



Economic and Social Council

Distr.: General
26 December 2023

Original: English

Commission for Social Development

Sixty-second session

New York, 5–14 February 2024

Item 3 (c) of the provisional agenda*

**Follow-up to the World Summit for Social Development and
the twenty-fourth special session of the General Assembly**

The influence of digital transformation on inclusive growth and development: a path to realizing social justice

Note by the Secretariat

Summary

The present note provides background and analysis on the theme selected as an emerging issue of interest by the Bureau of the sixty-second session of the Commission for Social Development, “The influence of digital transformation on inclusive growth and development: a path to realizing social justice”.

In the present note, a focus is placed on the opportunities and challenges presented by the digital transformation with regard to the achievement of inclusive economic growth, decent work for all and social inclusion. For the digital transformation to be inclusive and promote social justice, it is important to bridge digital divides among and within countries, ensure the social protection of workers in the context of job displacement and volatility, support the training of digital skills and reskilling across the life course and improve the digital transformation’s governance. International cooperation is needed to harmonize industry standards and governance frameworks and to facilitate technology transfer. Governments are advised to take concerted action to steer digital transformation in the direction of social development and social justice so as to ensure that it brings benefits for all.

* E/CN.5/2024/1.



I. Introduction

1. Digital technologies are transforming lives and societies and hold great potential with regard to contributing to the achievement of the Sustainable Development Goals. There are many challenges, however, to harnessing this transformation for inclusive growth and social justice. While digital technologies create new opportunities, they may also increase inequalities and result in new forms of exclusion and discrimination.

2. Inclusive and sustainable economic growth creates opportunities for all, with its benefits being distributed in a fair and inclusive way, without harming the environment. As a pillar of sustainable development, inclusive growth can only be achieved through social justice, such as by ensuring equal rights and equal access to opportunities and services. This includes the promotion of decent job creation, which encompasses fair wages, labour rights, social dialogue, non-discrimination and access to social protection.

3. Digital transformation entails the fundamental restructuring of social and economic processes through the integration of digital technologies. It is a process of social change that is purposeful and should be planned and executed on the basis of a people-centred approach.¹ The digital revolution can be an opportunity to promote inclusive economic growth and social justice on the basis of multi-stakeholder engagement in implementing effective policies that place social considerations at the heart of digital transformation.

4. The frontier technologies of the digital revolution, such as artificial intelligence, cloud computing, big data analytics, the Internet of things, three-dimensional printing and robotics, take advantage of digitalization and connectivity to multiply their impacts.² These technologies have enormous potential for automating tasks and enhancing human labour, in particular by supporting decision-making processes, and for overcoming physical distances and barriers. They can contribute to increasing overall productivity and efficiency, support financial and labour-market inclusion and facilitate a socially just transition towards sustainable development. These technologies can also improve the reach, effectiveness and delivery of social policies, including through the provision of social protection benefits, distance learning and e-health, and ensure better responses to natural disasters, which often disproportionately affect the poor.

5. However, the integration of digital technologies into the world of work can increase risks for workers, as job displacement and inequality rise, owing to insufficient access to social protection. Digital divides limit the effectiveness of digitalization in social policies, hinder access by groups in vulnerable situations to the labour market and social services and prevent their financial inclusion. The risk that bias and discrimination against marginalized groups may be exacerbated by digital technologies could undermine the latter's potential for greater social inclusion.

6. The coronavirus disease (COVID-19) pandemic accelerated the pace of digital transformation – as it brought many more people and activities into the digital realm – and exemplified many of the opportunities and challenges thereof. During the pandemic, digital technologies were key to ensuring the continuity of business activities and key services, with a large segment of workers performing their functions remotely. Online

¹ United Nations Development Programme, “Inclusive by design: accelerating digital transformation for the global goals”, policy brief New York, 26 July 2022.

² United Nations Conference on Trade and Development (UNCTAD), *Technology and Innovation Report 2021: Catching Technological Waves – Innovation with Equity* (United Nations publication, 2021).

education was central for millions of children and young people, and e-health initiatives represented a growing share of patient care. Between 2019 and 2021, 800 million people came online for the first time.³ However, those who were not digitally connected were thus disproportionately excluded from public services, opportunities and information, all of which were shifted online. Similarly, while digital technologies, in particular social media, facilitated communication and ensured that people stayed connected during the pandemic, they have also posed challenges, such as the spread of misinformation and disinformation on public health and other issues.⁴

7. The present note builds on the report of the Secretary-General on the priority theme for the fifty-ninth session of the Commission, “Socially just transition towards sustainable development: the role of digital technologies on social development and well-being of all” (E/CN.5/2021/3). In the present note, the opportunities and challenges that the digital transformation presents with regard to the labour market and financial inclusion, and in terms of making social policies more effective and promoting social inclusion, are addressed. Policy pathways for ensuring that the digital transformation under way is implemented in a people-centred manner that reduces inequalities and contributes to social justice are also explored.

II. Opportunities and challenges of digital transformation

8. Digital transformation opens many opportunities for promoting people’s well-being, inclusion and social justice. However, a major obstacle preventing these opportunities from being materialized is the existence of various and multiple digital divides, in particular the lack of widespread access to and use of the Internet.

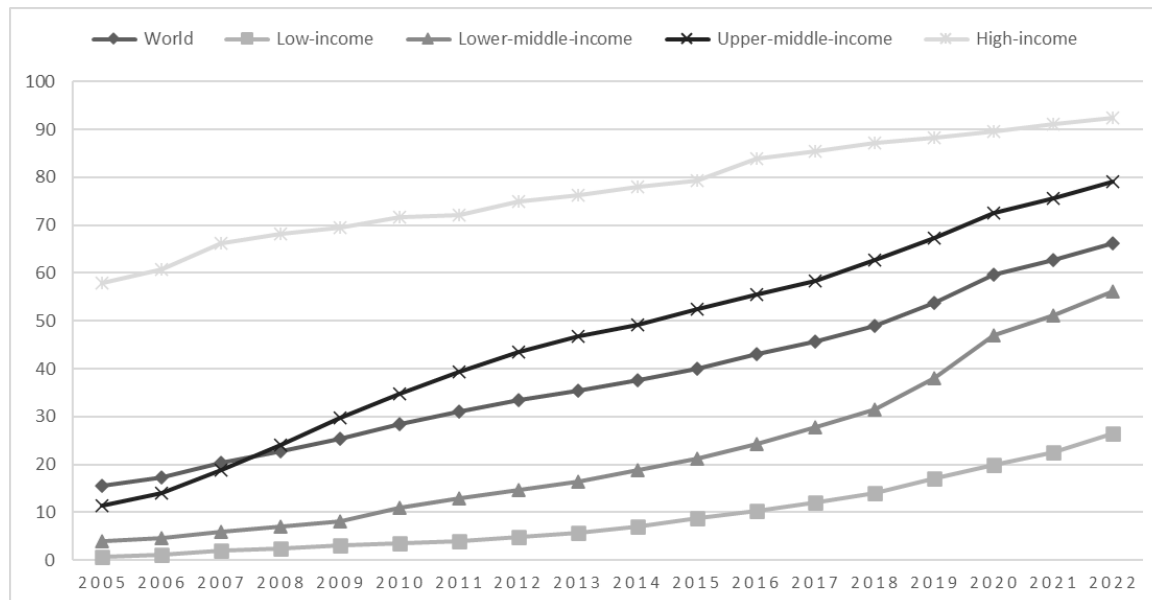
9. Access to digital technologies is a human right, since it is part of the right to enjoy the benefits of scientific progress and its applications.⁵ However, enjoyment of that right is very uneven. While Internet coverage has expanded significantly over time and more people are online now than ever before, digital divides remain a serious challenge (see figure below). In 2022, only one in four people in low-income countries and just over half of all people in lower-middle-income countries used the Internet, despite the fact that those countries account for more than half of the global population.

³ Organisation for Economic Co-operation and Development (OECD), *Development Co-operation Report 2021: Shaping a Just Digital Transformation* (Paris, 2021).

⁴ According to the Internet Governance Forum, misinformation is defined as the unintentional spread of inaccurate or false information, while disinformation is defined as deliberately falsified content specifically designed to deceive. See Internet Governance Forum, “IGF Messages”. Available at: www.intgovforum.org/en/filedepot_download/300/26576 (accessed on 15 November 2023).

⁵ Committee on Economic, Social and Cultural Rights, general comment No. 25 (2020) on science and economic, social and cultural rights.

Share of population using the Internet in the previous 12 months, world and income regions⁶



Source: Department of Economic and Social Affairs, based on data produced by the International Telecommunication Union in “Facts and figures 2022”, World Telecommunication/ICT Indicators database, November 2022.

10. Significant progress has been made in expanding the availability of broadband worldwide, with 95 per cent of the world population now covered by at least a 3G network, up from 78 per cent in 2015. However, 2.7 billion people remain offline, with significant regional differences.⁷ Affordability is an important reason for this, with mobile broadband baskets prices costing nearly 30 times more in low-income countries than in high-income ones, adjusting for differences in gross national income per capita.⁸ Coverage is particularly lacking in rural areas in Africa and Latin America. The gender digital divide is most pronounced in developing countries, where women are 8 per cent less likely to use the Internet than men. It is of particular concern that in most countries people have low levels of digital skills, which risks workers and countries being left on the margins of the global economy. Only in five countries do more than 75 per cent of people have a broad range of digital skills.⁹

11. In the present section, some of the opportunities and challenges that digital transformation presents with regard to promoting decent work, expanding financial inclusion and making social policies more effective will be reviewed.

A. Labour markets

12. Digital transformation reshapes labour markets by creating and eliminating jobs across different sectors, as well as by changing the skills required to perform certain

⁶ The indicator refers to the share of the population that used the Internet from any device (including mobile phones) in the previous 12 months.

⁷ International Telecommunication Union (ITU), *Measuring Digital Development: Facts and Figures 2022* (Geneva, 2022).

⁸ Ibid.

⁹ Ibid. Data available for 74 countries. Only five countries reported averages of more than 75 per cent of the population having at least three of five digital skill groups: communication and collaboration, problem-solving, safety, content creation, and information and data literacy.

jobs. While studies have provided different estimates regarding the risk of jobs being lost to automation as a result of artificial intelligence and advanced technologies – ranging from 10 to 60 per cent depending on the country¹⁰ – the impact on net employment in countries of the Organisation for Economic Co-operation and Development appears to be neutral or even positive, largely because technology has increased productivity and created new jobs.¹¹ This transformation of the labour market will create not only enormous opportunities for many of today’s and tomorrow’s workers, but also significant challenges. How smooth this adjustment and adaptation process will be depends, to a large extent, on the functioning of public employment services, educational systems, opportunities for skills upgrading and the behaviour of employers.

13. When properly harnessed, the digital transformation can generate new jobs, better work-life balance and higher salaries, resulting in overall improved prosperity. Online job-matching services can improve the efficiency of labour markets by reducing spells of unemployment, skills mismatching and search friction.¹² However, digitalization does not automatically lead to more and better jobs. As outlined below, digitalization has also been associated with increased wage inequality, job displacement and polarization in the labour market. In the absence of plans and policies to support workers experiencing displacement and labour-market volatility, unemployment may rise. This may have disproportionate impacts on livelihoods and well-being among informal workers, who often lack access to social protection and opportunities for skills upgrading. Digital technologies have also been linked to worsening working conditions owing to increased use of remote mechanisms for the surveillance of workers and constant connectivity, resulting in longer working hours and poorer work-life balance.

1. Job displacement and polarization in the labour market

14. New technologies are often perceived as a threat to jobs, with concerns that they could result in widespread unemployment, as workers would increasingly be replaced by machines. While automation and the substitution of human labour by machines has been an integral part of technological advancements over time, it is generally specific tasks, rather than entire occupations, that tend to be replaced. Likewise, new technologies create new jobs, including those related to the use, testing, supervision and marketing of the resulting new products and services.

15. In developed countries in particular, digital technologies are mostly affecting middle-skill jobs through the automation of routine or codifiable tasks. New technologies have thus increased demand not only for high-skilled workers, but also for low-skilled workers, as a secondary effect of that increased demand. This may result in a polarization of labour markets and rising wage inequality. While there is no clear evidence of a reduction in the number of available jobs, shifts in the skills composition of the labour market pose significant challenges to particular occupations and displaced workers, thus requiring government policies to support labour-market transitions and reskilling.¹³

¹⁰ *World Social Report 2020: Inequality in a Rapidly Changing World* (United Nations publication, 2020).

¹¹ Lorraine Charles, Shuting Xia and Adam P. Coutts, *Digitalization and Employment: A Review* (Geneva, International Labour Organization, 2022).

¹² Estonia, for example, had digitalized its public employment service system prior to the COVID-19 pandemic, which made it easier for workers to receive support, including job-matching, during the pandemic. See United Nations, Department of Economic and Social Affairs, “Can digital technologies put us back on the path to achieve the SDGs?”, “Frontier Technology Issues, November 2020.

¹³ *World Social Report 2020*.

16. High-skilled workers with a high degree of creativity and strong problem-solving and interpersonal skills are expected to benefit the most from new technologies such as artificial intelligence.¹⁴ However, even if low- and middle-skilled workers seem to be the most affected, these new technologies have the potential to displace certain high-skilled workers, including lawyers, physicians and computer programmers, who carry out non-routine cognitive tasks.¹⁵ While the current evidence does not indicate that these risks for high-skilled workers have yet materialized, this may change, considering the fast pace of technological advances.¹⁶

17. The digital revolution has different impacts for different regions, which risks countries being left behind. Workers in developing countries – especially low- and middle-skilled workers in the manufacturing industry – are disproportionately at risk of losing their jobs owing to automation and premature deindustrialization accelerated by digital technologies.¹⁷ There is also a widening gap between regions when it comes to digital employment. Digital technologies have enabled the outsourcing of digitally deliverable work from developed countries to some developing countries where the requisite information and communications technology infrastructure and language and technical skills are available. While workers from countries such as Bangladesh, India and the Philippines are matched by online platforms with firms from all over the world, the proportion of digital workers in Africa, Latin America, the Middle East and North Africa remains low. Three countries – Bangladesh, India and Pakistan – account for 50 per cent of the global supply of online gig work.¹⁸ While high- and middle-income countries have been increasing their exports of digitally deliverable services, with averages above 30 per cent of total services exports in 2019, low-income countries have seen declines in their exports, with numbers as low as 17 per cent, owing to limited digital infrastructure.¹⁹

2. Differentiated impacts on specific groups

18. The changing skills structure of the labour market affects men and women differently, as they are not equally represented across occupations and sectors. Digitalization is expected to generate job growth in sectors employing more female workers, such as care, retail and wholesale. As a result, there could be an increase in employment and income opportunities for women. However, there is also a possibility of increased competition for jobs by men. If low-skilled men displaced from other sectors do not find sufficient reskilling opportunities, there could be increased competition for lower-skilled jobs, including those occupied by women, which could thus result in downward pressure on wages. Women are more likely than men to leave the workforce when wages go down, owing to the trade-off between paid and unpaid care work, the latter being disproportionately carried out by women.²⁰ Moreover, women are less represented in sectors that require high digital skills and are therefore

¹⁴ United Nations, Department of Economic and Social Affairs, “The impact of the technological revolution on labour markets and income distribution”, *Frontier Issues*, 2017.

¹⁵ International Labour Organization (ILO), *World Employment and Social Outlook 2023: Trends 2023* (Geneva, International Labour Office, 2023).

¹⁶ OECD, *OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market* (Paris, 2023).

¹⁷ *The Workforce We Need: Social Outlook for Asia and the Pacific* (United Nations publication, 2022).

¹⁸ Namita Datta and others, *Working Without Borders: The Promise and Peril of Online Gig Work* (Washington, DC., World Bank, 2023).

¹⁹ UNCTAD, *Digitalisation of Services: What Does It Imply to Trade and Development?* (Geneva, 2022).

²⁰ Michiel Evers, Ruud de Mooij and Daniel van Vuuren, “The wage elasticity of labour supply: a synthesis of empirical estimates”, *De Economist*, vol. 156, No. 1 (March 2008).

less likely to benefit from the increased income-earning opportunities. The disruptions to the labour market owing to the COVID-19 pandemic put this in evidence, as they affected women more intensely than men owing to their differing levels of digital skills.²¹

19. Rural workers can benefit from digital technologies as agricultural production, processing and distribution become more efficient and e-commerce connects farmers to the urban centres that buy their products. Technology, including artificial intelligence, can increase the productivity of agrifood systems through weather forecasting, climate change adaptation and mitigation measures, and increased efficiency in the use of natural resources. This can generate more employment opportunities, lower rural household poverty and promote food security.²² However, a precondition for the realization of these opportunities is full, affordable and reliable access to the Internet, which is still lacking. Globally, only a quarter of small farmers have access to 3G or 4G services, compared with 80 per cent of large farms.²³

20. New income-generating opportunities created by online working and facilitated access to entrepreneurship through e-commerce can contribute to the inclusion of underrepresented groups, including women, persons with disabilities and rural populations. However, this potential is not yet fully realized, as digital divides and a lack of the required digital skills prevent many from fully participating in the digital economy. Remote work also poses challenges when it comes to working conditions and access to social protection, thus requiring new regulations so as to ensure workers' rights.

21. There is also a risk that discriminatory bias against specific groups might be magnified by the increased use of algorithmic decision-making for activities such as task allocation, performance assessment and recruitment. Artificial intelligence tools trained using data sets that contain bias might replicate existing patterns of discrimination, with particular impacts on women and persons with disabilities (see [A/HRC/49/52](#)). The lack of transparency about how such decisions are made raises concerns regarding the lack of accountability for mistaken algorithm-based decisions.

3. The case of digital labour platforms

22. Digital labour platforms exemplify many of the opportunities and challenges for workers that are posed by the digital revolution. In both developed and developing countries, digital labour platforms have had a profound impact on labour markets and contributed to the rise of non-standard forms of employment among low- and high-skilled workers. Online web-based platforms enable workers to gain access to specific assignments to be executed remotely (such as translation, design or legal services) or in person (such as delivery or home services). Task-based working provides for new and flexible income-generating opportunities, which could thereby facilitate the inclusion of persons with disabilities and migrants, for example, in the labour market. It also offers people a chance to complement their earnings from low paying or seasonal jobs.

23. These informal and non-standard forms of employment nevertheless pose many challenges in relation to work and income regularity, working conditions, collective bargaining and social protection.²⁴ A vast majority of platform workers are

²¹ Charles, Xia and Coutts, *Digitalization and Employment*.

²² *World Social Report 2021: Reconsidering Rural Development* (United Nations publication, 2021).

²³ Inter-Agency Task Force on Financing for Development, *Financing for Sustainable Development Report: Financing Sustainable Transformations* (United Nations publication, 2023).

²⁴ ILO, *World Employment and Social Outlook 2021: The Role of Digital Labour Platforms in Transforming the World of Work* (Geneva, International Labour Office, 2021).

categorized as self-employed or independent workers, notwithstanding the fact that their working conditions are, in many ways, determined or controlled by the platforms. Location-based workers, in particular, bear a large proportion of the costs and risks associated with the business. For example, according to a survey by the International Labour Organization, while 69 per cent of application-based taxi drivers owned their own vehicles, 70 per cent of them had taken out a loan for that purpose.²⁵ In addition, these types of workers can face uncertain or highly variable incomes, as they struggle to find sufficient work owing to intense competition on many platforms.

24. Despite platform workers' self-employed status, their working conditions are controlled, to a large extent, by the platforms, which have broad discretionary power owing to information asymmetry, the complexity of their algorithms and their dominance in their respective markets.²⁶ High fees imposed by platforms and instances of non-payment have an impact on workers' earnings. In addition, platforms deploy surveillance tools that limit the autonomy of workers, who are often unaware of how to gain access to dispute resolution mechanisms.

25. These non-standard forms of employment often result in a lack of access by workers to many protections and entitlements, including social protection benefits. Advocating for better working conditions is a challenge, as workers' geographical dispersion hinders their ability to engage in collective bargaining.²⁷ While some innovative programmes to extend social security benefits to digital workers have been documented, significant gaps remain and were particularly evident during the COVID-19 pandemic, especially for those on location-based platforms.

B. Financial inclusion

26. The use of digital or mobile payments, already deployed in many countries, expanded rapidly during the COVID-19 pandemic and facilitated the wider adoption of financial services, including in developing countries. The number of mobile money accounts worldwide increased 18 per cent in 2021, thus contributing to the growth in access to bank accounts. During the pandemic, 39 per cent of adults in low- and middle-income countries opened their first bank account to receive wage payments.²⁸ The gender gap in account ownership shrank for the first time in 2021, narrowing to 6 percentage points in developing countries, with the increase in mobile money accounts seeming to contribute to this trend. Digital financial technologies are also reducing the cost of cross-border payments, thus benefiting migrants and their communities of origin. As lockdowns prevented migrants from using informal networks and over-the-counter cash remittances, many turned to financial technology, or fintech, innovations. The use of digital remittances grew 48 per cent in 2021 and could be increased even further through the easing of regulatory barriers.²⁹ However, these advances towards financial inclusion involve new risks, including digital fraud and phishing scams, in particular among those in vulnerable situations, such as older persons, the poor and rural populations, owing to lower financial and digital literacy.

27. Digital technologies can support poverty reduction efforts by promoting greater financial inclusion of previously excluded or underserved populations. Access to

²⁵ Ibid.

²⁶ Department of Economic and Social Affairs, "Does the sharing economy share or concentrate?", *Frontier Technology Quarterly*, February 2020.

²⁷ United Nations, Department of Economic and Social Affairs, "Digitally enabled new forms of work and policy implications for labour regulation frameworks and social protection systems", policy brief No. 113, September 2021.

²⁸ Inter-Agency Task Force on Financing for Development, *Financing for Sustainable Development Report*.

²⁹ Ibid.

affordable mobile phones and the Internet, in particular for women and people living in rural areas, is therefore critical. By reducing the costs of financial services, digital technologies have increased bank account ownership among unbanked populations and expanded the use of financial services overall. In India, for example, where, in 2008, a third of the population lacked a birth certificate, a biometrically enabled digital identity system, known as “Aadhaar”, was introduced, leading to the registration of around 90 per cent of the population, thus facilitating access to different types of government programmes, including food subsidies, pensions and the national wage-guarantee programme for rural workers, all of which are critical to efforts to reduce poverty. The Aadhaar system also enabled many previously unbanked persons to have access to bank accounts and to credit.³⁰

C. Social policies

28. Digital technologies can contribute to increasing the efficiency and effectiveness of social policies, including with regard to access to social protection, education and health care. For example, there has been a significant increase in the number of countries receiving electronic applications for social protection benefits, including maternity care, child subsidies, pensions and food allowances. Digital technologies can increase access to services by making social registries and databases more integrated and interoperable. In Pakistan, the national social registry covers around 85 per cent of the population and supports the implementation of approximately 70 programmes, resulting in estimated savings of \$248 million.³¹ Digital solutions can also ensure the regular and predictable payment of cash benefits, including by facilitating electronic payments to recipients in hard-to-reach areas. Moreover, they can contribute to reducing the misuse of public funds, as the use of well-maintained databases of recipients can ensure that payments are made to the correct beneficiaries. Digital payment systems are also useful for quickly disbursing funds during crises or emergencies. During the COVID-19 pandemic, the use of e-government strategies was accelerated, including in developing countries.

29. In the light of the dramatic expansion in the use of remote learning during the pandemic, there is an opportunity to build on the initiatives and lessons learned from that period to increase access for people in rural areas and other marginalized groups. Digital technologies can, for example, support learning in multiple settings through open educational resources, which are teaching, learning or research materials that are freely accessible and usually disseminated online.³² Similarly, e-health can contribute to the provision of health-care services, including through the direct provision of care through telehealth appointments, thereby facilitating access to health in rural and remote areas. Online resources can support the training of health workers, improve patient care through facilitated access to medical records and data-sharing among providers and modernize the management of health systems. Predictive analysis can support medical assessments and the development of tailored health-care plans, while data analytics can improve responses to public health emergencies.³³

30. There are a broad range of applications for digital technologies in social policies. Complex analytics and artificial intelligence can support the development of tailored solutions for specific groups through various policies and help to identify and

³⁰ *World Social Report 2020*.

³¹ Sriani Kring and Vicky Leung, *Renewing the Social Contract through E-formalization in the World of Work*, (Geneva, International Labour Organization, 2021).

³² See United Nations Educational, Scientific and Cultural Organization (UNESCO), *Recommendation on Open Educational Resources*, 2019.

³³ World Health Organization, *Global Strategy on Digital Health 2020–2025* (Geneva, 2021).

reach remote or marginalized populations. Digital solutions can support accountability and transparency, as online platforms can be used to gather information on the implementation of programmes and receive complaints about their implementation.

31. Despite its potential, the use of e-government can only serve as an equalizer if it is accessible to all members of society. During the COVID-19 pandemic, when many services were moved online, large groups of marginalized people saw their access to government services and to information reduced, leaving them more vulnerable to misinformation and to the disease itself. In addition, some risks relating to the use of digital technologies are more pronounced when it comes to social policies, which rely on personal data and provide services directly to beneficiaries. As Governments increasingly rely on algorithmic decision-making tools for determining benefit eligibility and service provision, there are concerns surrounding the risk of discriminatory bias and the opaqueness of policy decisions. Furthermore, data breaches risk exposing personal data; technical and institutional mechanisms are thus required to safeguard such data.

D. Social inclusion

32. There are opportunities to leverage digital technologies in efforts to increase social inclusion and protect the rights of marginalized groups and communities, thereby contributing to fulfilment of the pledge to leave no one behind. Digital technologies are not inherently inclusive. Concerted efforts are therefore required to prevent inequalities and discriminatory access to the benefits of technology from becoming entrenched.

33. Emerging digital technologies have transformed the field of assistive technology and can have a great impact on the lives of the more than 2.5 billion people who need them, such as older persons and persons with disabilities.³⁴ Digital technologies, including artificial intelligence, the Internet of things and advanced sensors, support smarter and connected assistive products that can learn from users' behaviour and environment and support independent living and navigation.³⁵ However, access to these assistive technologies is extremely limited and there is often a lack of trained health personnel for the prescription, fitting and training in the use of assistive products. There are also concerns regarding the collection of, access to and use of data produced by assistive devices, for which reason suitable regulatory frameworks are needed.

34. Digital technologies can facilitate improved access by marginalized groups and communities to services, including health and education, and increase their participation in decision-making. However, to make access effective and meaningful, it is important to put in place mechanisms to protect women, lesbian, gay, bisexual, transgender and intersex persons, ethnic minorities and others from online violence, which can further impede their participation.

35. In fact, the digital revolution brings with it new ways in which social exclusion can be further exacerbated. Data poverty, or the lack of sufficient and disaggregated information on specific populations, can risk certain groups being made invisible, as digital tools are increasingly becoming part of policymaking and social life. This underrepresentation in data sets trickles down to technologies that rely on algorithmic

³⁴ World Health Organization, "Assistive technology", fact sheet, 2 January 2024. Available at www.who.int/news-room/fact-sheets/detail/assistive-technology.

³⁵ World Intellectual Property Organization, *Technology Trends 2021: Assistive Technology* (Geneva, 2021).

decision-making, which can result in the unintentional exclusion of certain vulnerable groups in service delivery.³⁶ Bias in data sets used to train algorithms, including in large language models, have been found to result in the reproduction of harmful stereotypes of marginalized groups, including patterns of racial and gender discrimination, which has a negative impact on their access to jobs and services. However, discrimination in artificial intelligence systems may be more difficult to detect than in other contexts.³⁷

III. Pathways to harnessing digital transformation for inclusive growth and social justice

36. To steer the digital transformation towards inclusive economic growth and social justice, there is a need to design innovative, evidence-based policies, regulations and institutional frameworks and incorporate a holistic, multi-stakeholder approach. There are various possible pathways to addressing some of the critical challenges, such as by bridging digital divides, making social protection systems effective, reinforcing the governance of the digital transformation and strengthening international cooperation.

A. Bridging the digital divides to promote inclusion and equity

37. As already outlined above, digital divides within and among countries limit the potential of digital technologies to promote social inclusion. As more information, services and opportunities are moved to the digital realm, digital divides can exacerbate pre-existing inequalities. In fact, digital divides or “digital poverty” can be viewed as a dimension of multidimensional poverty,³⁸ with direct impacts on the realization of social justice.

38. Overcoming these divides is important to ensure meaningful universal connectivity, which is defined as the opportunity for every person to enjoy a safe, satisfying, enriching, productive and affordable online experience.³⁹ The many obstacles to achieving that goal include issues of access, affordability, awareness, relevance, safety and skills, thus requiring the specific needs and experiences of marginalized groups to be considered.

1. Access and affordability

39. Universal Internet coverage is a standalone target of Sustainable Development Goal 9. Although gaps in access are shrinking, there is a need for policies to expand infrastructure to underserved regions and communities, in particular those that are not commercially viable for private companies, such as rural areas. Government regulations can provide incentives, such as by reducing constraints on foreign direct investment for digital infrastructure, including network roll-out obligations as conditions for the granting of licences, encouraging network-sharing among operators and covering some of the costs through public-private partnerships.⁴⁰ Other initiatives include establishing low-cost satellite connectivity for remote areas and incentivizing

³⁶ *United Nations E-Government Survey 2022: The Future of Digital Government* (United Nations publication, 2022).

³⁷ OECD, *OECD Employment Outlook 2023*.

³⁸ *United Nations E-Government Survey 2022*.

³⁹ Internet Governance Forum, “IGF Messages”.

⁴⁰ UNCTAD, *Technology and Innovation Report 2021*.

business models that combine energy provision with broadband access in order to reach rural communities.⁴¹

40. To address the challenge of the affordability of connectivity in both rural and urban areas, Governments can reduce taxes on broadband services; subsidize data use for the poorest groups through social tariffs, similar to those in place for food allowances; provide free Wi-Fi; and offer free access to the Internet in community centres, schools, libraries and other public buildings.⁴²

2. Awareness, relevance and safety

41. Providing access to the Internet is not sufficient alone to bridge the divides. While access to the Internet has expanded, the number of people using the Internet lags behind. In 2022, over 30 per cent of people that had access to at least a 3G mobile broadband did not use the Internet.⁴³

42. Raising awareness on the different uses of the Internet through campaigns and community outreach usually encourages people to use it. Going online can improve people's social lives, with the use of Internet calls, social networks and video streaming being the most common activities. There is also a need to make tools and content on the Internet more relevant to different social groups, as the current lack of content in local languages and the dominance of the Latin alphabet online pose challenges for many. To reach people with limited literacy and communities that communicate mainly in oral forms, non-text-based forms of communication, such as audio and video files or messages, need to be expanded.

43. Meaningful use of the Internet is also dependent on ensuring online safety. To that end, measures are required to protect users against data breaches, misinformation and harmful content. Data protection laws, content moderation on social media platforms and enhancing the media literacy of users can help to improve safety online. For example, the strengthened European Union Code of Practice on Disinformation promotes the demonetization of disinformation, the implementation of fact-checking and the requirement for data to be submitted on content moderation decisions.

3. Digital skills for the digital age

44. A lack of digital skills is the most commonly cited obstacle preventing the meaningful use of the Internet.⁴⁴ Investing in digital literacy and training is therefore one of the most important investments that Governments can make to promote social inclusion and social justice in the digital age, with a view to not only ensuring that more people have the basic skills needed to gain access to services and information online, but also providing workers with relevant digital skills in a changing labour market.

45. Efforts to promote digital literacy should start by ensuring that the subject is part of the school curricula and that schools are connected to the Internet.⁴⁵ All students should develop at least basic digital skills, enabling them to accomplish tasks such as transferring files and sending emails with attachments. Formal training can be used to instruct people on the various uses, benefits and risks associated with the Internet, including ways to protect privacy and to distinguish between fact and

⁴¹ *United Nations E-Government Survey 2022*.

⁴² ITU, *Global Connectivity Report 2022* (Geneva, 2022).

⁴³ ITU, *Measuring Digital Development*.

⁴⁴ *Ibid.*

⁴⁵ The Giga initiative of the International Telecommunication Union and the United Nations Children's Fund is aimed at connecting every school to the Internet by 2030. More information is available at <https://giga.global/> (accessed on 17 November 2023).

misinformation. For those not in school, community outreach programmes can be effective. In Rwanda, 5,000 young people have been trained to provide digital skills training to others as part of the Government's Digital Ambassador Programme. The private sector can also play a role in this endeavour; successful programmes in South Asia and Africa, for example, involve mobile operator sales agents providing basic training to customers, with free data for customers and commission for trainers offered as incentives.⁴⁶ To reach marginalized groups and communities, such as older persons and persons with disabilities, it is important that their specific needs and circumstances are taken into account in training strategies.

46. As shifts in the labour market displace workers and demand increasingly complex digital skills, measures are needed to promote digital training and reskilling for workers, such as through technical and vocational training and lifelong learning. The need for skills training and reskilling applies to both low- and high-skilled workers with differing levels of digital skills. Acquiring basic digital skills is increasingly becoming a requirement for occupations at various skill levels. High-skilled professionals must also adapt to the changing task composition of their jobs. Given the potential of artificial intelligence to substitute workers in non-routine cognitive tasks, including those performed by high-skilled workers, Governments should provide workers with opportunities to develop skills that are complementary to these emerging artificial intelligence systems.⁴⁷

47. To support workers in a context of technological change, skill upgrading and reskilling can be done through vocational, on-the-job, technical and entrepreneurial skills training. Training programmes should be needs-based, taking into account both individual and national circumstances. Despite being perceived as digital natives, young people often lack the skills required by the labour market. The educational system should therefore be prepared to teach them intermediate and advanced digital skills, such as creating presentations and coding. To increase women's digital skills, in particular at advanced levels, combining training with mentorship programmes can help to address gender stereotypes that hinder their participation.

4. Addressing digital divides among countries

48. As technological innovation continues to widen digital divides among countries, many low-income countries will require international support to be able to overcome them. Technical and financial support can be provided through official development assistance and international cooperation. International financial institutions can provide funding for infrastructure projects in developing countries, especially in a context of rapidly changing technology with the implementation of 5G networks in developed countries. Developing countries will also require international support to promote technology transfer, access, adoption and development, in line with their national development objectives. This may include a more flexible international approach to intellectual property rights and strategies for market liberalization and deregulation.⁴⁸ Lastly, the participation of developing countries in the development of new technologies is crucial to ensure that they can respond to local needs and challenges, such as through the use of artificial intelligence in the field of health care.

⁴⁶ ITU, *Global Connectivity Report 2022*.

⁴⁷ OECD, *OECD Employment Outlook 2023*.

⁴⁸ *World Social Report 2020*; and Inter-Agency Task Force on Financing for Development, *Financing for Sustainable Development Report*.

B. Making social protection more inclusive and effective

49. Digital transformation intensifies the need for strong, comprehensive and gender-responsive social protection systems, including social protection floors, that support people throughout their lives. As societies undergo profound transitions, there will be increased demand for social protection to mitigate vulnerabilities, as workers experience increased job market volatility and displacement. This demand is also growing in a context of multiple and intersecting crises, including climate change, demographic transition and the aftermath of the COVID-19 pandemic.

1. Reaching workers in the informal sector

50. Social protection schemes may need to be adjusted so as to better support workers in non-standard forms of employment. Digitalization has contributed to the blurring of employment relationships, with many more workers now being classified as self-employed or contractors. Various policies have been implemented to make regulations more flexible and responsive to workers' circumstances. In some countries, digital workers are being included in existing regulatory frameworks; for example, platform workers have been acknowledged as workers by the courts or in regulations and have therefore become entitled to employment benefits, such as the minimum wage and sick leave.⁴⁹

51. Other regulatory changes have sought to adapt frameworks to the reality of non-standard forms of employment. Increasing the portability of benefits by linking social protection to individuals rather than to jobs can support workers who are geographically and occupationally mobile. As far as eligibility for social protection coverage is concerned, lowering the legal thresholds regarding minimum working hours or duration of employment, including by allowing greater flexibility in terms of contributions required to qualify and interruptions to such contributions, would help to respond to the increased “gigification” of the economy. Facilitating registration and the payment of contributions, including through simplified tax and contribution collection mechanisms, would not only increase access to benefits, but also support the funding of social protection systems.⁵⁰

52. Facilitating the formalization of employment can help to expand access to social protection for task-based and other informal workers. Digital technologies have played an important role in e-formalization initiatives, mainly by simplifying and expediting procedures, and have provided access to decent work in many developing countries. For example, in 2006, the Government of Peru introduced an electronic payroll system to replace the physical submission of payroll reports. The new system allowed for more frequent reporting – monthly instead of annually – and combined both payroll and tax information. As a result, the number of firms reporting on their payroll annually to the Labour Ministry increased from 26,000 to more than 200,000, matching the number of firms previously reporting to the tax authority. The introduction of the electronic payroll made it easier for workers to prove their labour relationship and contributed to an increase in registered employment in firms of five or more workers, which rose from 930,000 in 2002 to 2.4 million in 2011.⁵¹ Other measures to support e-formalization include improving the ease of operating formally, creating registers of workers and business and data mining tools to detect informal

⁴⁹ Charles, Xia and Coutts, *Digitalization and Employment*.

⁵⁰ ILO, *World Social Protection Report 2020–22: Social Protection at the Crossroads – in Pursuit of a Better Future* (Geneva, International Labour Office, 2022).

⁵¹ Juan Chacaltana, Vicky Leung and Miso Lee, “New technologies and the transition to formality: the trend towards e-formality”, Employment Working Paper, No. 247 (Geneva, International Labour Office, 2018).

arrangements, building new sanction systems, and raising awareness have contributed to increasing formalization, including during the COVID-19 pandemic.

2. Responding to increased demands for social protection

53. For formal and informal workers alike, there is a need to strengthen schemes to provide income security in a shifting labour market. This would include benefits for unemployment, transitions in the labour market and the acquisition of new digital skills. However, the challenge is significant, considering that, in 2020, only 47 per cent of the global population was covered by at least one social protection benefit and a large majority of the working age population – 69 per cent, or 4 billion – was either protected only partially or not protected at all.⁵²

54. Governments must prioritize the creation of social protection systems where they are not currently available, and the constant adaptation and reform of those that are, in response to the new realities. Routes to increase funding for social protection systems include the progressive taxation of income, profit and wealth and the reprioritizing of public spending.

C. Governance of digital transformation for inclusive growth and social justice

55. The direction of technological change is determined by social, economic and political choices. While digital transformation is a multi-stakeholder process, Governments have an important role to play in steering digital transformation towards technologies and institutional frameworks that foster inclusive, equitable green economies and promote social justice.

56. Governments can mitigate the impact of digital technologies on the labour market by providing fiscal support to promote the adoption of technologies that hold potential for creating new and decent jobs or new tasks, in particular those technologies that augment human labour instead of simply replacing it. Options to promote the adoption of such technologies could include direct subsidies or tax incentives, such as tax credits, special deductions for labour taxes or social security contributions.⁵³ Policies for research and development could also be tailored to encourage the development of technologies that create new or complement existing jobs.

57. Steps must be taken to improve the governance of digital systems and technologies based on inclusivity, accountability and human rights. The dominant model of industry self-regulation is now increasingly being questioned, with calls for better data protection and anti-monopoly and antitrust measures.⁵⁴ Regulations on artificial intelligence should be aimed at increasing accountability through oversight mechanisms. At the same time, the industry should involve people with diverse backgrounds in the development of artificial intelligence to prevent and correct discriminatory bias.⁵⁵

58. The expansion in the use of digital financial technologies also requires measures to strengthen customer protection mechanisms. Moreover, it is important to enhance financial literacy among underserved groups and those in vulnerable situations,

⁵² Ibid.

⁵³ Department of Economic and Social Affairs, “Can digital technologies put us back on the path to achieve the SDGs?”.

⁵⁴ United Nations Development Programme, “A shared vision for technology and governance”, 2023.

⁵⁵ OECD, *OECD Employment Outlook 2023*.

including the poor, women and rural populations, to prevent fraud and over-indebtedness.

59. There are opportunities and challenges related to the governance of data. Private companies often possess more data on individuals than Governments do, data that can be of value for social development. For example, as outlined in the report of the Secretary-General on progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels (A/77/62–E/2022/8), data on public health that can be obtained from social media platforms may be useful to prevent pandemics and improve service provision. Governments can lead the creation of technical and governance mechanisms to enable the sharing of data for policymaking purposes. Such mechanisms should ensure that personal information is kept private and that data is protected from security breaches.⁵⁶

60. As e-government strategies become more widespread, measures are necessary to mitigate the risk of exclusion of people and groups who remain offline. Governments can implement an “inclusion first” – rather than “digital first” – approach, taking a hybrid approach to service provision, while also strengthening efforts to bridge the digital divides.⁵⁷ Likewise, considering the ethical implications of using artificial intelligence in policymaking, transparency and accountability of the technology used must be increased and key policy decisions must continue to be taken by humans. Technological tools and policy frameworks are also needed to protect citizens’ rights, including the right to privacy, from mass surveillance and profiling, and to prevent security breaches of personal data. Lastly, there is a need to enhance the digital capacities of States, including in the legislative and judiciary branches, to understand and engage with digital technology regulatory regimes.

D. International cooperation for inclusive digital transformation

61. International cooperation can play a key role in fostering digital transformation that promotes social development, inclusive growth and social justice. Digital transformation is a global phenomenon, with physical infrastructure (such as cables and data storage) spanning multiple countries and significant cross-border flows of data and information. Cooperation can prevent the fragmentation of efforts and inconsistent policy approaches, as well as support countries in addressing significant challenges such as the taxation of cross-border digital transactions. Cooperation can also support the development of governance frameworks that are reflective of the different concerns and priorities of countries, taking into account how little influence low- and middle-income countries currently have over the governance regimes being implemented by powerful actors, such as China, the United States of America and the European Union.

62. Other elements that could be supported by international cooperation include exchanging good practices and lessons learned, facilitating technology transfer and supporting reform of the intellectual property rights regime to allow for special and differential access to new technology on the basis of level of development. The United Nations has been at the forefront of efforts, including with regard to various key initiatives such as the World Summit on the Information Society, the Internet Governance Forum and Recommendation on the Ethics of Artificial Intelligence of the United Nations Educational, Scientific and Cultural Organization. The adoption of a global digital compact, as proposed by the Secretary-General in his report entitled

⁵⁶ World Bank, *World Development Report 2021: Data for Better Lives* (Washington, D.C., 2021).

⁵⁷ *United Nations E-Government Survey 2022*.

“Our Common Agenda”, would be an opportunity to advance multi-stakeholder cooperation for an open, free, secure and human-centred digital future.

IV. Conclusions

63. As the deadline for implementing the 2030 Agenda for Sustainable Development nears, multiple and intersecting crises pose significant challenges. These have reinforced the need for renewed commitment and innovative pathways for a socially just transition towards sustainable development.

64. Digital technologies have become fundamental resources for ensuring people’s well-being. They can support social development and social justice, creating new jobs, improving living conditions, increasing access to services and information and promoting the inclusion of marginalized groups. However, they can also displace workers, polarize job markets, increase inequality and leave marginalized groups further behind. Concerted policies and international cooperation can mitigate these risks, while also realizing the potential of the digital transformation for inclusive growth and social justice.

65. Governments should encourage the creation and development of technologies that support social development by creating decent jobs, supporting access to services and livelihoods and promoting the social, economic and political inclusion of marginalized groups, such as persons with disabilities and people living in rural areas. Governments should also regulate digital technologies to ensure transparency and accountability in their use, thereby protecting human rights, including the right to privacy, and preventing discrimination. They must work to close all digital divides and empower people, through digital skills and capabilities, to fully participate in the digital economy and pursue their well-being. To support this transition, Governments must redouble their efforts to strengthen social protection systems, including social protection floors, and explore ways to expand coverage to all persons, in particular those in the informal economy and the growing digital workforce in non-standard forms of employment.

66. The realization of social justice in the context of digital transformation depends on technologies being designed, created and implemented in a way that enables all people to have equal access to the related benefits and opportunities. Considering the cross-border nature of digital transformation, international cooperation has a crucial role to play. It can ensure that the needs and perspectives of developing countries are an integral part of the development of technologies, while supporting access to and enjoyment of digital technologies to support socially just transitions towards sustainable development everywhere.