



Agriculture in Africa 2023

In collaboration with



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Sustainable Agricultural Practices

The tenets of sustainable agriculture entail reconciling environmental and social equity with economic development in order to provide for the present without compromising the ability of future generations to meet their own needs. Global best practices in sustainable agriculture prioritise soil health, water conservation, biodiversity preservation and reduction of carbon emissions, using techniques such as organic farming, precision agriculture, agro-forestry and efficient irrigation systems.

The importance of sustainable agriculture to Africa’s agri-food system has grown significantly in recent years, with the continent accounting for five of the top-10 countries in terms of the highest real food inflation rates in the World Bank’s May 2023 “Food Security Update”. Given that Africa holds 60% of the world’s arable land, normalising sustainable agricultural practices will be critical to feeding a population that is expected to reach 2.8bn by 2050. While most farmers in sub-Saharan Africa are cognisant of warmer temperatures and changes in precipitation patterns, widespread adoption of sustainable agricultural practices remains low.

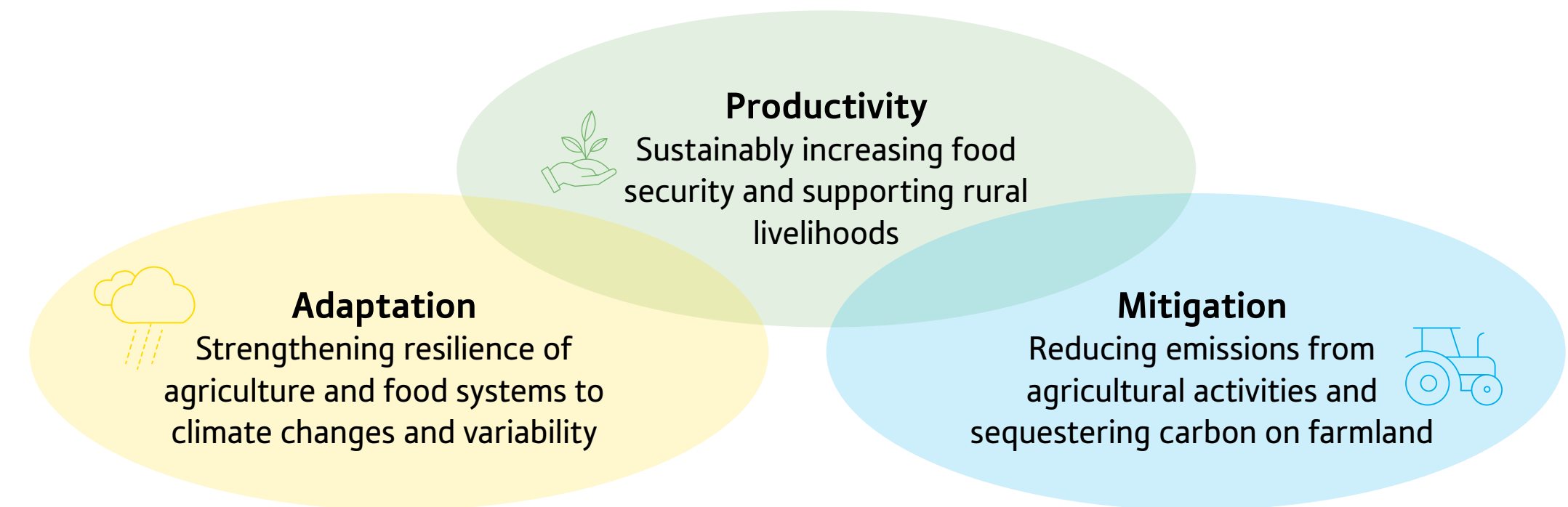
Accelerating the adoption of sustainable agricultural practices in sub-Saharan Africa presents both opportunities and challenges. The latter includes insufficient resources and technology, inadequate infrastructure, lack of training and knowledge, and limited market access. Moreover, financial constraints, such as access to credit and the high cost of inputs including organic fertilisers, make it difficult for smallholder farmers to invest in sustainable agricultural practices.

That being said, there are multiple examples of sustainable agriculture adoption in sub-Saharan Africa. In Senegal, the Ecovillage initiative has been successful in promoting sustainability. Ecovillages are community-led sites that prioritise agro-ecology, renewable energy and natural resource management. The project involves training farmers in sustainable farming techniques, promoting agro-forestry, organic fertilisation and efficient water management. By adopting these practices, farmers have increased crop yields, improved soil health and reduced reliance on external inputs. Ethiopia, meanwhile, saw increased uptake in water resource-

management measures among smallholder farmers following state-led irrigation investment, resulting in improved soil quality and production. Enhancing sustainable practices undergirds the memorandum of understanding between OCP Group and the World Bank to render fertilisers more accessible and affordable through accelerated investments and reforms. Signed in October 2023, this cooperation aims to boost agricultural productivity, soil health, and prosperity for 5m farmers across West Africa,

covering 10 million ha. Approaches encompassing economic and social determinants, such as gender and access to finance, should inform strategies to boost adoption. “Policies must be in place to ensure that production gains from incentives, such as increased access to inputs, are matched by a market that can absorb the surplus to foster growth,” Bruno Gerard, dean of the College of Sustainable Agriculture and Environmental Sciences at University Mohammed VI Polytechnic, told OBG.

Conceptual framework for financing sustainable agriculture



Agri-tech Solutions

Africa’s agricultural ecosystem stands to benefit from innovation, particularly given the rise in global food insecurity and rapid population growth. “The enormity of this challenge, and the prospect of high margins, is a compelling proposition for mobilising venture capital (VC) funding,” Yassine Laghzioui, director of entrepreneurship and venturing at University Mohammed VI Polytechnic (UM6P), told OBG. “With an asset class comprising vast uncultivated and arable land, African start-ups will have a competitive advantage in shaping the

direction of global agri-tech. Indeed, global VC firms are already leveraging artificial intelligence (AI) for increased mechanisation to deepen the application of agri-tech solutions in Africa’s agri-food systems. This potential will likely trigger the development of several subverticals amid the growth of Africa’s agri-tech space in the coming years.”

Local stakeholders, such as OCP Africa – a subsidiary of OCP Group, the world’s largest producer of phosphate-based fertilisers – are leveraging

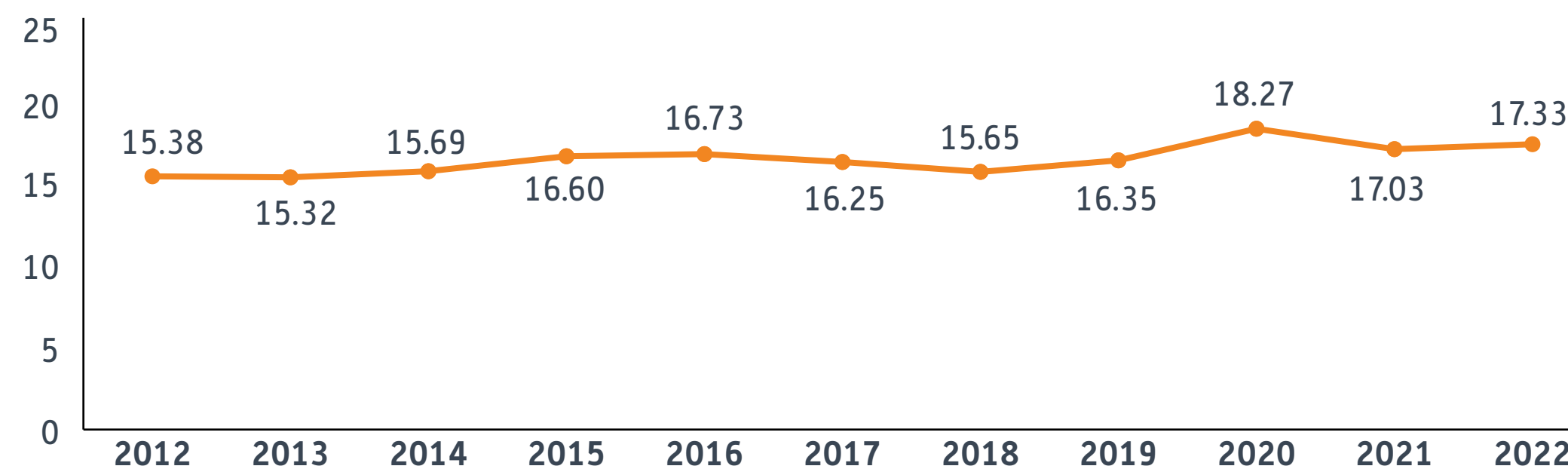
digital technology to enhance the impact of farmer-centric initiatives. Agripedia, for example, is a scientific reference web platform providing free access to educational materials, allowing agronomists, farmers and students to share agricultural knowledge. Another agri-tech solution is Core Blending, a simulator that helps fertiliser manufacturers and distributors determine the most cost-effective combination for creating a specific nitrogen, phosphorus and potassium (NPK) formula.

Digitalisation is at the forefront of advancing sustainable agricultural practices in Africa. Udongo, for example, is a digital platform that widens farmers’ access to the agricultural input market, offering local support through the Agri Extension Agents Network. Available in seven countries, including Nigeria and Ghana, more than 460 agro-dealers, 215,000 farmers and 1100 extension agents had joined Udongo as of mid-2023. Such initiatives are key given the impact of agriculture on climate change and the focus of green technology on formulating smart ecological solutions. “Intensifying the synergy between these

two verticals will be critical to attracting capital for solutions with a wider impact,” Laghzioui told OBG. In April 2022 Bidra Innovation Ventures, backed by UM6P and OCP Group, launched a \$50m agri-tech fund to support founders building technologies to sustainably feed the world’s population, with the capital committed rising to \$200m a year later. In 2022 African agri-tech start-ups raised a record \$640m in funding, according to AgFunder’s 2022 “AgriFoodTech Investment Report”. Having secured over \$4.3bn in VC funding between 2016 and 2021, Africa’s agri-tech industry is forecast to grow at an annual rate of 44% in the 2023-28 period.

Enhancing digital literacy requires leveraging models of education such as UM6P’s 1337, a coding school that is free and accessible to all without any diploma or technical prerequisites, and utilises a peer-to-peer learning approach to digital skill building. “The benefits of technological advancements are more likely to accrue to the public when solutions are adapted to local specificities,” Bruno Gerard, dean of the College of Sustainable Agriculture and Environmental Sciences at UM6P, told OBG.

Agriculture, forestry & fishing value added in sub-Saharan Africa, 2012-22 (% of GDP)



Bernard Hien

Regional Director, West and Central Africa (WCA) Division, International Fund For Agricultural Development

In what ways can financial services be better tailored to integrate small-scale farmers into agricultural value chains?

Stakeholders participating in agricultural value chains have diverse financial needs, necessitating a careful analysis of supply and demand for financial services. Based on their position in the value chain, smallholder farmers can qualify for bespoke financial services provided by institutions with the capacity to serve them. Assisting financial service providers (FSPs) to better tailor their products to the agriculture sector and mitigating risks comprise a two-pronged approach for integrating small-holders into agricultural value chains.

Governments and financial institutions are able to create inclusive instruments within lending projects to underpin this approach. In Cameroon, for example, where loan accessibility limits agri-business development, stakeholders were engaged under the Rural Microfinance Development Support Project to promote a

medium-term loan facilitation fund that provided liquidity to rural micro financing institutions, allowing agri-businesses to access credit over periods ranging from 18 months to five years to finance various needs. This helped 62,000 small farmers across five regions, operating through seven micro-finance networks and 310 service points. These interventions equally facilitate climate-related investment, enabling FSPs to manage such risks in their agriculture portfolios.

How can investment in digital technology help transform rural agriculture in WCA?

Agriculture is Africa's economic backbone, and with advancements in innovation, technology and entrepreneurship, there is an opportunity to transform the sector sustainably. In sub-Saharan Africa, the mobile technology industry's economic contribution is projected to increase to \$154bn by 2025. Statistics indicate that a 10% increase in broadband penetration would boost the GDP of low- and middle-income countries by 1.38%, benefitting the agriculture sector.

Small-scale producers in WCA face challenges such as climate change, market access and financial services that could be addressed through digital technologies, including satellite imaging, drones and sensors. These offer timely weather and crop information, enabling farmers to optimise the use of critical inputs, and increase production and productivity. Mobile technologies facilitate financial services, empowering farmers to conduct transactions using mobile payments, while digital marketplaces ensure better pricing and fewer information gaps by fostering direct connection with consumers and agri-businesses.

African governments must improve internet access to bridge the digital divide by addressing barriers such as electricity shortages, network coverage gaps, low literacy rates and gender disparities. Investment in capacity development is essential to deepening digital adoption, which necessitates the availability of local language resources. Addressing cultural and behavioural barriers is crucial to overcoming resistance to emerging technologies among farmers.



Boosting Access

Along with knowledge and capacity development, building productive and sustainable agri-food systems requires adequate access to inputs and technology such as chemical fertilisers, hybrid seeds, pesticides, machinery, and livestock breeds and feed. The application of inputs in Africa remains below optimal levels, with average fertiliser consumption estimated at 17 kg of nutrients per ha of cropland. Input application varies across the continent, with household inorganic fertiliser use most significant in Ethiopia, at 56%, Malawi, at 77%, and Nigeria, at 41%. Meanwhile, commercial lending to Africa’s agriculture sector remains modest – there is an estimated \$65bn loan gap for the agriculture sector in sub-Saharan Africa alone – and the factors limiting credit extension to farmers include the perception of high default risk, poor credit history and limited collateral.

Several initiatives aim to deepen access to purchased inputs and technology for smallholders. Led by the African Agriculture Technology Foundation, one such intervention scheme is the Cassava Mechanisation and Agro-processing Project

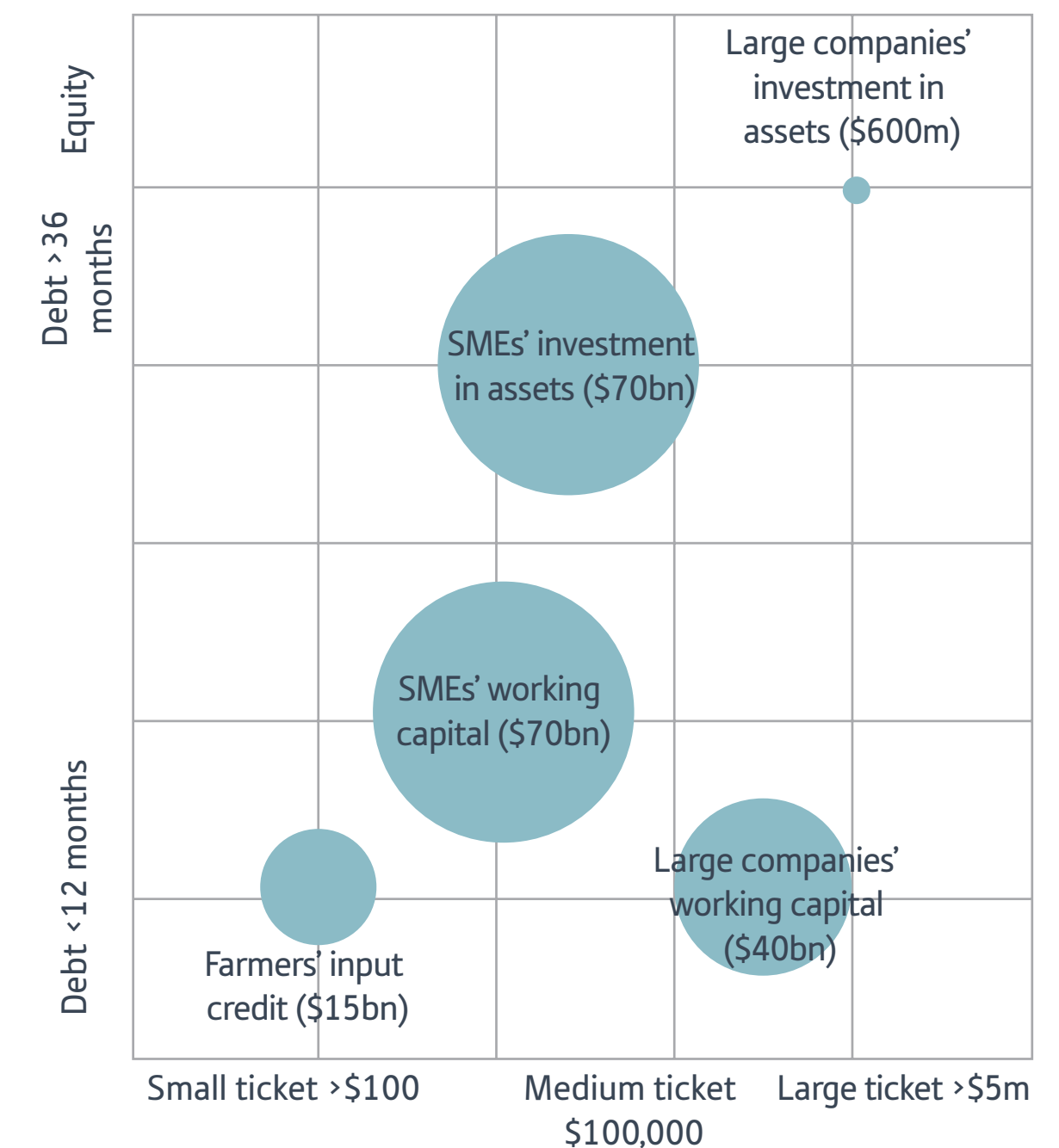
(CAMAP), which focuses on increasing cassava production by intensifying mechanisation across the value chain. Despite its status as a staple crop, cassava farmers in sub-Saharan Africa achieve an average yield of seven to nine tonnes per ha, underscoring the need for planting, harvesting and processing equipment. The initiative has helped localise the fabrication of cassava planters to reduce the attending costs of a key input. Over 543,000 farmers across CAMAP’s four countries of operations have seen a 200% increase in yields per ha and a 100 % increase in income per ha.

A local production drive in Kaduna, Nigeria is boosting access to inputs through OCP Africa’s NPK bulk-blending plant, which produces blends of customised fertilisers to increase yields by 50-85% for at least 75,000 targeted smallholder farmers. This infrastructure, and two additional blending facilities under construction in Sokoto State and Ogun State in Nigeria, is adjoined to service centres called Farm and Fortune Hubs, which provide farmers with critical inputs as well as knowledge transfer on topics such as crop yield.

Innovative financing solutions are increasingly being leveraged to widen rural access to capital. First launched in 2020 in Tanzania – where over \$10m worth of fertiliser sales were guaranteed from \$1m of revolving credit – the African Development Bank (AfDB) and OCP Africa extended their collaboration under the Africa Fertiliser Financing Mechanism initiative to implement a \$4m credit guarantee through Agribooster programmes in Ghana and Côte d’Ivoire, enabling the provision of 1725 tonnes of fertiliser to 9752 smallholder farmers.

An agri-finance platform, launched in October 2023 by OCP Group and the International Finance Corporation (IFC), will mobilise \$800m of blended capital by 2030 to widen access to finance and skills training in sustainable food production, strengthening 30 agricultural value chains across Africa through 60 agri-finance operations. Similarly, a partnership programme between the IFC and OCP Africa is harnessing the power of digital technology to provide farmers with access to financial tools, such as mobile banking and digital payments, enabling them to efficiently manage their finances.

Segmentation of demand for agricultural finance in Nigeria



Empowering Farmers

Between 2000 and 2019 Africa expanded its area of cultivated land to 102m ha, accounting for 52% of the global increase over the same period. Sub-Saharan Africa also recorded the world’s fastest growth rate in agricultural output value – including both crops and livestock – since 2000, expanding by 4.3% per year and surpassing the 2.7% world average. However, 75% of this production growth has been fuelled by the expansion of cropland, whereas agricultural productivity contracted by 0.12% annually. One of the main

factors underpinning low productivity levels is the knowledge gap that exists among smallholder farmers, who are Africa’s primary food producers. Fostering knowledge-based farming systems is even more critical as the reliance on expansion-based output intensifies the risk of land fragmentation, deforestation and loss of biodiversity.

Private sector-led initiatives are at the forefront of imparting the requisite knowledge and skills to smallholders. Launched in Nigeria in 2016, the OCP

School Lab utilises interactive training sessions, live demonstrations and videos on good agricultural practices, to enhance farmers’ understanding of efficient farming techniques, leading to increased crop yields. Additionally, by utilising innovative technologies such as big data and machine learning, the mobile laboratory enables soil testing and provides real-time information on crop needs and fertiliser recommendations. This empowers farmers to make informed decisions regarding their farming practices and optimise their resource allocation. With 533,537 farmers reached since its launch – including more than 136,000 in 2022 – and a footprint spanning nine countries in sub-Saharan Africa, this initiative underscores the importance of direct community engagement for knowledge and capacity development.

A similar approach is behind OCP’s network of over 140 farmer-centric stations undergirding the Farmer Hubs initiative. By establishing local stations equipped with classrooms, offices, soil-testing labs and essential farming equipment, Farmer Hubs facilitated training opportunities for 212,000

farmers and furnished over 453,000 farmers with inputs supply in 2022. Furthermore, the use of popular media, such as the Farm & Fortune TV and radio show in Nigeria, demonstrates the importance of adaptability and responsiveness in formulating knowledge-building initiatives. The programme’s focus on promoting agricultural best practices through various media formats helps it reach a wider audience, comprising the critical youth demographic, and contributes to knowledge sharing among farming communities.

Sustaining the momentum behind such initiatives comes with challenges, such as the limited literacy of smallholders in sub-Saharan Africa, which often makes it difficult to scale agricultural solutions. “In Africa, knowledge dissemination needs to be sensitive to the equity issues inherent in helping people with varying literacy levels,” Bruno Gerard, dean of the College of Sustainable Agriculture and Environmental Sciences at UM6P, told OBG. Ultimately, integrating local knowledge in science-based education interventions will be important to building productive and resilient agri-food systems.

Key factors empowering farmers in Africa

	Economics	Increasing access to funding and advanced technologies
	Social	Reducing entrenched inequality and challenging the patriarchal social system
	Education & training	Adapting school education and practical training to local factors
	Nature	Improving soil quality, mitigating rainfall patterns, and addressing global warming and new pests
	Infrastructure	Building infrastructure to enhance agricultural development and livelihoods
	Politics	Creating a stable political environment

Sustainability Efforts

Embedding sustainability in Africa’s agriculture sector has been advanced as a viable method to combat food insecurity and reduce poverty, especially at the rural level. “Ultimately the goal is to accelerate the transition of smallholder farmers from subsistence to pre-commercial, and eventually, to commercial farming through a virtual loop system whereby improved agronomic practices lead to increased income, incentivising more investment in agriculture,” Mehdi Filali, vice-president of farmer solutions at OCP Africa, told OBG.

OCP Group spearheads many sustainability efforts through farmer-centric programmes such as Agribooster and AI Moutmir. First launched in Nigeria in 2017, Agribooster helps farmers in West Africa navigate the agricultural value chain, offering financing, training and access to necessary inputs. In 2022 the initiative supplied 3470 tonnes of specialty fertiliser blend to 198,200 farmers across the ginger, rice, maize and wheat value chains. A key focus of the programme is empowering over 1m farmers through local extension agents known as agri-promoters to implement sustainable plant

nutrition techniques and fertiliser use, resulting in increased crop yields of superior quality. Attached to Farmer Houses, a last-mile delivery and support system ensuring access to quality inputs and market linkage for rural farmers, agri-promoters help drive adoption of sustainable agricultural practices by using demonstration platforms to underscore the impact of best practices on crop yield, quality and earnings (see Youth section). In 2021 a total of 3.6m tonnes of fertiliser were given to 783,435 farmers through seven aggregators across Côte d’Ivoire, Ghana, Nigeria and Senegal, resulting in a yield increase of 4.5 tonnes per ha for maize and rice.

Meanwhile, the AI Moutmir initiative targets smallholder Moroccan farmers and promotes best agronomic practices, offering a range of solutions that focus on balanced fertilisation to enhance productivity while preserving natural resources. Emphasising a scientific and digital approach, AI Moutmir leverages technologies like the platform Smart Blender, the no-till farming programme and the @tmar mobile application to reach and support farmers. “The project will be able to ensure the

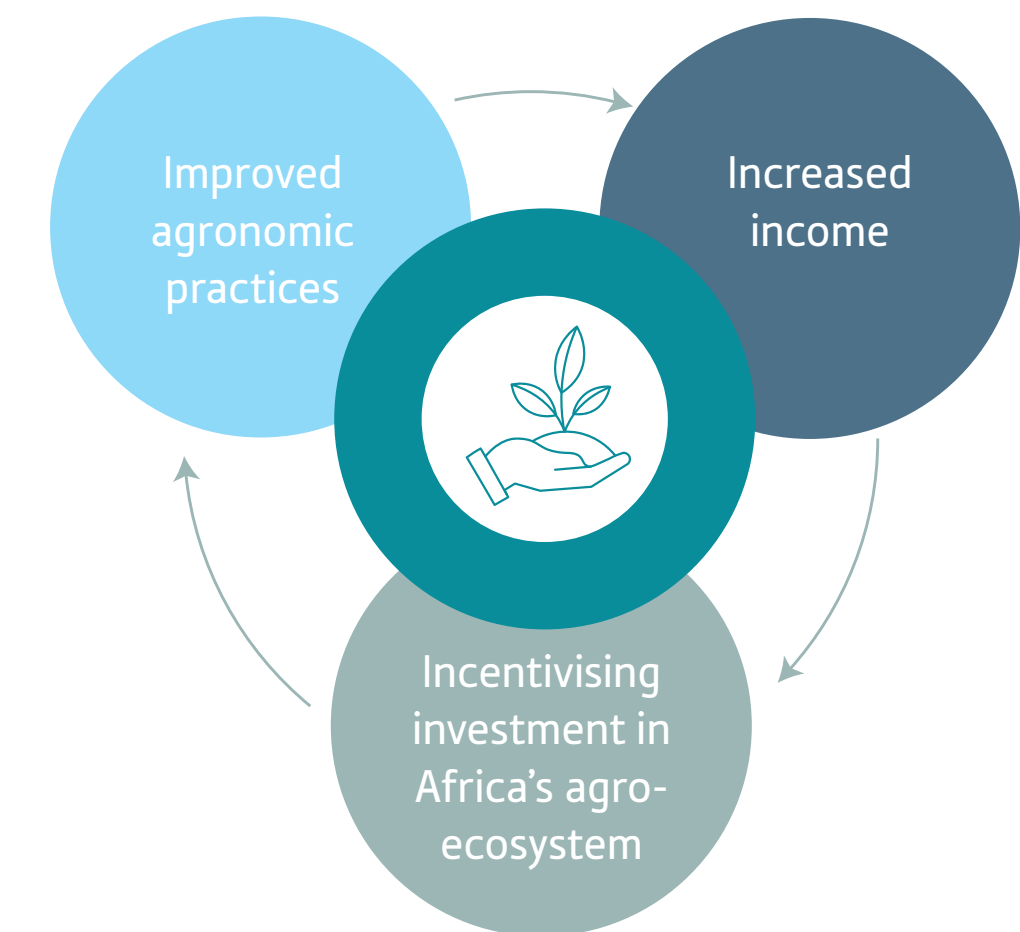
link between applied research and the agricultural ecosystem to contribute to the implementation of sustainable and inclusive agricultural development models, accelerating the transition from subsistence to sustainable commercial farming,” Nawfel Roudies, head of AI Moutmir Business Unit within Mohammed VI Polytechnic University, told OBG.

Additionally, AI Moutmir employs a participatory and inclusive approach, with agronomist engineers working closely with local communities to develop solutions. Under this initiative, 45 seeders were made available to 8530 beneficiary farmers and 51 cooperatives, resulting in a total of 23,500 ha cultivated in 2021 and 2022.

Central to OCP’s sustainability agenda is the supply of customised fertiliser to enhance the health and productivity of African soils. OCP leverages the 4R approach – using the right fertiliser, at the right rate, at the right time and in the right place – to meet local needs. “One can modulate the fertiliser’s formula to furnish more balanced nutrients depending on the needs of the soil,” Filali told OBG.

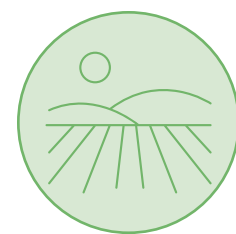
Understanding farmers’ needs and the qualities of different soil undergirds this bespoke method, which is powered by mobile laboratories mapping 50m ha of soil in nine African countries in 2022. This approach has resulted in improved staple crop yields of 23-37% in Ethiopia, Nigeria and Rwanda.

Embedding sustainability into Africa’s agriculture sector



Enhanced Integration

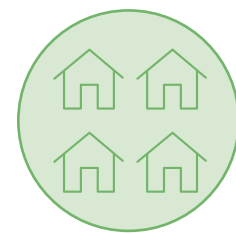
Factors influencing growth in African agricultural SMEs



Increased farm productivity



Higher government investment in infrastructure



Rapid urbanisation



Changing dietary preferences



Rising investment by entrepreneurs

Small and medium-sized enterprises (SMEs) are the linchpin of Africa's agri-business segment, and indeed its national economies. According to the "Africa Agriculture Status Report 2019", published by the Alliance for a Green Revolution in Africa, African agri-SMEs, which encompass food processors, wholesalers and retailers, act as vital intermediaries, connecting millions of smallholder farmers to commercial markets. Traders, truckers and processors account for approximately 40% of the total gross value of the agri-food system – on a par with the share contributed by farms – while retailers constitute the remaining 20%. Among the factors contributing to the growth of agri-SMEs are increases in farm productivity, government investment, urbanisation, changing dietary preferences and rising private sector investment.

Despite the enhanced integration of SMEs into African agri-food systems, considerable challenges remain to accelerate their growth. With only five countries in sub-Saharan Africa consistently allocating more than 10% of their annual budget to agriculture and a limited supply of private lending,

mobilising public and private resources to narrow the \$74.5bn annual agri-SME finance gap is critical. One option, blended finance, could deepen access to agri-SME financing by reducing the cost of capital and lending risks through varied funding schemes.

In February 2023, for example, the AfDB and the Canadian government established the Agri-food SME Catalytic Financing Mechanism to provide concessional finance to financial intermediaries facilitating loans to agri-SMEs. Buttressing this funding landscape is the 2022 establishment of 30 new agricultural service centres in Côte d'Ivoire. Managed and co-funded by OCP Africa, these centres will furnish a range of services across the local agri-value chain, including financial products and insurance for SMEs.

Uneven access to technology and knowledge and skills gaps often affect the productivity of African agri-SMEs. Increased funding as well as technical support from the private sector could be mobilised to develop critical agri-business skills such as food processing and marketing. To that end, the 2017

opening of the first French-language agricultural university in Senegal, the University of Sine Saloum El-hâdj Ibrahima NDIASS, which offers degrees in food processing, is an important step. The Centre de Formation en Entrepreneuriat Agricole de Baguinéda in Mali, which provides short intensive courses in light agro-industrial training, represents another model for capacity-building interventions.

Enhancing digital adoption among Africa's agri-SMEs will be pivotal to strengthening their integration into regional and global value chains. Investment in digitalisation fosters resilience by increasing forecasting capacities; reduces inefficiencies and costs through automation; augments access to financial services via mobile money and merchant payment solutions; streamlines logistics through digital platforms; and unlocks data-driven insights to improve stakeholder engagement and experience. Key to effectuating this transformation is improving the accessibility and inclusivity of digital services, and enabling elevated foreign investment in cross-border e-commerce within the emerging African Continental Free Trade Agreement environment.

Case Study: Togo

A key challenge facing farming communities across rural Africa is limited access to agricultural information, such as climate change data and sustainable agricultural practices. Fostering and leveraging local communication structures is critical to addressing this gap, affording local citizens the agency to effectuate their own progress.

The liberalisation of mass media in early 1990s Togo, for example, spawned regional and rural radio stations in regional capitals and prefectures. Recognising the effectiveness of radio in disseminating agricultural information and its unparalleled reach in rural areas, these radio stations targeted smallholder farmers as their primary audience. Nevertheless, rural radio stations in Togo face several challenges that hinder their effectiveness. These include limited training and professional development opportunities for journalists, producers, directors and technicians; unsuitable, outdated or malfunctioning equipment; financial constraints hampering innovative programming; and limited infrastructure and transport facilities in remote areas.

In December 2021 OCP Foundation, the philanthropic arm of Moroccan phosphate company OCP Group, partnered with Togo's Ministry of Communication and Media on a project to support rural radio stations in furthering the nation's agricultural development programme. Recognising the power of media in empowering local communities through knowledge dissemination, OCP Foundation selected rural radios as the primary medium to maximise the project's impact. The key objectives underpinning this public-private sector partnership include enhancing the professional skills of producers, journalists and technicians; improving the quality and increasing the number of radio productions; diversifying radio genres to cater to diverse audience interests; and strengthening the community integration impact of radio stations.

The project enables collaboration with four rural radio stations, namely Savanes Radio in Dapaong, Binah FM in Pagouda, Radio Novissi in Notsè and Kékéli Radio in Avé. Additionally, two community radio stations, Samah FM in Niamtougou and Radio Tchaoudjo in Sokodé, are part of the initiative,

ensuring that each region of the country is reached effectively. The project supports long-term improvements by enhancing broadcasting equipment in six rural radio stations, providing training programmes for 24 journalists and radio personnel, and producing over 250 radio spots in nine local languages to raise awareness about food security, sustainable agriculture, environmental issues and climate change.

The scarcity of access to information in rural communities across Africa underscores the importance of leveraging dynamic models to empower local communities and promote sustainable development. "Given their core audience demographic, rural radio stations can significantly increase awareness of myriad agriculture-related issues, including the imperative of adopting sustainable agricultural practices," Ibtissam Laouina, project manager for OCP Foundation, told OBG. "By leveraging localised communication channels to broaden the agricultural knowledge base, smallholders and the wider economy can benefit from integration into agri-value chains."



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Innovation and Entrepreneurship

Young Africans are projected to number more than 830m by 2050, representing over 45% of the estimated 1.8bn global youth population. This demographic shift underscores the challenge of expanding economic opportunities amid rapid urbanisation, limited employment in the formal sector and food availability, especially in sub-Saharan Africa. As the primary employer in Africa, the agriculture sector presents a key opportunity to harness the dynamism and entrepreneurial drive of this demographic to stimulate inclusive economic transformation and promote food security. Several African countries, including Ethiopia, Kenya, Morocco and Nigeria have enacted youth-friendly agriculture policies and have experienced increased youth activity in diverse roles across Africa's agri-food systems. Despite this, challenges remain in order to harness the youth dividend in Africa's agricultural space, including access to training, capacity-building and mentorship.

Recognising the importance of youth engagement in catalysing Africa's agri-space, the UN Food and Agriculture Organisation (FAO) has launched major

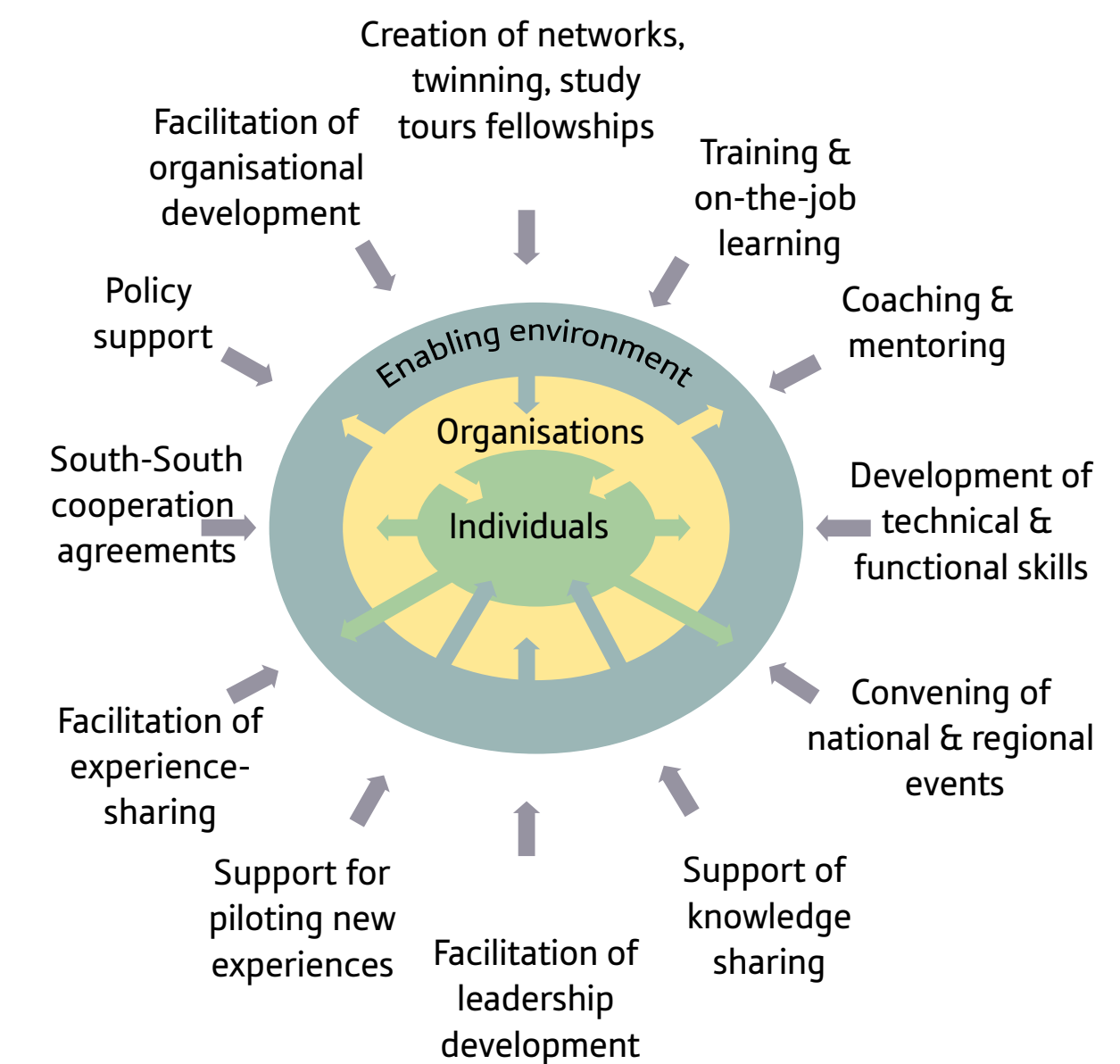
projects across the continent to further capacity-building. In February 2022 the UN FAO, the UN Industrial Development Organisation and the African Union Commission launched the Opportunities for Youth in Africa (OYA) programme to leverage agri-business and entrepreneurship development for African youth employment. OYA is operational in six pilot countries, including Ghana, Kenya, Tunisia and Zambia, and since its launch has trained 30,000 youths in agri-business skills, supported 600 youth-led small businesses and built 60 public-private development and business partnerships.

Through local incubator programmes in Kenya and Zambia, OYA has nurtured more than 270 agri-businesses. Additionally, 300 young agricultural entrepreneurs in Kenya, Ghana and Zambia have acquired essential skills in business development, as well as digital and financial literacy. Following detailed country assessments, 17 priority value chains were earmarked for future investment in the six countries. Key aims of the programme include expanding its investment in innovative practices – such as micro-irrigation in production – value

addition through processing, and providing digitally-enabled access to local and regional markets for young agricultural entrepreneurs.

Agricultural intervention programmes are growing in the region to maximise youth inclusion. For example, the International Fund for Agricultural Development (IFAD) has established a growing network of agri-business centres in Nigeria to empower youth trainees in agri-business and entrepreneurship. The facilities operate at two levels to foster transformation in agricultural production and processing: one with 70% of trainees cultivating critical skill sets among employment-track youth, and another with 30% of trainees equipping and backstopping young entrepreneurs. In 2022 IFAD partnered with nine private-sector companies in nine Nigerian states to extend youth capacity-building, training and mentoring services. These agri-business centres leverage experience across the agri-value chain to increase job opportunities for young Africans, and identify and upgrade facilities for agri-skill training and knowledge transfer, resulting in over 35,500 youth beneficiaries.

Modalities to support national capacity development processes



Case Study: Support Mechanisms

Private sector players are increasingly leading the way in enhancing the impact of Africa's young and enterprising population across its agri-food systems. In collaboration with local stakeholders such as government agencies, research institutions and international partners, OCP Africa is marshalling various initiatives across the continent in order to harness the potential within Africa's growing young population.



Recognising the importance of rural extension and advisory services to build resilient agri-food systems, initiatives aimed at promoting agricultural solutions position Africa's youth as powerful agents of change, diffusing the information and services needed by smallholder farmers and other stakeholders to enhance their knowledge and technical capacity, thus improving their incomes, livelihoods and communities. By adopting the Train the Trainer approach, the youth are encouraged to be enterprising and collectivistic in terms of leveraging their education and experience to build stronger and knowledge-based farming communities.

In 2019 OCP Africa established a series of farmer houses that operate under a system of farmer hubs, where rural farming communities can access inputs and agricultural services. These agriculture promoters have been pivotal in maximising the impact of OCP Africa's Agribooster programme in reaching more than 1m farmers between its launch in 2017 and 2022. Equipped with an array of tools, including

tricycles, tablets and soil testing kits, agriculture promoters onboarded more than 200,000 farmers on the Udongo platform in 2022.

"Key to encouraging youth participation in Africa's agri-food systems is deepening Africa's adoption of agri-tech solutions proliferating in more developed agri-food systems, which would help dispel the perception of agriculture in Africa as the domain of subsistence and low-mechanised farming," Mehdi Filali, vice-president of farmer solutions at OCP Africa, told OBG.

Accordingly, in June 2023 OCP Africa and AgriEdge, a business unit of University Mohammed VI Polytechnic (UM6P), collaborated to launch the Farming Innovation Programme in Côte d'Ivoire, which is focused on accelerating youth-led agri-tech start-ups to engender the nation's smart agricultural ecosystem. Deploying precision agriculture tailored to the specificities of the local agro-ecology is at the centre of the programme, which is the flagship project of the strategic partnership between OCP Africa and

the Ivorian government. Administered in two phases, the programme consists of a three-week mentoring session followed by a one-month learning experience to incubate the most impactful agri-tech start-ups out of 100 prospects and equip them with the tools for potential funding.

Ensuring adequate training in smart agriculture will be critical to deepening the supply of agri-tech start-ups that can leverage the incubation framework. To that end, in June 2023 OCP Africa, in collaboration with Côte d'Ivoire's Institut National Polytechnique Félix Houphouët-Boigny, launched a digital farming educational institution based on the disruptive agri-tech training model championed by UM6P. This educational approach emphasises practical learning strategies, marked by peer-to-peer learning and education by farming, for an incoming class of approximately 100 students, bolstering the start-up ecosystem at the Farming Innovation Programme to embed innovation, entrepreneurship and digitalisation at the nucleus of local agri-food systems.

Building Capacity

Strengthening capacity is key to maximising the potential of Africa’s youth. Central to this is leveraging education to foster the skills, knowledge, experience and entrepreneurship required for young Africans to enhance local agri-food systems. With a growing tertiary student population, there is a heightened demand for quality education. This entails complementing traditional university studies with technical and vocational training to equip students for a dynamic labour market. Faced with the developmental challenges of food security and sustainability, Africa’s tertiary education system stands to benefit from a practical learning strategy.

New funding models could expand educational infrastructure and enhance financial aid for students. While public spending on education in Africa has improved in recent years, a funding gap still persists. As of 2020 the sub-Saharan Africa region spent 21% of government education expenditure on tertiary education, compared to 43% on primary and 27% on secondary education. A sustainable infrastructure could therefore move beyond public financing to harness cooperation

between Africa’s universities, industries and businesses through targeted investment. In this vein, the African Development Bank’s African Education, Science, Technology and Innovation Fund, announced in September 2022, could provide a model for facilitating large-scale financing instruments, incentivising long-term capital mobilisation from local and international stakeholders into education and other key metrics of economic growth.

Epitomising the capacity-building potential of higher education is the Morocco-based University Mohammed VI Polytechnic (UM6P), which aims to develop Africa through four interdependent poles: research, academics, executive education and entrepreneurship. In 2023, 5948 students, comprising 60% female and 40% male, representing 30 nationalities, are enrolled in 38 programmes. This diverse student body leverages experimentation for capacity-building, spanning conventional and specialised programmes in fields like STEM and social sciences. UM6P plays a pivotal role in bolstering Africa’s local-content capacity, in line with

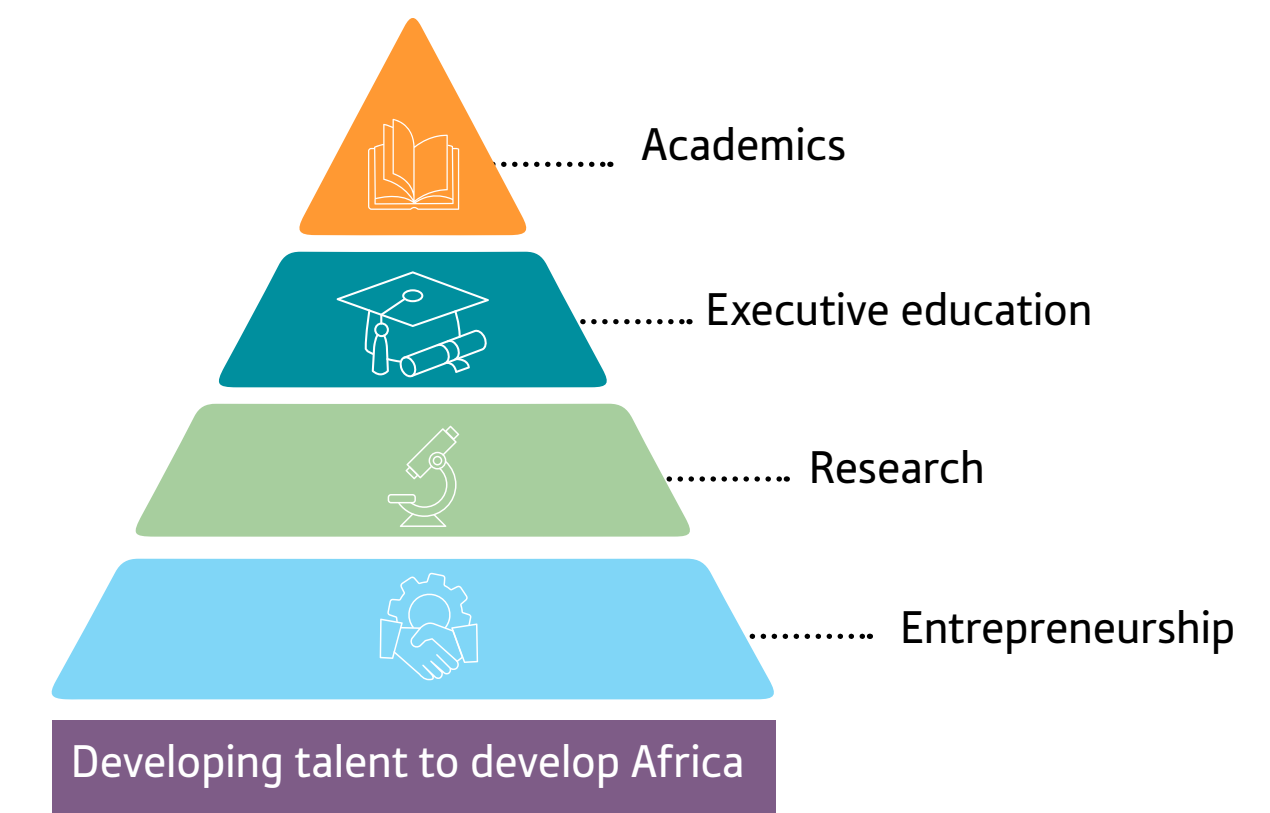
its target of attracting 6000 students by 2025.

The learning-by-doing methodology is underpinned by access to applied research and critical facilities, such as 100 ha of experimental farms and laboratories, to help generate innovative and practical solutions to challenges such as food security. Fostering talent to encourage youth entrepreneurship is facilitated by an ecosystem of over 200 regional and global partners, manifesting in the launch of a master’s programme in agribusiness and entrepreneurship in September 2023, a joint effort with the Africa Business School.

Building students’ capacity includes equipping them with effective ICT skills to leverage technology for transforming Africa’s agri-food systems. With digital skills expected to be essential in over 50% of jobs in some African countries by 2030, the emergence of coding schools in Africa enhances the global competitiveness of the workforce. For instance, schools like 1337 and Youcode in Morocco offer free, peer-based training. Moreover, remote learning options are increasingly available across Africa

through platforms like Ahmadu Bello University’s Distance Learning Centre in Nigeria and Kenyatta University’s Digital School of Virtual and Open Learning in Kenya. The capacity of African students to contribute to challenges in agriculture is well positioned for growth, provided that educational reform and investment prioritise equitable access and quality enhancement by innovative measures.

Leveraging education and training to bolster excellence in agriculture



Case Study: Education and Research

Deepening Africa's agricultural knowledge base is critical to realising the potential of its agri-food systems to safeguard both regional and global food security. Continuous education and training is necessary to underpin efforts to augment the knowledge base, which necessitates improvements to the quality and efficiency of teaching in Africa. It is against this background that OCP Africa and University Mohammed VI Polytechnic (UM6P) have partnered over recent years to engender economic development in Africa through sustainable agricultural production. This entails implementing learning and research initiatives to combat food security challenges, reinforcing the university's position as a centre of knowledge creation and dissemination.

The Centre of Excellence in Soil and Fertiliser Research in Africa (CESFRA), for example, focuses on personalised fertilisers and improved soil science, key factors for enhancing agricultural productivity sustainably. By addressing specific soil and fertiliser needs, CESFRA aims to optimise

agricultural output and promote eco-friendly practices. Another centre spearheading research in the intersection of water, energy, agriculture and climate in Africa is the Water-Energy-Food Nexus & Climate Centre. This organisation targets projects with real-life applications, emphasising the relationship between water, energy and food.

Reinforcing this research infrastructure are the university's laboratories, which provide an innovative platform for researchers to test agricultural solutions, with a particular focus on food security and resource management. By facilitating on-site experimentation, these laboratories engender practical, scalable, and effective solutions that can be implemented in Morocco and eventually extended to other African countries. Similarly, the establishment of the African Sustainable Agriculture Research Institute (ASARI) at the university's Laâyoune campus underscores the imperative of an empirical approach to confronting Africa's agricultural challenges. With a dedicated team of 30 researchers, technicians, and PhD students,

ASARI focuses on critical areas such as soil salinity management, water resource utilisation, plant suitability, animal husbandry, and market studies. Additionally, strategic collaborations with national and international partners, such as Spain's Fertinagro, the Netherlands' Salt Doctors, Ethiopia's Bahir Dar University and Australia's Queensland University, further augment ASARI's research capabilities.

In tandem with these research initiatives and facilities are strategic collaborations with international universities to enhance the quality of teaching in Africa's academia. A recent example is the Excellence in Africa (EIA) initiative, which was developed in 2021 in partnership with the Swiss Federal Institute of Technology Lausanne. The EIA aims to foster junior faculty development in critical fields such as sustainable agriculture by facilitating collaboration between talented young African professors and an EPFL laboratory to jointly develop a research project. Since the initiative's launch, six projects have been selected and 19 joint collaborations with



EPFL professors were generated under the EIA. Additionally, with over 700 scientific publications in 2021, eight patents granted and more than \$103,000 invested that year for scientific research on sustainability topics – of which 11% went to agriculture – OCP Africa and UM6P's investment in research, innovation and practical learning is reinforcing the foundation of knowledge-based agri-food systems across the continent.

Abebe Haile-Gabriel

Assistant Director-General and Regional Representative for Africa, UN Food and Agriculture Organization (FAO)

By what means can the FAO and the African Union's Investment Guidelines for Youth in Agri-food Systems in Africa stimulate investment?

The guidelines aim to accelerate investment for youth in agri-food systems by providing practical tools and examples to design, develop, implement, monitor and evaluate youth-focused and youth-sensitive investment programmes. Engaging Africa's youth as partners in the process is a key target, and the guidelines call for a shift in mindset among governments and international financial institutions. Africa's significant youth demographic offers a unique opportunity given their untapped potential in driving agricultural productivity.

In what ways can Africa's youth contribute to shaping agricultural and agri-business policies and investment programmes?

To ensure active participation and contributions from all youth, policymakers are encouraged to provide inclusive platforms where young people have a voice. These include investing in capacity-

building programmes that provide the skills and knowledge to engage effectively in agriculture and agri-business; fostering youth networks and associations in agriculture; enhancing financial inclusion for youth; establishing youth mentorship programmes; and promoting gender equality to overcome the challenges faced by young women.

How can Africa's youth leverage digital tools to transform the agri-food industry?

Engaging Africa's youth in leveraging digital tools to transform agri-food systems is a critical endeavour as such tools can enhance efficiency, sustainability and profitability. Deepening adoption necessitates an inclusive approach, such as digital literacy programmes and equitable access to data and other digital infrastructure. Under the UN FAO's Digital Villages Initiative, for example, villages across the world are being furnished with the requisite digital tools to drive rural transformation. Farmers are also being given a range of free user-friendly apps that provide market information, weather forecasts, best agricultural practices and

more. Training and knowledge sharing are vital to success. By ensuring that the youth have the necessary skills, knowledge and access to digital resources, their potential will be maximised to drive the transformation of Africa's agri-food industry.

To what extent is support for youth-focused initiatives pivotal for fostering more climate-resilient and sustainable agri-food systems?

Youth engagement is key to the task of enhancing the efficiency, equity, resilience and sustainability of Africa's agri-food systems, yielding better production, nutrition and a greener environment. The involvement of public-private partnerships further bolsters these efforts as they can provide critical financial and technical support, and foster innovation and knowledge transfer. Collaborative projects involving governments, businesses and young farmers can accelerate the adoption of sustainable practices, modernise farming techniques, and enhance food security and nutrition, ultimately contributing to greener, more inclusive and more resilient development in Africa.



Start-ups and Job Creation

Underpinned by vast resources in the form of unused arable land and a population that is still largely rural, agriculture is foremost among local sectors ripe for entrepreneurship. Given the limited capacity of Africa’s labour market to absorb 10m-12m youth entering the workforce annually, empowering young people to transition from job seekers to job creators is critical to reducing youth unemployment and enhancing food security and economic growth. Powered by innovative ideas, access to capital, mentorship and markets, a robust start-up ecosystem can be a vital tool to harness the power of youth entrepreneurship in agriculture.

To that end, over the past three years, University Mohammed VI Polytechnic has supported 650 start-ups spanning the pre-incubation, incubation, acceleration, and venture building stages from over 15 African countries. In 2020 the institution’s vision to empower African youth through entrepreneurship and venturing was operationalised through StartGate, a start-up campus nurturing the continent’s growing innovators in a start-up environment within an ecosystem of higher

learning. Currently home to 16 programmes, plans are underway to expand StartGate by 30,000 sq metres, which will further the objective of creating a pipeline of future entrepreneurs. Buttressing this trajectory is the provision of skilling and mentoring to early start-ups and access to international markets and investment for mature start-ups.

The Entrepreneur Academy, another initiative under StartGate, delivers programmes to meet the specific needs of local and international partners. Through the academy, more than 1300 individuals have developed entrepreneurial awareness and skills. The programme has also launched Futurpreneur, an innovative entrepreneurship platform that has benefitted over 520 high school students across different regions in Morocco.

Agri-tech start-ups in Africa



Extending critical support to Africa’s agri-tech start-up space is the Filaha innovation lab, which, in collaboration with AgriEdge, offers technical and business support to select teams to transform their ideas into viable start-ups. The programme includes technical supervision to ensure project adaptation and feasibility within the agricultural ecosystem and business support to facilitate market penetration. As of 2021 the lab had received more than 180 applications from 24 African countries, engaging 16 partners to provide support to 27 teams in bringing their agri-tech solutions to the market.

Furthermore, in partnership with MassChallenge, the Impulse programme was launched to incubate start-ups innovating in areas such as agri-tech, biotech, mining technologies and material science.

Through a 12-week acceleration boot camp, 16 start-ups from across Africa were selected out of 350 applications to develop innovative solutions addressing pressing developmental challenges. Notably, Nigerian agri-tech start-up FoodLocker emerged as the winner of the first cohort in 2020, while three other Nigerian start-ups – Farmcrowdy, Social Lender and ColdHubs – also received prizes.

The StartGate platform presents a dynamic model to catalyse the growth of start-ups in Africa, harnessing technology to transform sectors ripe for innovation such as agriculture. By providing incubation, acceleration and entrepreneurship support to over 254 start-ups in more than 15 African countries, the impact on sustainable job creation and poverty reduction could be significant.

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Agricultural Transformation



Agriculture serves as the cornerstone of African economies, accounting for more than half of the continent's employment and approximately 15% of economic output. Beyond being a source of livelihoods, agriculture is an arena where women play a pivotal role, actively engaged in producing, processing and marketing agricultural products. Within the context of sub-Saharan Africa, 66% of women are part of agri-food systems, spanning both on-farm and off-farm tasks. This percentage not only surpasses the corresponding 60% for men, but also exceeds the global average of 36%. Africa's male involvement is double the global average of 30%. This pattern is especially pronounced in the off-farm segment, where women account for 60% of the workforce, higher than the global average of 41%.

Women represent a substantial portion of the agricultural workforce and form the backbone of Africa's agriculture sector as smallholder farmers, who comprise more than 80% of all farms on the continent. These farms contribute nearly 80% of total food output in Africa. However, they are faced with a number of challenges, ranging from the

impacts of climate change and land degradation, to limited access to modern technologies. Despite some progress over the years, average productivity across the continent has diminished. The agricultural value added per worker in sub-Saharan Africa stands at \$1500, less than half the global average of \$4000 and more than 50 times lower than in the most productive farming countries. Correspondingly, yields of the continent's primary cereal crops have stagnated at less than 25% of their potential, with the average cereal yield in Africa being half that of India and one-fifth that of the US. This not only presents challenges to food security, but also acts as a catalyst for poverty among African smallholder farmers. It is against this backdrop that efforts are being made to leverage women's central position in the sector to shape the continent's agricultural landscape, and implement innovative farming practices.

According to the UN Food and Agriculture Organisation (FAO), agro-ecological approaches such as crop diversification, organic compost, rainwater harvesting and conservation tillage hold

significant potential to reverse historically low productivity for small-scale farmers with limited access to resources, and who are particularly vulnerable to climate change and resource depletion. A 2009 report by the International Assessment of Agricultural, Science and Technology for Development scrutinised 286 projects covering 37m ha in 57 countries, revealing that sustainable agricultural techniques led to an average increase in crop yields of 79%. Similarly, a February 2023 report by the International Union for Conservation of Nature and the UN Framework Convention on Climate Change indicated that if 50% of farmers adopted regenerative agriculture across Africa, by 2040 the continent could witness a 30% reduction in soil erosion, a 20% increase in soil carbon content and a 16% rise in daily per capita calorie intake.

Against this backdrop, women farmers act as agents of change, driving progress towards ecological balance and increased productivity. With targeted efforts to accelerate the adoption of sustainable agricultural practices, this cohort is key to the continent unlocking its full agricultural potential.

Case Study: Agribooster and AI Moutmir Programmes

Initially introduced as a pilot in Côte d'Ivoire in September 2016, the Agribooster programme strives to provide comprehensive support to farmers along every juncture of the agricultural value chain. Developed by OCP Africa, a subsidiary of the world's largest producer of phosphate-based fertilisers, the Agribooster programme operates with a farmer-centred market development model, aiming to equip agricultural workers with the necessary resources and training, ultimately leading to higher crop yields, and improved livelihoods.

The programme assumed greater significance during the Covid-19 pandemic, as it helped mitigate the repercussions of the health crisis on Africa's agriculture sector and meet the continent's pressing food consumption needs. By collaborating closely with local governments and public institutions, the Agribooster's pandemic-related initiatives reached more than 350,000 smallholder farmers across four countries in 2020. Notably, in Côte d'Ivoire, OCP Africa partnered with the Emergency Rice Programme

to bolster food security and augment rice production in the country. Since its launch the programme has expanded to five countries: Ghana, Côte d'Ivoire, Kenya, Nigeria and Senegal, and benefitted 783,425 farmers by 2021. The programme's momentum continued into 2022, reaching 222,000 farmers that year, including 180,000 farmers participating in ginger, rice, maize and wheat value chains in Nigeria, as well as the provision of agricultural practices training to 30,000 smallholder farmers in Ghana.

In 2020 OCP Africa introduced the Women in Agribooster (WIA) programme, a specialised initiative for women that has rapidly grown. During its inaugural year the WIA reached 5000 female farmers, and this number more than doubled in 2021, encompassing 13,000 women in Ghana and Nigeria. The programme is designed to empower women farmers by enhancing their agricultural knowledge and providing tailored training. By 2022 the programme had registered and trained 25,000 women and resulted in an increase in their yield from 1.9 to

4 tonnes per ha. In Ghana, the WIA facilitated partnerships between local start-ups TROTRO Tractor and SAYeTECH, assisting female farmers in mechanisation through a mobile platform connecting them to tractor operators and smart harvesting machines on demand.

To further amplify the reach of the WIA programme, OCP Africa implemented a Training of Trainers initiative in Ghana in 2022. This programme targeted 15 field officers selected from three women's cooperatives to enhance their capacity to serve farmers in their communities, equipping them with essential business skills including data collection, management and facilitation.

Introduced in 2018, the AI Moutmir initiative is another farmer-centric project, prioritising the promotion of optimal agricultural, technical and governance practices. "The project invests in technical reinforcement programmes for women, enabling them to enhance farm productivity, financial and project management

skills, and sales expertise. Out of the 27,000 total beneficiaries, the programme collaborates with 1000 women, over 400 predominantly female cooperatives and approximately 30 female retailers, with the goal being to foster increased autonomy, business development and empowerment," Nawfel Roudies, head of AI Moutmir Business Unit within Mohammed VI Polytechnic University, told OBG.



Hassina Moukhariq

Director of International Development, OCP Foundation

In what ways can knowledge and capacity building among women address challenges related to climate change in the sector?

A major challenge is how to feed the increasing global population amid the diminishing availability of arable land. Food security is at stake in many parts of the planet and creating a more climate-resilient and sustainable agriculture sector is vital for Africa, as one of the continents most vulnerable to climate change. Farming communities can overcome challenges associated with climate change if they are empowered with holistic capacity building encompassing the entire value chain. Indeed, knowledge is the foundation of a resilient rural Africa that relies on a labour force that is 60-80% represented by women. Key to developing resilience is supporting women farmers, entrepreneurs and scientists with accessible programmes to facilitate continuous education and training, thereby boosting the adoption of sustainable practices and improving the livelihoods of farming communities.

What can firms do to enhance the integration of women in agricultural value chains?

While progress has been made in integrating women into Africa's agricultural value chains, stakeholders must do more to ensure value that is commensurate with their outsized impact. One way to realise this is by empowering collective action through groups such as female cooperatives. This model, animated by the principles of economic and democratic participation, allows for an equitable and inclusive redistribution of wealth, the creation of productive employment and social integration. Organisations like OCP Foundation, for example, have been implementing strategies to engender the emergence of a new generation of cooperatives to maximise the benefits for women working in the agriculture sector.

This is buttressed by efforts to develop critical skills in key areas such as financial management and leadership – empowering women to engage in public advocacy to advance their interests,

which are invariably communitarian. Also important is continued support for research and development. In one such initiative, OCP Foundation is working to forge closer ties with African universities by cultivating a strategic network of female agricultural researchers across the continent. This would amplify the scholarly exposure of female scientists and magnify the impact of their work.

How do public-private partnerships (PPPs) leverage digital technology to support women entrepreneurs across Africa?

As more public stakeholders embark on a path towards digitalisation, the private sector can help accelerate this process through efficient capital allocation and strategic advisory to ensure that PPP projects are tailored to the needs of female entrepreneurs in the sector. OCP Foundation, for example, supports women-led technology and AI initiatives addressing climate change, promoting agricultural development, and advancing socio-economic progress across Sub-Saharan Africa.



Micro-loans and Finance

Securing financing to procure inputs is a key enabler of growth in the agriculture sector, though limited financial literacy, insufficient collateral and weak credit risk assessment have historically hampered farmers' access to finance. This particularly affects smallholder farmers who struggle to access essential resources such as seeds, fertilisers and technology in a context where factors like Russia's ongoing invasion of Ukraine and rising global temperatures have accentuated the need for robust African food systems. Despite the agriculture sector's substantial contribution to African economies' GDP, the traditional reluctance of African banks to lend to farmers has been a long-standing issue. In 2019, 4.3% of total credit was directed towards the agriculture sector, with commercial bank lending to agriculture varying from 3% in Sierra Leone, 4% in both Ghana and Kenya, and 6% in Uganda, to 8% in Mozambique, and 12% in Tanzania. Consequently, just 25% of the estimated \$240bn agricultural financial needs in sub-Saharan Africa are being met. Within this, there is a \$65bn gap for agricultural small and medium-sized enterprises (SMEs) out of the overall

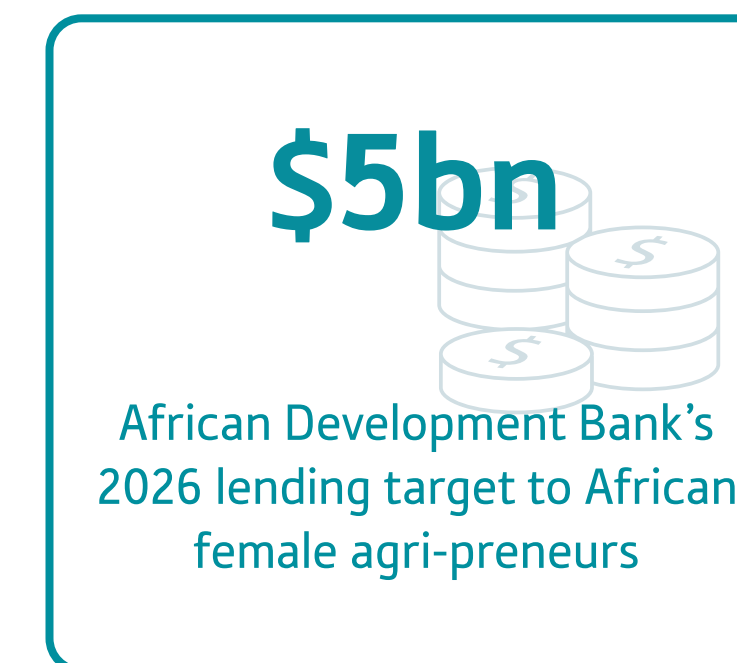
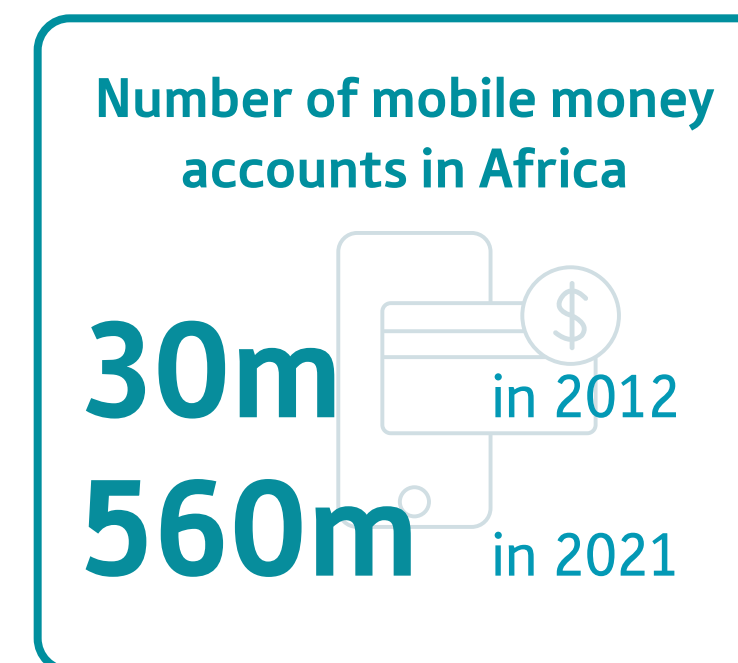
\$180bn agriculture financing shortfall. Women, who predominantly lead Africa's agricultural SMEs as smallholder farmers, face an estimated \$42bn gender-based financing deficit in comparison to their male counterparts.

The private sector has a critical role to play in developing more accessible and cost-effective financing solutions tailored to the requirements of rural women. Addressing the hurdles faced by agri-businesses is vital, given that most financial institutions demand collateral, financial records and credit histories. Innovations in this domain include the One Acre Fund, a Kenya-based social enterprise that has devised financial products aligned with local farmers' cash flows, benefitting approximately 615,000 farmers. Accompanied by training and field engagement, the approach has resulted in a 98% repayment rate. Additionally, global entities like the World Bank and the International Finance Corporation (IFC) play key roles in agri-business financing, extending technical aid for commercial finance institutions and value chain stakeholders. Within Africa, initiatives include Nigeria's Incentive-

Based Risk Sharing Agricultural Lending Scheme, backed by the Central Bank of Nigeria, and Ghana's Incentive-Based Risk Sharing System for Agricultural Lending, which looks to de-risk agri-business financing by local financial institutions.

In 2021 OCP Africa initiated a partnership with the IFC, aiming not only to enhance the skills of smallholder farmers and expand the Agribooster programme, but also to amplify digital financial services by integrating digital payments into farmers' and cooperatives' operations. With the

growing prevalence of smartphones and mobile money accounts among farmers, the landscape for financing has undergone a transformation. The number of mobile money accounts in Africa surged from 30m in 2012 to 560m in 2021, ushering in a wave of new digital lenders that offer financial support to small-scale farmers. For instance, financial technology ventures like Uganda's Emata have formed partnerships with agricultural cooperatives, utilising farmers' production history within the cooperative as qualifying evidence for loans, which have averaged a 95% repayment rate.



Raising Awareness

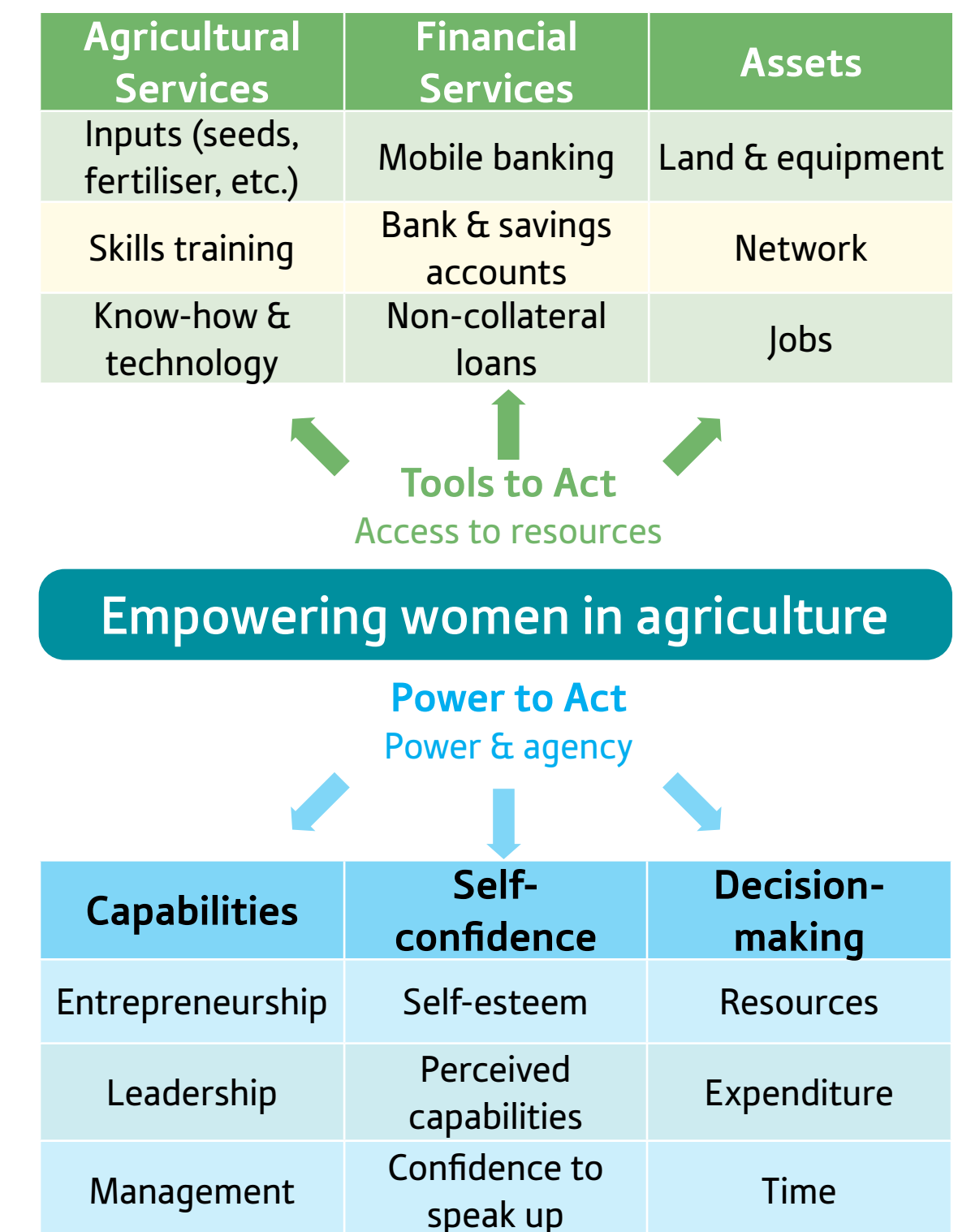
Women in Africa’s agriculture sector have historically faced marginalisation in the management of crucial assets and resources, especially when it comes to land ownership. According to statistics from the World Bank, less than 13% of African women have sole ownership of land, while the figure for African men is 36%. Likewise, women often engage in agricultural production under unfavourable conditions, whether in cultivating less profitable crops, working irregular hours or shouldering a disproportionate burden of unpaid domestic work. Gender disparities are further exacerbated by low literacy levels among rural women farmers, which hampers effective knowledge sharing. These factors manifest in a 24% gender gap in land productivity between farms managed by females and males.

Gender equality holds significance beyond boosting productivity and narrowing Africa’s yield gap – the 90% difference between average yields and the most productive ones. It also plays a crucial role in financially empowering women within the farming industry. For instance, even though women

constitute half of the agricultural labour force in several countries, they earn 18.4% less on average than their male counterparts in wage-based agricultural employment. Similarly, females engaged in farming are disproportionately vulnerable, with 22% of women in off-farm roles having lost their jobs on a global scale during the Covid-19 pandemic, in contrast to 2% of men. The 2023 “Status of Rural Women in Agri-food Systems Report” by the UN FAO emphasises that efforts aimed at promoting gender equality, female empowerment and more sustainable agri-food systems must go beyond addressing gaps related to assets and technology to confront the issue of unpaid domestic labour, enhance educational opportunities and foster resilience among women. Eliminating the gender gap in farm productivity and wage disparities in agri-food systems could lead to a 1% increase in global GDP, equivalent to nearly \$1trn. This shift would decrease global food insecurity by approximately 2%, strengthening food security for 45m individuals.

Women’s empowerment and gender equality are explicit focal points of the UN Sustainable

Development Goals, highlighting the imperative for comprehensive policy support and strategic investment. A proactive stance is needed in formulating gender-responsive policies tailored to address the unique challenges encountered by women in the agriculture sector. Among policy documents related to agriculture and rural development across 68 countries, 75% acknowledge the roles and challenges faced by women, 19% explicitly incorporate gender equality in agriculture as a defined policy objective and 13% actively promote the participation of rural women in the policy formulation cycle. This trend persists despite compelling data indicating the positive outcomes associated with women’s increased involvement. For example, the UN FAO report demonstrates that initiatives that empower women yield greater benefits than those simply integrating gender considerations. The report argues that if development interventions targeting women’s empowerment were to benefit half of the small-scale producers, it could substantially increase the incomes of an additional 58m individuals and bolster the resilience of a further 235m people.



Somachi Chris-Asoluka

CEO, Tony Elumelu Foundation

What should be at the core of bolstering female-led rural development in Africa?

To unlock the potential of Africa's future through socio-economic empowerment, it is vital to empower grassroots and agricultural entrepreneurs across the continent. They possess a unique understanding of their cultural context, leading to a focus on bottom-up development in their communities, which can then be scaled up. One stark reality we must confront is that Africa cannot be competitive globally if half of its agricultural producers remain marginalised. Agricultural production makes up the backbone of many African economies, and when 50% of these producers are disenfranchised, it hinders not only their potential, but also the continent's growth.

In what ways can women be part of the solution to these developmental challenges?

Africa's female entrepreneurs are often overlooked but offer significant potential. Compared to any other continent, Africa boasts one of the highest

numbers of women entrepreneurs. However, these individuals often lack access to adequate training and support. Cultural norms sometimes force them to relinquish control of their businesses to their spouses, which is a structural injustice that we must work collectively to change. A possible solution lies in a bottom-up approach that integrates women into economic activities at the community level. Empowering women benefits families, entire villages and communities. Female entrepreneurs are proven to create more jobs than their male counterparts, further contributing to local development and poverty reduction.

We cannot merely speak on behalf of these women – we must create platforms for them to voice their needs and challenges directly to government officials. Data is a powerful tool that can be used to demonstrate the benefits of empowering women in agriculture. It is crucial to establish platforms of transparency and honest dialogue between policymakers, entrepreneurs and communities. Looking forwards, it is time to shift the narrative and ensure that agricultural entrepreneurs

and women entrepreneurs at the grassroots level are at the forefront of discussions about Africa's economic future. By empowering female agricultural entrepreneurs more specifically, we can unlock the continent's full potential.

By what means can access to financing for female entrepreneurs be improved?

One issue for women entrepreneurs in agriculture is access to capital and financing. Africa has shown remarkable innovation in digital payment solutions, yet women are disproportionately excluded from the lending process. They face higher rejection rates than their male counterparts, often due to difficulties with documentation and a lack of adequate training and mentorship. Women are often underrepresented in decision-making roles in many institutions, which perpetuates inherent institutional biases. Thus, more women are needed in decision-making positions in order to enable bottom-up, female-led development. If these issues are addressed in a structural manner, this can be the decade of the African women entrepreneur.



Skills and Knowledge

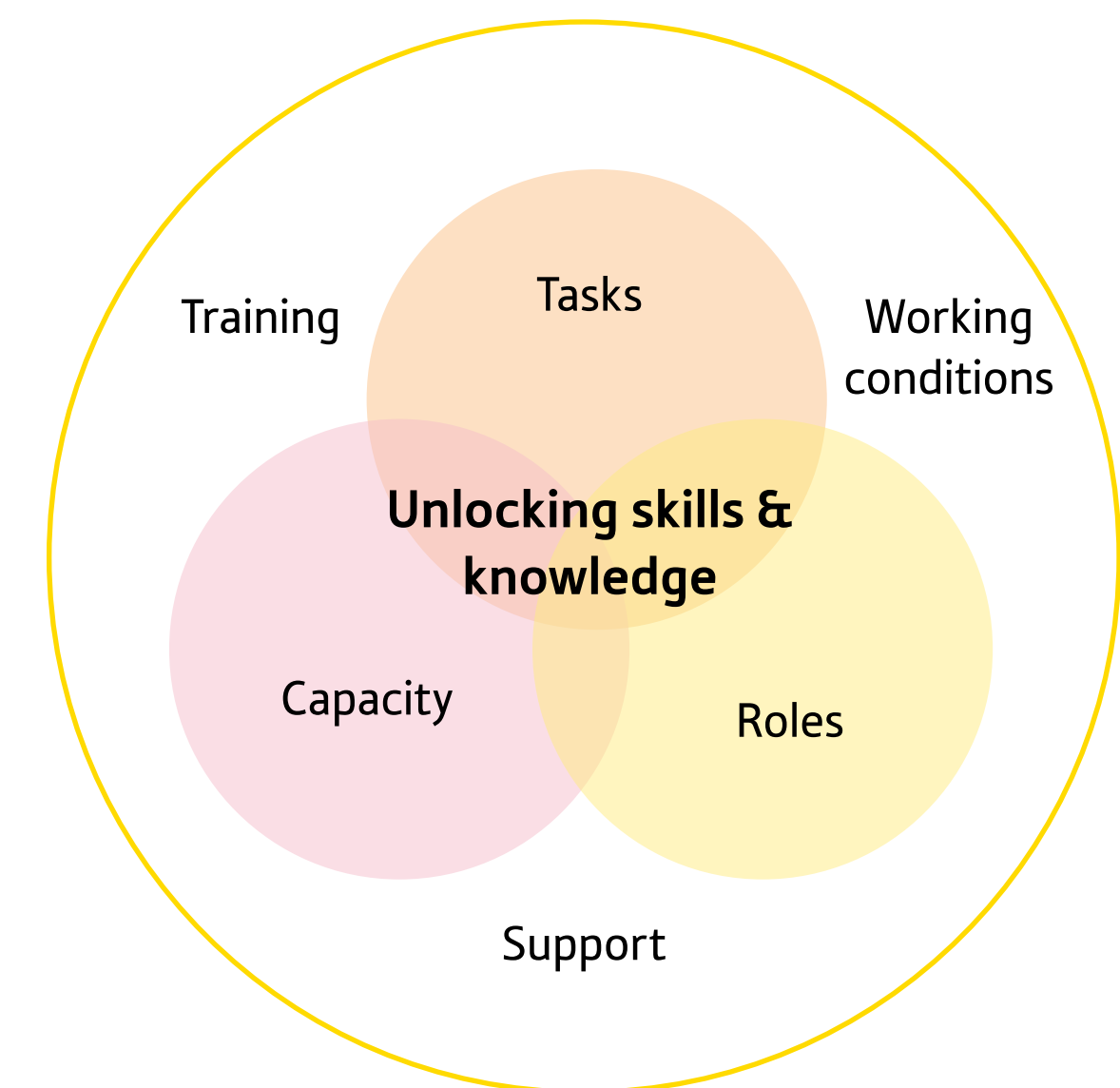
While women play a key role in smallholder farming operations, the challenge of limited education and training requires the implementation of capacity-building efforts to ensure the adoption of best agricultural practices. In countries like Morocco, a promising organisational structure has emerged among female farmers through the establishment of cooperatives. A report from Morocco's High Planning Commission in 2022 revealed that 73% of the 15m individuals outside the labour force were women, underscoring the potential for the integration of women in agriculture. Due to the variability of available machinery and agro-ecological conditions across Africa, however, a tailored approach to implement agronomic solutions is needed to effectively impart essential skills.

In a meeting with OBG, Lamfeddal Kouisni, director of the African Sustainable Agriculture Research Institute (ASARI) – part of University Mohammed VI Polytechnic – stressed the importance of considering socio-economic factors when implementing agricultural solutions, including education and literacy levels, to maximise their

effectiveness. As many women farmers might not have attended traditional classes or have limited exposure to formal training, it is crucial that training approaches be tailored to align with these realities, ensuring accessibility and affordability.

Women farmers in Africa have shown resilience in the face of climate change by embracing climate-smart agricultural practices such as cultivating drought-resistant crops and utilising soil-conservation techniques. Key projects have been realised in North Africa, where ASARI collaborates with cooperatives, organising workshops, delivering training and establishing field schools to showcase the efficacy of agronomic methods to address ecological challenges. For instance, the adoption of biosaline agriculture has emerged in regions where drought-induced aridity exacerbates soil salinity problems, while other areas face issues with soil acidity. Female farmers have embraced these innovations, particularly when they see increased revenue streams. To foster widespread adoption, it is essential that farmers are provided with affordable access to effective solutions.

As part of the UN's Women's Empowerment through Climate-Resilient Agriculture programme, women's cooperatives are receiving support to transition to conservation agricultural practices. This shift involves the introduction of climate-resilient agro-ecological techniques and the integration of renewable and energy-efficient technologies across value chains. A publication of the programme's outcomes between 2017 and 2021 highlights that more than 17,000 women adopted climate-resilient agricultural production approaches across the region. Notably, 11,000 women in Mali were trained in soil restoration, water management, alternating crop systems, and the utilisation of organic fertiliser and natural pesticide. In Senegal, 1194 women effectively integrated practices and technologies following the training programme, including the development and marketing of climate-adapted rice seeds. Côte d'Ivoire saw 1927 women gain access to knowledge on organic and resilient techniques within the shea farming segment. In Nigeria, 2500 women smallholder rice farmers were trained in improved rice production technologies. Similarly, 690 women farmers in Niger successfully developed



and adopted bio-pesticides using local products. These accomplishments highlight the impact of empowering women with climate-resilient skills and technologies, promoting sustainable and adaptable agricultural systems across the continent.

Developing Employment

In order to empower women’s engagement in agricultural employment and foster sustainable development, it is imperative to enact initiatives that not only highlight women’s contributions, but also offer encouragement and the opportunity for greater roles. Access to technology is a key element, with digital innovation holding the potential to foster more resilient and productive agri-food systems. Equipping smallholder farmers with mobile digital solutions that provide real-time agricultural insights enables them to optimise land use and increase farm productivity. In tandem with the global increase in internet usage, around 33m smallholder farmers, equivalent to 13% of those in sub-Saharan Africa, were engaged in digitalisation for agriculture solutions in 2019, with estimates forecasting this number will reach 200m by 2030.

Kenya has taken the lead in leveraging technology to boost agriculture and is Africa’s primary recipient of agri-tech investment. UK innovation agency Nesta indicates that with effective implementation of digital farming technologies, Kenyan farmers could enhance their annual profits from 7.1% to 76.3%.

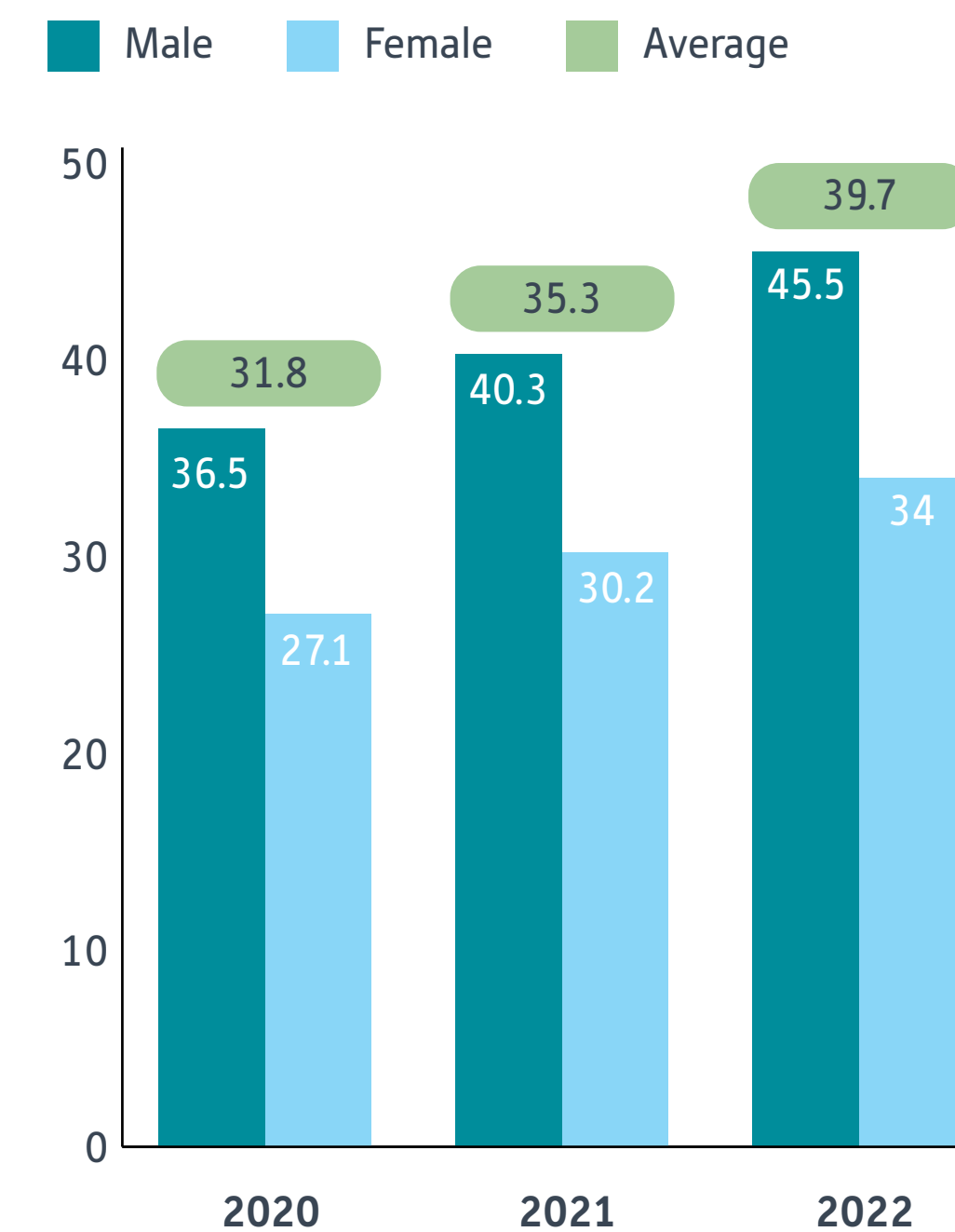
Elsewhere, digitalisation for agriculture solutions is present in at least 43 out of 49 sub-Saharan African countries. Over half of these solutions are headquartered in East Africa, and nearly two-thirds of registered farmers across all solutions are based in the East African Community region.

The private sector has played a crucial role in delivering innovative technology and knowledge to smallholder farmers. In Kenya, DigiFarm, an integrated mobile platform operating under local telecommunications provider Safaricom, uses drones for aerial surveys and equips farmers with a comprehensive understanding of their land’s topography, aiding them in timing pest control and fertilisation efforts. The platform has extended services to 1.4m smallholders since its launch in October 2017, providing financial aid, enhanced data inputs, training and improved market access. Notably, 48% of these beneficiaries are women. Likewise, MKulima, an online marketplace for farmers in Tanzania, uses digitalisation in agriculture in order to foster new customer connections for farmers, allowing sellers to directly list their

produce, thereby eliminating the need for intermediaries in buyer interactions. The application also delivers weather forecasts, assisting farmers in refining their seasonal planning.

Outside of technology and private sector participation, a viable public support system is important. While digitalisation efforts have transformed African agriculture, deliberate interventions are needed to fully leverage its potential. In the “Agricultural Outlook 2022-2031” report, the OECD and the UN FAO stress the need for cohesive action by governments, the private sector and civil society to drive reforms that incentivise investment alongside the promotion of digital literacy across the African continent. While significant efforts are still required, the prioritisation of rural women and digital agriculture within the broader development agendas of the New Partnership for Africa’s Development and the Comprehensive African Agricultural Development Programme – the latter of which serves as Africa’s policy framework for driving agricultural transformation – signifies promising steps forwards.

Internet usage in sub-Saharan Africa, 2020-22 (%)





Productivity

In 2016-19 Africa's area of cultivated land reached 1.2bn ha, accounting for 52% of the global increase over the period and up 102m ha from 2000-03. Sub-Saharan Africa, meanwhile, recorded the world's fastest growth rate in agricultural output, including crops and livestock, between 2000 and 2021. However, 75% of this expansion was fuelled by an increase in cropland rather than total factor productivity growth. Fostering knowledge-based farming systems through smallholder, farm-centric initiatives such as OCP's demonstration labs will be critical to reducing the reliance on expansion-based output and attendant environmental risks.

Youth & Job Creation

With 10m-12m youth entering Africa's workforce each year, empowering young people to transition from job seekers to job creators is critical to reducing youth unemployment and food insecurity. A robust start-up ecosystem can be a powerful tool to harness the power of youth in agriculture. University Mohammed VI Polytechnic's StartGate platform is a dynamic model to catalyse start-ups in Africa, harnessing the disruptive power of technology to transform high-impact sectors primed for innovation such as agriculture.

Young Africans are projected to number more than 830m by 2050, representing over 45% of the estimated 1.8bn global youth population. As the primary labour employer in Africa, the agriculture sector presents a significant opportunity to harness their dynamic, tech-savvy and entrepreneurial drive to stimulate inclusive economic transformation and promote food security. Countries such as Nigeria, Kenya and Morocco that have enacted youth-friendly agricultural policies will reap the entrepreneurial benefits of increased activity in diverse roles across the agri-value chain.

Innovation

Digitalisation is at the forefront of advancing sustainable agriculture practices in Africa given the power of green technology to formulate smart ecological solutions. Key to maximising the impact of agri-tech solutions is mobilising sufficient capital to help start-ups in the space reach meaningful scale. Africa's agri-tech industry is primed to grow at an annual rate of 44% between 2023 and 2028, with local agri-food tech start-ups raising \$640m in venture capital funding in 2022.

Women's Empowerment

Despite being leaders in Africa's agriculture space as smallholder farmers, women face an estimated \$42bn gender-based financing deficit in comparison to their male counterparts. In light of this, it will be important for the private sector to craft more accessible and cost-effective financing solutions tailored to the needs of rural women. Funding innovations from multilateral lenders, multinationals such as OCP Group and financial technology firms that address the hurdles faced by agri-businesses – especially smallholder farmers and small and medium-sized enterprises – will be critical to expanding the availability of and access to credit among key populations such as women.

Even though women constitute half of the agricultural labour force in many sub-Saharan countries, they tend to work in informal or low-skilled jobs and on average they earn 18.4% less than their male counterparts in wage-based agricultural employment. Both governments and NGOs should take a proactive stance in formulating gender-responsive policies that are tailored to address the unique challenges encountered by women in the agriculture sector. Initiatives that empower women by explicitly incorporating gender equality in agriculture as a defined policy objective will ultimately yield greater and more inclusive benefits.

