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Item 5 of the provisional agenda \*

**Presentation on the theme of the session****Africa's economic development in the post-  
coronavirus-disease era: the role of regional  
integration, infrastructure and technology****Issues paper****I. Introduction**

1. Agenda 2063: The Africa We Want of the African Union eloquently articulates the continent's vision for its development. It provides a shared framework for inclusive growth and sustainable development in Africa, realized over 50 years, beginning in 2013. It is also a continuation of the continent's drive for unity, self-determination, freedom, progress and collective prosperity, pursued under the ideas of Pan-Africanism and the African renaissance. African countries are also signatories to the 2030 Agenda for Sustainable Development, a United Nations plan of action for people, the planet and prosperity. It seeks to strengthen universal peace, and recognizes that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development. As put forth in the 2030 Agenda, the Sustainable Development Goals were developed to realize the human rights of all and achieve gender equality and the empowerment of all women and girls. They are integrated and inseparable and balance the three dimensions of sustainable development – economic, social and environmental.

2. Africa, therefore, strives for a “well-being economy” that envisages the continuous fulfilment of human well-being, with primary attention given to job creation, poverty eradication and gender equality while mainstreaming the sustainability of ecosystems. The present paper explores how regional integration, infrastructure, and emerging technologies could be used to harness the opportunities that the triple challenges of climate change, the coronavirus disease (COVID-19) pandemic and economic recession present to realizing the African development agenda.

3. The rest of the present paper is structured as follows. Section II provides an overview of the challenges and opportunities for African economic

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development resulting from COVID-19. Section III, IV and V present the roles of regional integration, infrastructure and emerging technologies in African economic development in the post-COVID-19 era. Section VI concludes the paper, providing a consolidated list of questions to be discussed by the Committee, as well as in expert group meetings preceding the Committee session.

## **II. Overview of coronavirus disease challenges and opportunities**

4. The COVID-19 era presents both challenges and opportunities for the continent to achieve the development aspirations elucidated in the introduction of the present paper. The ECA report *Building Forward for an African Green Recovery*<sup>1</sup> underscores these challenges. It highlights that Africa is in the eye of a triple storm: climate change, on which the continent is already spending some \$335 billion annually, equivalent to more than 5 per cent of its collective gross domestic product (GDP), to respond to climate disasters; the COVID-19 pandemic, which had caused some 2.7 million Africans to contract the disease, and more than 70,000 people to die from it by the end of February 2021; and economic recession, which the continent is facing for the first time in 25 years, as a repercussion of the COVID-19 pandemic.

5. The economic and social impacts of COVID-19 on the continent have been devastating. ECA<sup>2</sup> estimates that the pandemic pushed some 55 million people into extreme poverty in Africa in 2020, wiping out the previous decade's gains. The pandemic has also accelerated other existing trends on the continent. For instance, several countries were already in recession at the start of the crisis. Overall GDP growth of Africa slowed to 3.2 per cent in 2020 and was less than 1 per cent or even harmful in some of the largest economies. Oil prices fell by more than 50 per cent in the first quarter of 2020, and with a decline in non-oil commodity prices, countries dependent on primary commodity exports were under stress. In addition, many countries were beset by limited public and private investment, high levels of debt, fragile fiscal situations, political instability, long-standing crises (as in the Sahel region), and low levels of human capital.

6. The pandemic also exposed existing vulnerabilities that amplified its effects on the continent. This includes the large proportion of informal workers in most countries with unstable jobs and irregular incomes, the fact that 82 per cent of Africans do not have access to social protection, low spending on health care on the continent (5–6 per cent of GDP on average), and the already significant gender inequalities that are likely to be further accentuated by the disproportionate burden of care work.

7. The COVID-19 era is not all about challenges, and the challenges mentioned above are not insurmountable. Instead, the pandemic and associated challenges present great opportunities for building forward better and bolstering resilience to enhance the prospects of achieving the continent's development aspirations. Over the medium-to-long term, Africa is expected to channel additional resources towards promoting a sustainable recovery and an economic reset. This is envisaged to include significant investments in the continent's healthcare infrastructure, including building a supply of skilled healthcare personnel; prioritizing equitable access to healthcare services; and creating employment opportunities in the health sector by leveraging the

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<sup>1</sup> ECA, *Building Forward for an African Green Recovery*, 2021.

<sup>2</sup> ECA, *Economic Report on Africa 2021: Addressing the challenges of poverty and vulnerability in Africa in the time of COVID-19*, (forthcoming).

African Continental Free Trade Area (AfCFTA) for pharmaceutical production, pooled procurement of medicinal supplies, digitalized regional supply chains, and medicinal tracking and traceability systems. The continent will also have to invest in enhancing the skills of the young workforce to increase labour productivity, strengthen resilience against future shocks and develop sustainable social protection systems, especially in highly indebted countries.

8. The current crisis also allows African countries to adopt alternative growth models that prioritize value addition and leapfrog technologically to a sustainable, inclusive and job-rich future. AfCFTA, which came into existence in January 2021, is an essential springboard for recovery. The potential of green investment strategies is equally important, given how they could support the future development of the African economy. A recovery that provides high-quality jobs for Africans must be based on an innovative sustainable growth model that simultaneously delivers modernization and investment, potentially supporting the shift from low-productivity to a high-productivity economy.

9. The following section explores the role of regional integration in African economic development in the post-COVID-19 era.

### **III. Regional integration and African economic development in the post-pandemic era**

#### **A. Improving African healthcare systems**

10. Africa has avoided a healthcare system collapse from COVID-19, as initially feared by some. However, successive waves of infections – especially the latest wave driven by the Delta variant – have led to 8.2 million positive cases and more than 200,000 deaths on the continent.<sup>3</sup> Vaccination roll-outs are slow due to scarce supplies and inadequate delivery capacity to get doses into arms. By late September 2021, only 55 million people in Africa – less than 5 per cent of the total population – were fully vaccinated.<sup>4</sup>

11. In the face of this unprecedented challenge, African policymakers have exhibited solidarity in the continental response. Early on, Governments and regulators worked with the private sector to establish the Africa Medical Supplies Platform, which leverages pooled procurement to source equipment, diagnostic kits, personal protective equipment and other essential medical products. The African Vaccine Acquisition Task Team is a crucial Africa-led supply vehicle to complement the COVID-19 Vaccines Global Access (COVAX) facility and bilateral purchase agreements. To date, the Task Team has secured 220 million doses of the single-shot Johnson and Johnson vaccine, with options to add another 180 million doses.

12. In addition to the immediate healthcare emergency, there is now a consensus and a singular collective resolve among African Governments, regional organizations, the private sector and the international community to expand the production of vaccines and pharmaceuticals for Africans in Africa on the grounds of health security and regional supply chain resilience. At the Virtual Conference: Expanding Africa's Vaccine Manufacturing in April 2021, African leaders announced the Partnership for Vaccine Manufacturing to realize the ambition to increase the share of vaccines produced on the continent to 60 per cent by 2040.

<sup>3</sup> Africa Centres for Disease Control and Prevention, Africa CDC COVID-19 Dashboard. Available at <https://africacdc.org/covid-19/> (accessed 22 October 2021).

<sup>4</sup> World Health Organization Regional Office for Africa, Africa COVID-19 Dashboard. Available at [www.afro.who.int/health-topics/coronavirus-covid-19](http://www.afro.who.int/health-topics/coronavirus-covid-19) (accessed 23 September 2021).

13. The collaboration and solidarity in the African response to COVID-19 can provide the blueprint for deepening regional integration in the future. And the continental market of 1.2 billion consumers enabled by AfCFTA provides economies of scale to support the efforts to expand pharmaceutical manufacturing in Africa.

## **B. African Continental Free Trade Area: an essential tool for economic recovery**

14. AfCFTA has a vital role in shaping the recovery of Africa from COVID-19 so that it returns not to its traditional dependency on exporting raw commodities but instead turns towards industrial, high value-added and job-rich trade sectors. The fear that African countries' trade will revert to bad old habits is more prescient given the current record highs in important African commodity prices. Petroleum oils, which account for 40 per cent of African exports, recovered to pre-COVID-19 levels in February 2021. The London Metals Exchange index of traded metal ore prices has soared, reaching 50 per cent above its pre-COVID-19 level in August 2021. International food prices, too, as measured by the Food and Agriculture Organization of the United Nations Food Price Index, were 30 per cent above pre-COVID-19 prices as of September 2021.

15. AfCFTA can help to build back better. The latest ECA modelling estimates that, by 2045, AfCFTA will boost intra-African trade in agrifoods by 20.5 per cent, industry by 64.7 per cent, services by 3.3 per cent, and energy and mining goods by 11.4 per cent. This will translate into gains of \$27.3 billion in agrifoods, \$86.2 billion in industry, \$4.4 billion in services, and \$15.2 billion in energy and mining<sup>5</sup>

## **C. Reassessing foreign direct investment**

16. Inward foreign direct investment in Africa fell 18 per cent, from \$46 billion in 2019 to \$38 billion in 2020, a level not seen since 2006. This dip was more profound than the decrease in developing economies (12 per cent) but less severe than the decline in developed countries (69 per cent).<sup>6</sup>

17. Prospects for recovery were not encouraging in 2020. Greenfield and project finance announcements (indicators of future trends) fell 63 per cent and 40 per cent, respectively.<sup>7</sup> Foreign direct investment is an essential source of finance for productive capacity and infrastructure development, so that a prolonged decline could hamper the economic recovery of Africa.

18. On the bright side, as the pandemic forced the closure of government offices and service points, it also gave Governments a renewed push to further digitalize public services. Some African investment promotion agencies have taken advantage of digital technologies (videoconferencing and virtual reality solutions, for example) for important investment promotion and facilitation activities, such as investor meetings and site visits. Promoting investment in the local manufacturing capacity of vaccines and pharmaceuticals has also become a priority for investment promotion agencies globally, including those in Africa.<sup>8</sup>

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<sup>5</sup> ECA and the Centre for International Research and Economic Modelling of the Centre d'Etudes Prospectives et d'Information Internationales (forthcoming).

<sup>6</sup> United Nations Conference on Trade and Development, *Investment Trends Monitor*, Issue 38, Geneva, 2021.

<sup>7</sup> Ibid.

<sup>8</sup> United Nations Conference on Trade and Development, "Promoting investment in health post-pandemic: a global trend?" *IPA Observer*, No. 11 (2021).

19. The sharp drop in foreign direct investment flows into Africa during the pandemic is an impetus for expediting the negotiation and implementation of the AfCFTA Investment Protocol. Harmonization of investment rules can create an enabling legal environment to lower transaction costs and attract productive investments, especially intra-African investments that can aid the continent's structural transformation and regional integration agenda.

20. Investment policies adopted in response to COVID-19 allow Africa to take full advantage of the opportunities presented by a post-pandemic world. They should therefore be harnessed well beyond the current emergency.

#### **D. Addressing climate change in the post-pandemic recovery**

21. COVID-19 has shed light on the fragility of African supply chains, highlighting the urgency to develop more robust and resilient regional value chains to face future climate-change shocks. At the same time, the pandemic has significantly reduced the fiscal space available for African Governments to invest in green projects.

22. The Agreement Establishing the African Continental Free Trade Area provides opportunities for green regional integration. It will unlock opportunities in the continent's non-extractive sectors, through which expanded regional trade can be climate-conscious if guided by the right enabling policies. Furthermore, trade under the Agreement can offer an essential tool for supporting climate change mitigation and adaptation policies. Mitigating climate change will depend on the ability of African countries to manufacture, diffuse and maintain low-carbon technologies, which can be facilitated through trade and technology transfer. Trade can also help bridge differences in demand and supply, so that countries where climate change creates scarcity can meet their needs by importing from countries with surpluses.

23. Eighty-five per cent of all preferential trade agreements globally contain environmental provisions. In contrast, environmental issues have been largely overlooked in the AfCFTA process. However, AfCFTA intersects with the green agenda through specific provisions in its protocols, in addition to the strategies adopted to drive implementation. There are opportunities to further "green" AfCFTA. These include ensuring that environmental goods and services are liberalized, and environmental standards are harmonized in the first phase of the negotiations. In the second phase, appropriate intellectual property rights structures can be designed to incentivize the diffusion of green technologies, strengthening competition regulations to address brown status quo investment. Indeed, the investment regime can be emboldened to discourage the race-to-the-bottom erosion of environmental regulations.

### **IV. Infrastructure and African economic development in the post-pandemic era**

24. Africa requires transformative infrastructure to support its development agenda and enhance the continent's resilience to social, economic and environmental shocks in the COVID-19 era. Moreover, investment in infrastructure is often an essential component of economic stimulus packages because of its potential to create jobs. In this regard, COVID-19 provides an opportunity to improve the sustainability of African infrastructure. To that end, resources allocated to the sector from COVID-19 relief packages could be used to build its resilience and invest in green projects. For instance, roads could be constructed using design guides that consider the increased frequency and severity of extreme climatic events, deficient infrastructure could be retrofitted, new materials that may better resist climate change could be used in

construction, and green purchasing could be prioritized. From a mitigation perspective, priority could be given to projects that address transport emissions by shortening travel distances, enabling low-carbon transport modes such as railways, and using emerging technologies such as electric cars and shared and high-performance vehicles fleets.

#### **A. African Continental Free Trade Area and demand for transport infrastructure and services**

25. AfCFTA seeks to increase intra-African trade by eliminating import duties and double this trade if non-tariff barriers are also reduced. However, inadequate transport infrastructure and services could hamper the full realization of the benefits of AfCFTA. The urgent need to improve transport connectivity within Africa in AfCFTA has created new research opportunities. In this context, ECA undertook a comprehensive study that explored the effects of AfCFTA on trade flows in Africa and provided insights into how member States could reap its full benefits through integrated planning of trade and transport. The study provides forecasts of the demand for different modes of transport due to AfCFTA. It also estimates infrastructure investment requirements for different modes of transport and the impact of improvements in transport infrastructure and services on the volume of intra-African trade. It also provides forecasts of the demand for equipment for different modes of transport – road (trucks), railway (rolling stock), air (aircraft) and maritime (ships) – as a result of AfCFTA. The study shows that the introduction of AfCFTA would lead to a general increase in intra-African freight demand of around 28 per cent compared with the without-AfCFTA scenario.

#### **B. Harnessing strategic infrastructure partnerships to access sustainable finance**

26. Strategic infrastructure partners of Africa, such as the European Union and China, have facilities for financing the development of impactful and sustainable infrastructure. The partnership between Africa and the European Union, for instance, offers various avenues for impactful and sustainable investment in regional infrastructure projects. Examples of such avenues include the African Investment Platform, which aims to address critical funding gaps in Africa, excluding North Africa, and the European Union-Africa Infrastructure Trust Fund, which mobilizes finance for projects to increase access to energy and transport, water, sanitation and communication services.

27. The Belt and Road Initiative, launched in 2013, is widely considered to be the centrepiece of the new foreign policy of China. Interconnectivity of infrastructure development is the core of the Initiative. The concept of greening the Initiative is relevant to sustainable regional infrastructure development in Africa. Several countries and organizations on the continent have signed memorandums of understanding with China on the Initiative. Beyond Africa, many organizations are preoccupied with the sustainability of the Belt and Road Initiative. For instance, a Green Belt and Road Initiative Centre has been created, and a Belt and Road Initiative International Green Development Initiative also exists.<sup>9</sup> To ensure that the Initiative is of mutual benefit to Africa and China, projects under the Programme for Infrastructure Development in Africa that would facilitate intra-African trade and trade between Africa and China could be identified and promoted for implementation through the Belt

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<sup>9</sup> United Nations Environment Programme, “The Belt and Road Initiative International Green Development Coalition (BRIGC)”, available at [www.unep.org/regions/asia-and-pacific/regional-initiatives/belt-and-road-initiative-international-green](http://www.unep.org/regions/asia-and-pacific/regional-initiatives/belt-and-road-initiative-international-green).

and Road Initiative. The launch of the Initiative has been accompanied by the creation of financial mechanisms to fund its projects. For instance, the \$40 billion Silk Road Fund was established to finance the Belt and Road Initiative projects. Another funding body for the Initiative is the Asian Infrastructure Investment Bank. It is worth harnessing these sources of finance to implement Programme for Infrastructure Development in Africa projects that are part of the Belt and Road Initiative.

28. The following sub-sections look at the energy sector, particularly its implications for prosperity, health and climate change.

### **C. Addressing the role of energy in African prosperity**

29. Globally, the recognition that infrastructure endowment is fundamental to sustainable development is reflected in its inclusion in the Sustainable Development Goals. Specifically, Goal 7 is to “Ensure access to affordable, reliable, sustainable and modern energy”; Goal 9 is to “Build resilient infrastructure, promote sustainable industrialization and foster innovation”. Infrastructure development, in particular in the African context, where the development return from infrastructure investment is appreciable, remains a fundamental priority and enabler of sustainable development. Energy demand in Africa is expected to rise from 125 GW in 2010 to 700 GW by 2040. Electricity access has improved considerably; in 2016, the people who lacked access fell by 28.5 million.

30. Furthermore, off-grid applications, such as solar energy, are surging in Africa, with about 60 million – or about 10 per cent – of users. Despite this progress, COVID-19 has reversed some of these gains, and today 25 African countries have energy access levels below 50 per cent. Lack of access to energy on the continent deprives more than 580 million people of modern energy services. Fixing this problem will require investment to the tune of \$170 billion per year. The African Development Bank estimates infrastructure requirements of Africa at \$130 billion–\$170 billion per year, with a financing gap in the range of \$53 billion–\$93 billion annually.<sup>10</sup>

31. The significant infrastructure gap in Africa translates into a huge demand for infrastructure to meet the continent’s development needs.

### **D. Role of energy in improving African healthcare systems**

32. The COVID-19 pandemic has triggered demand- and supply-side shocks to African economies. Restrictions in the travel, commercial, services and manufacturing sectors have led to a global demand shortfall, leading to oil and gas price plunges. Beyond the fiscal effect of the unanticipated oil price plunge, the actual price reduction had adverse effects on the macroeconomy in oil-exporting countries, including the deterioration of national currencies. In Algeria, Chad and Equatorial Guinea, current account deficits exceeded 10 per cent of GDP. The net borrowing position has deteriorated in Algeria, Angola, Equatorial Guinea and Libya. The disruption of the COVID-19 shock in oil-dependent countries is alarming.

33. The pandemic also led to 13 million people losing access to electricity in 2020. While the impact of that loss was observed in many sectors, the impact was of critical importance in the healthcare sector. Because refrigeration is required for the effective delivery of COVID-19 vaccines and for providing adequate care to patients, access to electricity by healthcare facilities is

<sup>10</sup> African Development Bank, *Infrastructure Financing Trends in Africa – 2018*. Abidjan, Côte d'Ivoire: AfDB.

essential. Nearly 30 per cent of healthcare facilities lack such access. In this context, member States need to improve access to electricity in the healthcare sector, translate the lessons from COVID-19 into a resilient healthcare system supported by sufficient provision of infrastructure services, and implement business models that fast-track the provision of electricity access to essential public institutions.

## **E. Role of the private sector in energy development**

34. In Africa today, more than 85 per cent of energy infrastructure development is financed by using public and multilateral funds. This has placed a considerable financial strain on the public sector, especially during COVID-19. The role of the private sector in technology transfer, finance and investment, and provision of infrastructure services at large remain negligible. Meeting Goal 7 and other Sustainable Development Goals and addressing the energy transition requirements and infrastructure constraints to development, in general, require significant investment. In this regard, bridging the private sector participation gap will remain essential. In this context, member States are encouraged to adopt policies and regulations that attract private-sector investment in the electricity value chain; replicate the successful investment of the private sector in electricity generation to that of transmission, distribution and off-grid markets; develop the capacity of the local private sector to play a constructive investment role; and leverage public-private partnerships for infrastructure development.

## **V. Emerging technologies and African economic development in the post-pandemic era**

35. Science, technology and innovation are key enablers and drivers of economic, social and environmental progress and well-being, and the COVID-19 pandemic has reinforced this fact. The world has relied on science, technology and innovation to find treatments, track the evolution of the virus and the disease, keep the world at work, and enable families and friends to stay in touch during the pandemic. Scientists and technology firms from various disciplines have provided the knowledge that has informed decisions to contain and mitigate the COVID-19 crisis, brought 24 vaccines to market (the World Health Organization has approved seven) and kept economies running.

36. Emerging digital technologies and innovations have sustained global supply chains. During the pandemic, African Governments have stepped up efforts to strongly encourage financial institutions and financial services providers to adopt electronic, digital and mobile banking technologies. As a result, in 2020, Africa recorded 27.5 billion transactions (up 15 per cent) worth \$495 billion (up 23 per cent over 2019), and the number of registered mobile banking accounts surpassed the half-billion mark (562 million). Africa accounted for 43 per cent of the new mobile banking accounts registered globally in 2020.<sup>11</sup> Nonetheless, it still has a long way to go to fully capture the benefits of digital technologies to power innovation, business development, and public service delivery to improve its communities' well-being.

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<sup>11</sup> GSMA, *State of Industry Report on Mobile Money* (GSM Association, London, 2021). Available at [www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/03/GSMA\\_State-of-the-Industry-Report-on-Mobile-Money-2021\\_Full-report.pdf](http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/03/GSMA_State-of-the-Industry-Report-on-Mobile-Money-2021_Full-report.pdf).



## **A. Advances and participation in emerging energy technologies**

37. Advances in materials and manufacturing technologies accelerate the uptake of renewable energy solutions. In this regard, advances in energy storage technologies bring renewable technologies to levels that the average user can afford and manage. These advances also contribute to the reduction of greenhouse gas emissions. For instance, fuel cells, especially hydrogen fuel cells, are key to decarbonizing economies and bringing clean energy to developed and developing countries. From January to June 2021, about 395 new hydrogen energy projects were announced. These projects will be worth about \$500 billion in total investments by 2030. They will focus on developing technologies, materials and infrastructure to reduce the cost of producing, storing, shipping and delivering hydrogen to consumers.

38. Egypt, Mauritania, Morocco, and South Africa have announced such projects in Africa. For instance, Morocco seeks to produce 133,000 tons of ammonia from 13,000 tons of green hydrogen a year. At the same time, the South African company Sasol has announced at least two major hydrogen projects that will lead to the installation of hydrogen cells on heavy-duty and long-haul vehicles in partnership with Imperial Logistic. It also announced a feasibility study to develop a hydrogen hub with the Northern Cape Development Agency. Furthermore, Namibia and Germany have signed a cooperative agreement to develop hydrogen.

39. As costs fall, the above energy technologies could help Africa quickly deploy energy services in small rural and isolated communities through microgrids. Homegrown companies such as PowerGen (located in Kenya, Nigeria, Sierra Leone and the United Republic of Tanzania) have attracted international investments and partners. Microgrids have also effectively provided power to small businesses in Africa, and the community can easily manage them. Pay-as-you-use business models are offering poorer communities flexibility in energy use.

## **B. Digital technologies in Africa**

40. There are numerous examples of digital technologies introduced in Africa during the pandemic. Africa was home to 590 million Internet subscribers in 2020, and Tunisia deployed robots to patrol areas of Tunis to ensure that people observe coronavirus lockdowns. Ghana and Rwanda used drones to deliver healthcare services to remote areas (e.g., collect samples). Sierra Leone offered citizens an electronic platform for self-assessment of their COVID-19 status. Various other entities developed platforms and tools that collected and published national, regional and global data on COVID-19 trends. ECA developed the Africa Medical Supplies Platform, the Africa Communication and Information Platform, and the African United Nations Knowledge Hub for COVID-19.

41. While Africa is doing well in terms of growth rates in the Internet and mobile phone users, the continent seems to perform poorly regarding the key technologies that underpin the digital economy. Cloud computing is one of those critical technologies where Africa remains behind. Still, it is essential for enabling individuals, firms and institutions to store, process and use the vast volumes of generated data. The African share of cloud computing is estimated at less than 1 per cent. Similarly, the digital gender divide remains high, with the mobile Internet gender gap growing from 20.7 per cent in 2013 to 33 per cent in 2019.

42. As digital technologies transform every aspect of the economy, governance and society, African countries should address barriers and ensure

gender equality in science, technology, engineering and mathematics as potential career paths and business opportunities; including digital skills training in formal and informal education; improve security online; drive down the costs of digital technologies, and improve the quality of infrastructure and regulatory frameworks. The ECA “African Girls Can Code Initiative” is a good example, organized by the International Telecommunication Union, the United Nations Entity for Gender Equality and the Empowerment of Women (UN-Women), and the African Union Commission.

### **C. Advancing science, technology and innovation policies for emerging technologies**

43. Policies are generally seen as tools that enable Governments to achieve clearly defined objectives when the private incentives provided by free markets systematically perform poorly. In developing countries, the incentives for the private sector to engage in emerging technologies are even lower, because of complex and unclear legal and regulatory regimes and standards, among other reasons; high costs of research and development; the uncertainties of market uptake; a lack of support infrastructure; and low levels of customer willingness to buy new, untested products (e.g. locally-made electric cars). Technologies such as artificial intelligence, the Internet of Things and machine learning are being adopted as quickly as they are developed, magnifying risks (such as data breaches, rapid rates of replacements and updates, and increasing demand from users for technologies that firms are still learning to master) that even larger firms may struggle to manage, let alone smaller ones.

44. Countries may wish to put policies that reduce the private sector’s risks to drive investment and knowledge creation in emerging technologies. Among others, science, technology and innovation policies created to accelerate the development and uptake of emerging technologies could take an integrated approach and build in some flexibility to adapt quickly to changes. This may include bringing together different disciplines and industries with similar needs to accelerate learning and technology development. The policies should aim to strengthen institutional arrangements that are consistent, stable, inclusive and capable of mobilizing the public and private sectors.

45. Countries with limited resources should set clear priorities for research, technology, industries, skills, and infrastructure to benefit various players. For example, battery technology platforms could benefit researchers and businesses in the electronics, energy, automotive and real estate industries. Furthermore, the policies should include an implementation plan with clear roles and responsibilities and mechanisms for continuous monitoring and evaluation to enable countries to guide their actions and encourage continuous stakeholder engagement and buy-in at every stage. These approaches can help countries attract longer-term and committed investment, build local and regional markets, and participate in using and exporting emerging technology products. They will also help countries to monitor global trends in technology to ensure their investments are keeping up with global and national expectations.

## **VI. Conclusion**

46. The present paper has highlighted critical issues in African economic development in the post-COVID-19 era. It has also explored the role of regional integration, infrastructure development, and emerging technologies in addressing these issues and achieving economic transformation on the continent. Based on the analysis in the paper, the following questions are proposed for consideration by the Committee:

- (a) Regional integration:
- (i) How should AfCFTA be leveraged to shape and facilitate the recovery of Africa from COVID-19, in particular in avoiding a return to traditional dependence on raw commodity exports, by transitioning instead towards industrial, high value-added and job-creating trade sectors?
  - (ii) In what ways should African Governments support the harmonization of investment rules or policies to create an enabling legal environment to lower transaction costs and attract productive investments, especially intra-African investments that can aid Africa's structural transformation and regional integration agenda?
  - (iii) What steps should African Governments take to increase investment in the health sector, including developing health infrastructure, pharmaceutical production and supplies, and requisite skills to enhance labour productivity and strengthen resilience against future pandemics?
- (b) Infrastructure development:
- (i) What are the implications of AfCFTA for infrastructure and services development in Africa?
  - (ii) How could African countries harness strategic infrastructure partnerships to implement sustainable and impactful projects, in particular projects under Programme for Infrastructure Development in Africa?
  - (iii) Given the current state of the infrastructure gap on the continent and the ambitious aspirations for a prosperous Africa, how could member States sustainably finance long-term infrastructure investment?
  - (iv) How could member States address the regulatory challenge to private sector investment in energy projects and infrastructure projects in general?
  - (v) Regional electricity markets offer great opportunities, especially following the launch of an African single electricity market. How could member States pursue regional electricity market integration and access?
  - (vi) Appreciating the urgent necessity to deal with the climate emergency, what would a just national energy transition plan look like, coupled with a sustainable energy development strategy? How will member States finance the needed energy transition?
- (c) Emerging technologies:
- (i) What steps should African countries take to strengthen their science, technology and innovation institutional arrangements to support the design, implementation and monitoring of emerging digital and energy technology policies to accelerate the achievement of economic, social and environmental objectives in the post-COVID-19 era?
  - (ii) What approaches can African countries exploit to mobilize private and public investment in research and development, innovation and entrepreneurship to meet the ambitious goals of bringing energy and digital solutions to all and driving firm growth and trade in emerging digital and energy technologies?
  - (iii) Resources remain a significant challenge. What are the appropriate policy instruments and mechanisms that countries can use to leverage regional research networks, industrial alliances and common

markets to raise adequate resources and share risks to become competitive in digital and energy technologies?

(iv) Emerging technologies are not necessarily neutral or inclusive. How can countries ensure that emerging technologies deliver development gains that are inclusive and equitable, with particular consideration given to the needs of small and medium firms, women and young people, and rural and urban dwellers?

(v) What strategies and approaches can Africa employ to build research and support infrastructure for digital and energy technologies that are cost-effective and easy to upgrade, operate and manage, considering the social and regulatory challenges that emerging technologies present?

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