

The future of agriculture in Sub-Saharan Africa

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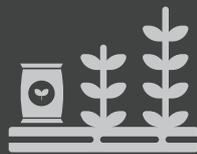
Key messages



Population growth, rapid urbanisation, and a young population are major trends shaping the future of African agriculture. They underlie profound changes in the evolution of food demand and contribute to the structuring of food markets.



African agriculture must take on these issues, while facing the challenges of climate change and land degradation. If no adequate measures are taken, the future ability of agriculture to produce enough food could be jeopardised.



It is imperative to establish an integrated land management strategy by increasing organic matter, retaining moisture, and increasing the use of inorganic fertilisers.



Governments must invest in technical and professional agricultural education and training systems and strengthen the skills of young people and women to seize the entrepreneurship opportunities offered by agriculture and agri-food systems.



Policies must clearly support family farming and the facilitation of private sector intervention via inclusive business models.

For several decades, Sub-Saharan Africa (SSA) has faced multiple challenges, including rapid population growth, rampant urbanisation, climate change, and chronic food insecurity. In recent years, significant progress has been made. Agriculture has again become a priority in the development agenda, with the Maputo and Malabo Declarations, as well as the 2030 Agenda for Sustainable Development.

The African Union Assembly of Heads of State and Government, through the Maputo Declaration in 2003, adopted the African Union Comprehensive Africa Agriculture Development Programme (CAADP) to improve food security and nutrition, and increase incomes in Africa's agriculture-based economies. CAADP increased annual national budgetary allocations for agriculture to at least 10% to ensure a growth of the agricultural output of at least 6% annually.

The 2014 Malabo Declaration made seven specific commitments to achieve accelerated agricultural growth and transformation to share prosperity and improve livelihoods. Among these, African Heads of State and Government made a commitment to ending hunger by 2025 by doubling productivity, halving post-harvest losses, and significantly improving nutrition.

More recently, the 2030 Agenda strives to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. The Agenda seeks to double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fisherfolks, as well as ensure sustainable food production systems.

In SSA, millions of family farms have increased their capacities and improved their incomes, while soliciting renewed interest from private companies. In this changing context, what does the future of African agriculture look like? Will it be able to meet the demand of a population whose preferences are changing profoundly? What are the critical policy action points to facilitate the transformation of the African agriculture? The following section will take stock of the major trends affecting SSA agriculture. It will be followed by an analysis of the possible trajectory of agriculture. Finally, recommendations will focus on the identification of policies likely to put SSA agriculture on a good launching pad for future growth.

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■ Population continues to grow in Africa, despite a global slowing pace

Africa is the fastest growing region in the world. With 2.2 billion people expected by 2050 and more than 4 billion by 2100, Africa is the only region where the maximum population size will not be reached within this century: it will expand even beyond (FAO, 2017). SSA could account for more than half of the world's population growth between 2019 and 2050, with a projected addition of 1.05 billion people. In fact, SSA's population is growing at 2.8% a year, double the rate of South Asia, four times the rate of East Asia and the Pacific, and about 50% higher than the Middle East and North Africa region (Mabiso & Benfica, 2019).

Furthermore, the issue of fertility is crucial. Future population growth in Sub-Saharan Africa is highly dependent on the path that future fertility rates will take. Indeed, this region has the world's highest level of total fertility, even if it has declined at a very slow rate from 6.3 births per woman in 1990 to 4.6 in 2019. The rapid population growth of most countries in Africa since the 1960s is mainly due to the later, and slower demographic transitions and fertility declines they have experienced compared to other countries in the world (Bongaarts & Casterline, 2012; Guengant, 2007; Guengant, 2012; and Guengant & May, 2011a).

Rapid population growth, fuelled by high fertility rates, is driving an increased demand for food. Therefore, the second sustainable development goal to end hunger by 2030 is challenging. It is important to reflect on the future of agriculture and its ability to satisfy growing food demand, particularly for Sub-Saharan Africa, where 60% of the population is smallholder farmers.

■ Africa still predominantly rural, despite the fastest urbanisation rate

Rapid population growth is also accompanied by unprecedented urbanisation. As highlighted in the State of the World Population in 2007, the world crossed a threshold by reaching a momentous milestone. The number of people in urban areas exceeded the number of rural dwellers for the first time. According to World Urbanisation Prospects in 2018, 55% of the world's population resided in urban areas, corresponding to 4.2 billion people, compared to 3.4 billion in rural areas.

Africa is the second fastest urbanising region around the world, after Asia. From 14% in 1950, Africa's rate of urbanisation sits presently at 42%. 50% of Africans are expected to reside in urban areas by 2035 (AUC/OECD, 2018). This urbanisation rate is expected to continue growing

even beyond 2035: the region should reach 56% urbanisation by 2050 (Cockx, L., et al. 2019). Africa's urbanisation occurs mostly in peri-urban areas, illustrated through the growth of its megacities and towns. Indeed, cities and towns with less than 500,000 residents accounted for 67% of urban growth between 2000 and 2018 (AUC/OECD. 2018). Forecasts from McKinsey Global Institute reveal that the number of African cities with more than five million inhabitants will rise from 6 to 17 between 2015 and 2030, and cities with more than 10 million people will increase from 3 to 5.

Although Africa is one of the world's fastest urbanising regions, its rural population still surpasses urban dwellers. As highlighted in the 2018 World Urbanisation Prospects, Africa and Asia are still home to nearly 90% of the world's rural population in 2018. Africa's rural population will continue to grow at a rate of more than 1% per annum beyond 2045, and Sub-Saharan Africa is expected to grow by more than 353 million additional rural dwellers between 2015 and 2050 (AfDB, OECD, UNDP. 2016). In addition, 952 million Africans, corresponding to 82% of Africa's population, live at such a rural-urban interface¹.

It is widely recognised that the rapid urbanisation of SSA is playing an important role in changes in food demand, including markets and distribution systems. According to projections, the value of urban food markets in SSA will grow from USD150 billion to USD500 billion between 2010 and 2030 (FAO, 2017a). Furthermore, there is a close relationship between rapid urbanisation and the growth of the middle class. Evidence shows that the African middle class will drive demand for higher-value agricultural products and value-added products from the processing sector (Reardon et al., 2013; Badiane, 2014). With increasing demand for processed food and higher value agricultural products, private sector and local entrepreneurs should play a key role to ensure adequate transportation, processing and market facilities. Increasing urbanisation, and the resulting changes to food demand, presents a great opportunity for the future of agriculture, particularly in Africa, if smallholder farmers are not left behind at the benefit of large processors and agribusinesses.

As shown in studies and reports, one of the key characteristics of the urbanisation pattern in Africa is the youth bulge and a large informal economy. Urbanisation and demographic transition in Africa – two of the region's megatrends – call for a paradigm shift toward youth-centred sustainable development (Siba, 2019).

¹ According to Akkoyunlu (2015), the rural-urban interface is one in which rural and urban economies depend on, and complement each other.

Africa has witnessed a significant growth of its youth population over the last decades. With 70% of the population aged below 30, a median age of 18.3, and 226 million people aged between 15 and 24, Africa has the youngest population in the world. The number of working-age youth in Africa is unprecedented; on average 29 million additional young people will turn 16 every year between now and 2030 (AUC/OECD, 2018). By some estimates, the working-age population in Africa is expected to grow by close to 70%: approximately 450 million people between 2015 and 2035. The region will have 362 million young people aged 15-24 years by 2050 (WEF, 2017). Today, in most African countries, the youth aged 15-29 represents more than 40% of the adult population, a phenomenon known as the 'youth bulge' (Guengant & May, 2013).

The youthfulness of Africa's population, while presenting challenges, could be a good opportunity for the continent if youth employment and the demographic dividend are well addressed. By 2030, the increase in labour supply could create a first 'demographic dividend' and boost Africa's annual growth of GDP per capita by up to half a percentage point, assuming constant output per worker (AfDB, OECD, UNDP, 2016). By 2030, this demographic dividend could contribute 10-15% of Africa's gross GDP volume growth (Ahmed et al., 2014). If the demographic dividend will close for several African countries by 2030, it is important to invest in youth entrepreneurship and technological innovation to seize the opportunity in the coming ten years.

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In terms of employment, rural youth particularly in Africa are still primarily engaged in agriculture, while in urban areas most of them are in the informal sector. Evidence shows that rural youth in Africa are farming and the proportions of youth labour forces expected to be farming in the coming decades will remain high, albeit declining in the long run (Mabiso & Benfica, 2019). About 40% of African youth work in the agriculture sector. Several opportunities could be seized by youth if agriculture in the future provides decent and attractive jobs to young people, while fostering rural entrepreneurship. Investing in technology has the potential to attract young rural men and women in agriculture.

Despite their significant contribution to agriculture, women work on subsistence crops, and are less involved in higher value-added activities. They are also disadvantaged and face greater challenges in terms of decision-making power and control over productive resources such

as land, which limits their access to credit and financing. Because of their involvement in other household activities, women have less time to devote to farming activities. Women's limited access to productive resources have negative impacts on their agricultural productivity, and consequently the incomes they can generate from agriculture. In Sub-Saharan Africa, the levels of agricultural productivity for female farmers are 20 to 30% lower compared to that of male farmers because of the gender gaps regarding access to resources (FAO, 2011).

■ **Population growth, urbanisation, youth bulge and women empowerment: implications for the future of African agriculture**

The increase in the density of the rural population in most of the SSA countries is exerting increasing land pressure and deeply affecting agricultural systems. We are therefore witnessing a reduction in the size of farms, and their fragmentation. In some parts of the world, such as Asia, a similar situation has led to agricultural intensification, resulting in a consequent increase in agricultural yields. Africa, on the other hand, has followed a different trajectory. The increased population density is associated with more intensive land use without increased fertiliser and irrigation. Thus, the increase in crop intensity explains almost half of the growth in total agricultural production per hectare. This poses a real challenge for sustainable intensification (Headey & Jayne, 2014).

The strong growth of the young component of the population, coupled with land pressures, requires the development of a non-agricultural rural sector capable of absorbing this overflow of labour. However, the rural sector hardly offers young people any prospects in terms of non-farm employment. There are serious difficulties in diversifying outside of agriculture in densely populated rural areas, when these areas need more non-agricultural diversification to absorb the surplus of people looking for jobs.

Several authors (Fine et al., 2012; Losch, 2012; Jayne, Chamberlin & Headey, 2014) show that even under favourable conditions, the nonfarm sector will not be able to generate enough jobs capable of absorbing the young population. Therefore, agriculture will have to provide gainful employment for at least one third of the young African workforce. That's why young people in densely populated areas will need access to better farming technologies and new land. Despite the strong urbanisation, small farming will be a fundamental asset to absorb a large mass of African youth. The exploitation of this opportunity will nevertheless depend on the capacity of public policies to facilitate young people's access to land. With the strong growth of the young population, the intergenerational subdivision of land will limit the possibilities of

young rural people to enter the labour market. With land fragmentation in many countries and concentration in some cases, young people are increasingly unable to inherit enough land to make farming a viable business (Jayne, Yeboah & Henry, 2017).

Women play a critical role in the agricultural sector, from the production to marketing of products. In Sub-Saharan Africa, women comprise 52% of the total population in this sector; they are responsible for approximately 50% of the agricultural labour force and contribute up to 60 to 80% of the region's food (Njobe and Kaaria, 2015).

For women to seize the opportunities offered by the future of African agriculture it is important to improve their agricultural productivity by providing them with adequate productive resources, particularly land, as well as facilitating access to financing. However, increasing women's agricultural productivity alone will never be enough. Attention should be given to investing in women's entrepreneurship skills, involvement in niche markets, and higher value-added activities. In addition to investing in women on the farm, closing the gender gap in agricultural research is also determinant for the future of African agriculture. Agricultural research institutions are developing projects and programs of research that contribute to addressing challenges faced by farmers and proposing innovative solutions. Investing in women's involvement in agricultural research could bring perspectives and insights that are more gender-sensitive in order to overcome the challenges female farmers are facing on the ground. Even though results are still insufficient, efforts are being made towards closing the gender gap in African agricultural research. The number of women in agricultural research increased from less than 9,000 in the year 2000 to more than 15,000 in 2014, an average increase of 24%.

Land degradation and climate change: two daunting challenges

Land degradation is a serious problem in SSA. According to the Intergovernmental Panel on Climate Change (IPCC) special report, 46% of Africa's land area suffers from degradation, affecting at least 485 million people and costing 9.3 billion USD per year. 70 to 80% of the cultivated areas of the continent are degraded with losses of 30 to 60 kg of nutrients per hectare, per year. The arid and semi-arid zones such as the Sahel region are more affected. In these areas only 3 to 30% of the land is still undegraded (AGNES, 2020).

Land degradation results mainly from climatic and anthropogenic factors. Changes in temperature, intensity of precipitation, windstorms, and the distribution and intensity of extreme weather events are the

main climate drivers of land degradation. Vegetation is in turn strongly marked by changes in rainfall patterns and thus conditions processes leading to soil losses resulting from water or wind erosion. Climate change is expected to significantly reduce the area of agricultural land in parts of sub-Saharan Africa. In Senegal, for example, land degradation affects 64% of arable land due to erosion and salinisation. Nigeria records 30 million tons of soil loss per year while Ethiopia loses about 1 billion tons of topsoil annually due to soil erosion (AGNES, 2020).

Human factors are another important driver of land degradation. Poor agricultural practices exacerbate the processes of erosion and salinisation. Poor management of irrigation and fertilisation accelerates soil pollution, salinisation, and acidification. This is the case of Malawi and Zambia where chemical land degradation has led to 15% loss in arable land in the last 10 years. In several countries in SSA such as Burkina and Gabon, ferruginous and ferralitic² soils have been shown to suffer from acidification after approximately 4 to 7 years of continuous exploitation (Doukkali et al, 2018; AGNES, 2020).

Small producers are increasingly confronted with declines in soil fertility. 28% of farmers in rural Africa cultivate land in continuous degradation. The shrinking size of farms under demographic pressure, and fragmentation due to inheritance, forces small producers to cultivate their fields continuously. It is difficult to maintain soil quality in the absence of adequate soil amendment practices, crop rotations, and fallow (Barbier & Hochard, 2016; Jayne & Ameyaw, 2016).

Under certain circumstances, inorganic fertiliser can make up for nitrogen deficiencies, one of the main nutrients extracted from African soils. But this supply of conventional inorganic fertiliser does not solve soil degradation, due to losses of organic carbon and increased soil acidification. Under these conditions, the efficiency of inorganic fertiliser tends to decrease, pushing small producers to reduce their demand. Consequently, the positive effects expected from the use of improved seeds tend to be diminished because plants cannot benefit from the technological package (seeds and fertilisers) on depleted soils.

Faced with this situation, and to increase agricultural productivity in a sustainable manner, research has recommended the use of an integrated land management strategy. This involves rehabilitating the

² According to Wikipedia: "Ferrallitisation is the process in which rock is changed into a soil consisting of clay (kaolinite) and sesquioxides, in the form of hydrated oxides of iron and aluminium. In humid tropical areas, with consistently high temperatures and rainfall for all or most of the year, chemical weathering rapidly breaks down the rock. This at first produces clays which later also break down to form silica. The silica is removed by leaching and the sesquioxides of iron and aluminium remain, giving the characteristic red colour of many tropical soils. Ferrallitisation is the reverse of podsolisation, where silica remains and the iron and aluminium are removed. In tropical rain forests with rain throughout the year, ferrallitic soils develop. In savanna areas, with altering dry and wet climates, ferruginous soils occur."

soil by increasing organic matter, retaining moisture, and increasing the use of inorganic fertilisers.

A recent policy brief by the Africa Group of Negotiators Experts Support (AGNES, 2020) based on the IPCC special report on land degradation, clearly demonstrates that land degradation and climate change reinforce each other. The brief states that “Land degradation reduces carbon sinks resulting in more emissions while climate change through heat stress and rainfall variability intensifies the rate and magnitude of land degradation” (AGNES, 2020, p. 1). These interactions have negative implications on agricultural productivity, affecting food security. In Zimbabwe, 10% of communal land is seriously eroded due to farming or grazing, while the Sahel experiences a 3% per annum decline in agricultural production as a result of land degradation (Doukkali et al, 2018). If trends are maintained, more than half of the cultivated agricultural area in Africa will be lost by 2050. Given the contribution of agriculture to GDP and employment, land degradation will have profound negative implications for the livelihoods of the people, in particular the poorest living in the most degraded areas. Data show that in 2007, around 1.5 billion people made their living from degraded land.

■ Evolution of food demand in Africa and the importance of food markets

One of the significant developments in SSA in recent decades concerns the demand for food. West Africa is a good example of this development. As a result of strong population growth, rapid urbanisation and rising incomes, the West African food market has experienced strong growth. In 2010, it reached \$178 billion or 36% of regional GDP. The share of household income spent on food was 52%. Market transactions amounted to \$126 billion, indicating a transformation from a subsistence-based economy to a market economy (Allen & Heinrigs, 2016). What are the drivers of this structural change?

Urbanisation is one of the driving forces behind this change. Large cities and small towns have grown in size and number. They are linked together by a relatively dense transport and communications network, bringing rural areas closer to cities. Around growing urban areas, there is a spatial organisation of trade and markets. Urbanisation has been accompanied by a fundamental change in the markets³. They have become the main source of supply for urban households. Urban growth is therefore not only a factor in integrating rural areas into the market economy; it is also a driving force in transforming agrifood production systems.

³ We mean markets in a broader sense, not physical markets

New eating habits are another determinant of structural changes in food demand. Food preferences are changing dramatically with changes in urban lifestyles and rising incomes. According to Engels's law, the share of income spent on food purchases decreases as income increases. Since most of the population is just above the poverty line, substantial sums are still spent on food purchases. Urban households spend 46% of their income on food, while in rural areas, this rate is 60%. Processed products are also occupying an increasingly large share of household spending. They represent 39% of household food consumption, i.e. 41% in urban areas and 36% in rural areas. Wealthy households spend the largest share of their food consumption (49%) on processed products. Even for poor households, processed products occupy a large share (36%) of their food expenditure (Allen & Heinrigs, 2016).

The increase in demand for food is accompanied by a sharp increase in demand for convenience food, including street food. In African cities, more and more people eat outside their family compound, either because of professional duties, time constraints, or ease of access. Consumers are therefore ready to pay a premium so that the processing and preparation of food is done upstream, thus leading to an increase in the level of post-harvest activities in the food system⁴ (Staatz & Hollinger, 2016).

How agricultural production systems adapt to respond effectively to this increasing urban food demand is one of the major challenges that agricultural policies must tackle. The transformation of agriculture and the subsequent increase in incomes of smallholder farmers depend on it.

■ Pathways towards Agricultural transformation in Africa

Rapid urbanisation, changing diets, and growth in per capita income in SSA have led to major changes in food systems. They have boosted the growth of domestic and regional food markets while opening real opportunities for small producers. At the same time, these opportunities constitute a challenge for smallholder producers in their capacity to meet this growing demand from an urban population whose preferences are more oriented towards animal products, fresh vegetables, fruits, and processed products. In addition, producers must respond to constraints

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⁴ The food system should nevertheless factor in the tradeoffs of a strong growth in the consumption of processed products due to the rise in incomes, with as a corollary the increase in noncommunicable diseases linked to diet-related behavior. Putting in place a comprehensive food policy that promotes healthy and nutritious food for the population, including educating the youngest should be a key priority for Africa's policymakers.

such as weakness and uncertainty around input and product markets, huge post-harvest losses, climatic uncertainty, high transaction costs, and weak agricultural research and extension programs. Taking stock of the low use of inputs in SSA and the obstacles to the expansion of the input market in the region, Kelly, Adesina & Gordon (2003) point to the ineffectiveness of the distribution of inputs and credits as well as the inadequate level of public investment. They recommend that governments focus their efforts on the provision of public goods (roads, irrigation, basic education, market information systems, agricultural research and extension) and on improving institutions (compliance with laws and regulations, promotion of grades and standards). These interventions help lower production costs and increase demand from producers, thereby prompting the private sector to further expand its distribution networks.

Addressing the weaknesses of product markets requires institutional innovations. These include the promotion of contract farming, support for cooperatives and other producer organisations, the creation of systems of grades and standards, the existence of dispute settlements mechanisms, and the promotion of effective governance of agricultural value chains. All these interventions must be complemented by bold investments in infrastructure, agricultural research and extension, and market information systems.

To support smallholder farmers in exploiting the new opportunities offered by the current environment, the following policies should be implemented:

- The adoption of improved technologies is likely to increase yields and reduce post-harvest losses. In addition to technology acquisition efforts, a holistic approach integrating investments in agricultural research and extension is required. Special emphasis should be given to the proper functioning of the input and product markets. Without this, producers have no incentive to produce for the market, or to access technologies that improve yields.
- Increasing public investments in physical infrastructure such as roads can generate significant benefits, particularly in production and post-harvest activities. Beyond these interventions, policymakers must involve the private sector by creating a favourable environment and by promoting private investments in storage, processing, and marketing infrastructure. Inclusive business models should be promoted. The government and its technical and financial partners must encourage the private sector to invest in models that offer beneficial prospects to smallholder

producers, by providing them with knowledge and access to input and output markets. There are value chain development projects demonstrating the viability of these mechanisms, which put small producers at the heart of the system and provides the private sector the prospect of a reasonable profit. These good practices must be scaled.

- Above all, policymakers must develop transparent mechanisms thus minimising their intervention in product markets. Intervention often weakens private sector incentives in post-harvest activities (storage, processing, marketing). By setting up an environment based on transparent and incentivised rules, public authorities minimise market uncertainties and thus make it possible to test models and to scale up if successful.
- Access to finance is critical for agricultural transformation. For smallholder farmers, inadequate financing of agricultural activities has been a major obstacle. Innovative financing approaches are being tested by the private sector and development partners to mobilise additional resources and tackle prevalent market failures. Given the importance of agricultural finance, African governments should be more committed to supporting the key players involved in scaling up innovative models of agricultural finance.
- Advances in digital technologies offer tremendous opportunities to transform the African agricultural sector. Aggregating farm data improves the financial inclusion of smallholders. The proliferation of mobile phones in SSA has made it easier to integrate them with emerging technologies and facilitate scaling up. As a result, different actors in the value chain can now trade more easily, thereby increasing the productivity of the entire value chain, through increased market access and cost efficiency along the chain. Despite these advances, smallholder farmers suffer from the lack of control over large information flows due to the complexity of the new technologies and their weak technical capacities. In many countries, governments and development partners are promoting multi-stakeholder partnerships for the development and promotion of digital technologies in the agricultural sector. These have the potential to transform the food system, increasing the inclusion of smallholder farmers and fostering greater involvement of women and young people. Finally, digitalising the agricultural sector has two additional advantages. It will remedy the lack of data for decision-making and attract youth whose involvement is critical to the sustainability of the sector.

- Investing in women and youth is critical given their role in agricultural value chains, as well as women's role in food and nutrition security. It is important to strengthen the entrepreneurial and technical skills of women and youth, and to provide them with training and capacity building, while harnessing their innovative potential. Education is key to facilitating women and youths' access to information and better technologies, which are critical to moving beyond production and running successful rural businesses. Investing in education for women and youth, while strengthening their entrepreneurial capacities, is insufficient without creating an enabling environment positioning them with better access to productive assets and markets. Finally, it is important to develop gender-sensitive agricultural and nutrition policies, in order to boost attention to rural women as key actors of food and nutrition security, while overcoming the challenge of feeding an increasing population.

The 2003 adoption of CAADP in Maputo highlighted the commitment of African heads of state to prioritising agriculture as an engine for economic growth, poverty reduction and the improvement of food and nutritional security. More than a decade later, the Malabo Declaration (2014) reaffirms Maputo's options but incorporates new commitments to reduce child malnutrition, post-harvest losses, and livelihood vulnerabilities. Despite implementation challenges, the political will at the continental level is unequivocal.

On the ground implementation of this transformative agenda requires a holistic intervention including the provision of appropriate technologies to producers (certified seeds, organic and inorganic fertilisers, and technology to restore soil fertility), the promotion of efficient agricultural advisory services that can facilitate technology adoption, and the development of domestic and regional markets for food and other agricultural products.

Financing and investment are also key ingredients for transforming African agriculture. The needs are immense. They include, for instance, financing smallholder farmers, other value chain actors, entrepreneurs, access to roads and other infrastructure, the development of market infrastructure, as well as research & development. To be successful, innovative financing tools must be mobilised to integrate the diversity of actors around agricultural value chains. Several experiments conducted on a small scale have demonstrated the potential for great improvements in innovative credit tools, risk management tools, result-based financing, and crowdfunding.

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The path of African agriculture will depend on the fate of family farming systems. Family farmers and other smallholder farmers account for more than 80% of agricultural producers and produce 98% of food crops. Building a sustainable intensification around these family farmers is the fundamental strategy to adopt. The success of this intensification supposes increased access to the market, thus allowing the producer to put surplus production on the market, while respecting quality standards and receiving in return a remunerative price. The obstacles faced by small producers are numerous: high transaction costs, high post-harvest losses, counterproductive government policies, high cost of inputs, etc. A determined commitment from public authorities and progressive policies are essential to remove all these bottlenecks and respond to continuously growing urban food demand (Ameyaw & Jayne, 2016).

■ Conclusion and recommendations

For several decades, SSA has stood out through the image of major challenges that beset it: rapid population growth, accelerating urbanisation, chronic food insecurity, and strong threats from climate variability and land degradation. These challenges, while worrisome, can be transformed into opportunities that can strengthen African agriculture, transforming it into a vehicle for inclusive economic growth. Government initiatives around prioritising the agricultural sector in public interventions, large although insufficient investments by the private sector, and the commitment of smallholder farmers and their organisations to cope are reasons for satisfaction. Today, smallholder producers have more options for the seeds and fertilisers than they use. They also have access to the markets for their products. Gleams of progress are perceptible. More and more smallholders are coming out of survival strategies and considering agricultural production as a real business. Likewise, agrifood systems are changing, moving away from self-subsistence tendencies and towards commercial agriculture centred on consumer preferences.

Despite these notable changes, colossal long-term efforts are still needed to achieve the transformation of African agriculture, thereby assuring the population a more decent life. Key recommendations include:

- Increasing the funding of national agricultural research systems so that they can respond to the challenges of the climate, land degradation and changes in consumer preferences by making suitable technologies available to smallholder farmers.
- Supporting the implementation of effective and sustainable agricultural advisory programs capable of providing smallholder agricultural producers with the skills necessary to be more productive, and to adapt to different environmental constraints.

- If the current trend of land degradation continues, more than half of the cultivated agricultural area in Africa will be lost by 2050. To avoid the devastating consequences on the livelihoods of populations, with the poorest living in the most degraded areas, research has recommended the use of an integrated land management strategy. This strategy involves rehabilitating the soil by increasing organic matter, retaining moisture and increasing the use of inorganic fertilisers. This is the fundamental way to increase agricultural productivity in a sustainable way.
- We have seen that the large youth population could be an opportunity for African economies. This mass of young people could be attracted by key links in value chains such as mechanisation, processing, transport, and marketing services, especially in the context of major innovations in digital services. The great difficulty lies in the mismatch between the skills provided by universities and other training centres and the demand for skills from agricultural and agrifood companies. Therefore, African governments should make huge investments to ensure adequate agricultural technical and vocational education and training systems, and build the skills of young people to seize the entrepreneurship opportunities offered by agriculture. These investments should integrate a specific component to improve the entrepreneurial skills of women and allow them to go beyond subsistence crops with low added value.
- Given the numerical importance of family farmers, their role in food production and in the preservation of biodiversity, the fate of future African agriculture will depend on the fate of family farming systems. Therefore, public policies must opt bluntly for the construction of a sustainable intensification around these family farmers. This assumes that public intervention must ensure that all the constraints facing this type of agriculture are removed. The intervention of the private sector is beneficial. However, it should operate through inclusive business models.

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