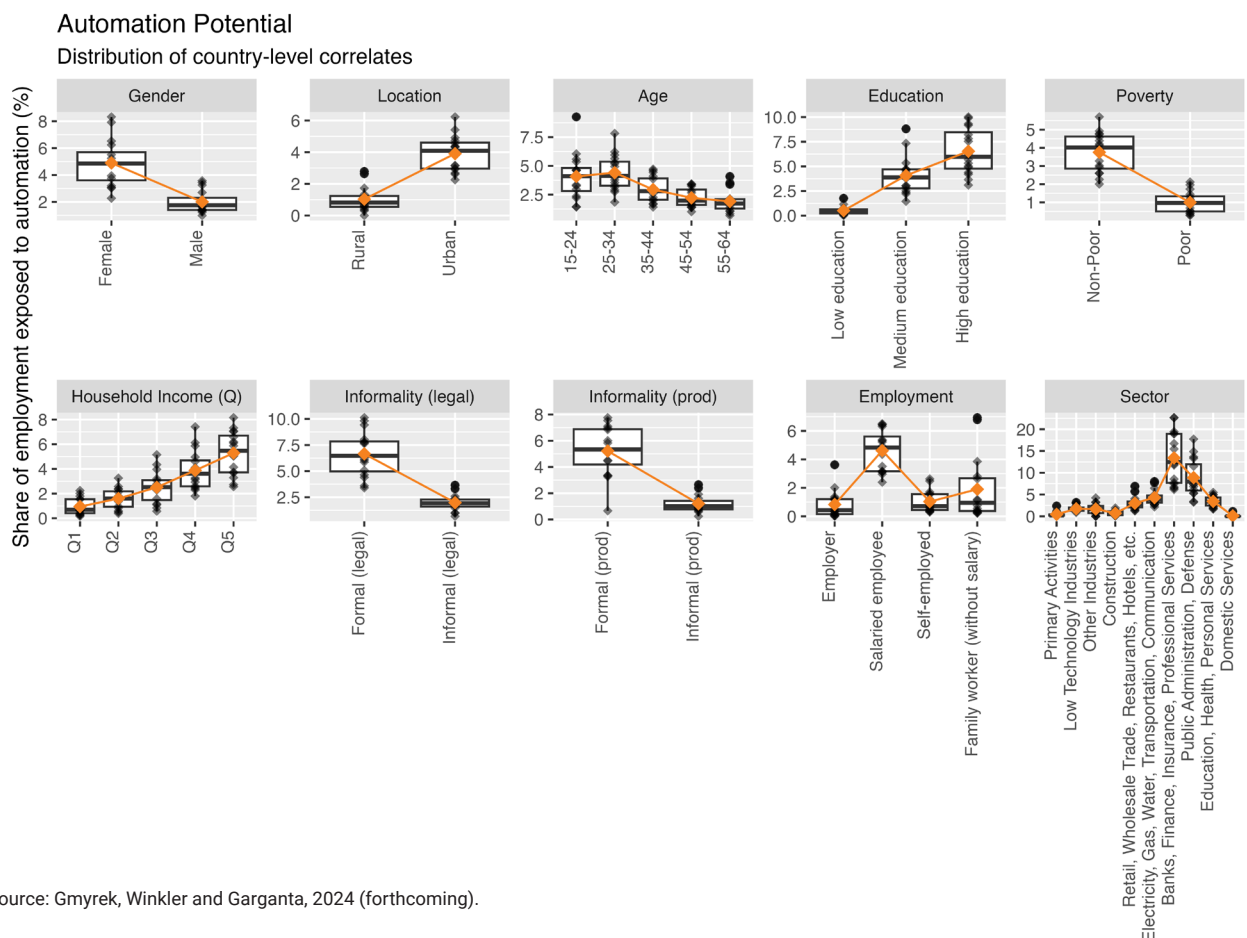
was positively associated with employment growth, increasing both skilled and unskilled occupations [5]. Scholars [6] also find positive employment effects, from the arrival of internet in 12 African countries, albeit with a slight bias towards skilled occupations. These gains are attributed to increases in productivity and growth of markets that followed increased connectivity, underlining the need for such investments, given important multiplier effects on the economy and labour markets.

Ensuring job quality under augmentation

Another area of concern is about the impact of AI technology on working conditions and job quality when the technology is integrated into the workplace. While such integration into work tasks can potentially promote more engaging work if routine tasks are automated, it can also be implemented in ways that limits workers' agency or accelerates work intensity. Concerns over AI's integration at the workplace has focused on the growth of algorithmic management, essentially work settings in which "human jobs are assigned, optimized, and evaluated through algorithms and tracked data" [7]. Algorithmic management is a defining feature of digital labour platforms, but it is also pervasive in offline industries such as the warehousing and logistics sectors. In warehouses an automated, "voice-picking" system directs warehouse staff to pick certain products in the warehouse, while using data collection to monitor workers and set the pace of work [8]. Besides lacking autonomy to organize their work or set its pace, workers also have little ability to provide feedback or discuss with management about the organization of work [9]. The integration of generative AI into other fields such as banking, insurance, social services, and customer service more broadly may have a similar effect.

Technological advancements are often felt more immediately at the workplace level and are usually best addressed at the workplace.

As a result, whether the effect of technology on working conditions is positive or negative depends in large part on the voice that workers have in the design, implementation and use of technology. Having such agency relies in turn on the opportunities for worker participation and dialogue. This can take place either through formalized settings, such as works councils or guidance provided in collective bargaining agreements, or less formally, in workplaces where there is a high degree of employee engagement. Studies in Europe have shown that it is countries with stronger and more cooperative forms of workplace consultation, essentially the Nordic countries and Germany, where workers are more open to technological adoption at the workplace [10].

The AI value chain and the demand for skills

Like the production of many goods and services in the global economy, AI has its own value chain. As depicted in Figure 6, there are different stages of the AI value chain, each with specific human and social infrastructure needs. As is typical in most global value chains, stages differ in the amount of value received for the contribution made, with lower-value added activities predominant in middle and low-income countries and design and deployment associated with higher-income countries.

Data is fundamental to the development and operation of AI systems. Human-prepared data is fed into AI systems to help them learn the necessary connections and patterns for functionality. The sources of this data are diverse, depending on the system's purpose. Publicly available data, such as United Nations documents used for training translation programs, contributed to advances in natural language processing. Proprietary data is also crucial, particularly in workplace applications, like call center recordings used to train chatbots for customer service. With global connectivity, data collection continues to provide the essential raw material for future AI applications.

When data is collected, it is usually unstructured. Highly skilled data engineers will pre-process the data into a usable format, but 'data labelers' are needed to label and classify data so that it is usable. Labelled and annotated datasets are critical for the development and effectiveness of machine learning models. Workers involved in data enrichment carry out an array of tasks that include marking radiology scans to aid in creating AI systems capable of detecting cancer; categorizing toxic and unsuitable online content to improve content moderation algorithms or diminish the negativity in large language model responses; annotating video footage from driving sessions to train autonomous vehicles; editing large language model outputs to boost their functionality; and more.[4]

Content moderation is the process of monitoring and filtering user-generated content on digital platforms, such as social media, forums, and websites, to ensure that it complies with the platform's guidelines and policies. The goal of content moderation is to maintain a safe, respectful, and positive environment for all users by removing or

Figure 6: Value chain of AI

Note: Orange represents the activities that have lower value-added.
Source: Authors' elaboration.

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4   Valuing Data Enrichment Workers: The Case for a Human-Centric Approach to AI Development | United Nations

flagging content that is inappropriate, offensive, harmful, or illegal. Content moderation can be performed manually by human moderators or automatically by using algorithms and machine learning tools. The types of content that may be subject to moderation can vary widely, including but not limited to hate speech, harassment, violence, nudity, and false information. Even with the use of algorithms and machine learning tools for content moderation, there is typically always a human involved in the process. These technologies can help automate and scale the moderation process, but they are not perfect and can sometimes make mistakes or miss nuances that a human moderator would be able to pick up on.

In many cases, algorithms are used to flag or prioritize content for review by human moderators, who then make the final decision on whether the content should be removed or allowed to remain on the platform. Additionally, human moderators may also be involved in training and improving the algorithms, by providing feedback and labelling data that can be used to refine the system's accuracy and effectiveness. Individuals tasked with content moderation duties in social media platforms often suffer from anxiety, depression, and post-traumatic stress disorder, a direct consequence of their continuous exposure to distressing materials such as murder, suicide, sexual assault, or child abuse videos.

These examples demonstrate how humans are integral to the provision of services marketed or described as "artificial intelligence". Indeed, Jeff Bezos described Amazon's Mechanical Turk (AMT) platform as "artificial-artificial-intelligence" as it was human intelligence that was providing the labour-intensive work needed for artificial intelligence systems to operate. As described on the AMT site, the platform provides "an on-demand, scalable, human workforce to complete jobs that humans can do better than computers, for example, recognizing objects in photos".[5] Workers on the platform are accessible through an application programming interface (API), allowing programmers to call on workers with

a few simple lines of code when working on an algorithm [11].

In addition to platforms such as AMT and Appen, data labelers sometimes work through third-party companies hired by leading tech firms, in a subcontracting relationship. Although there are still many data labelers working in the United States in Europe, much of the work is being done in developing countries, given the low remuneration associated with the work. While precise figures on the numbers of persons working as data labelers do not exist, estimates range in the tens of millions, and demand for such work is likely to continue as AI data sets and training needs grow [12]. The size of the market is estimated at between US $1 - $3 billion and likely to experience double-digit growth over the next 5 years [13].

Data labeling work does not require many qualifications, besides literacy, digital skills and access to computer (or mobile device) and internet. Studies of earnings of online platform workers in the US that perform this work, regularly report median earnings of roughly $2 -$3 per hour, or well below the federal minimum wage of US $7.25 [14];[11]. Given the low level of pay, it is unsurprising that much of this work has moved to developing countries.

But even from a developing country perspective, the earnings are low, particularly considering the skill level of the workforce, with many workers holding university and post-graduate degrees [11]. For the workers who work through digital labour platforms – and not business process outsourcing firms – there is the added concern that they are hired as independent contractors and are thus not covered by the protections and benefits emanating from a standard employment relationship. Moreover, analyses of earnings differentials between workers in India doing similar types of data annotation work revealed that platform workers earned two-thirds less than comparable, non-platform worker employees, even before accounting for other benefits such as social insurance contributions [15].

But even among business process outsourcing firms, there are concerns about the working conditions of these workers, with one case study of a data annotation enterprise with offices in Kenya revealing low pay, insecure work and gender-based workplace violence [16]. Furthermore, the study argued that the data annotation skills used in this line of work were not essentially transferable, questioning the career-enhancing impact of this line of work.

Moving along the value chain, the subsequent parts – model design, model training and tuning, deployment and maintenance – represent a contrasting picture with the skills needs and working conditions of data annotation work. They also involve much greater requirements for physical infrastructure, particularly compute power necessary for model training and tuning. These stages require the skills of highly qualified computer scientists or graduates from other STEM[6] fields in addition to significant investments in research and development.

Apart from China and India, emerging markets have garnered only a small portion of global investment in advanced technologies. From 2008 to 2017, total venture capital flows to emerging markets, excluding China and India, amounted to just $24 billion, while the United States alone attracted $694 billion during the same period.[7]

Annually, more than $300 billion is spent globally on technology to enhance computing capacity. However, these investments are unevenly spread, making the disparity in access to computing infrastructure both within and among various regions increasingly evident. A limited number of countries are leading the way in developing compute capacity, while many others are beginning from a low base. The US holds a significant advantage in data-centre construction, far surpassing investments made by any other nation. Although China, Singapore, the Netherlands, and a few others have developed substantial capacity, most countries

have fewer than 20 top-tier data centres. The disparity in data centre construction is unambiguous, with the US having built 19 times more leading cloud and co-location data centres than India, which has the most data centres among emerging-market economies.[8]

The AI divide is stark – and it is precisely at this stage that policy attention is needed to support investments both in physical infrastructure (computing power or "compute") and skills. And such investments are expensive, putting developing countries and their home-grown start-ups at a severe disadvantage. For example, OpenAI spent approximately $78 million of compute to train GPT-4, while Google's Gemini Ultra's compute costs were estimated at $191 million [17].

Moreover, there are knock-on effects from pre-existing market positions. Leadership in the app market is important as apps generate additional user data that is then used to expand the database on which machine learning algorithms train and improve. Asia, Europe and North America have almost equal shares of the mobile app developer market, with South America and Africa accounting for just 7 percent in total [18].

Investments in compute must go together with investments in skills, otherwise, there will be an exacerbation of the brain drain, with either physical or virtual movement of skilled tech professionals. Data from the Oxford Internet Institute on professions offered through freelancing platforms reveals that the top countries in terms of numbers of workers offering software development and IT services are India, Bangladesh, Pakistan, Ukraine, the Russian Federation, United States and Serbia [19]. Most of these services are being offered to firms located in the United States and Europe. As such, without national tech or AI industries, workers with requisite skills in developing countries, will just offer their services through freelance platforms to AI builders in other countries in what can be characterized as a "virtual brain drain". In

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other words, they may not migrate physically, but their skills will benefit the development of technology outside their home countries.

Adapting skills for the AI landscape

In addition to capital investments in compute, there is also a clear need for skills enhancements in developing countries to successfully benefit from AI. Such skills are essential not just for developing national AI systems, but also for understanding how to properly use such systems in developing countries, including developing and instituting safeguards.

This is also true with respect to how AI is applied in the workplace. Enterprises that purchase "off-the-shelf" AI need to be aware of the implications of such technology in terms of cyber security, data privacy and possible discriminatory effects, particularly in recruitment software [20]. Skills in AI can also improve the process of integrating the technology in the workplace, if managers and workers are more informed about how the systems work, the collection and use of data, the scope for worker autonomy and feedback, as well as provisions for redress. Such awareness comes with skills training, but it also comes by building a workplace culture and workplace institutions that promote social dialogue and cooperation among employers, workers and the collective organizations that represent them.

To effectively evaluate AI's impact on the workforce, it is important to develop a worker-centric approach. This approach not only addresses the technical aspects of AI integration but also considers its broader social impact. A worker-centric framework should closely examine the specific tasks and skills affected by AI, looking at both the nature and extent of these impacts. Through this analysis, we can comprehensively understand how AI transforms various job roles and identify

the sectors most susceptible to automation and technological disruption. This nuanced understanding enables the development of targeted strategies to mitigate adverse effects and optimize positive outcomes.

Additionally, a well-structured skills and lifelong learning framework is crucial for developing tailored and targeted capacity and skills programs. By identifying the skills that require improvement or updating, stakeholders are better positioned to create educational and training initiatives that are both efficient and effective. Such an approach allows for proactive workforce adaptation, ensuring that workers have the skills to succeed in a future powered by AI [21].

We ground our analysis in the well-established conceptual approach that measures the susceptibility of human tasks to automation and the potential for human-AI complementarity, in line with the analysis presented in section 2.[9] Building on existing analysis of the automation vs augmentation issue we present a framework consisting of four distinct quadrants, each representing a different combination of these key dimensions: exposure and complementarity.[10]

The resulting quadrants delineate the potential impact of AI across various occupations, ranging from mere assistance of the AI to full automation, thus providing a clear framework for guiding strategic workforce planning.

As illustrated in Figure 7, a detailed exploration of each quadrant reveals the nuanced ways in which AI interacts with different aspects of the workforce.

1. **Assist**: Situated at lower exposure and moderate complementarity, this quadrant highlights tasks where AI can support human activities without fully replacing them. Tasks in this zone, such as decision-making, hospitality services, and geriatric care, benefit from AI tools that assist humans in executing tasks more efficiently

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9   The analysis draws on an approach used by the ILO, and developed by Acemoglu and Restrepo (2022), Moll, Rachel, and Restrepo (2022), and Felten, Raj, and Seamans (2021, 2023). While the methodologies differ in some respects, fundamentally they assess the extent to which AI can perform tasks traditionally handled by humans and how it can enhance or augment human capabilities.

10   The approach is corroborated by the IMF report 'Gen-AI: Artificial Intelligence and the Future of Work'.

but cannot replace core activities of the occupations. AI systems provide valuable data insights or automate routine aspects, allowing professionals to focus on more complex or nuanced aspects of their roles.

2. **Transform and Optimize**: This quadrant represents a high degree of both AI exposure and complementarity. Here, AI can fundamentally transform occupations, making significant changes to how tasks are performed. In professions such as psychotherapy, exception handling[11], or maintenance, AI can do more than just assist, it can redefine processes to potentially achieve efficiency gains. AI in this context can lead to new methods and approaches that optimize the outcomes of professional activities.

3. **Augment and Hybridize**: Occupations in this quadrant may experience moderate

to high complementarity with significant exposure to AI. Professions such as R&D, radiology, and advanced data analysis benefit from AI that augments human skills. Here, AI and human intelligence collaborate closely, with AI enhancing human capabilities and enabling new possibilities for innovation and improved performance that go beyond traditional methods.

4. **Replace and Automate:** High exposure to AI with low complementarity, this quadrant includes tasks suitable for complete automation, given their routine and predictable nature. Typical examples include data entry, call centre operations, and electronics assembly, where AI has the potential to fully take over tasks traditionally performed by humans.

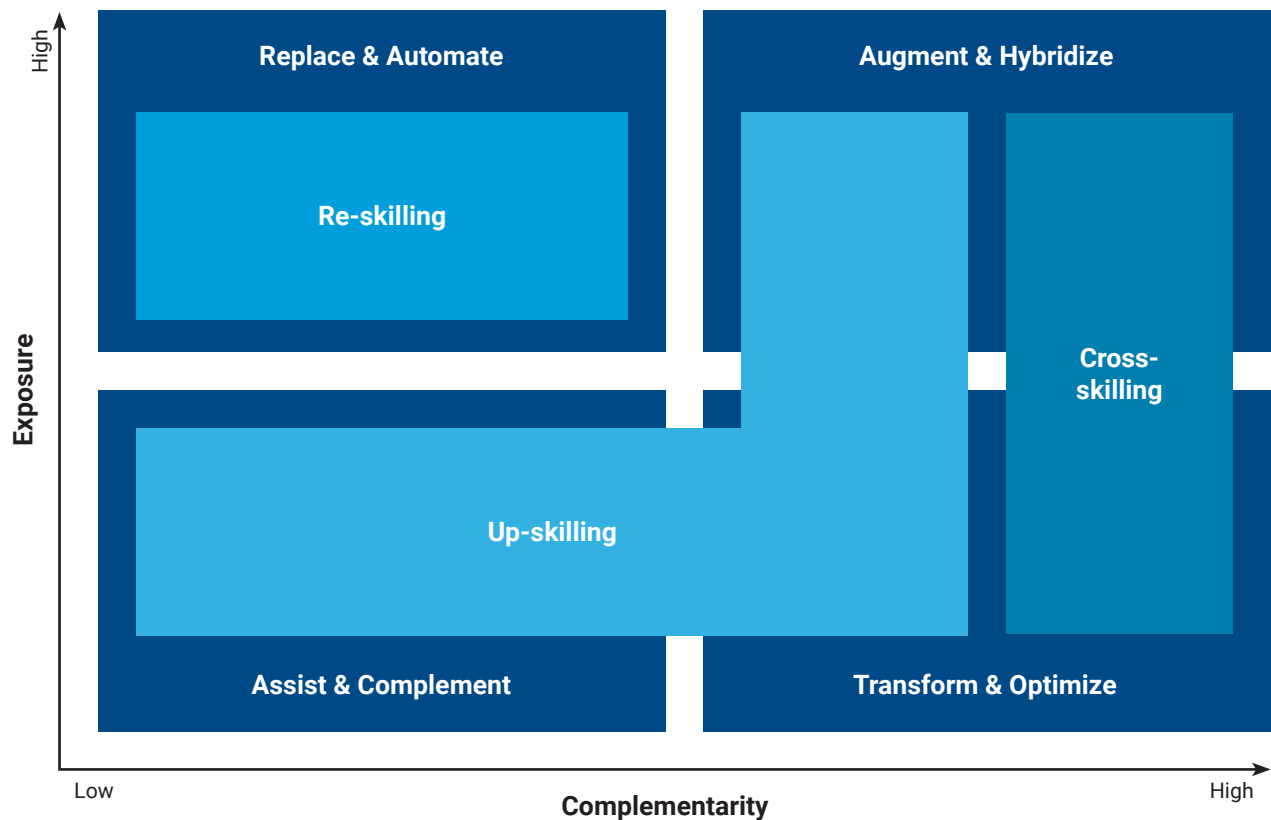This methodological framework, as illustrated in the figure 8, enables us to develop a

Figure 7: AI impact quadrant

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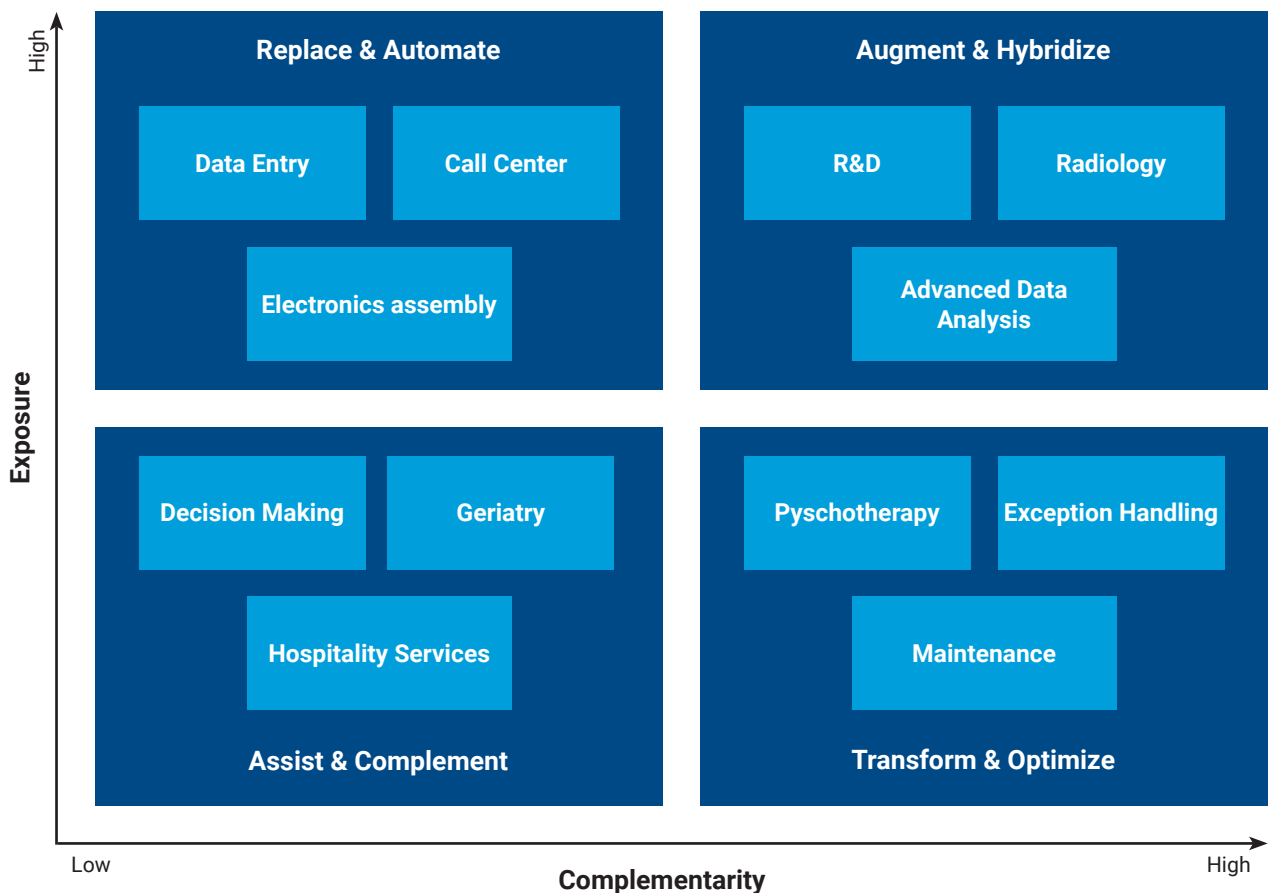
11   Exception handling is the process of responding to unwanted or unexpected events when a computer program runs

Figure 8: AI impact quadrant and corresponding skilling strategies

nuanced understanding of the varying capacity development needs across different impact categories. It assumes, of course, that there is seamless integration of AI and thus abstracts from the reality of infrastructure deficits and high cost of technology that plague developing countries. Nevertheless, by mapping out the specific requirements for reskilling, upskilling, and cross-skilling according to AI's potential impact on occupations, this approach can support the creation of customized and evidence-based AI capacity development programs and thus better prepare workers and enterprises for the possible transformations ahead.

In the quadrant labeled "Replace and Automate," there is a significant emphasis on reskilling, as jobs in this category are highly susceptible to being replaced by AI, necessitating new skillsets for affected workers, in addition to social protection measures that can support workers during the transition process. Conversely, in the "Augment and Hybridize" quadrant, there is a focus on cross-skilling, where workers expand their capabilities to work alongside AI,

enhancing roles rather than losing them. This tailored approach not only facilitates strategic educational and training interventions but could also help prepare governments, enterprises and workers to mitigate risks associated with job displacement.

However, such a scenario presumes that there will be AI investments, which may not be the case in some developing countries either because of a lack of infrastructure needed to power such AI systems, because the cost of the technology is too high, particularly relative to the cost of labour, or because the digital skills to integrate such technology in the workplace are lacking.

As mentioned previously, it is critical to know how to integrate technology beyond mere "off-the-shelf" purchase of technology, to assess and address possible risks to security, data privacy, or non-discrimination. It also makes evident the consequences of not investing in such skills development, and the potential for the digital divide to further widen productivity gaps.

Moving forward

Strengthening international cooperation, building national capacity, and addressing AI in the world of work

Concerted policy action is needed at the national and international level to ensure that the present AI divide between countries narrows, so that the global majority can seize the benefits of the new technology and contribute to expanding the AI opportunity while mitigating any potential risks.

Narrowing the divide is not a straightforward endeavour. It requires policies at the international and national level, with special attention to integration of AI into the world of work. As the analysis in this report has shown, advances in technology put at risk jobs in sectors such as call centres and other types of business process outsourcing that are prevalent in some developing countries. In addition, the potential for productivity gains in the workplace risks not being realized if basic impediments – such as the lack of access to computers at work and foundational digital skills – are not addressed. Similarly, attention needs to be given to how technology is integrated into the workplace to ensure that it augments human labour as opposed to limiting workers' scope for agency or creativity in their work. The objective is to harness the technology to improve productivity and working conditions, in support of social justice.

Building AI capacity through international cooperation is essential for equitably distributing the benefits of this transformative technology. By pooling expertise, targeting sensitive areas, and fostering public-private collaboration, countries can enhance their AI readiness, mitigate risks, and unlock the potential of AI for sustainable economic and social progress. International organizations play a critical role in facilitating this collaborative effort, serving as platforms for coordination, knowledge-sharing, and the development of global frameworks for responsible AI development and deployment.

Proactive capacity-building efforts and policies are needed to ensure that the benefits of AI are distributed equitably and that countries are prepared to navigate the challenges posed by this transformative technology. By investing in AI capacity building, countries can foster innovation, boost productivity, and enhance their competitiveness in the global economy, while also mitigating potential negative impacts on employment, privacy, and security.

Policymakers should navigate these complexities and tailor their strategies to address the specific challenges and opportunities presented by AI. Based on empirical data and leveraging social dialogue, they must set the strategic direction to ensure that labour markets, and the broader social contract can adapt to and keep pace with rapid technological advancements.

We propose three policy pillars to advance these objectives: strengthened international cooperation, building national capacity and addressing AI in the world of work.

Strengthened international cooperation on AI

- **Global network of knowledge sharing**: Establish a global network for knowledge exchange to disseminate AI research and innovations. This network would ensure that all nations benefit from the latest advancements, bridging the gap between developed and developing countries by providing equal access to critical AI knowledge.

- **Unified methodology for assessing AI's impact on skills and occupations**: Work towards a unified methodology applicable globally, inspired by frameworks such as the United States' O*NET[12] or others extensively used by researchers. This methodology should focus on standardizing the evaluation of how AI technologies reshape job roles and skills across the globe, allowing these insights to inform policies and training programs that ensure workforce readiness based on skills needs assessments at all levels (national, sectoral and global).

- **Joint training initiatives**: Create global, interregional training programs that leverage expertise from around the world. These initiatives could improve the quality of relevant training, standardize AI skills and promote a uniformly skilled global workforce. By incorporating diverse perspectives, these programs could enhance the quality of AI education and training globally.

- **Multi-nation R&D partnerships**: Encourage global and interregional partnerships in research and development to combine resources, share risks, and enhance the scope of AI innovations. Multi-nation R&D collaborations can lead to significant advancements in AI technologies, benefiting all participating countries and driving global progress in the field.

- **Equitable AI resource and infrastructure allocation**: Work towards the equitable distribution of AI resources and infrastructures. Ensure that opportunities for AI education and training are accessible to all nations, particularly developing ones. This will prevent any country from being left behind in the AI revolution and promote the global sharing of AI benefits.

Building national AI capacity

- **Establish robust educational, skills and lifelong learning frameworks to build a skilled AI workforce**: Integrate AI and data science courses into existing educational curriculums, while also strengthening foundational skills. Partner with universities and international organizations to help build educational and training capacity. Support community-driven and sectoral AI learning initiatives, to encourage local talent and grassroots innovation.

- **Invest in digital infrastructure and ensure equitable access to AI resources and tools**: Starting with meaningful connectivity and strategic investments in data centers and cloud computing facilities to provide the necessary infrastructure for AI development and deployment. Promote open data policies to make public sector data available for research and development in AI, while ensuring privacy and safety. Engage in international collaborations to share resources and infrastructure, such as access to high-performance computing facilities and international research networks.

- **Develop and implement comprehensive policies and regulations that support human-centred AI development and use, including in the workplace**: Formulate a national AI strategy that outlines the vision, goals, and action plans for AI development. This should include safety standards and considerations for sustainable AI practices, in line with human rights and sustainable

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development goals, as well as respect for fundamental principles and rights at work. Leverage social dialogue. Implement data protection and privacy laws that safeguard workers' rights and promote trust in AI systems. Raise public awareness about AI, its benefits, and potential risks.

Towards a positive integration of AI in the world of work

- **Ensure decent work along the AI value chain**: Data curation and annotation are a critical component of the AI value chain, in addition to being an important source of employment creation for developing countries. Ensuring decent work, including and the protection of the fundamental principles and rights at work for all workers in the AI value chain, would help to spread the benefits of AI more evenly.

- **Leverage social dialogue and public-private partnerships to encourage training, reskilling and redeployment**: For workers at risk of redundancy due to AI, prioritize their redeployment and increase investment in relevant skills training. Provide employment support measures for workers most exposed to AI disruption and ensure coverage of social protection and access to reskilling for affected workers.

- **Address gender-specific needs in the transition process**: Account for the strongly gendered dimension on the potential impact of generative AI on the current labour markets and design policies that address gender-specific needs in the transition process, including by investing in skills needed for growing AI occupations or for other societal needs, such as in the care or green economy.

- **Promote social dialogue in the integration of AI in the workplace**: Promote the active involvement and consultation of workers and workers' organizations in the adoption of AI systems in the workplace; promote social dialogue and collective bargaining on the design, deployment and monitoring of AI and use of technology at the workplace; and support the development of AI-related skills among social partners.

Acknowledgments

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