

Policy area: Inequality, human capital and well-being

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Title: Africa's moment: How youth and natural resources can drive the continent's global economic and social leadership now

Abstract

Africa's countries are rich in two invaluable assets: a burgeoning youth population and vast natural resources. These represent a remarkable opportunity for the continent at a time when industrialised nations are looking for new sources of talent and the push for sustainable industries and resources is at an all-time high. Africa's assets can unleash massive economic growth but doing so while centering Africa's people and resources will require focusing on four elements — establishing a local-first approach, strengthening the education and skilling systems, creating ample 'good jobs' and supporting entrepreneurs, and utilising technology to support and develop high-growth, including 'green', industries.

Challenge

Africa is facing a turning-point opportunity to become a global economic powerhouse. With its burgeoning youth population and abundance of natural resources, the continent has two primary elements that can help move its economies from largely export-focused to a more diversified set that includes information and value-added manufacturing economies. Such a move not only strengthens Africa's local and regional economies, it is a significant comparative advantage globally at a time when industrialised nations are facing a massive (and because of declining birth rates, protracted) worker shortage and when the world needs leadership in the development of sustainable and renewable industries.

Yet, resources and sheer numbers alone are not enough to create this change for the continent. Both the youth population and the natural resources will require management and investment to serve as the backbone of a global economy. As of 2015, there were an estimated 226 million youth ages 15 to 24 in sub-Saharan Africa, comprising approximately 20% of the total population;¹ by 2050, the World Bank estimates that half of the population will be under 25.² These stunning numbers represent a massive potential workforce, yet nearly 95% of this demographic is currently informally employed, are more likely to have a lower amount of education, and are largely engaged in subsistence agriculture, according to a recent study by the UN's International Labour Organisation (ILO).³ Even educated youth — two-thirds of those with secondary education and nearly one-third of those with tertiary education — are largely employed in the informal sector. Young women are more greatly represented in these figures, by about 7 percentage points over men (excluding agriculture).⁴

Similarly, the African continent possesses an outsize proportion of the world's natural resources, both renewable and non-renewable and comprise 30% to 50% of natural capital in many African countries. The UN's Environment Programme estimates that Africa holds about 30% of global mineral reserves, its fossil fuels reserves comprise 8% of the world's natural gas and 12% of its oil, and the continent contains 65% of the planet's arable land and 10% of its internal renewable fresh water. In sub-Saharan Africa, more than 70% of the population depends on forests and woodlands for their livelihoods.⁵ Overall, the share of natural resources that make up the continent's wealth is the second highest in the world, behind the Gulf Coast countries.⁶ Yet, much of the potential from natural resources is not extracted, either because the industry does not exist, robustly or otherwise (renewables), or because weak institutions and governance structures allow the money from these natural resources to leave the country (non-renewables).⁷

PROPOSAL

Africa today has the opportunity to take a leading role in the global economy if it puts its youth and natural resources at the heart of its economic and social development. Taking advantage of these resources will require four actions: 1) take a local-first approach to build strong local and national economies; 2) upgrade the education and skilling systems to prepare youth for 'good jobs' in high-growth industries — those that are safe, paid fairly, reasonably secure and motivating, and leverages the human skills of the worker;⁸ 3) create job opportunities for young people and women, including entrepreneurship; and 4) utilise different technologies to modernise existing sectors and develop emerging industries, including in the green economy. The strategic vision laid out here can yield important benefits but during the time it takes to implement, Africa will continue to face uncertainty and instability. Climate change, food insecurity, inflation and other challenges will make it difficult to stay on the path towards this vision and keep short-term needs from derailing long-term objectives. As countries set about achieving each of these four actions, it will be important that their governments - and the companies eager to invest - build adaptability and agility into their planning.

Take a local-first approach to building strong local and national economies. Strengthening national economies across Africa will depend on making cities and villages more productive and sustainable, requiring cooperation among public and private entities and a partial decentralisation of decision-making to local governments and communities.

A local-first approach is predicated on developing and strengthening local communities by helping to fund and create new businesses tied to the local economy and skills of its people.⁹ This includes providing and incentivising investments in education, skilling, and entrepreneurship that are tied directly to high-growth industries within a specific community, as well as creating policy measures that support entrepreneurship and the development of 'good jobs' by companies, particularly for youth and women. Policies and incentives that attract investment in transportation infrastructure, which can allow better access to and participation in national, regional, and eventually global supply chains and export markets, help drive growth and expansion. A local first approach helps communities build their labour and consumer bases, begins to address income and wealth inequality, and helps keep people in their communities,

strengthening the social and economic ties of that community, which form the basis of a healthy and thriving national and continental economic ecosystem.

Policy recommendations:

- **Identify and support local economies that are based on local renewable and natural resources and are developed in a sustainable, innovative manner.** With the support of the national government and multilateral organisations, as well as through foreign direct investment, local communities can build thriving economies and local labour markets based on sustainable use of its resources. This should be accompanied by a focus on skilling local workers, particularly women, and creating an educational pipeline that prepares local youth with the education and training necessary for jobs in the local primary industry.
- **Incentivise businesses to work with local entrepreneurs to drive innovation.** Entrepreneurs generally know the local economy and are likely the best placed to understand how to innovate in a local-specific way,¹⁰ particularly for industries based on local natural resources. By providing access to technology, resources, and capital, governments can bring together the best of business knowledge and entrepreneurial innovation, coupled with a deep knowledge about local needs.

Upgrade the education and skilling systems to prepare youth for jobs in high-growth industries.

Sustainable local economies and stable labour forces are built upon a strong foundation of education and skilling. By the age of 10, according to the World Bank, children should have a basic ability to read and understand a simple text; an inability to do so is called “learning poverty.” The World Bank estimates that nearly 87% of children in sub-Saharan Africa are learning poor;¹¹ most primary students in sub-Saharan Africa lack basic proficiency in reading,¹² and employers report that tertiary graduates are weak in critical thinking, problem-solving, leadership, and digital literacy, among other skills.¹³ In addition, over 60% of youth ages 15-17 in sub-Saharan Africa — those who are primed to begin entering the workforce — are not in school at all.¹⁴ The majority of these are girls — only 29% of girls completed secondary school as compared to 35% of boys¹⁵ — with significant economic impact later on; girls who finish secondary school earn twice as much as those who do not attend school at all.¹⁶ This deficiency has created an intractable conundrum: Employers are stymied by the paucity of appropriately skilled workers, while young men and women are challenged in accessing basic quality education and gaining practical and noncognitive skills training that employers want.

Education alone is not necessarily the route to better jobs, or to jobs at all; two-thirds of those with secondary education and close to one-third with tertiary education work in the informal sector. The quality of the educational system must improve as well, and the curriculum must be tied to what employers need. The poor quality of education in sub-Saharan Africa means that a secondary school degree does not guarantee better employment or career progress and even those with a tertiary

education find that their skills are not being used.¹⁷ South Africa's educational expenditure is amongst the highest in the world when expressed as a percentage of GDP, yet it ranks 102 out of 141 countries in "Skillset of graduates" and 126 out of 141 in "Digital skills amongst the active population."¹⁸ This suggests that there should be a three-pronged approach to creating an educated and skilled workforce: building a high-quality primary and secondary educational system that provides youth with the foundational knowledge to be able to work and develop professionally throughout their career; developing a system to teach job-relevant skills to individuals from schooling and throughout their career, and which are tied to local labour market needs; and creating 'good jobs' within high-growth and locally relevant industries that take advantage of educated individuals in a way that allows them to thrive in their local communities.

Policy recommendations:

- **Incentivise multinational organisations to invest in, and be an active part of, local education.** When large and multinational businesses are incentivised to help support the creation of curricula, and offer apprenticeships, internships, and mentoring and skilling programs, they help develop a strong future work base they can utilise and correspondingly, a strong future consumer base. This includes classes to support entrepreneurship to learn basic skills such as developing a business plan, acquiring capital, creating a balance sheet, scaling, and more.¹⁹
- **Create a national skills mapping system for jobs in local industries, including for entrepreneurship.** National skills maps create a roadmap for individuals, particularly youth, to understand which skills they need to pursue meaningful and productive jobs. The mapping system is made up of three parts: a skills taxonomy to define skills, categories, and ways to measure competence; skills maps to outline categories of jobs in industries and their requisite skills; and a skills tracker to identify educational and training requirements and how they can be acquired.²⁰ This includes entrepreneurship, and what skills, knowledge, and training is needed to successfully design, start, and operate a business of their own.

Create job opportunities, particularly for women and youth, in high-growth industries and entrepreneurship. Researchers for the Africa Growth Initiative estimate that there will be 8-9 million new entrants into the African labour force each year.²¹ To create enough 'good jobs' for all these entrants year after year will require a multi-faceted approach across all businesses in Africa and sectors.

A 2020 publication from the World Bank suggests that the best way to increase 'good jobs' in the formal sector is to encourage the entrance and growth of large firms,²² which play an outsized role in economic transformation and employment creation by using newer technology, paying higher wages, and being better able to weather economic storms.²³ Africa's nearly 650 tech hubs, including accelerators, incubators, university-linked startup support labs, maker parks, and co-working sites, provide an example for how this is already being done in parts of the continent.²⁴ South Africa in particular has seen an increasing number of start-ups, especially in the digital sector. In Cape Town alone there are over 450 tech

firms which employ nearly 40,000 people, with \$88 million in direct investments into tech startups in 2020.²⁵

However, the heart of the African economy remains small and medium enterprises and creating enough 'good jobs' for youth and achieving gender parity in the workforce will require building a healthy culture of entrepreneurship²⁶ across micro, small, and medium enterprises (MSMEs). According to the African Development Bank (AfDB), as of 2017, 22% of Africa's working-age population are starting new businesses — the highest rate in the world — and 38% of Africa's entrepreneurs are between the ages of 25-34.²⁷ South Africa — whose MSMEs contribute approximately 34% of GDP and employ 50-60% of the country's workforce — recognises MSMEs as so vital to inclusive economic growth that the government has set a target of having 90% of jobs being created by MSMEs by 2030.²⁸ Female entrepreneurship rates in parts of Africa are also amongst the highest — in 2020, Uganda, Botswana, and Ghana were the top three countries in terms of women business owners as a percentage of total business owners²⁹ — with 27% of adult women in 2018 engaged in entrepreneurial activity.³⁰

Agriculture remains Africa's largest economic sector, producing 14% of GDP for the continent,³¹ but as young workers move into cities and villages, opportunities for other jobs are emerging. These "industries without smokestacks" (IWOSS) — which include horticulture, tourism, business services, and transport among others — are growing faster than many other industries, have higher job-creation potential, and tend to employ more women and young people. IWOSS sectors have the potential, over the next decade or so, to be the major source of new formal sector jobs in many countries across the continent.³²

Policy recommendations:

- **Establish talent development programs and exchanges between multinational organisations outside of Africa and local communities within the continent.** Devise a best-in-class talent exchange program between private businesses outside of Africa and educational institutions in African countries that allow youth to get training and professional experience for several years and then return home to put those skills to practice. This provides an opportunity for youth to get skills and training they may not otherwise get, as well as travel and international exposure, while allowing multinationals to brand-build, develop inroads with local communities, and potentially get into a market that they are not in yet. This must be partnered with a firm plan and commitment between governments and businesses to ensure that youth return to Africa once their exchange has finished; failure to do so would almost certainly create a 'pull' dynamic resulting in significant loss of intellectual capital and skill from the continent that would have a devastating impact for years to come.
- **Make access to credit and financing easier by providing micro-loans, low-interest/no-interest lines of credit, and removing collateral stipulations, particularly for youth and women.** Over 50% of non-farm employment in sub-Saharan Africa in 2016 (excluding southern Africa) came from women working in informal MSMEs, including 62% of employed women in Uganda;³³ across the

whole of the continent, that number is as high as 75-90%.³⁴ Providing easy, reliable access to credit and financing to these two groups of individuals can help employ youth, who make up a large portion of the informal sector, and women for whom gender and social norms as well as childcare and home responsibilities may make it difficult to obtain other work.

- **Review and rework regulations that stifle business growth.** Excessive or onerous regulations and bureaucracy stifle the growth and development of MSMEs, particularly for the smallest of those businesses. Streamlining the regulations and making it easier for businesses to comply will help create a fertile environment in which MSMEs, particularly those run by women and young adults, flourish.³⁵

Utilise technology to modernise high-growth industries and develop sustainable 'green' industries. The fourth industrial revolution (4IR) — characterised by large-scale digitization of analog systems and the growing use of technologies such as artificial intelligence, digital fabrication, robotics, blockchain, the internet of things, and augmented/virtual reality, among others — is driving innovation and growth across the world across most industrial sectors. For Africa's high-growth sectors, this represents a massive opportunity for growth when partnered with a rapidly growing, working age, and skilled and educated youth population. Farming, for example, makes up 60% of total employment in sub-Saharan Africa and the food system will create more jobs between 2010 - 2025 than all other industries combined, yet it has not yet exploited the full extent of these technologies.³⁶ If developed responsibly and sustainably using technology that can create efficiencies and scale, Africa's existing critical sectors, including mining, forestry, agriculture, extraction industries, and construction and infrastructure projects, can continue to serve as the torchbearers for a vibrant set of economies.

Concurrently, African countries should continue to support the germination and development of industries based solely around their massive trove of renewable resources such as solar and wind and to decarbonise traditional industries. At last year's COP26 climate summit in Glasgow, discussions about the fair and equitable transition from fossil fuels to renewable sources for energy production in developing nations included South Africa, the world's seventh largest coal producer and major employer in that industry. Launched at COP26, the Just Energy Transition Partnership, involving the governments of South Africa, France, Germany, the UK, the US and the EU, will help South Africa decarbonize its economy. The country will close several of its coal-fired power plants early in exchange for US\$8.5 billion over the next three-to-five years to launch renewable-energy projects.³⁷ As African nations begin to use technology to make their high-growth industries fit-for-future, and to grow their industries around renewable resources, job opportunities will follow; to maximise this opportunity, education, skilling, and employment of youth and women must be kept at the forefront.

Africa’s renewable generation and capacity

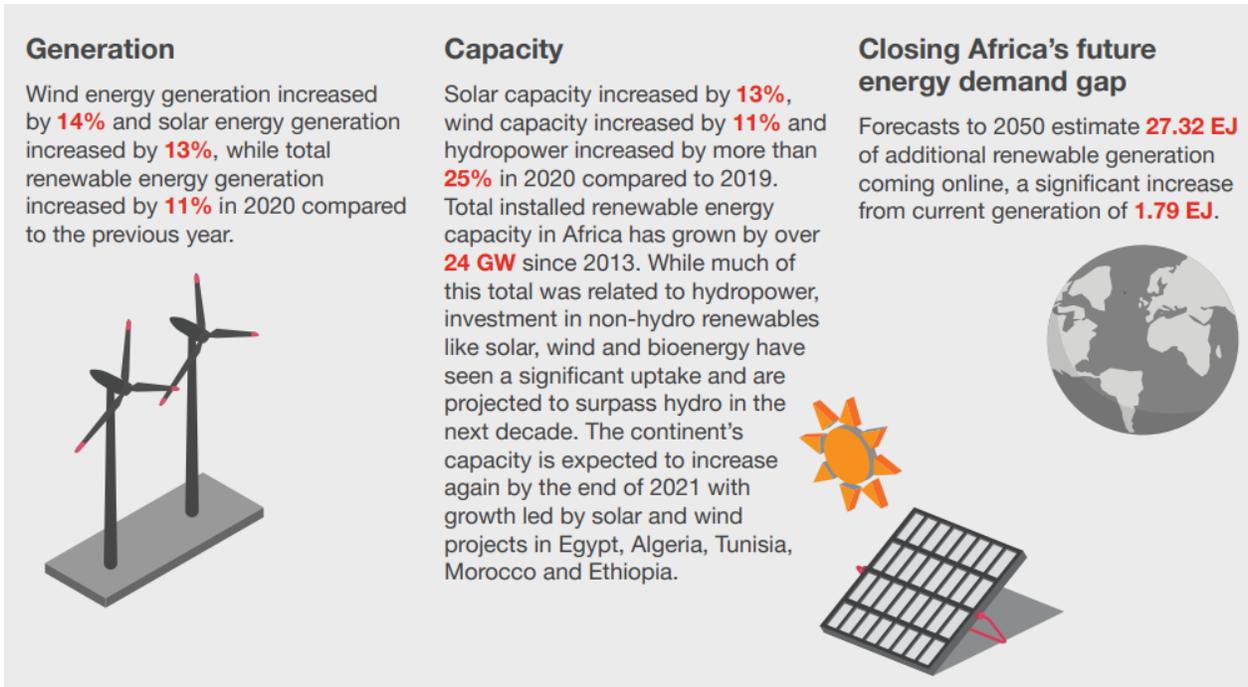


Chart source: PwC South Africa, “Africa Energy Review 2021.” November 2021, page 8, <https://www.pwc.com/ng/en/assets/pdf/africa-energy-review-2021.pdf>

Policy recommendations:

- **Create or strengthen policy frameworks for industries that protect natural resources and support UN Sustainable Development Goals (SDGs) 7-Affordable and Clean Energy; 13-Climate Action; and 15-Life on Land, and incentivize the development of green jobs.** Measures need to be adopted and enforced to protect not only the resources and related jobs, but to assure that environmental and sustainability goals are achieved in accordance with UN climate change mitigation policies.
- **Get youth voices involved in the development of the green economy, particularly in technology and entrepreneurship.** Youth must be at the centre of the development of the green economy in Africa, particularly youth entrepreneurs. They not only deserve a say in the future that belongs to them, but they are also likely to hire other youth and be more responsive to economic and technological opportunities than other demographics, according to a report by the African Union.³⁸

CONCLUSION

“Africa is at an inflection point; the current alignment of demographics, abundant natural resources, and cutting-edge digital technology have created an unprecedented opportunity for African communities

and nations to tap into their human and natural capital potential and create a new narrative based on prosperity, sustainability and innovation,” according to Dion Shango, PwC Africa’s territory senior partner.

This vision is feasible and achievable but it will require the combined efforts, talent, and most of all, ingenuity, of the public sector, private businesses, and local communities. It also requires the political will of the African nations and the support of its partners. With its vast resources and talent pool, Africa has everything it needs to create a sustainable, vibrant, youth-driven future — one that can serve as a model for the rest of the world.

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¹ African Union. “Africa’s Future: Youth and the Data Defining Their Lives.” Pg 4, <https://www.prb.org/wp-content/uploads/2019/10/Status-of-African-Youth-SPEC.pdf>

² Coulibaly, Brahim S. and Page, John. “Addressing Africa Youth Unemployment through industries without smokestacks.” Africa Growth Initiative, Brookings, AGI Working Paper #36, pg. 1, https://www.brookings.edu/wp-content/uploads/2021/08/IWOSS_Synthesis_Paper.pdf

³ International Labour Office, “Women and Men in the Informal Economy: A Statistical Picture.” 2018, p. 29, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_626831.pdf

⁴ Ibid, p. 28

⁵ UN Environment Programme, “Our Work in Africa” <https://www.unep.org/regions/africa/our-work-africa>

⁶ Izvorski, Ivailo. “Seven surprising findings about resource-rich sub-Saharan Africa.” Brookings, 1 August 2018, <https://www.brookings.edu/blog/future-development/2018/08/01/7-surprising-findings-about-resource-rich-sub-saharan-africa/>

⁷ UN Environment Programme, “Is Africa’s Natural Capital the Gateway to Finance Its Development?” 21 September 2016, <https://www.unep.org/news-and-stories/story/africas-natural-capital-gateway-finance-its-development>

⁸ Bhushan Sethi, Justine Brown, Stefanie Goldberg. “Delivering economic value and social cohesion through ‘Good Jobs.’ G20 Insights Policy Brief, 10 December 2020, https://www.g20-insights.org/policy_briefs/delivering-economic-value-and-societal-cohesion-through-good-jobs-2/

⁹ Sheppard, Blair et al. “Ten Years to Midnight: Four urgent global crises and their strategic solutions.” 2020, pp 91-104, <https://www.pwc.com/gx/en/issues/adapt/ten-years-to-midnight.html>

¹⁰ Goering, Laurie. “Is ‘frugal innovation’ Africa’s ticket to green development?” The Thomson Reuters Foundation, 14 April 2021, <https://www.reuters.com/article/us-climate-change-africa-innovation-trfn/is-frugal-innovation-africas-ticket-to-green-development-idUSKBN2C200N>

¹¹ United Nations Children’s Fund. “Transforming Education in Africa.” September 2021, <https://www.unicef.org/reports/transforming-education-africa>

¹² UNESCO Institute for Statistics. “More Than One-Half of Children and Adolescents Are Not Learning Worldwide.” September 2017, <http://uis.unesco.org/sites/default/files/documents/fs46-more-than-half-children-not-learning-en-2017.pdf>

¹³ Trudeau, Seth and Omu, Keno. “African youth: Africa’s universities are not preparing graduates for the 21st century workplace.” 19 September 2017, <https://qz.com/africa/1081160/african-youth-africas-universities-are-not-preparing-graduates-for-the-21st-century-workplace/>

¹⁴ United Nations Educational, Scientific, and Cultural Organisation Institute for Statistics. “Education in Africa.” <http://uis.unesco.org/en/topic/education->

[africa#:~:text=Of%20all%20regions%2C%20sub%2DSaharan,of%20about%2012%20and%2014.&text=Education%20in%20Africa%20is%20major%20priority%20for%20UNESCO%20and%20the%20UIS.](#)

¹⁵ United Nations Children's Fund. "A New Era for Girls: Taking Stock of 25 Years of Progress." March 2020, page 13, <https://data.unicef.org/resources/a-new-era-for-girls-taking-stock-of-25-years-of-progress/>

¹⁶ Wodon, Quentin; Montenegro, Claudio; Nguyen, Hoa; Onagoruwa, Adenike. "Missed Opportunities: The High Cost of Not Educating Girls." World Bank Group, July 2018, <https://openknowledge.worldbank.org/bitstream/handle/10986/29956/HighCostOfNotEducatingGirls.pdf?sequence=6>

¹⁷ Ibid, pg. 4

¹⁸ World Economic Forum. "Global Competitiveness Report 2019." page 536, https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

¹⁹ Matlali, Lindiwe. "Why entrepreneurship and innovation are key to addressing youth unemployment." World Economic Forum blog, 21 September 2021, <https://www.weforum.org/agenda/2021/09/the-role-of-entrepreneurship-and-innovation-in-tackling-unemployment-in-africa-youth-jobs-employment-education/>

²⁰ PwC, Generation Unlimited, United Nations Children's Fund. "Reaching YES: Addressing the youth employment and skilling challenge." December 2021, page 9, <https://www.pwc.com/gx/en/issues/upskilling/genu-pwc-report-december-2021.pdf>

²¹ Fox, Louise. "It's easy to exaggerate the scope of the jobs problem in Africa. The real story is nuanced." Brookings, 19 April 2021, <https://www.brookings.edu/blog/africa-in-focus/2021/04/19/its-easy-to-exaggerate-the-scope-of-the-jobs-problem-in-africa-the-real-story-is-nuanced/>

²² The "most widely used threshold" for a large firm is one that has 100+ employees. Ciani, Andrea, Marie Caitriona Hyland, Nona Karalashvili, Jennifer L. Keller, Alexandros Ragoussis, and Trang Thu Tran. "Making It Big: Why Developing Countries Need More Large Firms." The World Bank, 2020, pg. 4, <https://openknowledge.worldbank.org/bitstream/handle/10986/34430/9781464815577.pdf?sequence=2&isAllowed=y>.

²³ Ciani, Andrea et al. "Making it big: Why developing countries need more large firms." <https://openknowledge.worldbank.org/bitstream/handle/10986/34430/9781464815577.pdf?sequence=2&isAllowed=y>

²⁴ African Development Bank Group. "Entrepreneurship and Free Trade, Vol 1: Africa's Catalysts for a New Era of Economic Prosperity." June 2021, p. 23, https://www.afdb.org/sites/default/files/2021/06/28/entrepreneurship_in_africa_-_may_2021_abridged_version_06_28.pdf

²⁵ Fengler, Wolfgang et al. "South Africa after COVID-19 – Accelerating job creation." 13 July 2021, <https://blogs.worldbank.org/africacan/south-africa-after-covid-19-accelerating-job-creation>

²⁶ There is no universal definition for entrepreneurship and entrepreneurs. Entrepreneurs can be employers paying employees and own-account workers with no employees (self-employed) (African Development Bank et al., 2017, p.130). Informal entrepreneurs refer to employers and own-account workers in the informal sector (International Labour Organisation, 2018).

²⁷ African Development Bank. "African Economic Outlook 2017. Special theme: Entrepreneurship and Industrialisation." pg. 170, https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AEO_2017_Report_Full_English.pdf

²⁸ National Planning Commission (South Africa). "National Development Plan 2030: Our Future - Make It Work." Pg 119, https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf

²⁹ "The Mastercard Index of Women Entrepreneurs: 2020 Report." Page 54, https://www.mastercard.com/news/media/1ulpy5at/ma_miwe-report-2020.pdf

³⁰ Toesland, Finbarr. "Women-led tech startups on the rise in Africa." Africa Renewal: August - November 2018, <https://www.un.org/africarenewal/magazine/august-november-2018/women-led-tech-startups-rise-africa>

³¹ Oxford Business Group, "Agriculture in Africa 2021: Focus Report." Page 5, <https://oxfordbusinessgroup.com/blog/bernardo-bruzzzone/focus-reports/agriculture-africa-2021-focus-report>

³² Coulibaly, Brahim Sangafowa and Page, John. "Addressing Africa youth unemployment through industries without smokestacks: A synthesis on prospects, constraints, and policies." Africa Growth Initiative, Brookings, August 2021, <https://www.brookings.edu/research/addressing-youth-unemployment-in-africa-through-industries-without-smokestacks-a-synthesis-on-prospects-constraints-and-policies/>

³³ International Labour Organisation. "Engaging Informal Women Entrepreneurs in East Africa: Approaches to Greater Formality." 2016, pg. 3, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_seed/documents/publication/wcms_533202.pdf

³⁴ Woldemichael, Andinet. "Closing the gender gap in African labour markets is good economics." Brookings, Africa in Focus, 23 January 2020, <https://www.brookings.edu/blog/africa-in-focus/2020/01/23/closing-the-gender-gap-in-african-labor-markets-is-good-economics/>

³⁵ Nieuwenhuizen, Cecile. "The effect of regulations and legislation on small, micro and medium enterprises in South Africa." <https://www.tandfonline.com/doi/full/10.1080/0376835X.2019.1581053?scroll=top&needAccess=true>

³⁶ Njuguna Ndung'u and Landry Signe. "The Fourth Industrial Revolution and digitization will transform Africa into a global powerhouse." The Brookings Institution, 8 January 2020, <https://www.brookings.edu/research/the-fourth-industrial-revolution-and-digitization-will-transform-africa-into-a-global-powerhouse/>

³⁷ “Annex to the G7 Leaders Statement: Partnership for Infrastructure and Investment.” <https://www.g7uk.org/wp-content/uploads/2021/12/ANNEX-TO-G7-LEADERS-STATEMENT-PARTNERSHIP-FOR-INFRASTRUCTURE-AND-INVESTMENT-FINAL-3-DECEMBER.pdf>

³⁸ African Union. “Promoting Youth Entrepreneurship in Africa.” 2020, https://au.int/sites/default/files/documents/39541-doc-promoting_youth_entrepreneurship_in_africa_-_en.pdf