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Building forward better: towards a resilient and green Africa to achieve the 2030 Agenda and Agenda 2063

I. Background and mandate

1. The collaborative multi-stakeholder forum on science, technology, and innovation for the Sustainable Development Goals was established pursuant to the 2030 Agenda for Sustainable Development as part of the Technology Facilitation Mechanism. The Mechanism was established by the Addis Ababa Action Agenda and was launched in the 2030 Agenda to support the implementation of the Sustainable Development Goals. The global forum is organized by the United Nations inter-agency task team on science, technology and innovation for the Sustainable Development Goals, with the support of a 10-member group appointed by the Secretary-General drawn from the private sector, the scientific community and civil society.

2. The global multi-stakeholder forum is convened once a year, as indicated in paragraph 70 of the 2030 Agenda, "to discuss science, technology and innovation cooperation around thematic areas for the implementation of the Sustainable Development Goals, congregating all relevant stakeholders to actively contribute in their area of expertise", and also to "provide a venue for facilitating interaction, matchmaking and the establishment of networks between relevant stakeholders and multi-stakeholder partnerships in order to identify and examine technology needs and gaps, including with regard to scientific cooperation, innovation and capacity-building". All these measures are expected to help facilitate the development, transfer and dissemination of relevant technologies for the Sustainable Development Goals.

3. The African Science, Technology and Innovation Forum was established by the Conference of Ministers, in its resolution 960 (LI) of 15 May 2018, calling on the Economic Commission for Africa (ECA), in collaboration with the African Union Commission and other partners, to take all steps necessary to organize on a regular basis a multi-stakeholder forum on science, technology and innovation as an input into the work of the Africa Regional Forum on Sustainable Development and the multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals.

4. The first session of the African Science, Technology and Innovation Forum was held in Marrakech, Morocco, on 16 April 2019, in collaboration with the Department of Science and Innovation, South Africa. The Forum generated several key messages calling on countries to address:

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(a) Inadequate hard and soft science, technology and innovation infrastructure;

(b) Inadequate investment by African countries in science, technology and innovation ;

(c) The importance of harnessing the innovative spirit of the youth of Africa;

(d) The development of relevant and realistic science, technology and innovation policies and strategies;

(e) The essential need to promote intra-African science, technology and innovation collaboration.

5. It also identified cross-cutting issues and called on countries to consider promoting local solutions for local challenges; encouraging intra-Africa trade and competitiveness; enhancing private sector participation and intellectual property protection; promoting peace and security; empowering young people and women; and facilitating regional collaboration in science, technology and innovation.

6. The Forum's second session was held on 24 February 2020 in Victoria Falls, Zimbabwe, and was hosted by the Ministry of Higher Education, Science and Technology Development of Zimbabwe and co-organized with the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Department of Science and Innovation, South Africa. The Forum was also supported by the African Union Commission and the Department for Economic and Social Affairs.

7. Over 800 delegates, representing African member States, the United Nations agencies, academia, civil society, youth, marginalized groups, people with disabilities and the private sector, were in attendance. The Forum was presided over by the Minister of Higher and Tertiary Education, Innovation, Science and Technology of Zimbabwe, Amon Murwira.

8. A youth innovation bootcamp was organized by the Ministry of Higher and Tertiary Education, Innovation, Science and Technology with the support of the UNESCO Southern African Regional Office. The bootcamp attracted some 250 participants from universities, colleges of education polytechnics and schools from all administrative provinces of Zimbabwe, who were familiarized with innovative technologies such as rapid prototyping using 3D technology, robotics, artificial intelligence, and were introduced to the concept of entrepreneurship.

9. At its second session, the Forum adopted key messages identifying the following needs:

(a) To build capacity in the basic sciences and engineering guided by national heritage, priorities and comparative geographical advantages in order for Africa to take full advantage of the opportunities offered by emerging technologies;

(b) To significantly scale up investments in research and development, universities and research centres;

(c) To align the critical skills at country level to effectively respond to a future that is increasingly driven by science, technology and innovation;

(d) To establish innovation hubs, incubators and common equipment centres that serve both industry and academia;

(e) To develop a strategy that co-implements the fourth industrial revolution, while taking advantage of established technologies in order to catch up and meet the aspirations of the 2030 Agenda and Agenda 2063 of the African Union;

(f) To strengthen collaboration and partnerships at a continental and regional level by supporting regional networks and capacity-building initiatives;

(g) To draw lessons from the experiences of other regions to make significant inclusive and sustainable development gains;

(h) To adopt and promote renewable energy technologies in order to mitigate the impact of climate change, create jobs and promote well-being;

(i) To redesign the curricula of higher education, by putting an emphasis on an education system that produces goods and services.

II. Key actions and progress in realizing the 2020 messages

10. While many of the messages were aimed at member States, ECA, UNESCO and the Department of Science and Innovation of South Africa mobilized several partners and resources to meet some of the aspirations of the first and second sessions of the Forum. Selected initiatives that were designed and implemented in 2020 are outlined in the following paragraphs.

11. To support member States in developing a critical mass of skilled workers to meet their development aspirations and participate effectively in the fourth industrial revolution, ECA and its advisory board on science, technology and innovation launched three generic curricula for African universities, to enable them quickly to design, refine and run undergraduate and postgraduate programmes in emerging technologies. These include generic curricula on artificial intelligence; nanotechnology and material sciences; and pharmaceutical chemistry and manufacturing.

12. ECA organized the first Innovation and Investment Forum with a focus on COVID-19 in June 2020; and the first Africa Nanotechnology Research and Innovation Forum 2020 in December 2020. The forums brought researchers, innovators, investors and policymakers together to build networks, industrial alliances and collaborative ventures among the key stakeholders of the triple helix of academia, industry and government. More important, ECA is supporting four teams financially and technically to move their research from the laboratory to the market.

13. ECA and its partners are also undertaking a comprehensive review of science, technology and innovation performance with a special focus on emerging technologies and health-care technologies, in the light of the current coronavirus disease (COVID-19) pandemic. This also takes into consideration the African Union-led High-Level Panel on Emerging Technologies and the initiative launched by the African Union Development Agency on the development of African science, technology and innovation indicators.

14. With a view to promoting innovation and entrepreneurship among young people, ECA and its partners hosted the first online youth bootcamp on innovation for COVID-19, held over two weeks in June 2020 with student participants from 38 countries. ECA, the International Telecommunication Union (ITU) and partners also hosted a month-long female student coding event that engaged over 3,000 young women from across the continent in learning modern ways of coding to build their information and communications technology (ICT) capacities.

15. In 2020, the United Nations inter-agency task team on science, technology and innovation, comprising all United Nations entities, launched the Guidebook *for the Preparation of Science, Technology and Innovation (STI) SDGs Roadmaps* and engaged countries in piloting the approach and methodology elaborated in the Guidebook. Five pilot countries (Ethiopia,

Ghana, India, Kenya and Serbia) are participating in the global pilot programme on science, technology and innovation road maps for the Sustainable Development Goals launched by the high-level political forum on sustainable development in 2019. In addition, the inter-agency task team conducted pilot online training workshops in November and December 2020, to build national capacity on science, technology and innovation with a view to promoting attainment of the Sustainable Development Goals.

16. UNESCO has been preparing an international standard-setting instrument on open science that would encourage and build stronger than ever scientific cooperation for the good of all humanity. The first draft of the UNESCO recommendation was developed through an extensive and inclusive consultative process and is currently under revision on the basis of comments received from Member States by 31 December 2020. Implementation of the future recommendation is contingent upon awareness raising, capacity-building and development of the necessary infrastructure for open science.

III. Third session of the African Science, Technology and Innovation Forum

17. The third session of the Forum will be held on 25 and 26 February, in an online format in Congo. The Forum is being co-organized with UNESCO, the African Union Commission and the Department of Science and Innovation, South Africa.

18. The Forum is designed to meet both the global and continental mandates. As noted above, it will serve as a platform for exploring and facilitating interactions, matchmaking, cooperation and partnerships among the relevant stakeholders, in order to drive technology development and transfer, and create regional innovation networks for co-learning and co-creation, and for the sharing of experience between and among multi-stakeholders. In addition, it will also provide a platform to identify and examine technology needs and institutional voids and gaps that should be addressed to enable African countries to fully harness and deploy science, technology and innovation to accelerate the achievement of the Sustainable Development Goals.

19. Areas of concern in that regard include scientific cooperation, innovation and capacity-building, and also facilitation of the development, transfer and dissemination of relevant technologies for the Sustainable Development Goals. The Forum will showcase efforts that the public and private sector, and also individuals, deploy to accelerate the achievement of Sustainable Development Goals, and will demonstrate how technologies, in particular technologies developed in Africa, can contribute to the achievement of the Goals and Agenda 2063.

IV. Focus of the third session of the African Science, Technology and Innovation Forum (Goals 1, 2, 3, 8, 10, 12, 13, 16 and 17)

20. At its third session, the African Science, Technology and Innovation Forum will draw lessons from the first and second sessions of the Forum and from organizational and structural aspects of the multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals. To this end, the third session of the Forum will be held over a two-day period before the commencement of the Africa Regional Forum on Sustainable Development and will mobilize representatives of member States, business leaders, academics and civil society stakeholders to contribute fully and benefit from its proceedings.

21. The Forum's third session will differ from its first and second sessions in that it will not focus on how science, technology and innovation can contribute in general to the individual Goals under review, but will look instead at selected, key science, technology and innovation-related actions and areas that can help Africa accelerate the pace and expand the scale necessary to achieve the selected Goals under review from an African perspective. In other words, the third session will focus on four key areas of concern identified from among the concerns highlighted at the first and second sessions of the Forum and from the Science, Technology and Innovation Strategy for Africa 2024 and lent added urgency by the COVID-19 global pandemic. These four areas are outlined below.

A. Science, technology and innovation policy design, implementation and evaluation for the Sustainable Development Goals

22. Effective science, technology and innovation policies are indispensable in enabling all key stakeholders to take advantage of science and technology to contribute to development. The Addis Ababa Action Agenda underlined the importance of science, technology and innovation policies at the national level to enable science, technology and innovation to serve as a driving force and enabler for fulfilment of the 2030 Agenda for Sustainable Development. Similarly, the African Union's Science, Technology and Innovation Strategy for Africa 2024, which is part of the collection of measures for the first phase of implementing Agenda 2063, has prioritized science, technology and innovation policymaking as one of its four pillars. The United Nations inter-agency task teams on science, technology and innovation and the 10-member group appointed by the Secretary-General launched the science, technology and innovation road map initiative to meet the same goals. In this regard, the Forum will showcase tools that countries can use for the effective design, efficient implementation, adequate tracking and evaluation of their science, technology and innovation policies.

B. Leveraging emerging technologies for sustainable development

23. Emerging technologies offer African countries endless opportunities to leapfrog and catch up with advanced countries. Emerging technologies are not only going to transform high-technology industries and sectors, but also traditional industries that are important to Africa, such as agriculture, mining, health, education and tourism, among others. The Forum will explore the opportunities, benefits and challenges that digital, nanotechnology, biotechnology and advanced energy technologies present to African countries.

C. Health-care technologies for improved health-care outcomes in Africa

24. The COVID-19 pandemic has exposed weaknesses of the health-care systems across Africa. At the beginning of the pandemic, a majority of African countries lacked the capacity to simply test and detect the virus that causes COVID-19. To date, few countries are tracking the evolution and emergence of different strains of the virus and even fewer are participating in the discovery, development and production of vaccines. This component will look at how countries can mobilize and build adequate number of researchers in all areas of sciences – ranging from natural sciences, medicine and veterinary sciences to humanities and social sciences; develop research, innovation and industrial

infrastructure and entrepreneurial talent to quickly bring life-saving solutions to market; and build reliable domestic and regional supply chains to meet health-care needs in future. This endeavour may include efforts by business, government, higher education and not-for-profit sectors to co-invent, co-innovate and co-deliver services to the communities that they serve.

D. Research and innovation funding in Africa

25. Africa's gross expenditure on research and development as a percentage of its gross domestic product (GDP) was estimated at about 0.4 per cent in 2019, far below the world average of 1.7 per cent and the 1 per cent target set by the African Union. In addition, research and development work is concentrated in the public sector, in particular in higher education establishments, whether measured in terms of expenditure or sources of research and development funding. Recent data gathered by the African Union Development Agency in the African Development Outlook III show that expenditure on research and development by the business sector ranges from about 46 per cent of gross expenditure on research and development in South Africa to 1.3 per cent in Ethiopia and 0.5 per cent in Mozambique. If business sector research and development in Ethiopia, for example, rose to about 50 per cent of gross expenditure on research and development, the country's gross expenditure on research and development as a percentage of GDP could rise to about 0.9 per cent, from its current level of 0.62 per cent. It so happens that countries whose business expenditure on research and development is above 50 per cent of gross expenditure on research and development have surpassed the 1 per cent mark of gross expenditure on research and development as a percentage of GDP: such countries include Brazil, China and Malaysia in the last two decades. While public sector funding is important, African countries may need to emulate strategies of those countries that have successfully crossed the 1 per cent mark.

26. To drive innovation and technology entrepreneurship, several African countries have put in place funding mechanisms to support efforts by public research institutions to take their outputs to market and establish or run firms. In addition, Africa boasts 643 technology hubs, the majority of which have received less than $100,000 in funding, and that funding comes largely from donors, corporate sponsors, philanthropic foundations and non-governmental organizations. While these developments are building an emerging innovation ecosystem, Africa needs to make greater efforts to seed, grow and attract major technological firms that could anchor the emerging innovation systems. This component of the session will showcase some national, regional and institutional efforts to boost research and development, innovation and technology business funding and the financial products that have been developed for that purpose.

V. Objective of the African Science, Technology and Innovation Forum

27. The overall objective of the third session of the African Science, Technology and Innovation Forum is to conduct a regional follow-up and review of progress made, in order to identify potential mechanisms and measures that countries can deploy to scale up actions, facilitate peer learning and advance transformative solutions to accelerate achievement of the Sustainable Development Goals and the goals of Agenda 2063. These include:

(a) Conducting regional follow-up to, and review of, the implementation of the key messages and measures recommended by the Forum at its previous session;

(b) Providing a platform for peer learning and sharing experience, approaches, good practices and lessons learned, in order to accelerate realization of the aspirations of the 2030 Agenda and Agenda 2063;

(c) Identifying the technological opportunities, gaps and challenges, and the institutional voids that can help drive innovation and development;

(c) Identifying implementable mechanisms for collaboration and matchmaking, to strengthen regional and international partnerships and investments in science, technology and innovation, to accelerate fulfilment of the two agendas within the decade 2020–2030.

VI. Theme of the third session of the African Science, Technology and Innovation Forum

28. The theme of the third session of the African Science, Technology and Innovation Forum is drawn from the theme of the seventh session of the African Regional Forum on Sustainable Development: "Building forward better: towards a resilient and green Africa to achieve the 2030 Agenda and Agenda 2063". The theme is aligned with the theme for the 2021 meeting of the high-level political forum on sustainable development: "Sustainable and resilient recovery from the COVID-19 pandemic that promotes the economic, social and environmental dimensions of sustainable development: building an inclusive and effective path for the achievement of the 2030 Agenda in the context of the decade of action and delivery for sustainable development".

29. At its seventh session, the African Regional Forum on Sustainable Development will undertake a review of the following Sustainable Development Goals: Goal 1 (End extreme poverty), Goal 2 (Zero hunger), Goal 3 (Good health and well-being), Goal 8 (Decent work and economic growth), Goal 10 (Reduced inequalities), Goal 12 (Responsible consumption and production), Goal 13 (Climate action), Goal 16 (Peace, justice and strong institutions): and Goal 17 (Partnerships for sustainable development).

VII. Format of the third session of the African Science, Technology and Innovation Forum

30. The third session of the African Science, Technology and Innovation Forum will comprise the following activities, high-level policy dialogues, panel discussions and showcasing events:

(a) High-level policy dialogues: At least four high-level policy dialogues will be organized, comprising senior government officials, ministers, heads of United Nations agencies, and chief executive officers of firms, along with vice-chancellors of universities and heads of research and technology organizations. The interactive high-level policy dialogues will focus on broad and cross-cutting issues and strategic direction, including opportunities and transformative levers, partnerships, commitments, actions and other measures to accelerate implementation;

(b) Panel session to assess progress on the 2030 Agenda and Agenda 2063: At least five sessions (on the themes of people, prosperity, planet, peace, and partnerships) will be held to assess the contribution of science, technology and innovation in the progress registered to date on the continent, and the actions needed to amplify the impact of science, technology and innovation in efforts to achieve the Sustainable Development Goals. All panel sessions are organized in a town-hall format without slide presentations, to encourage free discussion;

(c) Special sessions: There will be several special sessions and events organized by partners and ECA, with the aim of informing the Forum. These shall include the youth bootcamp on emerging technologies and innovations in the fight against COVID-19;

(d) Review and adoption of key messages of the Forum: During this part of the session, all stakeholders will review, propose amendments to and adopt the key messages of the session. These are aimed at accelerating implementation and are to be submitted to the Africa Regional Forum on Sustainable Development at its 2021 session and are also intended to inform the inter-agency task team on science, technology and innovation for the Sustainable Development Goals and the multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals.

VIII. Expected outputs

31. At its third session, the Forum will generate the following key outputs:

(a) Report of the African Science, Technology and Innovation Forum, which will inform the Africa Regional Forum on Sustainable Development and the multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals;

(b) Outcome documents of special sessions and events such as the youth bootcamp;

(c) General guide on the operation of a regional innovation platform for facilitating technology transfer and collaboration.

IX. Expected outcomes

32. The third session of the African Science, Technology and Innovation Forum is specifically designed to foster collaboration, the diffusion of technology and innovation, and the scaling up of policy and operational efforts needed to accelerate the contribution of science, technology and innovation to fulfil the 2030 Agenda for Sustainable Development. Specifically, the following will be the key tangible and intangible outcomes of the session:

(a) Report of key outcomes that could guide member States, the private sector and non-State stakeholders in improving their science, technology and innovation policies and amplify the impact of science, technology and innovation on measures to accelerate fulfilment of the two agendas;

(b) Strategies to improve funding mechanisms for research and development, innovation and entrepreneurship identified and documented to help member States to build a sound scientific, technological and innovation foundation;

(c) Regional platform for exchanging information on funding, innovations and institutions launched to accelerate technology transfer, collaboration and co-creation among key science, technology and innovation partners in Africa.

X. Details of the session

A. Participants

33. The meeting will be attended by representatives of all 54 African Member States of the United Nations, the African Union Commission, the African Development Bank, regional economic communities, civil society, business and industry organizations, academic and research institutions, agencies and organizations of the United Nations system, and other international agencies and organizations, together with all development partners.

B. Working languages

34. The meeting will be conducted in English and French, with simultaneous interpretation in both languages.

C. Dates and venue

35. The third session of the African Science, Technology and Innovation Forum will be held in Brazzaville, on 25 and 26 February 2021.

D. Contacts

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