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Report of the 2023 Social Forum*, **

Summary

In accordance with Human Rights Council resolution 50/22, the Social Forum on the theme of the contribution of science, technology and innovation to the promotion of human rights, including in the context of post-pandemic recovery, was held in Geneva on 2 and 3 November 2023. The present report contains a summary of its discussions, conclusions and recommendations.

* Agreement was reached to publish the present report after the standard publication date owing to circumstances beyond the submitter's control.

** The annex to the present report is circulated as received, in the language of submission only.

I. Introduction

1. The Human Rights Council, in its resolution 50/22, reaffirmed the Social Forum as a unique space for interactive dialogue between the United Nations human rights machinery and various stakeholders, including civil society and grass-roots organizations.[1]

2. The 2023 Social Forum was held in Geneva on 2 and 3 November 2023. It focused on the contribution of science, technology and innovation to the promotion of human rights, including in the context of post-pandemic recovery. The President of the Human Rights Council appointed the Permanent Representative of the Islamic Republic of Iran to the United Nations Office and other international organizations in Geneva, Ali Bahreini, as the Chair-Rapporteur of the Forum.

3. The programme of work was prepared under the guidance of the Chair-Rapporteur, with inputs from relevant stakeholders, including Member States and non-governmental organizations. The present report contains a summary of the proceedings, conclusions and recommendations. The list of participants is contained in the annex.

II. Opening of the Social Forum

4. The Chair-Rapporteur reminded the Forum that, although the coronavirus disease (COVID-19) pandemic no longer posed threats to society, it still had profound effects and it deepened inequalities within and among societies. He emphasized the need for heightened efforts in addressing discrimination. He recalled the Forum's aim of fostering constructive dialogue among diverse stakeholders to reshape the relationship between science, technology, innovation and human rights. He highlighted the enduring impact of the pandemic, emphasizing the importance of international cooperation and solidarity. He stressed the need to respect the right of countries to self-determination and to use their national resources for their own development and not hinder international cooperation, technology transfer, knowledge-sharing or mutual scientific development to promote the inclusive use of science, technology and innovation for future generations. The involvement of special interest groups, including youth, women, girls and persons with disabilities, must be at the heart of the planning for a secure future.

5. The Vice-President of the Human Rights Council, Maira Mariela Macdonal Alvarez, recalled that a key goal of the Social Forum was to promote social cohesion based on social justice, equity and solidarity, while addressing the challenges of ongoing globalization processes. She listed examples of resolutions and other activities of the Council on themes related to science, technology and innovation, including on new and emerging technologies in the military domain,[2] new and emerging digital technologies,[3] neurotechnology[4] and the transfer of technologies to support peasants and other people working in rural areas.[5] Ms. Macdonal Alvarez invited participants to build on recommendations of previous sessions of the Forum, focusing, among other things, on climate change, people-centred development, the rights of persons with disabilities, communicable diseases and epidemics, access to medicines, and water and sustainable development.

6. In a video message, the United Nations High Commissioner for Human Rights reflected on how science and technology had revolutionized global public health and increased access to information and knowledge. He highlighted the disparities in realizing the right to enjoy the benefits of scientific progress and its applications. Such disparities perpetuated inequalities and injustices, such as the lack of access to vaccines in developing countries and digital divides. The High Commissioner called for a dramatic overhaul of intellectual property rights, patents and trade models towards equitable technology transfer

[1] For further details on the Social Forum, see https://www.ohchr.org/en/events/forums/2023/2023-social-forum.
[2] Human Rights Council resolution 51/22.
[3] Human Rights Council resolution 53/29.
[4] Human Rights Council resolution 51/3.
[5] Human Rights Council resolution 54/9.

and international cooperation. He emphasized the need for countries to build their capacities to independently develop and utilize science, technology and innovation to close digital divides. The High Commissioner acknowledged the human rights implications of digital technologies, including artificial intelligence, and the need to safeguard all human rights, including the rights to life, privacy and non-discrimination.

7. In a video message, astrophysicist, author and science communicator, Neil deGrasse Tyson, highlighted the transformative impact of science on life expectancy. He cited advancements in medicine, genetic testing and child mortality reduction over the past 150 years. He cautioned against biases in scientific research and addressed the revolutionary impact of smartphones on health care. He discussed the potential for harmony between religious beliefs and science and advocated for inclusiveness in artificial intelligence. Mr. deGrasse Tyson viewed space exploration as a path towards global peace and abundant resources. He expressed optimism about the potential positive impacts that technological advancements in medicine, space exploration and quantum computing could bring to the enjoyment of human rights.

III. Summary of proceedings

A. Keynote panel

8. In a video statement, the President of Cuba, Miguel Díaz-Canel y Bermúdez, underscored the transformative impact of technological innovations on life and economic productivity. Expressing concern about global disparities, he highlighted problems, such as poverty and food crises, that persist despite ample global food production capacity. He advocated for addressing the technology access gap through various measures, including technology transfer, capacity-building and the provision of unconditional financial resources to developing States. He questioned the global accessibility to COVID-19 vaccinations, particularly in low-income countries, and emphasized the successful development by Cuba of its own vaccines amidst economic, commercial and financial unilateral coercive measures. He emphasized his country's commitment to scientific and technological development aligned with the 2030 Agenda for Sustainable Development and called for an immediate ceasefire in the Israel-Palestine conflict to protect civilians and uphold the right to life.

9. The Vice-President of the Islamic Republic Iran for Science, Technology and Knowledge-based Economy, Rouhollah Dehghani Firouzabadi, described his country's contributions to science, knowledge and technology. He emphasized the significant role of women in managerial and expert positions within knowledge-based companies and showcased achievements during the COVID-19 pandemic, including a 76 per cent vaccination rate. He noted that, despite the fact that it had faced unilateral coercive measures, the Islamic Republic of Iran had actively engaged in international collaborations and knowledge-sharing initiatives. Criticizing coercive measures, he called for open collaboration on science and innovation, reaffirming the commitment of his Government to global cooperation. He recalled that the right to development was a foundation for realizing other rights. Mr. Firouzabadi called for an immediate and permanent ceasefire in the Israel-Palestine conflict. In conclusion, he highlighted that harnessing knowledge, science and technology in a collaborative and inclusive manner was the path to a brighter future for all.

10. The Assistant Director-General for Natural Sciences of the United Nations Educational, Scientific and Cultural Organization (UNESCO), Lidia Arthur Brito, recognized the transformative power of scientific knowledge for positive change in human rights. She highlighted open source approaches in breaking barriers to information access and resources. Stressing the importance of a global network for collaboration, she advocated for remote access programmes to extend innovation to areas with limited scientific resources. She called for the translation of scientific advancements into practical solutions and the allocation of resources to address societal and environmental challenges, which would feed into the International Decade of Sciences for Sustainable Development, 2024–2033. She noted the role of UNESCO in protecting human rights and promoting just and equitable social

advancements through science and technology. Urging the global community to learn from past mistakes, she called for proactive measures to prevent their repetition.

11. The Assistant Director General of the World Intellectual Property Organization (WIPO), Edward Kwakwa, highlighted the importance of a balanced intellectual property system that considered the rights of owners and users. He highlighted the role of intellectual property, in particular patents, in fostering global innovation and creativity. Intellectual property was crucial to post-pandemic recovery. It served as a driver for economic growth and a means to address global challenges. WIPO actively supported marginalized groups, including youth, female entrepreneurs, women and Indigenous Peoples, through projects that supported awareness and management of intellectual property by grass-roots organizations. The COVID-19 response of WIPO supported over 45 countries, showcasing its commitment to inclusiveness and sustainable development. Initiatives such as training programmes for women entrepreneurs underscored the dedication of WIPO to fostering innovation and resilience.

12. The Special Rapporteur in the field of cultural rights, Alexandra Xanthaki, underscored the importance of a human rights approach to science, which was currently widely pushed aside in science debates. She emphasized the need for further scrutiny of the obligations of States through international monitoring and recognized the work done by the Committee on Economic, Social and Cultural Rights, especially through its general comment No. 25 (2020) on science and economic, social and cultural rights and its applications. She addressed disparities in the access to science and scientific resources between the global North and the global South. She advocated not only for availability, but also for training, education and equal opportunities, to bridge these gaps, especially for vulnerable and marginalized groups. She highlighted the need to ensure the right of everyone to participate in the scientific process in different ways. The overarching objective of the right to science, she stressed, was participation, which included also access to knowledge and research outcomes as well as benefit-sharing. She stated her intention to present to the Human Rights Council in March 2024 a comprehensive report on the right to science, which would explore various aspects and global implementation of that right.

13. The Executive Director of IT for Change, Anita Gurumurthy, highlighted the ways in which inequities had affected opportunities for people in the global South, causing more hunger and poverty despite great advancements in digital technologies. The risk with artificial intelligence technologies was that they could dismantle capacities and perpetuate biases. To promote equity, peace and international solidarity in the context of digital technologies, it was imperative to decolonize the data era by recognizing the material and epistemic infrastructures of data as integral to the ideas of equality and non-discrimination. She noted that local and domestic control over the production of artificial intelligence was necessary in order to achieve equity. Public innovation ecosystems were a path to a new social contract, shifting away from corporate-dominated technologies and platforms towards publicly financed people-led solutions, especially in support of women, youth developers and Indigenous Peoples. She called for a right to development and cultural sovereignty perspective to overcome an unjust artificial intelligence paradigm that put corporations before people. International solidarity should hinge on the idea of development as data freedom.

14. A young scientist and activist, Elizabeth Nyamwange, outlined challenges encountered by women in digital identification. She explained the dependence of women on men for legal identification in many societies, leading to their restricted access to resources. That reliance posed obstacles for women entrepreneurs, perpetuating economic disparities. Ms. Nyamwange shared her initiative to develop a secure system, Etana, a device enabling digital identification without electricity or the Internet in underserved areas. Emphasizing the importance of independence for women, she highlighted the need for digital literacy, programming skills and financial empowerment. Ms. Nyamwange advocated for inclusive conversations and decision-making processes that recognized the innovative problem-solving capabilities of youth, especially those who had experienced poverty.

15. During the general discussion, delegates from Algeria, China, Colombia, Cuba, the Dominican Republic, India, Iran (Islamic Republic of), Iraq, Malaysia, Peru, the Syrian Arab Republic, Venezuela (Bolivarian Republic of) and the European Union made statements.

Representatives of Associazione Comunità Papa Giovanni XXIII, Beijing Foreign Studies University, Cuban United Nations Association, Federation of University Students of Costa Rica, International Association of Human Rights and Social Development, International Association of Ahmadi Architects and Engineers, Italian Federation for Human Rights, Justice for Iran, La Verità Onlus – International Diplomacy, and Women's Federation for World Peace International, also intervened. Speakers underscored the pivotal role of science, technology and innovation in advancing human progress. They emphasized its positive impacts on the rights to health, education, food, water, development, a clean and healthy environment, freedom of opinion and expression, peaceful assembly, and disaster-resistant, sustainable and safe housing. Science, technology and innovation had the capacity to drive positive change, provide solutions to global challenges, and support the realization of human rights and the achievement of the Sustainable Development Goals.

16. While acknowledging the benefits of science and technology, participants raised concerns about their potential misuses, including threats to freedom and the spread of misinformation. It was highlighted that ethical considerations, especially in the development of artificial intelligence, were crucial to ensure that such technologies enhanced, rather than hindered, human rights. Stressing the importance of ethical and responsible development and use of technologies, participants advocated for transparency, inclusiveness and diversity to protect human rights and ensure the accurate dissemination of information. Many speakers addressed the benefits of science, technology and innovation and called for North-South and South-South cooperation, as well as government regulation of new technologies. This was particularly important in the context of the COVID-19 pandemic and post-pandemic recovery to ensure equitable access to technologies for a resilient future. Innovative vaccines should be ethically developed and distributed, in alignment with human rights principles and the fostering of universal health care. Participants also called for international solidarity and inclusive and multilateral approaches in order to overcome the digital divide, remove unilateral coercive measures and achieve digital literacy and informed policy decisions.

B. Round table on the triple planetary crisis: the contribution of science, technology and innovation and science-based decision-making to the rights of present and future generations

17. The Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Marcos A. Orellana, drew attention to the previously overlooked right to science enshrined in the International Bill of Human Rights, as addressed in his thematic report on the right to science in the context of toxic substances.[6] In that report, he emphasized the need for scientific information to be available and accessible, in alignment with regulatory measures and scientific evidence. Despite the imperative of the alignment of scientific evidence and policy responses, a significant gap persisted, incited by deliberate disinformation, attacks on scientists and conflicts of interest. He pointed out global environmental hazards, such as pesticide exports to developing countries and toxic additives to plastic, highlighting their severe impact on other human rights. Democracy, which is intertwined with the right to science, implied agency and empowerment, in particular through citizen science initiatives and the recognition of other forms of knowledge, such as Indigenous wisdom. He commended the UNESCO Recommendation on Open Science, in which the importance of citizen science was recognized. He stressed the importance of empowering communities in the scientific process and emphasized the need for stronger protection for scientists and their work.

18. Racheal Nestor, a young environmental rights defender from Saint Lucia, highlighted the disproportionate impact of the triple planetary crisis on the small island developing States. Despite minimal contributions to the crisis, those countries faced significant threats. She emphasized the need for science, technology and innovation to address those challenges, but noted that current measures often prioritized the interests of developed countries over the needs of citizens of small island developing States. Ms. Nestor outlined key areas for investment, including renewable energy, climate resilience, sustainable agriculture, marine

[6] A/HRC/48/61.

conservation, waste management, water resource management, ecosystem restoration, transportation solutions, access to information, capacity-building and international cooperation. She stated that innovative technologies should be deployed to reduce the reliance of small island developing States on fossil fuels, enhance climate risk assessment, promote sustainable agriculture, manage waste and restore ecosystems. Ms. Nestor emphasized that successful transformative change in small island developing States required commitment, investment, integration, holistic approaches and the consideration of local contexts and needs. While science, technology and innovation were vital components, they must be complemented by supportive policies, government structures, financial resources and public engagement for a successful response to the triple planetary crisis in the small island developing States. The achievement of transformative change was a long-term process demanding sustained efforts and collaboration across various levels.

19. The Coordinator and Asia Director of the Action Group on Erosion, Technology and Concentration, Neth Daño, acknowledged the challenges and threats posed by digitalization, in particular on children's well-being and privacy. She emphasized the critical role of parents in mitigating those risks. She highlighted the importance of recognizing diverse knowledge systems, especially Indigenous and local systems, in operationalizing the right to science. She underscored the contribution of non-experts, including civil society, highlighting the need to involve local communities in decision-making processes. Ms. Daño pointed to the responsibility of Governments and institutions in enabling diverse contributions to science and called for a comprehensive approach, including foresight and horizon-scanning processes, that involved non-experts in addressing emerging issues. The role of civil society in raising awareness about the environmental implications of technologies and its contribution to discussions at the international level were crucial, specifically in terms of societal engagement in shaping anticipatory governance of new technologies.

20. Lena Estrada Añokazi, a representative of Indigenous Peoples in the Major Groups Facilitating Committee of the United Nations Environment Programme and a researcher at the UNESCO Chair on Sustainability, underscored the fundamental importance of building relationships with Indigenous groups, recognizing their significant contributions to science and their deep knowledge of the natural world. Indigenous knowledge systems developed over generations in harmony with nature provided unique and valuable insights into sustainable practices. She advocated for the equal recognition of Indigenous knowledge systems and mainstream scientific knowledge. She warned about the impact of industrial activities on the environment, such as climate change, biodiversity loss and plastic pollution, specifically on Indigenous territory. She urged collaboration involving Indigenous participation to address environmental challenges effectively. Ms. Estrada Añokazi highlighted the richness of biodiversity in Indigenous territories and the vital role of Indigenous Peoples in ecosystem preservation and called for collaborative efforts with Indigenous communities for effective protection management.

21. Peter Bille Larsen, Senior Lecturer and Researcher at the University of Geneva, encouraged a retrospective consideration of the United Nations Conference on Environment and Development, held in Rio de Janeiro, Brazil, in 1992, urging contemplation of the collective pursuit of sustainability objectives. He considered the prioritization and mainstreaming of the implementation of the right to science as a building block for more equitable responses to the global pandemic and the triple planetary crisis. He underscored the imperative for collaborative efforts to address challenges confronting the scientific community, highlighting pressing concerns such as diminishing budgets, restricted employment opportunities and the marginalization of critical research in both the global South and the global North. He advocated for the establishment of conducive conditions and a robust foundation to implement the right to science. He pointed to the role of academia in articulating relationships and fostering collaboration, transcending prevailing trends of fragmentation and individualism. Mr. Larsen stressed the importance of the involvement of civil society, Indigenous Peoples and local communities for their diverse perspectives and critical voices.

22. During the interactive dialogue, the delegate of the Islamic Republic of Iran made a statement. Representatives of Global Peace Ambassadors, International Organization for the Right to Education and Freedom of Education, Centre for International Environmental Law,

International Association of Ahmadi Architects and Engineers, Scholars at Risk Network and Women's Federation for World Peace International made remarks. Speakers underscored the crucial role of science, technology and innovation in realizing human rights for current and future generations. They emphasized the power of these advancements in addressing global challenges such as climate change, resource scarcity and public health crises. Sustainable energy, efficient agriculture, cutting-edge medical treatments, Indigenous scientific wisdom, and science, technology, engineering and mathematics education could constitute key contributors towards economic growth, job creation and enhanced productivity. Moreover, these factors could promote other rights, such as the rights to education, work and an adequate standard of living. One participant pointed to the role of science, technology and innovation in agriculture, as it fostered a sense of global unity, reducing injustice and promoting peace. This included sustainable farming practices, such as seed cultivation, pest control, composting education, the sharing of disease-resistant and high-yield varieties and combating food waste through preservation practices. Science-based decision-making was key in formulating equitable and sustainable policies rooted in human dignity, with academic freedom identified as crucial for scientific progress and objectivity.

23. Speakers expressed concerns about the decline of academic freedom globally and its broad impact on social, political, cultural and economic development. Challenges included unfair global financial systems, restrictive national laws limiting access to science and potential disparities exacerbated by emerging technologies. Participants raised issues relating to technological unemployment, risks to ecosystems from marine fertilization and solar radiation modification, and threats to children's well-being from digitalization. Participants criticized harmful climate solutions and inadequate recycling practices, noting that less than 9 per cent of waste was effectively recycled. One speaker noted that Indigenous women faced barriers in accessing western education and science. Participants called for urgent action on emissions reduction, international guidance on academic freedom and enhanced global cooperation within the United Nations frameworks. To address the planetary crisis, collaborative efforts and the involvement of youth were crucial. Furthermore, States had a responsibility to monitor research that could pose risks to future generations and to utilize technology for health care and global health agendas. Several participants emphasized the right to science for countering disinformation and called for investment in agricultural sciences for a sustainable transition. One speaker underscored the importance of the participation of Indigenous Peoples in United Nations forums to present crucial community needs and solutions.

C. Contribution of science, technology and innovation to the promotion of human rights in the context of the post-pandemic recovery

24. The Chief Scientist of the World Health Organization (WHO), Jeremy Farrar, acknowledged the persistent challenges of the ongoing pandemic and the complexity of the post-pandemic era. Highlighting multifaceted global issues, including armed conflicts, climate change, debt, inflation, demographic shifts and inequality, he emphasized the opportunity for science to play a role, but also the need for sustained investment in science, technology and innovation by all nations according to their ability. He stressed the critical role of science in addressing global health and broader societal concerns, advocating for research funding, scientific capacity-building, collaborative efforts among experts and the central importance of domestic support as well as complementary international funding. Reflecting on the rapid development of vaccines, he underscored the importance of equitable accessibility and affordability and lessons learned from the COVID-19 pandemic. Addressing the opportunities and challenges posed by artificial intelligence and the digital era, Mr. Farrar called for proactive measures to anticipate threats and maximize benefits. He underscored the human right to health, advocating for inclusive engagement across scientific domains to shape resilient and equitable health policies. He noted the need to balance technological power with wisdom and emphasized the importance of equity and human rights in the application of science and innovation for a better future.

25. Xigen Wang, Dean of the Law School of Huazhong University of Science and Technology in China, highlighted the challenges posed by the digital revolution to human

rights, including the right to development. Those challenges included the digital divide, digital poverty, digital discrimination, digital security risks and the lack of legal protection for the right to development based on digital technology. He emphasized the need for effective global actions to address those challenges and made five suggestions that sought to empower vulnerable populations in the digital realm, integrate digital solutions into global development agendas and bridge the digital gap for sustainable and inclusive development worldwide through the mobilization of resources and facilitation of knowledge-sharing: the development of a global action guide; the integration of digital technology into the 2030 Agenda; the adoption of a resolution on the role of digital technologies in the right to development; the formulation of social responsibility guidelines for digital businesses; and the establishment of an operational mechanism for the implementation of the right to digital development, involving measures such as a digital tax and a global fund. Mr. Wang stressed the shared responsibility of the United Nations, Governments and civil society in addressing these issues.

26. The Executive Director of the South Centre, Carlos Correa, highlighted the pivotal role of science and technology in protecting human rights such as the rights to health, education and development. While recognizing the global contributions by developing countries to science and technology, he underscored persistent asymmetries. China led technological advancements at 22.3 per cent, with Latin America contributing 2 per cent and Africa 1 per cent. This amplified challenges in intellectual property dynamics. He emphasized the need for financial system reforms to address dependency issues, in particular the dominance of the dollar and limited technology access. He urged substantive changes to promote development as a human right and the consideration of various dimensions such as access to products, innovation and intellectual property. He addressed challenges such as techno-nationalism and unilateral coercive measures, citing the COVID-19 vaccine crisis. He emphasized that efforts like the COVID-19 Technology Access Pool faced limitations, and the need for a systemic shift whereby essential goods such as vaccines would be considered global public goods. He proposed a comprehensive approach, advocating for a broader debate on intellectual property beyond specialized organizations. Mr. Correa emphasized the role of the Summit of the Future in centralizing access to technology for development and ensuring the universal exercise of human rights, especially in vulnerable countries.

27. Marumo Nkomo, Economic Counsellor and Chargé d'affaires of the Permanent Mission of South Africa to the World Trade Organization (WTO), discussed the role of intellectual property rights in the science, technology and innovation landscape. He underscored the need to ensure public access to the outcomes in these fields, in particular in promoting the right to health. Referring to the waiver on the Agreement on Trade-Related Aspects of Intellectual Property Rights, Mr. Nkomo highlighted the concentrated production of anti-COVID-19 products, which limited access for low- and middle-income countries. Measures to remove barriers to access to these products included compulsory licences and State authorizations. A waiver adopted by WTO in 2022 that would benefit developing countries was deemed too limited and too late to make a significant impact. He expressed concern about the fact that rich countries opposing the waiver extension might inadvertently push States towards unilateral approaches, risking the fragmentation of the intellectual property system and hampering global responses to emergencies. He advocated open discussions, incorporating a human rights perspective, and the leveraging of institutions such as the United Nations to foster broader, sustainable thinking on the issue of intellectual property and the human right to health.

28. Nicoletta Dentico, Journalist, Director of the Global Health Programme of the Society for International Development and expert on international cooperation and human rights, expressed concerns regarding the ongoing WHO negotiations for a pandemic prevention agreement. Science, technology and innovation were essential aspects of the negotiations, but could become a bottleneck in addressing structural conditions for equitable pandemic strategies. She emphasized the right to science, highlighting global asymmetries in science, technology and innovation capacities and the dominance of a privatized, financialized knowledge economy. Ms. Dentico advocated for ambitious reforms in global institutions such as WTO, proposing compulsory minimum investments in open science and the creation of an international authority to address the damaging effects of intellectual property monopoly on rights and the world economy. Criticizing the focus on surveillance and data-

sharing in the pandemic prevention agreement for potentially favouring global knowledge owners and reinforcing colonial post-pandemic scenarios, she urged serious policy discussions and major reforms for a more promising future aligned with human rights. She emphasized the importance of broader health systems, including trained personnel, structures and universal public services, and called for binding agreements regulating the corporate sector's role in common goods production under human rights principles.

29. During the interactive dialogue, the representatives of China, Cuba, Iran (Islamic Republic of) and the Syrian Arab Republic intervened. Representatives of Associazione Comunità Papa Giovanni XXIII, Institute for Protection of Women's Rights, International Association of Ahmadi Architects and Engineers, Internationales Ingenieur-Büro Asadi-Khiavi, Iranian Elite Research Center, Mindanao State University, Othisi High School Athens and Women's Federation for World Peace International made statements. Speakers noted that the technical innovations developed during the COVID-19 pandemic would remain and accelerate digital transformation. Science, technology and innovation, especially information technology, had emerged as key factors in promoting human rights in resilient post-pandemic recovery. This transformative process was anticipated to dismantle communications barriers imposed by geographical location, time and language, facilitating collaborative efforts to tackle global challenges. Science, technology and innovation had the power to reduce poverty levels through inclusive, accessible and improved education and equitable and better health-care services. The use of artificial intelligence could contribute to the development of treatments and vaccines. Online tools offered flexibility and access to quality educational resources. The application of a holistic approach would address a range of issues, including poverty, job creation, educational disparities, resource scarcity and the needs of vulnerable groups.

30. Participants criticized the digital divide and unilateral coercive measures leading to unequal rights to science and health. Some participants denounced the unilateral coercive measures taken during the pandemic, which hindered recovery, hampered scientific collaboration and violated fundamental human rights. In the global South, in particular, one-third of the population lacked access to essential medicines, science and technology. One participant remarked that the lack of accessibility to science, technology and innovation in developing countries had an impact on education, employment and social connectivity during the pandemic. Another noted that many African countries lacked the agricultural infrastructures and necessary technologies to counter climate-induced hunger and food insecurities. One speaker expressed concern about using science, technology and innovation in the development of deadly weapons. Participants highlighted the importance of international scientific cooperation, increased pandemic preparedness, technology-sharing, capacity-building, responsible youth engagement, and transparent and democratic governance in global institutions in tackling the digital divide and challenges resulting from unilateral coercive measures and structural barriers. The interconnectedness of finance, corporate power and technology in shaping an equitable future were also highlighted. One participant drew attention to historical medical mistakes and potential issues with mRNA-based vaccines, emphasizing the importance of learning from past errors. Vaccine safety, thorough testing and regulatory approval were particularly critical. Concerns were expressed with regard to the unregulated spread of open-source data, and it was also suggested that a supervisory board of the Human Rights Council be established to validate information before widespread publication.

D. Opportunities from science, knowledge, education and culture: the contribution of science, technology and innovation to advancing all human rights for all through participation in science

31. The Special Rapporteur on the right to education, Farida Shaheed, highlighted the vital intersection of science, technology and innovation with human rights and advocated for the recognition of knowledge production as a public common good, urging inclusive participation. She raised concerns about global limitations on academic freedom, citing challenges such as censorship, financial insecurity and the influence of commercial entities. Ms. Shaheed stressed the importance of transparent governance in science, technology and

innovation to address potential inequalities and ethical considerations. She emphasized the impact of new technologies on decision-making and data ownership. She called for collaboration, diverse participation and human-centric governance in international science, technology and innovation efforts, guided by human rights principles. Ms. Shaheed stressed the importance of the preservation of human interaction in the face of technological advancements. She asserted that dynamic creativity and participatory decision-making were essential for leveraging science, technology and innovation to achieve human rights for all. She highlighted the imperative for greater transparency in decision-making and uniformity among countries in research and human rights decisions. She underscored the importance of academic freedom and cautious implementation of technology in education.

32. Mohammad Reza Majidi, Associate Professor in the Faculty of Law and Political Sciences at the University of Tehran, shared insights from a comprehensive study on the role of new technologies in continuous education during the COVID-19 pandemic, emphasizing the right to education as a fundamental human right. His statement focused on a student education network in the Islamic Republic of Iran, highlighting its strengths and challenges, the opportunities it had afforded and the impediments it had faced. Its strengths included innovative pedagogical techniques and student empowerment. Its challenges arose from the time-intensive content preparation it involved and from parental resistance. Opportunities were observed for flexible learning and enhanced digital proficiency, while the impediments involved digital divides, economic disparities, cultural incompatibilities and gender-related variations in technology adoption. In the study, collaborative efforts among stakeholders were recommended to address challenges and bridge digital divides, and the need for improved Internet access, teacher training, parental involvement, the cultural integration of technology, gender inclusiveness and adaptability in the education sector was emphasized. Mr. Majidi asserted that achieving equitable education through digital transformation required strategic planning, commitment and collective efforts, with lessons learned informing educational policy, practice and research globally.

33. The Acting Head of the Digital Knowledge Hub Department of the International Telecommunications Union (ITU), Sofie Maddens, underscored the intrinsic link between digital transformation and human rights. Despite significant advancements in digitalization, the fact that one-third of humanity was still offline was a pressing concern requiring urgent action. The challenge extended beyond infrastructure development to encompass science, technology and innovation, with inclusive connectivity. Ms. Maddens highlighted the role of ITU in advancing meaningful connectivity globally, aligning with human rights principles. The digital divide was especially pronounced in least developed countries, necessitating collaborative efforts to address gaps in policy, legal frameworks and skills. She emphasized the transformative potential of digital technologies in job creation and skills development, urging policymakers, educators and the private sector to contribute to a conducive environment. She advocated for gender inclusiveness and the inclusion of persons with disabilities, stressing that digital transformation should be accessible to all. A collaborative, multi-stakeholder approach was crucial for shaping an inclusive and secure digital future aligned with human rights and the Sustainable Development Goals.

34. Paul Olivier Dehaye, mathematician, data protection expert and co-founder of PersonalData.IO, contrasted extractive research practices with participative science, emphasizing key elements for genuine participation. He highlighted the importance of open science, acknowledging the transformative efforts of Alexandra Elbakyan, founder of the Sci-Hub initiative, in challenging copyright restrictions. Access to data was crucial, as was illustrated by initiatives in which citizens and scientists cooperated to find solutions for their communities, such as in the study of traffic mobility patterns. This was not possible when power imbalances were exceptionally large. He cited participative science efforts between academics and Uber drivers, emphasizing the importance of accessing one’s own data for labour rights and assessing algorithmic impacts. He expressed concerns about extractive practices in generative artificial intelligence that prompted a call for citizen scientists to control their personal data and models. Drawing parallels with open street maps and the open hardware license of the European Organization for Nuclear Research, he suggested a licensing approach. This approach would promote a more participative scientific landscape to prevent extractive tendencies in generative artificial intelligence.

35. Elsie Effah Kaufmann, Associate Professor of the Department of Biomedical Engineering and Dean of the School of Engineering Sciences at the University of Ghana, underscored the critical role of science, technology, engineering and math education, in particular considering Africa's demographic, with around 40 per cent of the population aged 15 or younger. She emphasized the potential of science, technology, engineering and math in addressing global challenges such as climate change, health-care emergencies and poverty, while acknowledging barriers such as limited access, gender disparities and outdated teaching methods. Ms. Effah Kaufmann shared insights from her involvement in promoting science, technology, engineering and math education in Ghana, including leading science, technology, engineering and math departments at various universities, and addressing the underrepresentation of women in those fields. Her involvement in hosting the national science and math competition in Ghana had had a significant impact on science learning in high schools. Ms. Effah Kaufmann viewed science, technology, engineering and math education as a catalyst for transformative change, empowering individuals and contributing to global problem-solving, economic growth and human rights. She expressed a sense of responsibility to replicate successes globally through collaborative efforts and investments in education.

36. During the interactive dialogue, representatives of Arte Magna International, At-sik-hata Nation of Yamassee-Moors, Institute for Planetary Synthesis, Institute for Protection of Women's Rights, Institute of Sustainable Development, International Association of Human Rights and Social Development, International Association of Ahmadi Architects and Engineers, International Charitable Organization Roma Women Fund "Chiricli", International Foundation Witnesses Ashoora, Maloca internationale, Othisi High School Athens and Women's Federation for World Peace International made statements. Representatives of Cuba, Iran (Islamic Republic of) and Venezuela (Bolivarian Republic of) intervened. Participants emphasized the crucial role of technology in promoting human rights awareness and equality across generations. They recognized recent scientific advancements in preserving human rights, emphasizing the potential of science, knowledge, education and culture as powerful tools for progress and justice. The speakers called for the leveraging of scientific progress to address global challenges, investment in education and the integration of sciences into curriculums to combat misinformation. They acknowledged the role of information and communications technologies (ICT) in upholding freedom of speech and assembly, highlighting their contribution to socioeconomic development. In addition, participants underscored the potential of science, technology and innovation in preserving and transforming cultural heritage. Speakers also emphasized the imperative of rectifying human rights violations in Gaza and ensuring Internet access for Palestinian civilians.

37. Speakers expressed concerns about the dual nature of ICT, recognizing its potential for innovation while highlighting its role as a platform for damaging behaviours such as hate speech. Hate speech affected individual dignity and societal cohesion, with the potential of creating dangerous divisions within society. Participants cautioned against potential risks related to the adoption of artificial intelligence and the manipulation of freedom of expression. Unilateral coercive measures were criticized for hindering equal access to science, technology and innovation, violating fundamental rights and, in particular, burdening future generations. One speaker warned that some Governments misused scientific knowledge and technology to enforce control, compromising privacy and freedom of expression. Another highlighted global disparities in regulating the technology industry, specifically regarding differences in data protection standards, and inequalities in technology labour wages. Participants asserted the need for global regulation to safeguard socioeconomic rights and ensure a human rights-based approach in the development of the technology industry. They also highlighted the need to implement recommendations on addressing hate speech, prioritizing the needs of vulnerable groups, providing urgent comprehensive assistance and implementing educational reforms leveraging science, technology and innovation. They advocated for responsible artificial intelligence development, transparency, accountability and inclusive technology use for societal betterment and stressed the importance of global cooperation and bridging digital gaps for protecting social and economic rights.

E. Round table on challenges and risks of new and emerging technologies: science, technology and innovation and human rights and fundamental freedoms, democracy and development

38. Fabien Lefrancois, Policy and Partnership Specialist in the Global Fund Partnership and Health Systems Team of the United Nations Development Programme (UNDP), highlighted the impact of the COVID-19 pandemic on progress towards the Sustainable Development Goals and the commitment of UNDP to digital transformation. He recognized both the opportunities and the risks associated with technology, particularly in terms of inequality and human rights. UNDP aimed at ensuring universal and affordable digital access while upholding human rights principles. This involved advocating for gender inclusiveness, global standards, and open digital standards and data, and reinforcing local digital ecosystems to prevent digital exclusion. He stressed the importance of digital public goods, such as open-source software and data, in advancing the Sustainable Development Goals. He emphasized their adaptability, scalability and collaboration benefits, which were all grounded in principles of transparency and accountability.

39. Augustine Marrah, pro-democracy and human rights activist lawyer in Sierra Leone, recognized the transformative impact of the Internet on civic space. By providing access to information and enabling the expression of views and remote work, the Internet facilitated the enjoyment and promotion of human rights. While acknowledging the expanded opportunities for civic activism online, he highlighted the challenges of cyberauthoritarianism and censorship. Governments leveraged technology to suppress dissenting voices. For instance, approximately 52 African elections had been affected by Internet shutdowns since 2017. Mr. Marrah discussed other critical challenges relating to digital technologies, including online abuse, cybercrime laws limiting civic space and emerging forms of violence and misinformation, such as deepfake videos. He drew attention to the migration of sexual and gender-based violence against women into the digital world. He urged the need for inclusive and safe civic participation, the protection of civil society actors and the promotion of open civic spaces, both online and offline, to ensure that freedom and democracy could thrive.

40. Manuela d'Ávila, journalist and researcher on digital media in Brazil, emphasized the critical role of technology in human rights and democracy. She noted the role of social media and technology in the spreading of misinformation, fake news and attacks on human rights defenders and causes. Addressing challenges such as misinformation and the use of social networks for violence, she cited examples from Myanmar, the Gaza Strip and the Brazilian elections in 2018. Highlighting the negative impact of business models on social networks grounded in hatred and threats, Ms. d'Ávila called for a balance between freedom of expression and the protection of dignity, in particular against gender-based threats. She underscored the urgent need to address these issues in the interests of human rights and democracy. Ms. d'Ávila concluded by calling for a ceasefire in Gaza.

41. The President of the World Federation of Science Journalists, Milica Momčilović addressed the challenges faced by journalists, in particular science journalists, in relation to technological developments. The regulatory grey area between social media and traditional media posed challenges to freedom of expression. She noted the increasing volume of scientific papers and the surge in artificial intelligence-generated content in the realm of scientific journalism. Considering the potential automation of science reporting, she raised concerns about the relevance of human journalists. Ms. Momčilović explored the rise of artificial intelligence-generated news stories, their potential impact on journalism and the ethical and human rights implications of this trend. She underscored the urgent need for research into the consequences of artificial intelligence on science reporting and its potential effects on the media industry and labour, raising questions about the future role of artificial intelligence in shaping the nature of reporting, including science journalism.

42. Roberto Bissio, Coordinator of the Social Watch Secretariat and Executive Director of the Third World Institute, drew parallels with historical struggles over resources, stating that data was the new oil. He noted comparable confinement and massacre patterns, exemplified by instances such as the Indigenous Osage Nation. The struggles of the global South to gain control over oil resources in the twentieth century drew attention to the

significance of the United Nations Conference on Trade and Development (UNCTAD) and the right to development. Mr. Bissio argued that data should be recognized as a resource, with principles of sovereignty applied. He acknowledged the ongoing struggle for data sovereignty and noted the current imbalance favouring corporations in the privacy and human rights debate. He critiqued the power of social media companies and the legal frameworks that shielded them from responsibility. Mr. Bissio called for the human rights system to address the implications of intellectual property rights and corporate privileges, referencing a recent acknowledgement by the Government of the United States of America of their negative effects on access and affordability in developing countries.

43. Klentiana Mahmutaj, member of the Expert Mechanism on the Right to Development, introduced her upcoming study on artificial intelligence regulation and its implications for the right to development. While recognizing the positive impact of artificial intelligence, she highlighted risks such as algorithmic bias, misinformation and job displacement, emphasizing its potential harm to human rights. The study would explore the intersection between artificial intelligence and the right to development, proposing a human rights-based approach. Ms. Mahmutaj noted the lack of comprehensive domestic laws regulating artificial intelligence, as well as ongoing initiatives such as the proposed European Union artificial intelligence act. She acknowledged practical challenges, including transparency and risk assessment. She raised questions about the need for international cooperation and technical assistance and the possibility of an international treaty to address high-risk artificial intelligence. Ms. Mahmutaj stressed the importance of collective action, global evidence-based policy and intergovernmental consensus to achieve a balance between the development of artificial intelligence and the protection of humanity.

44. During the interactive dialogue, representatives of Othisi High School Athens, United Nations Major Group for Children and Youth, Federation of Students of the University of Costa Rica, Justice for Iran, Ltd., Research Laboratory on Integrity Health Practices, Global Diplomatic Council, Women's Federation for World Peace International, International Organization for the Right to Education and Freedom of Education, Maloca internationale and International Association of Human Rights and Social Development intervened. A representative from the Islamic Republic of Iran made a statement. Speakers agreed on the potential of science, technology transfer and innovation for societies, economies and governance systems in promoting fundamental freedoms, democracy and development. Technology could empower and connect people all over the world. Social technologies, approaches, methods, techniques and practices could mitigate social problems, improving the quality of life of communities, in particular in the fields of education, health and communications.

45. Participants voiced concerns about privacy issues, ethical considerations and potential abuses related to emerging technologies, in particular artificial intelligence. Some mentioned the misuse by States of technology for repression, control and manipulation, leading to increased censorship and manipulation of votes. Emerging technologies also posed risks to cybersecurity. Speakers highlighted the impact of digital divides on inequalities, especially in access to government services and online public services. Developing countries faced challenges, contributing to gender disparities and hindrances in educational access. A participant noted the adverse effects of the digital revolution on children's well-being, including screen addiction, mental health issues and unregulated content exposure. Another speaker underscored the potential for economic injustices resulting from the swift evolution of new technologies. In response to these identified dangers, panellists emphasized the need for privacy safeguards, agile governance, cybersecurity measures, digital literacy and responsible use of emerging technologies. They recommended international cooperation, workforce retention and accountability for children's well-being. Sharing best practices, speakers advocated for increased student involvement in research and collaborative technology development involving diverse stakeholders to enhance democratic practices.

F. Contribution of science, technology and innovation in promoting equality and non-discrimination

46. Elham Mansoory, human rights and educational activist, highlighted the challenging reality faced by Afghan girls. The denial of basic human rights, especially educational opportunities, cast a long shadow over their lives. This situation reflected the grave injustices persisting in a nation marked by conflict. Afghan girls were not only deprived of education, a fundamental right, but also of the promise of a brighter future. Ms. Mansoory underscored the global issue of systematic discrimination against women and girls in general, emphasizing the resulting collective loss of potential. Despite these challenges, transformative education and technology offered hope in addressing critical issues and unlocking boundless opportunities, particularly when designed by communities facing these challenges first hand. Science, technology, engineering and math education, economic opportunities and health care were vital. Ms. Mansoory called for a world where all girls, regardless of their background, had the chance to fulfil their potential, breaking the chains that hold them back and paving the way for a brighter and more equitable future.

47. Elena Pont, Research and Teaching Fellow at the University of Geneva, and Minerva Rivas Velarde, Associate Professor and Head of the Laboratory of Disability and Global Health at the Geneva School of Health Sciences, jointly emphasized the role of technology, particularly assistive technology, in the lives of persons with disabilities and its potential for fostering fairness and social justice. Assistive tools served as crucial interfaces between impairments and everyday activities, enabling independence in various aspects of life. However, the panellists also pointed to the challenges arising from ableism, as a result of which individuals with disabilities often experienced a significant loss of control over their own narratives and perspectives, as well as the tools that shape their daily lives, which then led to further marginalization. Ms. Pont and Ms. Rivas Velarde pointed to the exclusion of persons with disabilities from innovation. They raised concerns about artificial intelligence algorithms, data biases and the limited access to assistive technology, particularly in low-income countries. They highlighted the need for a shift in perspectives, moving away from expecting technology to adapt the bodies of persons with disabilities to viewing assistive technology as a means to support individuals in reaching their full potential. They emphasized the importance of global cooperation, interdisciplinary approaches, including intersectionality, and inclusive decision-making processes involving persons with disabilities at all stages of innovation. Engineers should be trained to be aware of systemic discrimination.

48. The Executive Director of Seatini Uganda, Jane Seruwagi Nalunga, highlighted the crucial role of science, technology and innovation in promoting industrialization and structural transformation in commodity export-dependent least developed countries, in particular in Africa. Science, technology and innovation were integral to achieving development goals, addressing economic challenges and fostering a low-carbon economy. The symbiotic relationship between science, technology and innovation and trade and investment policies necessitated appropriate frameworks at the national, regional and global levels. While existing policies in African countries recognized the importance of science, technology and innovation, actionable strategies and clarity on technology transfer were lacking. Ms. Nalunga underscored the context-specific nature of science, technology and innovation, emphasizing its potential for social inclusion or exclusion. Organizations such as UNCTAD should play key roles in assisting least developed countries, and Sustainable Development Goal 17 should be revitalized. This involved facilitating knowledge-sharing, promoting sustainable technology transfer and creating conducive environments for such transfers within the multilateral trading system. National and regional governments had the responsibility to translate aspirations into actionable initiatives to harness science, technology and innovation for structural transformation.

49. Uma Rani, Senior Economist in the Research Department of the International Labour Office, discussed the impact of digital transformations, especially in the gig economy, amidst the fourth industrial revolution. Focusing on the surge in the gig economy post-COVID-19, she highlighted the gendered implications beyond numerical representations. She challenged the narratives of flexibility and autonomy associated with digital platforms, as well as

assumed benefits, such as increased female labour participation. Empirical evidence revealed precarious working conditions, including long hours, unpredictable pay and workplace harassment. Ms. Rani criticized the use of work flexibility to legitimize double shifts for women, which reinforced gender inequalities. She identified worker misclassification and algorithmic practices as contributors to exploitation and the amplification of gender- and race-based inequalities. Ms. Rani emphasized the need for governmental involvement and social dialogue to ethically address the role of technology in labour market inequalities.

50. The Special Rapporteur on the negative impact of unilateral coercive measures on the enjoyment of human rights, Alena Douhan, highlighted the dual role of technologies, which could potentially eliminate inequalities but also exacerbate them. She expressed concern about the misuse of technology as a tool for unilateral coercive measures, which had a particular impact on nations under sanctions. She stressed that such measures hindered access to vital technologies, affecting education, health care and global participation. Their consequences included restricted Internet access, obstacles to knowledge acquisition, limited access to advanced technological equipment, payment issues and constraints on software availability. Ms. Douhan pointed to UNESCO statistics indicating that unilateral coercive measures contributed to approximately 250 million children being out of school, highlighting the infringements on the rights of current and future generations and the increase in discrimination and inequalities. She underscored the importance of access to diverse information sources for information verification.

51. During the interactive dialogue, representatives from China, Cuba, Iran (Islamic Republic of), the Syrian Arab Republic and Venezuela (Bolivarian Republic of) made remarks. Representatives of Instituto de estudos previdenciários, trabalhistas e tributários, ArcDH Association, Associazione Comunità Papa Giovanni XXIII, Federal University of Santa Catarina, Justice for Iran, Ltd., and Othisi High School Athens also made statements. Speakers emphasized that science, technology and innovation had the potential to advance equality and non-discrimination and safeguard the human rights of vulnerable groups. They highlighted the role of technology in creating opportunities for economic and social empowerment, in particular by enhancing access to education and health care. Speakers shared examples of best practices, including the development of tools to facilitate the integration of individuals with disabilities. One participant underscored the crucial role of social media and online platforms in amplifying the voices of marginalized communities, thereby contributing to increased awareness of prevailing inequalities.

52. Representatives expressed concerns about privacy issues, algorithmic bias and ethical dilemmas related to artificial intelligence, emphasizing the widening digital divide and the emergence of new inequalities. They identified unilateral coercive measures as a factor contributing to discrimination, particularly affecting women and vulnerable groups. Speakers cautioned against the potential misuse of emerging technologies, which could lead to various forms of abuse, inequality and discrimination, including cybercrimes, trafficking and exploitation. Emphasis was placed on the limited access of refugee women to digital devices and the Internet, which impeded employment opportunities and access to essential information. Refugee women were also exposed disproportionately to cyberbullying, harassment and violations of privacy online. One speaker stressed that technology would reinforce inequalities instead of addressing them if misused by some States for surveillance, arrests, Internet shutdowns and punishment, particularly against women. Some participants addressed issues related to unilateral coercive measures and equal access to knowledge and technology and suggested strengthening the role of the United Nations. Participants called for enhanced collaboration among Governments, technology companies, civil society and individuals to combat the misuse of digital tools. They recommended essential digital literacy, inclusive policies, enhanced digital access and affirmative action in universities to address challenges and promote gender equality and social justice.

G. Dreaming and enabling for present and future generations: international solidarity and cooperation, partnership and capacity-building – youth empowerment initiative for sustainable development guided by youth-led start-ups

53. The co-founder of Her Mind, Maya Kumar, shared her experiences as a high school student in Singapore and described her transformative journey with Her Mind, an initiative she founded to address educational inequalities in rural India. She recalled witnessing the stark disparities in educational opportunities, particularly for girls grappling with cultural stigmas, during her volunteer work in Bangalore. This motivated Ms. Kumar to bridge the gap by providing free online tutoring and mentorship for girls through Her Mind. Through the support of individuals, Her Mind had raised over $65,000 and had contributed to enhanced technological infrastructure in schools and the empowerment of girls by providing them with access to education. She emphasized the importance of collaboration, financial backing and community involvement, encouraging everyone to engage in initiatives that aligned with their passions and made a meaningful impact.

54. Tze Hean, co-founder of Budding Minds, introduced the work of his non-profit organization initiated in 2018, which was dedicated to supporting students from low-income families through one-to-one tutoring and mentorship. The organization collaborated with governmental agencies, reaching over 250 students with educational programmes and exposure initiatives. In discussing the intersection of technology and education, Mr. Hean highlighted the positive impact of technology during the COVID-19 pandemic, through platforms such as Zoom for remote tutoring. While acknowledging the importance of technological advancements, he emphasized the need for human intervention, citing the major barrier of capital costs and the necessity for social support in providing technological access to low-income students. Mr. Hean also underscored the importance of continuity in the use of educational technology, emphasizing the role of volunteers in transforming family culture and addressing the long-term merits of education.

55. Scientist and activist, Elizabeth Nyamwange, highlighted the crucial role of science, technology and innovation in promoting a sustainable and equitable future, in particular in addressing climate change. She emphasized the need for innovative solutions and pointed to gender disparities in technology access, underscoring the economic importance of empowering women entrepreneurs. Ms. Nyamwange advocated for gender-inclusive innovation to bring more women into technology, thereby driving progress across sectors and accelerating the achievement of the Sustainable Development Goals. She acknowledged the challenges of misinformation and gender-based violence in the information age, calling for inclusive innovation to reshape the narrative around women's rights and civic engagement. Ms. Nyamwange argued that gender-inclusive approaches could break down barriers faced by women by addressing constraints in training, confidence, finance and networks, and ultimately contribute to reducing global inequalities, which are exacerbated by digital divides.

56. Racheal Nestor, an environmental rights defender from Saint Lucia, highlighted the vital role of youth-led start-ups in driving successes, supported by the enthusiasm of the younger generation. However, small island developing States faced challenges when balancing Sustainable Development Goals with economic risks. Youth-led start-ups in small island developing States encountered obstacles related to resource access, and therefore required inclusive and sustainable assistance. Ms. Nestor called for strong commitments from Governments and the international community and advocated for significant investments in youth-led start-ups and the creation of a supportive environment. She emphasized the importance of addressing social challenges, such as by bridging class disparities and ensuring access to quality education, to empower youth-led initiatives. Ms. Nestor urged building partnerships and recognizing the potential of youth-led initiatives as catalysts for positive change. She encouraged investment and support for impactful solutions, as exemplified by a youth-led initiative serving the homeless during the pandemic.

57. Sricharan Balasubramanian, co-founder of Comm.UnitySG, reflected on the unique challenges revealed during the pandemic, in particular homelessness. His organization addressed this issue by raising awareness, maintaining shelters and mobilizing youth

volunteers. They leveraged technology and digital platforms to navigate social distancing constraints, culminating in a successful fundraising campaign. His organization addressed the lack of impactful civic education through virtual journeys, allowing students to empathize with vulnerable groups. Focused on youth entrepreneurship and technology, the initiative had reached over 1,000 students and had expanded into South-East Asian countries. Mr. Balasubramanian emphasized the importance of taking a comprehensive approach involving non-governmental organizations, charities, Governments and schools to showcase the role of technology as an enabler in promoting human rights and empowering youth to make a meaningful difference.

58. During the interactive dialogue, representatives of Institution for Planetary Synthesis, International Association of Ahmadi Architects and Engineers, Othisi High School Athens and the Office of the United Nations High Commissioner for Human Rights intervened. Speakers noted that young people represented a powerful force for societal change and should be supported with needed tools and resources. The focus should be on innovative, green and inclusive education aligned with the Sustainable Development Goals. Participants called for a culture of lifelong learning, teacher capacity-building and redesigned curriculums for structured career pathways. One speaker stressed the importance of knowledge and technology transfer, especially to nations facing debt and poverty. Best practices included successful work by local non-profits, grounded education models and the transformative power of education design. Another participant called for UNDP funding opportunities for young people, emphasizing mentoring, coaching and cooperation skills. The right to development could provide a viable framework for youth-led initiatives on social entrepreneurship, as it advanced a participatory, people-centred and bottom-up approach that actively involved the most vulnerable and marginalized communities. Those initiatives should expand through international cooperation, including South-South and North-South cooperation, harnessing the power of solidarity, connection and collaboration to make a difference. In order to build an extensive network for positive change, the focus should be on connecting with other youth across nations and across generations. Speakers called for a world of sharing, trust, justice, peace and cooperation.

IV. Conclusions and recommendations

59. In a video statement, the Envoy of the Secretary-General on Technology, Amandeep Singh Gill, noted the role of the Social Forum in bringing stakeholders together for human rights promotion. Referring to the Road Map for Digital Cooperation, he addressed the digital divide, emphasizing the importance of meaningful access to the Internet for all. He highlighted the principles of connect and respect, as well as the need to protect human rights online. Mr. Singh Gill discussed the ongoing process of negotiating a global digital compact involving all stakeholders for an open, free, secure and inclusive digital future. The importance of artificial intelligence and its impact on human rights led the Secretary-General to launch the High-level Advisory Body on Artificial Intelligence, which is tasked with addressing risks, opportunities and international governance. The Social Forum fostered interactive dialogue between the United Nations human rights machinery and stakeholders and had made significant contributions to the negotiations on the global digital compact.

60. In his closing remarks, the Chair-Rapporteur acknowledged the valuable contributions of high-level officials, representatives of States, international organizations, experts, non-governmental organizations and individuals during the Social Forum. The Forum focused on the multifaceted impact of science, technology and innovation on human rights, drawing lessons from the global COVID-19 pandemic. While recognizing the challenges and shortcomings experienced in endeavouring to leave no one behind during the pandemic, the Chair-Rapporteur highlighted the growing realization of the urgent need for international cooperation, technology-sharing and inclusive policies. The achievements lay in understanding the importance of science, technology and innovation in addressing global challenges. The Chair-Rapporteur announced that the 2024 Social Forum would focus on the contribution of financing for development to the advancement of all human rights for all.

A. Conclusions

61. **The right to enjoy the benefits of scientific progress and its applications is a fundamental human right, with science, technology and innovation potentially serving as transformative forces for overcoming global challenges and for fostering a sustainable post-pandemic recovery.**

62. **Science, technology and innovation play pivotal roles in enabling the realization of other human rights, such as the rights to development, health, education, work, a clean, healthy and sustainable environment, and freedom of expression, in preserving and transforming cultural heritage and in enabling a human rights economy.**[7]

63. **Equitable access to science, technology and innovation is integral to advancing the right to development. Immediate attention must be given to ensuring global accessibility of COVID-19 vaccinations, especially in low-income countries.**

64. **Science-based decisions are essential to the enjoyment of human rights. Accordingly, epistemic communities have a key role in advancing their realization.**

65. **Everyone has the right to participate in, contribute to and enjoy the benefits of science, technology and innovation. Equitable access and global knowledge-sharing are crucial to realizing this right, especially given the existence of global digital divides. Women-led, youth-led and people-led science should be better valued and enabled.**

66. **A balanced intellectual property system that promotes the transfer of technology to developing countries and makes essential medicines and vaccines public goods is fundamental to the realization of the rights to life and to health. Such a system would also foster global innovation and creativity, acting as a catalyst for economic growth and post-pandemic recovery by incentivizing research and development in developing countries.**

67. **Techno-nationalism, unilateral coercive measures and intellectual property monopolies can hinder the sharing of science, technology and innovation, leading to more significant obstacles to the realization of human rights.**

68. **Small island developing States and least developed countries disproportionately affected by the triple planetary crisis can benefit from strategic investment in science, technology and innovation in addressing their unique challenges to protect the human rights of their peoples.**

69. **Multifaceted global obstacles to the realization of human rights, including war, conflict, debt distress, inflation and inequality, were compounded in the post-pandemic era. Science, technology and innovation could play a central role in shaping solutions to overcome these obstacles.**

70. **Addressing the challenges posed by the digital revolution, such as digital divides, digital poverty, discrimination and harassment, requires promoting digital literacy and advocating for ethical development to ensure that digital technologies contribute to equity, peace and international solidarity.**

71. **While the transformative impact of the Internet on civic space should be acknowledged, it is crucial to address challenges such as cyberauthoritarianism, censorship, online abuse, cybercrime and the increased manifestation of gender-based violence in the digital realm. It is imperative to strike a careful balance between ensuring freedom of expression and protecting against wrongful acts in the digital landscape.**

72. **Science, technology and innovation, including artificial intelligence, can either alleviate or perpetuate discrimination, particularly affecting women and girls, and**

[7] See statement by the United Nations High Commissioner for Human Rights at the workshop on promoting and protecting economic, social and cultural rights within the context of addressing inequalities in the recovery from the COVID-19 pandemic, 6 February 2023, available at https://www.ohchr.org/en/statements-and-speeches/2023/02/turk-calls-human-rights-economy.

persons with disabilities. Whether technology enhances or undermines human rights will be affected by ableism, algorithm biases, general development in developing and least developed countries, and limitations on technology access.

B. Recommendations

73. **The right to enjoy the benefits of scientific progress and its applications should be promoted by ensuring the availability and accessibility of scientific information and by supporting citizen science (ordinary people engaging in science).**

74. **Investment in science, technology and innovation should be sustained, particularly when they address global health challenges and ensure equitable solutions.**

75. **States should advocate for the removal of obstacles to the promotion of digital literacy, including unilateral coercive measures, and make informed policy decisions to ensure global access to digital goods and services.**

76. **States should step up investments in science, technology, engineering and mathematics education, especially for underrepresented groups, through innovative teaching methods and the promotion of diversity in those fields.**

77. **Collaborative scientific efforts involving academia, civil society, youth and women-led initiatives, Indigenous Peoples and local communities should be promoted.**

78. **The academic community should recognize and integrate Indigenous knowledge systems into decision-making processes, in particular in addressing environmental challenges.**

79. **States should step up international cooperation and solidarity measures for developing countries to advance technology transfer and capacity-building to bridge technology access gaps, including ensuring equitable global vaccine distribution.**

80. **In regulating artificial intelligence, States should address potential threats to the enjoyment of human rights and emphasize its ethical development aligned with human rights principles and obligations.**

81. **States should take measures to mitigate risks posed by digitalization on children's well-being and privacy.**

82. **States should take steps to overcome challenges in access to assistive technology and combat ableism.**

83. **States, international organizations and all other relevant stakeholders, including technology companies and civil society, are encouraged to cooperate with the United Nations, in particular with the Envoy of the Secretary-General on Technology, to implement the Road Map on Digital Cooperation and promote human rights in the digital space.**

Annex

List of participants

States Members of the Human Rights Council

Algeria; Belgium; Chile; China; Cuba; Czechia; Finland; France; India; Kazakhstan; Kenya; Kyrgyzstan; Lithuania; Luxembourg; Malawi; Malaysia; Maldives; Morocco; Mexico; Pakistan; Paraguay; Romania; South Africa; United Arab Emirates.

States Members of the United Nations

Angola; Armenia; Austria; Brazil; Colombia; Dominican Republic; Egypt; Greece; Guinea; Indonesia; Iran (Islamic State of); Iraq; Netherlands (Kingdom of the); Panama; Peru; Poland; Portugal; Slovenia; Syrian Arabic Republic; Togo; Tunisia; Türkiye; Venezuela (Bolivarian Republic of); Zimbabwe.

Non-Member States and Other Entities Represented by Observers

The Holy See; Sovereign Order of Malta.

United Nations

International Labour Organization; International Telecommunication Union; Major Groups Facilitating Committee of the United Nations Environmental Programme; Office of the United Nations High Commissioner for Human Rights; United Nations Development Programme; United Nations Educational, Scientific and Cultural Organization; United Nations Institute for Training and Research; United Nations Major Group for Children and Youth; United Nations Office at Geneva; United Nations Office for Disaster Risk Reduction; World Health Organization; World Intellectual Property Organization; World Trade Organization.

United Nations Human Rights Mechanisms

Expert Mechanism on the Right to Development, Special Rapporteur on cultural rights, Special Rapporteur on toxics and human rights, Special Rapporteur on the right to education, Special Rapporteur on the adverse effects of unilateral coercive measures on the enjoyment of human rights.

Intergovernmental Organizations

African Union’s Economic, Social and Cultural Council (AU ECOSOCC); Council of Europe; European Union; South Centre; Organization of Islamic Cooperation.

National Human Rights Institutions

National Human Rights Committee of Qatar; The People’s Advocate of Albania.

Academic Institutions

Aix-Marseille University; Beijing Foreign Studies University; Centro Universitário Newton Paiva; Dhaka School of Economics; Frontiers; Geneva School of Health Science; Geneva Graduate Institute; Huazhong University of Science and Technology; Iranian Elite Research

Centre; Kinnaird College for Women; Mindanao State University; Nanyang Technological University; National University of Mongolia; Othisi Highschool Athens; Research Laboratory on Integrity Health Practices; Tbilisi State University; University of Colorado; University of Geneva; University of Ghana; University of Minnesota; University of Santa Catarina; University of Tehran; University of the Free State; University of the State of Rio de Janeiro; Webster University Geneva.

Non-Governmental Organizations and Others

Action Group on Erosion, Technology and Concentration (ETC) Group; Action on Sustainable Development Goals Kenya; Action sensibilisation sur les nouvelles technologies de l'information et de la communication; Africa Culture Internationale (ACI) Human Rights; African Science Academy; Ahmadiyya Muslim Community; Alimuradova Organisation; All Humans for All in Iran; All Pakistan Women's Association; Ambassadors for Global Peace and International Organization for the Right to Education and Freedom of Education; Appui solidaire pour le renforcement de l'aide au developpement; ArcDH Association; Arte Magna; Article 19 - International Centre Against Censorship; Ashia International; Asociación de Productores Indígenas de Café (*ASOPIC)*; Association for the Human Rights of the Azerbaijani People in Iran (AHRAZ); Association démocratie et éducation Mali (ADEML); Association "Groupement Global Hygiene System"; Association internationale des médecins pour la promotion d'education et de la sante - Suisse; Association internationale pour l'égalité des femmes; Association of World Citizens; Association pour la Défense des Droits de l'Homme et des Revendications Démocratiques/Culturelles du Peuple Azerbaidjanais-Iran (ARC); Association pour la Promotion de la Bonne Gouvernance, la Citoyenneté et des Droits de l'Homme; Association Solidarité Internationale pour la Paix; Associazione Comunità Papa Giovanni XXIII; At-sik-hata Nation of Yamassee-Moors; Balochistan Human Rights Group; Barwaka Relief Organization; Budding Minds; Busia Social Justice Centre; Center for International Environmental Law (CIEL); Centre for Indigenous Child Rights; Christian Care Foundation Pakistan Cohesion Dynamics; ClimateScience; Comm.UnitySG; Conference of European Schools for Advanced Engineering Education and Research (CESAER); Convention Pour le Bien-être Social; Coordinating Body of Indigenous Organisations of the Amazon Basin (COICA); Cuban Association of the United Nations; Diplomatic Council e.V.; Drumbeat Media; Earth Hour Tunisia; Environment Conservation Organization - Foundation for Afforestation Wild Animals and Nature (ECO-FAWN); Equality for All (EFA); Etana; Evercomm Singapore Pte. Ltd.; Excellence International SA; Federation of Students of the University of Costa Rica; Feminist Cohort; Fighting Against Human Trafficking; Franciscans International; Free Iran Switzerland; Freedom Hub Sierra Leone; Fundación Retorno A La Libertad; Future International; Geoplanet Côte D'Ivoire; Global Digest; Global Diplomatic Council; Global Institute for Water, Environment and Health; Global Peace and Development Association; HerMind.org; Hungarian Ombudsman for Future Generations; IBAKH (International Engineering Bureau); Institute for Planetary Synthesis; Institute for Protection of Women's Rights; Institute of Social Security Studies; Institute of Sustainable Development; Instituto E Se Fosse Você?; International Association for Human Rights and Social Development; International Association for Human Rights and Social Development; International Association of Ahmadi Architects and Engineers (IAAAE); International Charitable Organization Roma Women Fund; International Foundation Witnesses of Ashoora; International Fund for Agriculture Development; International Human Rights Commission Relief Fund Trust; International Human Rights Commission; International Human Rights Observer (IHRO) Pakistan; Internationales Ingenieur-Büro Asadi-Khiavi; Iran Autism Association; IT for Change; Italian Federation for Human Rights; Jeunesse en Détresse Internationale; Justice for Iran; Juta Mewangi Enterprise (M) Sdn Bhd; Kenya Sports Development Organization (KESDO); Kijani Kibichi International Ltd.; Kurdistan Human Rights Association-Geneva (KMMK-G); La Verità Onlus - International Diplomacy; Maloca Internationale; Marrah and Associates Law Firm; Migration Youth and Children Platform; MINBYUN - Lawyers for a Democratic Society; Movimiento Unido Por los Derechos Humanos (MUDDH); Narnia Educational Group; National Association for the Defense of Rights and Freedoms; Noble Institution for Environmental Peace Inc.; Non-Aligned Movement Youth Organization; Ohaha Family

Foundation; On God Global Resource and Services Limited; Open Society Foundations; Organization for Peace and Development (APAD); Orphans Assistance - A Ray of Hope; OSER Humanitaire; Outreach Social Care Project; Pacte Mondial Réseau France; Pakistan Rural Workers Social Welfare Organization (PRWSWO); Patriotic Vision; Peace Organization For Supporting Iraqi Minorities; Peace Society of Kenya; People's Advocate Institution in Albania; PersonalData.IO; Promotion du Développement Economique et Social (PDES); Protection for Legal & Human Rights Foundation; Red Nacional por la Defensa de la Soberanía Alimentaria en Guatemala (REDSAG); Roma Future; Rosa-Luxemburg-Stiftung; The Royal Golden Cocoon of Java: Cricula Trifenestrata #SDGAction53224; Scholars at Risk Network; Self-sustaining People, Organizations, and Communities (S-POC); Sikh Human Rights Group; Social Empowerment for Economic Development (S.E.E.D); Social Watch; Society for International Development; Southern and Eastern Africa Trade Information and Negotiations Institute (SEATINI) Uganda; Spotlight Team International Art; Students for Global Democracy Uganda; Students Union of the University of Costa Rica; Subjective Physics Sciences; Taleem-Ul-Islam College Old Students Association; Third World Institute; Tort for Torture Victims Centre (TT-VC); Ukrainian Parliament Commissioner for Human Rights; Union des Nations pour l'Enseignement, la Science Universelle et les Droits de l'Homme; Victim Advocates International; Vision My Art; Vivian Olutunfese & Associates; Voice for UN Convention on the Poor (VUCP); Voice of America TV (VOA Farsi); Volant Media; Winrock International; Women's Federation for World Peace International; Women's Human Rights International Association; World Association of Girl Guides and Girl Scouts; World Federation of Science Journalists; World Federation of United Nations Associations; Yada Williams & Associates; Youth Association in Sierra Leone; Youth Empowerment for Peace and Security; Youth Revolution Clan.