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RURAL YOUTH EMPLOYMENT IN AFRICA: AN EVIDENCE REVIEW

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by Justin Flynn and Thomas Yeboah

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Executive Summary

This report evaluates the potential of the rural economy to provide decent employment and the outcomes associated with various types of employment for rural young people in Africa. The review draws on elements of the Landscapes of rural youth opportunity framework, such as the importance of economic geography and local or regional contextual factors, in order to understand the available livelihood opportunities for rural African youth. Primarily, however, the review bases its analysis on the concept of structural transformation in order to determine the areas of the rural economy which can best provide decent employment opportunities for rural youth. This is amidst an ongoing global pandemic, which the ILO has estimated to have particularly impacted 1.6 billion informal economy workers around the world, a large number of which are young Africans (ILO, 2020b; ILO, 2021).

Africa is still mainly agrarian, with the majority of its population, including rural youth, still involved in agriculture. Projections estimate that **around half of Africa's new jobseekers will need to find employment in rural areas, at least until 2030.** In SSA in particular, around 60 percent of the youth population is expected to continue to live in rural areas in SSA for at least the next decade. There is a consensus among many scholars that agriculture must play a central role in the structural transformation of Africa's economy, both to help alleviate poverty and also to improve employment outcomes. **Growing the agricultural sector as well as its productivity is necessary in order to transform Africa's economies**, particularly those still mainly agrarian according to the development economic literature. Reasons for this include increased income effects among farmers and herders, as well as linkages to the wider rural economy which help to grow and provide often better employment opportunities in the non-farm sector.

Within the agricultural sector itself, contract farming has the potential to benefit small-holder farmers in rural Sub-Saharan Africa through improving access to credit, inputs, improved technology, remunerative markets, productivity and income. Our review of the literature shows that various types of engagement in commercial agriculture such as engagement in contract farming and outgrower schemes, value chains and farmer-group type engagements (e.g. cooperatives), and work in plantations and agricultural estates can improve agricultural productivity, livelihoods and income of local populations. Certification schemes and sustainability standards can also improve employment outcomes, especially incomes, but results are ultimately mixed. **Employment outcomes related to different contractual arrangements differ** based on gender and local contextual factors, such as the organisation of value chains, and **some contractual arrangements can sometimes have negative effects on employment outcomes.**

In terms of technology uptake, **ICT-based extension advice can have positive effects, particularly on income. It can also increase women's levels of knowledge and participation in decision-making within the household.** The returns to agricultural technology development (crop breeding, soil fertility management, weed control, soil and water management and agronomic practices) were also found to be high and far reaching not only in the smallholder sector but also the entire rural economy. **However, improved agricultural technologies can have little value unless they are rightly judged by smallholder farmers to be appropriate to their local context and subsequently adopted by them. Our review found the importance of an 'intermediate step' in the adoption process,** based on farmer characteristics and economic variables that affect the adoption of innovative technology. Overall, in order to better understand smallholder decisions and effective ways to ensure adoption of agricultural innovation practices, rural development planners and policy makers must consider both intrinsic and extrinsic set of factors that are shaping agriculture technology adoption simultaneously rather than separately.

There is ample evidence to suggest that climate change is having a negative impact on agricultural productivity and the livelihoods of millions of people in Africa, and thus an impact on potential outcomes for rural youth employment. This is particularly so for smallholder farmers in both SSA and North Africa who depend directly on natural resources and who have limited access to extension services and social protection systems that could enable them to build their capacity and resilience. Moreover, **young rural women are more vulnerable to the impacts of climate change than men** because of the contextual factors such as limited access to agricultural resources, extension services, input, land, and limited mobility and rights. Further, heat stress, drought and floods pose direct threats to North African and Sub-Saharan African rural livelihoods alike, with crop yields and livestock productions currently or projected to fall by as much as 50 percent in certain regions of Africa.

With regard to youth perceptions of the agricultural sector and to the livelihood aspirations of rural youth, we find that **generalising young people's perceptions and aspirations is ill-advised, and that context**

shapes young people's perceived landscapes of opportunity. For example, in areas where agriculture is more commercialised, the perception that greater economic and financial opportunities exist can lead young people to actively pursue such livelihoods. Other factors such as pride and heritage linked to agricultural livelihoods, as well as greater investment, can also lead young people to seek work in this sector. However, gender, generational and often patriarchal social structures can make navigating the landscape difficult, for example by limiting autonomy, thereby leading to discouragement and disappointment. Education also has an impact on youth aspirations and perceptions, with higher levels of education often leading to reduced desire to pursue agricultural livelihoods, though this is not necessarily true for those who've achieved higher levels of education and who have the resources to invest in what can be a lucrative economic sector.

Our review finds that **beyond the positive effects of certain types of interventions that foster employment growth or creation among rural youth in Africa, such as skills-training programmes, the configuration and method of implementation of such interventions affects the effectiveness of such programmes.** For example, in LMICs, skills training was found to be successful when combined with entrepreneurship programmes, while methods of delivery of agricultural skills training programmes need to be adapted to local realities in order to ensure effectiveness. Overall, our report reviews programmes across the four most common types of interventions: skills development and training, employment creation/services, self-employment/entrepreneurship, and agriculture-related interventions. We found that **very few evaluations of such programmes exist whether in Africa or even in LMICs more broadly.** As for interventions regarding employment outcomes for youth in the agricultural sector specifically, the evidence across LMICs is even more scant, with a recent systematic review finding this field to suffer from a chronic lack of evaluation.

We conclude that **despite the potential of the agriculture sector for improved employment outcomes for rural young people in Africa, opportunities for decent employment remain scarce.** Some types of contractual arrangements can lead to employment more closely aligned with decent employment. This is also the case for off-farm or non-farm employment opportunities that are generated from agricultural expansion, surpluses and linkages into other sectors of the economy. While generating decent employment remains a challenge, this is not exceptional for rural Africa, or Africa more generally. The vast majority of workers in Africa, rural or urban, work in the informal sector, and this is the case for more than 90 percent of young people in many countries in Africa. Still, the literature affirms that **developing the agricultural sector can in the shorter term contribute to increased incomes for farmers, and consequently for workers in the rural non-farm economy as demand for goods and services increases.** Agricultural and rural transformation can also lead to improved employment outcomes, setting rural and African economies more broadly on a path to decent employment creation. However, our review shows that **the conditions and context in which the development of the sector takes part is crucial in allowing certain groups, for example young women, to benefit from the sector's development.**

Over time, increased agricultural growth and productivity can help to transform Africa's economies, eventually raising living standards and employment conditions across rural and urban Africa. However, the literature points us to the following recommendations to help generate this growth, induce a generalised increase in standard of living, and make young people able to take part in their associated benefits:

- Invest in agriculture to provoke more economy-wide growth. Investing in and ensuring access to key resources such as infrastructure (e.g., roads, electricity, irrigation), land, inputs, credit, and extension will improve productivity and help to unlock markets to enable producers to take advantage of economic opportunities in the rural African economy.
- Ensure access to quality education both now and over the long term to enable a transition from primarily agrarian economies to more highly skill-based economies, leading to better employment outcomes (including quality) for workers.
- Identify and address specific constraints to accessing resources or opportunities for young women and men to overcome barriers and benefit from agricultural development. National, regional and local actors will need to take contextual factors specific to rural young people into account when developing policies or implementing programmes in order to maximise the potential benefits of rural and structural transformation.
- Skills training interventions have been shown to be more effective when aligned with the needs of the private sector/employers. Such interventions in lower-middle income countries are 20 to 30 percent more likely to have a positive and significant when provided solely by the private sector. In the agricultural sector specifically, interventions that combined multiple interventions, such as training, mentorship on technical and financial dynamics of agribusiness, and financial support for start-ups proved successful in enhancing youth engagement in agribusiness.

1. Introduction

Most of the world's poor today are found in rural Africa, and forecasts suggest that this concentration might become more pronounced if current trends continue. Despite increasing urbanisation, there are projections that around half of Africa's new jobseekers will need to find employment in rural areas, at least until 2030 (Filmer and Fox, 2014; Mueller and Thurlow, 2019). Africa has a youth employment challenge, which is particularly acute in rural areas, as sustainable and decent employment opportunities for young people are very limited, and poverty rates are high (AfDB 2016; IFAD, 2011). In this regard, ensuring that Africa's rural youth population find decent employment has become an important part of Africa's and donors' development and policy agendas. In this report, we seek to understand the nature of rural youth employment in Africa and to evaluate the potential of the rural economy to provide decent employment for young people in Africa. Specifically, we seek to answer the following question: 'What does the evidence tell us about rural youth employment in Africa, and specifically about how more decent employment opportunities can be generated for rural youth?' Our paper focuses mainly on the role of agriculture as the basis for the generation of this employment. In order to answer our research question, we review the evidence (mainly academic articles and grey literature) around four main themes: the case for 'agriculture as the engine of economic growth' in rural Africa, outcomes of youth employment in agriculture, in particular in terms of decent jobs, youth perceptions and aspirations of these areas and sectors, and the effectiveness of government and other related interventions to promote decent youth employment in rural Africa.

In order to conduct the analysis, the paper takes two approaches: first, it evaluates the employment situation through the lens of the Landscapes of rural youth opportunity framework (Sumberg et al., 2019), and second, through the lens of structural transformation. The first framework speaks in part to the institutional context and social norms surrounding rural youth employment, and the second framework informs us about the stage of economic development of a country. We use these frameworks because it has been recognised that the promotion of effective policies for economic development depend on 'what stage of the development process a country is in and what institutions and social norms are in place' (Christiaensen et al., 2020: 8).

Before moving onto the analysis of the evidence in our review, we take the opportunity to set the scene regarding rural youth employment in Africa, including in the context of the ongoing COVID-19 pandemic.

1.1 Setting the scene

Over the past few years, Africa has experienced some considerable achievement in economic growth rates. Indeed, six out of the world's ten fastest growing economies are in Africa (Filmer and Fox, 2014). Nonetheless the growth has not necessarily been very inclusive as only a third of African countries achieved inclusive growth through a reduction in poverty and inequality (AfDB, 2020). Indeed, compared to elsewhere in the world, where a percentage increase in average per capita consumption has been associated with a rate in poverty reduction of over 2 percent, this reduction in Africa has averaged 0.69 percent (Filmer and Fox, 2014). The slow poverty reduction progress recorded in Africa can be linked in part to the sources of growth: mainly in oil, gas, and mineral extraction, and not in labour-intensive sectors such as agriculture or manufacturing. Although poverty rates have fallen, the absolute number of persons living in extreme poverty has been on the rise, increasing sharply from 278 million in 1990 to 413 million in 2015, due in part to high population growth (World Bank 2018; Beegle and Christiaensen, 2019). This raises concern as to whether Africa may be able to realise the United Nations Sustainable Development Goals (SDG) of eradicating poverty and/or of ending hunger by 2030.

Moreover due largely to the ongoing COVID-19 crisis, although Africa's economy is expected to rebound with 3.3 percent growth in 2021, its economy shrank by 2.1 percent in 2020, sparking the region's first recession in 25 years (AfDB, 2021; World Bank, 2020). The substantial downturn in economic activities is expected to cost the African continent an estimated $115 billion in lost output by the end of 2020, due in part to lower domestic consumption and investment caused largely by COVID-19 and its associated economic lockdowns and containment measures (World Bank, 2020). This in turn pushed 30 million Africans into extreme poverty in 2020 and is projected to push a further 39 million Africans in 2021 (AfDB, 2021).

In relation to employment, the COVID-19 crisis is also likely to affect all populations, particularly the youth. Prior to COVID-19, young people whether living in a developed, developing or transition economy were faced with an unemployment crisis and difficulties with securing decent employment (ILO, 2013). In addition to this, the disruptions brought about by the pandemic are exacerbating the challenges already associated with the youth employment crisis particularly in Africa (Acland, 2020; Zeufack et al., 2020). According to the African Union, an estimated 20 million jobs both in the formal and informal economies in Africa may be lost, with a particularly strong economic impact anticipated in Angola, South Africa and Nigeria (Acland, 2020; Zeufack et al., 2020). Indeed, the immediate impact of COVID-19 on employment will be particularly acute for younger demographics. According to the ILO, about 1.6 billion informal economy workers, including large proportions of youth and women have been severely impacted by lockdown measures in the world, including in Africa which experienced a 9.4 percent in labour income losses due to working hours lost (ILO, 2020b; ILO, 2021; Rafaeli & Hutchinson, 2020; Parsitau, 2021). The youth employment situation therefore deserves urgent attention. COVID-19 infections rates in Africa are not what they have been in Europe or in North or South America, though they are rising, , yet the continent will remain a region in the world where youth employment is and will continue to be one of the most important development challenges in a post-COVID era.

Indeed, an estimated 60 percent of the world's labour force growth will be in Africa between 2010 and 2050; 60 percent of the population of Africa is under 25 years of age; and the youth population will reach 400 million in the next decade (Losch, 2014). According to the AfDB (2016), one third of the nearly 420 million youth (15-35) in Africa are unemployed or feel discouraged, a further third are in vulnerable employment, and only one in six participate in wage employment. Among 15 to 24 year olds, the NEET (not in employment, education or training) rate increased slightly to 20.8 percent for Africa in 2021, and while the rate is around 10 percent higher for young women, that discrepancy decreased between 2012 and 2018 (ILO, 2020a). Abdychev et al. (2018) note that around 20 million jobs need to be created yearly until 2035 to accommodate the growing African workforce. In addition to the struggles to find work, under-employment and lack of decent working conditions abound. In SSA unemployment rates remain relatively low, though young people account for nearly 60 percent of the unemployed labour force. According to the ILO (2019) almost one in every five young people is unemployed, and of the estimated 38.1 percent of the total working poor in SSA, young people account for 23.5 percent. In SSA, almost 70 percent of working youth are living in poverty (UN, 2018). The situation in North Africa is also dire, as unemployment rates (generally among a more educated population) is estimated to be 23.8 percent, and this is projected to remain high in the coming years (ILO, 2019a). There is a gender dimension to the employment challenge in SSA as young women in the sub-region tend to be more disadvantaged in accessing employment and many experience worse working conditions than their male counterparts. Globally, labour force participation rates for women in North Africa are the second lowest (33.4 percent), after the Middle East (ILO, 2019a).

In much of rural Africa, a significant number of young people find themselves in family farming which is often unpaid (Dekker and Hollander 2017; ILO, 2016). While the share of the population that depends on agriculture has been decreasing in all sub-regions of the global south, agriculture still accounts for more than half (52 percent) of total employment in SSA (ILOSTAT, 2020). That figure stands at 58 percent in Central Africa, 65 percent in Eastern Africa, only 8 percent in Southern Africa (dominated by South Africa at 5 percent, though rates are 51 percent, 76 percent, 50 percent, and 66 percent in Angola, Malawi, Zambia and Zimbabwe respectively), 40 percent in Western Africa, and 23 percent in Northern Africa (ILOSTAT, 2020). In terms of time spent in agricultural employment (in full-time employment equivalents), rural African youth spend 51 percent of their time in agriculture, while that figure is 36 percent for adults (Dolislager et al., 2020). Due in part to its seasonal and rainfed nature, a problem with the agricultural sector in SSA is that it represents 'a large reservoir of underemployed workers' (McCullough 2017: 134). In addition, the prevailing informality and the poor quality of employment in both farm and non-farm segments of rural economies in Africa remains a serious concern (ILO, 2020c). Rural youth in Africa continue to face challenges related to unemployment, under-employment, and poverty. They essentially earn low wages, work under insecure, casual, unsafe and even exploitation working conditions, often with no legal forms of employment arrangements (FAO, 2020; ILO, 2020c).

A number of challenges inhibit rural youth's access to decent work: limited access to market and financial services, poor livelihood prospects, limited involvement in policy dialogues, inadequate infrastructure, low levels of compliance, poor OSH practices, high levels of informality, inadequate labour and social protection, and limited access to public and private services. Addressing these fundamental challenges will be crucial in enhancing youth participation in the agricultural sector, and eventually addressing the significant untapped potential of this sizeable and growing demographic while reducing widespread rural poverty.

Having set the scene regarding the employment of African youth in rural areas and in agriculture, the remainder of the paper is structured as follows. The next section presents the two frameworks helping guide the analysis throughout the paper: the Landscapes of rural youth opportunity framework, and structural transformation; the third section focuses on agriculture as the engine for economic growth and its role in rural youth employment generation; the fourth section discusses decent employment creation, and the impact of different agricultural production models and technology on youth employment outcomes; the fifth section presents rural young people's perceptions and aspirations regarding employment; the sixth section provides an overview of the types of youth employment interventions being carried out in Africa, as well as their outcomes; and the last section concludes our paper.

2. Theoretical framework: Landscapes of rural employment opportunity and structural transformation

2.1 Landscapes of rural employment opportunity

The Landscapes of rural youth opportunity framework developed by Sumberg et al. (2019) attempts to frame young people's understanding of the livelihood opportunities they see as available to them, and the factors that lead them to read the landscape and to ultimately decide on the livelihood opportunities they decide to take up. According to Sumberg et al. (2019: 13), the landscape of rural youth opportunity is structured by four key pillars. These include: economic geography, local particularities (including the institutional context), social norms, and family and access to resources.

The economic geography pillar explains that in any given local context, some economic opportunities are likely to be more viable than others. While the production of a commodity may be potentially viable in relation to agroecology, it may not necessarily be economically viable. Economic viability of a commodity depends on, among other things, access to inputs and markets. Independent of individual preferences, specific social norms, or local context, economic geography sets the first layer in shaping what is possible for rural youth (IFAD, 2019; Sumberg et al., 2018).

The second pillar that structures the landscapes of opportunity for rural youth relates to local particularities. This takes into consideration how local agrarian dynamics (for example demography, historical patterns of development, land availability and the distribution of landholdings), and how local politics and institutions (e.g. land tenure regimes, cooperatives and farmer-based organisations) that underpin them shape the different employment opportunities for young people.

In a given rural context, opportunities are also structured by social norms and expectations associated with social differences including gender, class, education, ethnicity, marital status, and age, all of which reproduce preconceived notions of what is acceptable or appropriate (Sumberg et al., 2019; Sumberg et al., 2014). Aspects of these dimensions may act as barriers or constraints for certain groups of young people in accessing employment opportunities. For example, the use of a motorbike might be considered inappropriate for young women but may be deemed fit for men. The literature on 'men's crops' and 'women's crops' provides further examples of how social norms structure the landscape of rural economic opportunity for young people (Carr, 2008; Evans et al., 2015; Orr et al., 2016).

Finally, family and broader social networks also help structure the landscape of rural employment opportunities. The literature on rural youth employment provides ample evidence of how family and kin groups are instrumental in enabling rural young people to access productive resources including land, credit, and technology (Yeboah et al., 2020; Flynn and Sumberg, 2017). Sumberg et al. (2019) note that social norms and local particularities shape differential access to resources which young people often access initially through family relations.

The framework also includes one final component, that is the reading of the landscape by young people (i.e. a young person's personal preferences, experiences, etc.). While we recognise the importance of this issue, in this paper, we focus on the structural factors (i.e. the pillars) of the framework, as we believe that it is these factors that help to shape the possibilities, and ultimately the opportunities that are available to young people.

Before moving onto the concept of structural transformation, we first define what is meant by 'rural' or 'rural area' in the Landscapes of rural youth opportunity framework, and in this paper more generally.

2.2 'Rural'

In the Landscapes of rural youth opportunity framework, rural areas are ultimately broken down into 'accessible areas', the 'middle countryside', and 'remote rural areas' (Sumberg et al., 2019: 11). 'Accessible areas' include peri-urban areas and rural areas 'with good physical access to urban markets' (p. 11). Further, in their paper, the authors operationalise rural areas as including all households within enumeration

areas considered as 'rural' by the different countries' national statistics agencies, as well as households situated in what can be considered 'urban' areas, but which have population densities lower than 1,000 people per square kilometre (p. 17). When operationalised, 'accessible areas' are defined as locations which are within 30 minutes of travel time to an urban centre with a population of 50,000 or more; the 'middle-countryside' is defined as being within 30 minutes to two hours away from such a centre; and 'remote areas' refer to the remaining areas (p. 17).

In the literature more broadly on the definition of what is 'rural', the definition varies widely, both depending on the author studying a particular rural area (and what their conceptualisation of what 'rural' is) (Beauchemin, 2011), and on the country (e.g. depending on the national statistics department's definition, as mentioned in the Landscapes of rural youth opportunity framework above; see also ILO, n.d.). Although there is no universal definition of rurality, largely because countries use differing criteria to define the concept (ILO, 2018; 2019a), the ILO (n.d.), which composed an inventory of definitions of 'rural' and 'urban' in several countries around the world, found that for Africa, the main element determining the definition of an area is the population size. Beauchemin (2011), for example, reports this threshold for a settlement as being up to a population of 5,000 or 10,000. However, an additional component which can further determine the consideration of an area as either 'urban' or 'rural' includes the type of employment practised by the population living there. For example, in Algeria, for an area to be considered urban, a settlement (or 'agglomeration') needs to have a population of at least 5,000 people, and have less than 25 percent of its economically active population be involved in agricultural activities (as well as other elements which figure into the definition, such as access to a number of various utilities and services) – otherwise, the area is considered rural (or semi-rural, depending on the case) (ILO, n.d.: 1). In Nigeria, areas are considered rural if they are not part of a town with a population of 20,000 or more and whose occupations are not mainly agrarian (p. 6). Finally, for Ethiopia, the population threshold can be a lot lower, though the nature of the population's occupation still matters, such that urban areas are those with populations over 1,000 and whose main activities are not primarily agricultural (p. 3). For Potts (2012, 2013), who adopts a critical perspective of statistics and projections regarding the Africa's 'urbanisation' rate, used by some international organisations, this notion of primary occupation among the population is crucial to an appropriate definition of urban or rural. Indeed, she argues that an area should be considered urban 'only if most of their residents derive the majority of their livelihoods from non-rural occupations (e.g., not agriculture, fishing, forestry)' (Potts, 2012: 1382-83). Even this may be a 'narrow conceptualization' of what is 'urban', it is a 'necessary' one, according to her (Potts, 2012: 1383). Otherwise, conceptualisations, including by major development organisations, are liable to inflate the number of those found in 'urban' areas, for example by incorporating peri-urban areas whose populations are mainly involved in agriculture (Potts, 2013).

In our paper, we will take into account the author's sense of 'rurality' in the evidence we review.

2.3 Structural Transformation

To complement the Landscapes of rural opportunity framework, the state of the economy and of the level of structural transformation within a certain country or region is crucial to determine the types of opportunities available to young people (IFAD 2019). According to Losch (2016: 7), 'the process of structural transformation refers to changes in the sectoral and spatial distribution of economic activities and people, illustrated by the evolutionary pathway followed by many countries throughout the world'. A general result of the process of structural transformation is typically the declining share of agriculture's contribution to GDP and the declining share of the working population in the sector. A structural transformation process is fundamentally accompanied by reallocation of labour from lower to higher productivity sectors and changes in productivity within sectors (Kucera and Jiang, 2019). The successes of other developing nations, particularly the 'East Asian tigers' is sometimes considered as a blueprint for African countries for inclusive growth and job creation. Rapid economic growth in East Asia involved a process of structural change, which led to a decline in the share of workers employed in agriculture as opportunities for employment became available in the more remunerative and higher productivity sectors of the economy (Mueller and Thurlow, 2019). This led to substantial reduction in poverty, driven in large part by opportunities for farmers and their families to take advantage of a range of employment opportunities that were open to them in the economy. The process was also supported by rising productivity in the agriculture sectors, which allowed a proportion of workers to leave farming without increasing food prices or urban wages, which could have hampered the process of industrialisation

(Mueller and Thurlow, 2019). ILO (2019a) has recently noted, however, that less industrialised countries are not following a typical economic transformation path experienced by industrialising nations beforehand, but rather are seeing a shift in labour directly from agriculture to the service sector, and bypassing the manufacturing sector completely, in a process known as 'premature deindustrialization' (p. 1, cited in Dasgupta and Singh, 2006). Rodrik (2016a, 2016b) also suggests scepticism at African countries' ability to transform in the classical way, and denotes that much of the structural transformation underway is often into a service sector that is not particularly productive. Still, some African countries have been able to increase agricultural productivity and reduce poverty at a faster rate than other African countries, such as Ethiopia and Rwanda (Jayne et al., 2017). Both these countries have been able to raise their industrial output and share in industrial labour (at the same time as a reduction in agricultural employment), by double and nearly quadruple in terms of shares of employment in the industrial sector between 1991 and 2018 respectively, and at the same time raising productivity by at least double during the same period (ILO, 2019a).

3. Rural transformation and the role of agriculture as the engine of growth

The process of rural transformation is encompassed in the wider process of structural transformation (Jayne et al., 2018). While structural transformation may include the shifting in labour between the industrial and service sectors, namely in urban areas, rural transformation concerns economic transformation of rural areas in particular. Rural transformation is typically characterised by an increase in agricultural productivity, leading to marketable surpluses, and consequent livelihood diversification (IFAD, 2016: 23). This in turn leads to improved opportunities for decent off-farm employment, better rural infrastructure and services, and broad-based rural economic growth (IFAD, 2016).

For Jayne et al. (2018), as was seen in the conceptualisation of rural transformation above (IFAD, 2016), this process of transformation and economic dynamism, including in the non-farm sector, does not tend to arise spontaneously. For economies whose populations are primarily involved in agriculture, as is the case for many SSA countries, they state that 'agricultural productivity growth is generally necessary to generate transformative income growth and money circulating in rural areas to stimulate and sustain the growth of non-farm goods and services' (Jayne et al., 2018: 779-780). Thus, central to the process of rural transformation is the role, and growth, of the agricultural sector and of agricultural productivity (IFAD, 2016; Jayne et al., 2018; see also Losch, 2016).

The notion put forward above relates to the argument of agriculture as 'an engine of economic growth'. While there is some contestation around the extent to which agriculture should be prioritised as the main engine of economic growth in Africa, for example depending on the nature of the economy, and whether economies have access to imports (including agricultural imports) (Gollin, 2015), there is consensus on the importance of growth in the agricultural sector in driving poverty reduction, economic growth, and broader rural transformation. Reardon et al. (2007: 140) mention agriculture as one of the three potential 'engines of regional growth', with the other two being mining and tourism, though these latter two engines are not present everywhere in rural Africa. This is what McCullough (2017: 149) alludes to in her study of productivity in SSA, stating that in SSA, 'apart from agriculture, no engine for rural economic growth is apparent'. Further proponents of this view or theory that agriculture plays the main engine of rural economic growth include Diao et al. (2007, cited in Gollin 2015: 111), who state that 'most African countries cannot significantly reduce poverty, increase per capita incomes, and transform into modern economies without focusing on agricultural development'. Even economists who have less of a 'pro-agriculture' (Losch, 2016: 24) stance to development admit the importance of the agricultural sector in developing economies. For example, Gollin (2015: 116) states the following on Africa:

> ***Given that almost all countries on the continent have at least one-third of their workforce in agriculture, and given the importance of agricultural output in the consumption baskets of the poor, it is hard to imagine that significant growth or poverty reduction will arrive in the absence of agricultural productivity growth.***

The importance of growth in the agricultural sector and in agricultural productivity particularly is highlighted by the importance of growth linkages tied to growth in this sector. As has been historically demonstrated, growth in agricultural productivity can generate strong multiplier effects that expand or provide job opportunities in the off-farm economy and the entire downstream stages of the agrifood systems (value chains) (Haggblade et al. 2007; 2010). This relates to the very concept and processes of rural transformation, mentioned above. As Jayne et al. (2017: 1) note, African economies that have effectively enhanced farm productivity growth (e.g. Rwanda, Ethiopia) have achieved higher productivity in the non-farm sectors of the economy, a reduction in incidence of poverty, and a more rapid diversification of the labour force from farming into the broader economy (as seen earlier). The experience of Rwanda for instance shows that recent high economic growth and poverty reduction resulted in large part from agricultural policies and investment which in turn led to significant improvements in on-farm agricultural productivity, leading to increased incomes of rural families (Jayne et al. 2017; Allen et al. 2016). As seen in Section 2.3, both Rwanda and Ethiopia were also able to transition parts of their agricultural labour force into the industrial sector, furthering productivity gains. Further evidence of the significant impacts and importance of agricultural growth on the rural economy in developing countries comes from a

'bellwether' study from Malaysia, where for every dollar of agricultural income derived from investment in an irrigation scheme, a further 83 cents were generated in 'second-round' income gains to other parts of the regional economy, 79 cents of which were generated in the non-farm sector and 4 cents in other agricultural activity (Hart 1987, cited in Haggblade et al. 2007: 158). In Ethiopia, evidence showed that every US $1 output in agriculture further generated US $1.23 in economic activity in the other sectors of the economy (Diao et al., 2016, cited in Jayne et al., 2017: 19). An estimated 40 percent of this increased economic activity was attributed to production linkages, and 60 percent from consumption linkages.

Finally, another reason to invest in and promote growth in the agricultural sector is because of the impacts it has been found to have on poverty reduction. Indeed, Christiaensen and Demery (2007) and Christiaensen et al. (2011) find that growth in the agricultural sector plays a more important role in reducing poverty than other sectors, especially in lower-income countries such as in SSA. For example, Christiaensen et al. (2011) found that growth in the agricultural sector was 3.2 times more effective at reducing extreme poverty (less than $1/day) in low income and resource rich countries (e.g. of SSA) than other sectors.

Among other proponents of the strategy to invest further in the agricultural sector as a way to improve employment outcomes for rural young people in Africa, and to spur wider economic growth are Yeboah and Jayne (2018) (see also e.g., Betcherman and Khan, 2018; Fox and Filmer, 2014). By studying nationally representative livelihood surveys in multiple SSA countries, Yeboah and Jayne (2018) find that despite a decreasing employment share, agriculture, as mentioned in the introduction, remains in aggregate the largest sector of employment for young people (15-34) (their survey included Ghana, Nigeria, Rwanda, Tanzania, Uganda, and Zambia). Second, they also find evidence to support that the performance in farming strongly affects the rate of growth in the wider economy (and specifically, a positive link between increased agricultural productivity and an increase in non-agricultural production across 11 SSA countries) (Yeboah and Jayne, 2018). Third, they argue that with proper policies and public expenditures that can help make agriculture less arduous and more remunerative, the agricultural sector can absorb the 'unprecedented growth' of young people entering the labour market in Africa (Yeboah and Jayne, 2018: 826). They argue that young people are turning their backs on poverty, rather than on farming per se. In their view, a more productive agricultural sector can provide decent agricultural employment and continue to spur the all-important growth in the nonfarm sector to boost livelihoods across rural areas, and across Africa more widely.

Further studies also find that most rural Africans are employed in the agricultural sector (Fox and Thomas, 2016; IFAD, 2019; Elder et al., 2015). Fox and Thomas (2016) report that the vast majority of young people in SSA aged 15-16 (90 percent) and 24 or older (80 percent) are involved in agriculture at least as one of their economic activities. IFAD (2019) reports that rural young people in SSA (aged 15-24) spend 70 percent of their working time in farming, with those aged 15-34 spending 60 percent of their working time in the agrifood system (though no exact breakdown is provided on the exact nature of these activities, e.g. whether in production or otherwise). Elder et al. (2015) also found that for eight surveyed SSA countries, the majority of rural youth (aged 15-29) were involved in agriculture (52.3 percent).

While employment rates in the agricultural sector in Northern Africa are substantially lower than in SSA, going from around one-third of the working population in the region in 2000 to one-quarter today (ILO, 2019b), agriculture still plays an important role as a livelihood and economic activity. In some countries such as Morocco, however, agriculture 37.5 percent of employment nationally, and 72.9 percent in rural areas, as of 2017 (Harbouze et al., 2019). We recognise the importance of other sectors of the rural economy, including mining, manufacturing, and other industries (Cilliers, 2020). However, because agriculture is still the most important livelihood activity for young rural Africans, and because it can act as 'engine for economic growth', we focus our analysis both on the economic repercussions of investing in the agricultural sector, and on the livelihood outcomes associated with being employed in the agricultural sector, including under different employment arrangements. This includes involvement in crop, livestock and fishing activities, which all constitute major agricultural livelihood activities.

We already have some evidence to draw upon in terms of potential impacts of investments in agricultural productivity in Africa and its impacts on the economy and on employment. For example, in Ethiopia, over the past 15-20 years the country has sought to invest heavily in and reform the agricultural sector (Jayne et al., 2017). Among other things, it has implemented land reforms to improve tenure security, particularly for female farmers, and has improved its agricultural extension system to improve service delivery and

technology adoption. Between 2005 and 2014, Ethiopia consequently increased cereal production by 70 percent (7 percentage point increase annually on average) and saw an average annual increase in GDP of 10 percent, while being able to achieve significant poverty reduction (Jayne et al., 2017: 22). Countries such as Ethiopia and Zambia that have seen some of the largest increases in agricultural productivity growth also experienced the largest increases to non-farm sector productivity growth. The growth in productivity of labour in the agricultural sector can also have a drastic effect on the share of labour moving to other sectors of the economy. Evidence shows that a 20 percent increase in agricultural labour productivity over a five year period can lead to exits out of the agricultural sector by labour of 0.4 to 6.2 percent annually, on average (Jayne et al., 2017; Yeboah and Jayne, 2017).

Authors such as Filmer and Fox (2014), Losch (2016), and Jayne et al. (2017) agree on various ways to improve productivity in the agricultural sector. These are 1) improving access to credit and financial services, which is especially important for young people as they have more limited access to credit (Filmer and Fox, 2014; Flynn and Sumberg, 2018, Losch, 2016), which could be done through extension services, NGOs, or other actors; 2) land policies to improve tenure security, which can lead to increased investment in land productivity (Filmer and Fox, 2014); 3) infrastructure, such as electricity, roads, and irrigation – in Africa for example, only about 3 percent of land is irrigated (FAO, 2020d), but in countries such as Morocco, where about 13 percent of land is irrigated, irrigated agriculture production contributes 45 percent to the added value of the sector, 75 percent of exports, and 35 percent of agricultural employment (Harbouze et al., 2019: 11) – smallholder irrigation schemes has also recently been recognised as vitally important, as opposed to a reliance only on large/government irrigation schemes (FAO, 2020d); 4) extension services (skills, inputs provision), where in SSA, for example, fertiliser use on average is 17kg/ha, which is about 15 percent what it is in other developing countries (AGRA, 2019; Senbet and Simbanegavi, 2017); 5) education, which will be required as agriculture (and other parts of the economy) becomes a more knowledge and technology intensive sector (Fox and Filmer, 2014; Jayne et al., 2017).

3.1 Climate change and its impact on rural agriculture

The process of agricultural and rural transformation is likely to be shaped by the phenomenon of climate change. The Intergovernmental Panel on Climate Change (IPCC) (2014) note that global warming is leading to changes in rainfall patterns, and occurrence of extreme weather events such as increase in temperatures, drought and flood. A consequence of this is that efforts to boost agricultural productivity, food security and the prospects for rural youth employment are likely to be stymied if adequate mitigation and adaptation strategies are not put in place. While the phenomenon of climate change is already impacting on all economies across the globe, a number of non-climatic factors make many African countries more vulnerable to the effects of climate: fragile and hazardous locations, lack of access to resources and services, rapid population growth and human mobility, gender inequality, poor health, poverty and hunger, and governance challenges (UNECA, 2012; Sakamoto et al., 2020; Ali et al., 2020).

There is ample evidence to suggest that climate change is impacting on agricultural productivity and the livelihoods of millions of people in Africa (FAO, 2020; Ali et al., 2020). This is particularly so for smallholder farmers in both SSA and North Africa who depend directly on rainfall and who have more limited access to extension services and social protection systems that could enable them to build their capacity and resilience (Lewis et al., 2018). According to the FAO (2009), the increasingly unpredictable and erratic nature of weather systems poses a serious threat to African rural economies and agriculture is likely to pay a significant cost of the impact of climate change. More than a decade ago, the IPCC 2007 report provided an extensive assessment of how climate change is likely to impact on agricultural sector in Africa in the coming years. The report notes a potential increase in temperatures by between 1.5ºC and 4ºC, which will result in reduction of crop yields and crop revenue by 50% and 90% respectively by the year 2100. Prolonged periods of droughts and/or floods during El Niño events are also expected to result in loss of agriculture's contribution to GDP by 2 to 7 percent, 2 to 4 percent, and 0.4 to 1.3 percent in SSA, Western and Central Africa, and Northern and Southern Africa respectively. The fisheries sector is also likely to see a reduction in productivity by 50 to 60 percent by 2100 due to changes in sea temperatures (see also FAO, 2020c). Climate change is also likely to result in a decline of viable arable land for production in Africa, with 9 to 20 percent of arable land predicted to become much less suitable for agriculture by 2080 (FAO, 2009). Aggregate yields of maize in smallholder rain-fed systems in Africa and Latin America is likely to decline by 10 percent by 2055 because of climate variability (Morton, 2007). In North Africa, crop yields are projected to reduce by 10 to 20 percent by 2050, and also yields from

several economically important fruits including olives, apples, pistachios, pomegranates and other nuts are likely to experience failure or diminish due to high winter temperatures (FAO et al., 2017; Lewis et al., 2018). In addition, pastoralists in North Africa would be affected as heat stress and reduced feeds are expected to cause a 25 percent reduction in animal production, and daily milk yield in relation to feed is also projected to see a reduction (Lewis et al., 2018).

Beyond these projections there is a growing body of empirical research and assessment from a variety of contexts in Africa that have documented the dynamic ways in which climate change is impacting on rural economies. In the Southern Africa Development Community (SADC) region, where there is huge year to year rainfall variability, and where just under 3.5 percent of the sub-region's arable land is under irrigation, there is evidence that climate change has resulted in net productivity reduction of more than 10 percent for crops such as maize, millet, sorghum, wheat and sugar cane (SADC, 2011). Within the same region, there has been a reduction of rainfed agricultural yields by 50 percent, and drought conditions have exposed 14.4 million people, particularly those in rural areas, to hunger and malnutrition. Also, higher and increased temperatures in the SADC region have affected livestock productivity. The rate of milk production, calving, and general body weight for cattle in the SADC have all been affected with implications for availability of and access to dairy product and protein. Subsistence farmers who rely fundamentally on surface water has also been affected due to declining water supplies which affect livestock production (The Economic Commission for Africa, 2012). Similar findings of the impact of climate change on rural populations have been reported elsewhere in Africa. Qualitative assessments from northern Ghana highlight the impact of climate change on the different capitals (natural, financial, social and human) on which agricultural households draw to build their livelihoods (Akudugu et al., 2012). Excessive rain and floods in the region negatively impacted on life and property. Also, high temperatures in the region are reported to have contributed to degradation of arable lands for agricultural production, destruction of trees and grasses through bushfires triggered mainly by high temperatures, which had implications on agricultural yields, food security and farmers income (Akudugu et al., 2012).

Moreover, farmlands with crops (cereals, fruits, vegetables and cash crops) in rural areas of Ethiopia estimated to be about 257.6 hectares, as well as soil and water conservation infrastructures, water and irrigation schemes were destroyed due to irregular flooding. This affected the livelihoods of over 10,000 people in the country (Gezie, 2019). In Tanzania, meteorological data point to prolonged drought, unpredictable and uneven distribution of rainfall and increased temperatures over the last three decades which is leading to a reduction in agricultural productivity. Stressors such as low fertility, crop diseases and inadequate extension services resulted also in decreased productivity and the re-occurrence of food insecurity. However multiple adaptation strategies such as water harvesting for livestock and small-scale irrigation, increases in wetlands cultivation, use of improved, drought tolerant and early maturing crop varieties enabled farming households to cope with the impacts of climate change. Nevertheless, these strategies were more common among wealthy households while the relatively poorer households with limited livelihood assets were still susceptible to the negative impacts of climate change and food security (Kangalawe and Lyimo, 2013). In effect, the negative consequences of climate change on rural agricultural households in Africa manifest mainly through reduction in production and productivity of smallholder farmers with its implications for food security and income, which can lead to widespread vulnerability especially in countries (e.g., Malawi) that depend highly on agriculture (Economic Commission of Africa, 2012).

Evidence from North Africa also suggests that rising temperatures associated with climate change is gradually leading to a reduction in the land area suitable for agriculture, shortening the length of growing seasons, and reduction in crop yields with obvious implications for the rural poor (mainly youth) who rely on agriculture for their livelihoods and sustenance. A 1ºC rise in temperature in a given year in many countries within the region is expected to result in a decline in economic growth by 1.1 percent (Al-Olaimy, 2020). Droughts and floods which are typical climatic events in North Africa pose a direct threat to lives and livelihoods. Nonetheless given North Africa is among the world's water-scare regions in the world with exclusive dependency on climate-sensitive agriculture, socio-economic conditions of the poor are likely to worsen further in the coming years. This is particularly crucial for the entire region as most of the economies in North Africa depend on agriculture (Al-Olaimy, 2020). Climate change is causing increased variability in food supply by smallholder farmers, with an estimated 3.8 million people at risk of hunger in the region. In northern Africa, particularly in Sudan, chronic malnutrition resulting in part from climate change is still a key development challenge (FAO 2016; Lewis et al., 2018).

It should be noted that rural populations' vulnerability to climate change is likely to differ across geographical locations and groups (e.g., income-groups, gender and occupations). Based on analysis of existing geographical data sets of farming systems, projections of length of growing periods, mixed crop-livestock, and grazing systems in parts of the Sahel, East Africa and the great Lakes Region, and indicators of socio-economic vulnerability in Africa have been noted to be more susceptible to the impact of climate change (Morton, 2007). Moreovercompared to men, there is evidence that rural women tend to be more vulnerable to the impacts of climate change because of their limited mobility, limited rights, and limited access to decision making authorities, information and agricultural resources including land, inputs and extension services (Jost et al., 2016; FAO, 2020). Women represent the vast majority of the world's poor, and may not only lack the capacity to cope with the adverse effects of climate change, but also because their livelihoods are dependent on natural resources that are sensitive to the changing climate (UNDP, 2012). FAO (2020) notes that the gender-differentiated impacts of climate change is more pronounced among rural women, who, compared to men, rely more on biomass (firewood, agricultural crops, waste and other forest resources) for their household energy needs and livelihoods. Also, research findings from Malawi, for example, demonstrate that in places where extreme weather events result in a decline in consumption and nutrition, the effects are more noticeable in rural communities where the share of land owned by women is higher. In Ghana, Uganda and Zimbabwe, where smallholder farmers are changing their agricultural practices due to perceived impact of climate and environmental change, studies found that financial constraints (for Ghana and Uganda) and increased reliance on CA (in Zimbabwe) also contributed to negative labour outcomes (e.g., increased labour loads) for women (Jost et al., 2016; Dube et al., 2017).

What is clear therefore is that climate change can exacerbate existing gender inequalities in rural agriculture. However, there is also the potential for women to become agents of change especially in contexts where their role in agriculture is acknowledged, and they are provided with equal access to resources and services (e.g., extension services). Identifying appropriate gendered climate smart agriculture practices and technologies in a given context in rural Africa will require policy makers to meticulously analyse prevailing agro-ecological conditions, as well as specific socio-economic and institutional norms, projected climate change scenarios and potential impact of climate change in the future (FAO, 2020).

Overall climate change has a substantial impact on agricultural productivity, livelihoods and income of the many millions of young people who derive their livelihoods from the agricultural sector. Without appropriate strategies to adaptation for agriculture in Africa, the region will continue to suffer and remain vulnerable to deleterious effects of climate change particularly on agriculture and rural based livelihoods. This will likely have implications for young people's orientation and aspirations to enter into the agricultural sector.

4. Challenges and opportunities for the promotion of decent work for rural youth

4.1 Agricultural commercialisation models and their impacts on youth employment outcomes

In the previous section, we saw that while increases in agricultural productivity may lead to increased off- and non-farm employment, which are widely associated with better employment outcomes (Haggblade et al., 2010; Mueller and Thurlow, 2019; Yeboah and Jayne, 2018) and with the possibility of decent employment generation in the farm sector itself, they also tend to be associated with increased exits out of agricultural labour (Yeboah and Jayne, 2018). However, rural residents, including young people, are not simply moving out of farming and therefore out of rural areas entirely, but rather, they are increasing the uptake of activities in the rural off-farm and non-farm sectors, as can be seen in the increased share of time spent employed in these sectors, according to Yeboah and Jayne (2018). Additionally, an increasing body of literature, has found that African countries are urbanising at slower rates than previously predicted, and that much, if not most, of migration in Africa is rural-to-rural (Beauchemin, 2011; Potts, 2012; de Brauw et al., 2014; Yeboah and Jayne, 2018). In addition, While there is more to say about young people's livelihood and migratory trajectories in Africa, young Africans are still predominantly located in rural areas and employed in agriculture. It is to the conditions and configurations of work in these areas that we now turn.

In rural Africa, where the vast majority of the population, including the youth, engage in agriculture, smallholder farmers face a number of constraints in production, marketing, limited access to services including credit and effective extension, which are deemed as crucial for upgrading commodity value chains (Wiggins et al., 2010). A growing body of literature from SSA highlights the potential of contract farming to benefit small-holder farmers in rural Africa through improved access to credit, inputs, modern technology, remunerative markets, productivity and income (Kanburi Bidzakin et al., 2019; Yaro et al., 2017; Simmons et al., 2005).

Our initial review of the available literature shows the potential of various types of engagement in commercial agriculture such as engagement in contract farming and outgrower schemes, membership-based farmer organisations (e.g., cooperatives), and work in plantations and agricultural estates to improve agricultural productivity, livelihoods and income of local populations including for youth. However, outcomes differ based on gender and local contextual factors. For example, Hakizimana et al. (2017) in their study of various Kenyan commercial agriculture production models found that smallholder farmers were able to benefit from waged employment on a large nearby canola and fresh flower producer estate, , as well as on nearby commercial coffee farms. The close opportunities for waged, though not necessarily decent, employment at these farms enabled the smallholder farmers to invest in their own commercial agriculture production. Young people in Zambia found employment in a large-scale beef production estate attractive particularly as dryland farming in that area is risky. The young people appreciated this type of wage employment as an alternative or complement to small-scale farming (Hall et al., 2017; Matenga and Hichaambwa, 2017). Outcomes for contract farming (also known as outgrower schemes) also varied between three case studies in Ghana, Kenya and Zambia. Outgrowers in Ghana and Zambia were generally better off than their counterparts not participating in these types of schemes, while those in Kenya were generally worse off as they were typically women farming small plots of land, with better-off farmers opting not to participate in the scheme (Hakizimana et al., 2017; Hall et al., 2017; Matenga and Hichaambwa, 2017; Yaro et al., 2017).

Kanburi Bidzakin et al. (2019) also investigated the impact of contract farming schemes on farm performance in three regions of Ghana (Volta, Northern and Upper East regions where 80 percent of the country's rice production comes from) and found that farmers' participation in such schemes increased yields by 27 percent and gross margins (profit) by 34.2 percent. Interestingly their econometric models revealed the huge impact that contract farming may have on farmers who were not involved in contract farming at the time of the research; participation can increase yield by 240 percent and further increase gross margins by 538 percent on the average. They, however, note that the size of farmland, educational level of the farmer and integrated soil fertility management (ISFM) positively influence participation

in contract farming. Based on these findings the authors concluded that contract farming serves as a tool for developing the local rice value chain in Ghana, and called for the need to promote farmers' participation through adoption of ISFM technology and sensitisation of relatively less well educated farmers to participate in contract farming arrangements (Kanburi Bidzakin et al., 2019). Contract farming also contributed to technology adoption and productivity growth although it did not result in profitability, while Abdulai and Al-hassan (2016) also concluded that despite productivity gains, engagement in contract farming did not improve smallholder including youth incomes in soybean production.

Participation in and outcomes of the various commercialised farming models in rural Africa differ by gender. The study by Yaro et al. (2017) of three different commercialised farming models (plantation, outgrower and individual commercial farming) in rural Ghana found that young men had more employment opportunities than young women. In both the plantation and individual commercialised agriculture, young men often? occupied permanent employment positions and were hired to carry out spraying of crops and clearing of farmlands, while women were predomianntly hired as temporary workers during harvest time. Men also occupied higher positions than females in both the outgrower (contract farming) and plantation models. Patriarchal gender systems and the perception that farm work is physically demanding limited women's employment potential in these schemes. Nonetheless young women had employment opportunities in the outgrower scheme mainly based on the assumption of what constitutes 'women's work'. The gendered employment opportunities translated into wage differentials across the different types of employment. Permanent workers, mainly men in the plantation agriculture and contract farming received higher wages than permanent workers in the individual commercialised farm or on the farm of the outgrowers (Yaro et al., 2017).

Overall, a meta-analysis of studies on the impact of contract farming on smallholder incomes found that contract farming had an average pooling effect of 38 percent, but this was liable to publication bias and survivor bias, which led to an overestimation of the income increase effect (Ton et al., 2018). The meta-analysis also found that benefits from contract farming are usually derived by larger farmers. The study found that in 61 percent of cases, contract farmers had 'significantly larger landholdings or more assets than the average farmers in the region' (Ton et al., 2018: 46).

4.2 Youth uptake of technology and its impact on agriculture related outcomes

As an emerging field that encompasses the use of ICT in rural domains, advancements in ICT in agriculture can provide 'accurate, timely, relevant information and services to farmers, thereby facilitating an environment for more remunerative agriculture' (Bhattacharjee and Saravanan, 2013: 4). The penetration of modern ICT in Africa, particularly mobile technology and internet is changing the way information is shared and the speed of information flow across the continent, reducing the cost of access to new knowledge and information, as well as creating diverse opportunities in different sectors of the economies of Africa, a key sector being agriculture. In addition to websites and emailing, which are becoming well-established in the agricultural sector, modern ICT devices and applications used in agriculture encompass office software, mobile phones, geographical information systems (GIS), online TV and videos, tablets, short messaging services, social media, and drones (which is being explored in some African countries, for example Ghana) (Lohento and Ajilore, 2015). In what follows we synthesise the evidence on the opportunities and barriers to rural youth's uptake of different forms of technology and its impact on agricultural related outcomes.

4.2.1 Impact of agricultural related technologies on productivity and working conditions

Indeed, whether it is introduction of cutting-edge innovations like blockchains, improved irrigation schemes, satellites providing accurate climatic data, and or the use of smart phones and the internet, the adoption of new agricultural technologies is key to improving agricultural productivity and growth, income, food sufficiency and resilience in a more sustainable way (Abdul-Rahman et al., 2019; Ehui, 2018). IFAD (2019) cites a number of studies revealing the impacts of technology adoption on agricultural outcomes. For example, Abate et al. (2018) found that video-mediated extension programmes increased the knowledge, and subsequently the uptake of agronomic practices by smallholders in Ethiopia by up to 35 percent, while van Campenhout et al. (2018) found that video-mediated extension programmes increased maize yields among participating smallholders by 14 percent in Uganda, and that they also increased women's levels of knowledge and participation in decision-making within the household (both

cited in IFAD, 2019). The report also cites a study that reveals the impacts of mobile money on agricultural outcomes in Uganda: Sekabira and Qaim (2017) found that the adoption of mobile money led coffee farmers to increase the value addition to their coffee before selling it, and it also allowed them to find buyers from outside the region leading to higher sales prices. Non-farm and total incomes increased by 45 percent and 19 percent respectively (Sekabira and Qaim, 2017, cited in IFAD, 2019).

Emerging trends show considerable adoption of ICT infrastructure in Africa (e.g. Mobis, Musoni System, Agritech, Farmer Mobile Wallet and Mobipa). These technologies are being pioneered by Africa-based international technology solutions companies. They present opportunities for job creation and agricultural productivity through enabling smallholder farmers including the youth to gain access credit, which is one of the key barriers to young people's engagement in agriculture, and to agricultural insurance schemes, or by connecting smallholder farmers to potential funding organisations and potential investors (Lohento and Ajilore, 2015). Our evidenced-based review shows that there are many different ICT products, business models and solutions which are under development in Africa, and evidence on their impacts on agriculture related outcomes shows some considerable promise. Muzari et al. (2012) for instance demonstrate that the experiences and evidence from several countries in SSA and North Africa region suggest that the returns to agricultural technology development (crop breeding, soil fertility management, weed control, soil and water management and agronomic practices) could be high and far reaching particularly not only in the smallholder sector yet also in the entire rural economy.

One example of a study linking technology adoption to agricultural outcomes is the study (Saito et al., 2015) of the impact of the use of a cloud-based ICT decision-support tool for fertiliser application named Nutrient Manager for Rice (NMR) on rice yields among farmers in the Senegal River valley. Saito et al. (2015) found that the use of such an ICT-based decision-support tool increased yields by one tonne or more per hectare, and increased incomes by several hundred dollars per hectare. Another example is an IFAD (2013) study of a Nigerian agro-subsidy e-wallet programme, where smallholder farmers who subscribed to the scheme obtained subsidised seed and fertilizer vouchers on their mobile phones – or e-wallets. Using the e-wallets, which the smallholders used just like cash to buy inputs directly from the agro-dealers, the programme reached 1.7 million smallholder farmers within a year, and enabled expansion of production by additional food supply of 8.1 million MT, which was 71 percent above the target set for the programme in the first year (IFAD 2013, cited in Lohento and Ajilore, 2015). In rural Kenya, young sugarcane farmers who received agricultural advice via SMS messages reported increases in yields by 11.5 percent (Casaburi et al., 2014). In Ghana, the deployment of an audio-conferencing platform by SavaNet has enabled rural young farmers to call in to get agricultural production information (Lohento and Ajilore, 2015). This is particularly important in the era of the current COVID-19 crisis where physical and social distancing is advised to help contain the spread of the virus. Traditionally, meetings were generally held in person, requiring individual farmers to leave their farms or home to attend the sessions. Nonetheless with the deployment of the dial-in platform, young farmers can call from anywhere to obtain much needed information about their crops, price for crops and livestock, marketing and ergonomic practices (Lohento and Ajilore, 2015).

Beyond improvement in productivity and yields, there is also evidence that agricultural technology adoption can improve rural households' income, expenditure and marketable surplus. Research findings from rural Tanzania and Ethiopia highlight the potential role of technology adoption to improve rural household welfare (higher incomes translate into lower income poverty) through improvement in crop income even though the impact on consumption expenditure was mixed (Asfaw and Shiferaw, 2010). This finding corroborates the work of Adekambi et al (2009) in rural Benin where they report that the adoption of improved agricultural technology (i.e New Rice Varieties for Africa) by smallholder farmers positively and significantly affected household expenditure although the impact was relatively higher for female headed households (161.75 FCFA/day) than male headed households (128.34 FCFA/day). In Western Kenya, rural youth who use ICT tools and skills in their farming businesses generally reported increase in yields, income and more importantly enhanced social status in their communities (Lohento and Ajilore, 2015). Asfaw et al. (2012) analysed the impact of adoption of improved pigeonpea technologies among smallholder young farmers in rural Tanzania and found that such technologies significantly increase income which in turn translate into an increase in consumption expenditure, and thereby a reduction in poverty. In this regard, the development of appropriate mechanisms to facilitate availability of better agricultural technologies is worthwhile but this may require governmental and policy support to improve extension efforts, access to markets outlets and seeds. Moreover, a study of the impact of agricultural technologies on smallholders' output market participation which draws on the Farmer Innovation Fund

Impact Evaluation survey collected by the World Bank covering a sample of 2,675 people in rural Ethiopia demonstrates that improved agricultural technologies positively influence smallholder households marketable surplus production: adoption of high yielding varieties and improved input fertilizer increased surplus crop production by 7.39 percent per year and 2.32 percent per year respectively (Mekonnen, 2017). Adoption and use of the two inputs concurrently increased marketed surplus by 6 percent which underscore the importance of complementarity of two technologies. The study further reported that access to modern technologies (input), price, crop, availability of labour, farm size and availability of infrastructure influence marketable surplus crop production and market participation, and the availability of training and credit in turn fosters technology adoption (Mekonnen, 2017).

In addition to the outcomes discussed above, agricultural technologies such as mechanisation and the use of robots, aerial images, GPS technology as well as temperature and moisture sensors have the potential to improve the working conditions of rural farmers particularly through preventing agricultural workers from being more directly exposed to occupational health hazards (that results from exposure to chemicals from fertiliser application, accidents in the farm, and exposure to direct sunrays). The adoption of advanced technologies and robotic systems across several countries in SSA is leading to improvement in working conditions by making agriculture more safe, efficient and environmentally sustainable (National Institute of Food and Agriculture, 2020). In rural Kenya, where the World Bank has been experimenting and deploying big data from remote sensing and GIS-enabled technologies, there is evidence that these technologies have contributed to improved weather monitoring and further improved the quality of work of smallholder farmers through provision of data that enable them to know when and how to apply inputs (eg. fertilizer, pesticides) for optimal results (Ehui, 2018).

In rural Malawi where the production of groundnut has traditionally been labour-intensive, the introduction of a simple mechanised technology is noted to have contributed to improved work conditions through easing the drudgery and labour of smallholder groundnut farmers. The equipment was designed in such a way that it can lift (harvest), strip (remove pods from plants) as well as shell groundnuts faster and more efficiently than using manual labour. An assessment carried out showed some considerable changes in the groundnut production chain brought about by the new technology: the lifter component of the device can harvest four times faster than manual harvesting, it stripper can also strip groundnuts three times faster compared to hand stripping and the shelter can shell 18 times more quantity in one hour than hand shelling (International Crop Research Institute of Semi-Arid Tropics, 2016). The report did not provide any evidence to show whether the technology led to a decrease in employment. These finding echoes evidence from elsewhere in other developing countries (India) where ergonomically improved farm technologies (improved sickle, hoe, wheel, capron, protective gloves and cot bag) were provided to both men and women farmers in the village of Shahpur. Analysis of the impact of these technologies on the level of drudgery of workers before and after the technology intervention showed significant improvement in working conditions through a reduction in drudgery for both men and women, although the wheel hand hoe was deployed successfully by men in contrast to women who preferred to use conventional technology (i.e improved long-handled hoe). Moreover, more than half of the males and a few of the females reported to have found the wheel hand hoe more efficient in terms of energy, time and money saving (Mehta et al 2012). This underscores the importance of how technology can help improve working conditions mainly through saving energy and the labour of agricultural workers.

In Ghana, the use of drone technologies for farming is leading to a reducing the drudgery and labour-intensive way of pineapple cultivation by providing farmers with reliable and accurate information on farm crops and land preparation requirements needed to ensure high quality products (pineapple fruits), optimize crop production and minimise the cost associated with production (Hinneh, 2020). The establishment of information system that links farmers to production and market through the use of drones (small, unmanned aircraft) is reported to have resulted in reducing extension officer visits, and improved information on crop health and performance as well as yield estimates. This information is then relayed through a mobile phone platform linking farmers to markets and extension agents, and this makes the work of farmers relatively more comfortable and efficient in contrast to when they do not have access to this information. The deployment of this technology also enabled farmers to learn the type, quantity and effect of various elements of pesticide and fertiliser application, and effective ways to apply agrochemicals efficiently without exposing themselves to hazards or causing harm to the natural environment (Hinneh, 2020). Indeed mechanised ways of applying pesticides have been reported to reduce direct exposure of farmers to occupational hazards (exposure to chemicals), and thereby improving working conditions compared to if these were applied by workers directly.

Overall, the evidence presented here suggests that developing and scaling up alternative agricultural technologies is worthwhile as they have the potential to improve smallholder productivity, increase income and to some extent can improve working conditions, the quality of work, and reduce rural poverty. This evidence reinforces calls for mainstreaming agricultural technology adoption into agriculture and rural development policies in Africa.

Despite these considerable impacts, some evidence points to no significant impact or even negative impact of agricultural technology on technical efficiency (i.e. the ability to get the maximum output out of a bundle of inputs for a certain technology) of smallholder farmers. Based on baseline data collected from over 2,130 smallholder farmers in 242 villages in Central and East Africa, Oduol et al, (2011) examined whether the adoption of soil and water conservation technologies (SWCT) contribute to technical efficiency among smallholder farmers. Overall, they found that the introduction of SWCT had no impact on technical efficiency in Democratic Republic of Congo and Rwanda. Nonetheless the impact was negative for smallholder farmers in Uganda, and also for the pooled sample even though the magnitude was relatively small.

4.2.2 Constraints to agricultural technology adoption

It should be emphasised that access to, adoption, and use of agricultural technologies in smallholder farming systems and their outcomes on productivity and income are shaped by local contextual factors. Meijer et al. (2015) note that while agricultural innovation or technology holds great potential to improve working conditions, quality of work, productivity and income, their pace of adoption among smallholder farmers in rural Africa seems to be somewhat slow. For instance, they report that the adoption of agro-forestry technologies among smallholder farmers in Africa is shaped by both extrinsic (i.e characteristic of the technology, characteristic of the individual adopter (farmer), and the external environment) and intrinsic factors (perceptions, knowledge and attitudes). Based on extensive review of the existing evidence the authors highlight considerable variation in what particular factors are considered in research and what their effects are (Meijer et al., 2015). Indeed, while some intrinsic or extrinsic variables can have positive effect on adoption of agricultural technology in a given context, the same factors may have a negative or even insignificant impact in other contexts. In this regard, it may be extremely challenging if not nearly impossible to concretely determine the role of diverse factors in the uptake of agricultural technologies. Given that the adoption process is extremely complex, it is thus difficult to understand the influence of all possible factors which may influence the decision of smallholder farmers whether or not to adopt a particular agricultural technology and their interdependencies. Nonetheless, Meijer et al. (2015) conclude by noting that "there is an intermediate step in the adoption process, where farmer characteristics and economic variables affect adoption indirectly by influencing the knowledge, attitudes and perceptions, which in turn influence farmers' decisions of whether or not to adopt an innovation" (p. 51).

The importance of risk and uncertainty in shaping the decision of smallholder farmers to adopt new technologies is reflected in the work of Jerneck and Olsson (2014). Using the case of small holder farmers in Kenya, they demonstrate through their 'narrative walks' that the 'poorest of the poor' usually fails to adopt agriculture technologies. And this was influenced largely by concerns of the poor whose main priority is to satisfy household food requirement rather than investing time, labour and resources in new technologies with uncertain benefits in the long term. On the other hand, smallholder farmers with less food security concerns were more enthusiastic and inclined to venture into adopting new agro-forestry technologies. In the same country where 90 percent farmers aged 18 to 35 years are deemed to have high levels of engagement with ICT, a recent report by the MercyCorps and AgriFin Accelerate (2019) identified four categories of Kenyan youth farmers, who use digital financial technology and other technologies differently based on gender, age and educational attainment. The typology of digital technology users comprised of: 1) the determined builders (generally aged 30-35 years, with secondary school education); 2) the opportunistic movers (usually in their 20s and who have vocational or university degree education); 3) static planners (who are usually female and married at young age); and 4) rootless climbers (generally closer to 18 years of age and who only have primary education).

The opportunistic movers and determined builders were found to be most likely to use DiGiFarm (an end-to-end, farm to market services including digital financial technology, that is supplemented by in-person on-farm contacts) as part of their farming activities because of their higher educational status compared to the static planners and rootless climbers. The opportunistic movers were found to be savviest at technology and to use their smartphones and computers to access online platforms to get information

and connect with other farmers in different locations and the wider ecosystem (MercyCorps and AgriFin Accelerate, 2019). Obiero et al. (2019) also analysed the barriers to, and impact of aquaculture technology adoption on the livelihoods of smallholder farmers. The study revealed that only a third of the farmers were considered as high adopters of novel aquaculture technologies, suggesting a relatively low uptake of such technologies among smallholder farmers. Factors such as the farm size, educational attainment, production level, diversified on-farm activities, attendance of extension training, and difficulties with handling new technologies were positive and significant predictors of aquaculture technology adoption among small holder farmers in Kenya.

In the same vein, Matata et al. (2010) analysed the factors that influence the adoption of improved fallows among smallholder farmers in Tanzania and found that membership in farmer group, the availability and opportunity to receive information on improved farming skills, participation in improved farming methods and contacts with extension services had positive impact on decision to adopt new technologies. In contrast marital status, participation in regular off-farm income and formal education had no impact on decision to adopt improved fallows. But overall unwillingness to plant trees, lack of awareness or poor knowledge of improved fallow technologies as well as inability to wait two or more years before realising the benefits from technology were key factors that served as constraints to adoption of improved fallow technology (Matata et al. 2010). Along similar lines, evidence from rural Northern Ghana demonstrates that smallholder farmers decision to adopt agricultural innovation or technology (i.e improved maize variety) is shaped by the size of household, age and gender of household head, farm workshop attendance, number of years in formal education, level of experience, membership of a farmer-based organisation, availability and access to agricultural credit, labour and extension contacts. Moreover, the intensity of adoption was also influenced by farm size, years of formal education, previous income, membership of farmer-based organisation, attendance to demonstration fields and distance to farm plots (Danso-Abbeam et al., 2017). In rural Nigeria, the level of training, distance to nearest sources of seed, average yield, cost of seed, membership of farmer organisation, and farmer income have been reported to be key extrinsic variables that influence intensity of adoption of improved rice varieties (Awotide et al., 2016).

There is evidence that direct economic benefit (profitability) resulting from technology adoption also shapes the decision of smallholder farmers to adopt agricultural technologies. Research findings from rural Burkina Faso suggest that the likelihood of adopting a live fence technology is influenced by the profitability of the technology in addition to the availability of water (Ouedraogo and Tiganadaba, 2015). Another study of farmers adoption of agroforestry technology in rural Rwanda found that the gender of the head of household, number of meals per day, spatial location, number of salaried workers of the household and selling of tree products were significant predictor variable determining in the adopting of tree planting technologies on farms (Ndayambaje et al. 2012). The study concluded that economic factors such as total income, and availability of firewood, poles and food rather than environmental concerns were found to be the key factors that influence the decision to adopt agroforestry technologies in Rwanda.

Overall, the influence of both intrinsic and extrinsic factors in shaping agriculture technology adoption reinforce calls for the need for rural development planners and policy makers to consider both set of factors simultaneously rather separately in order to better understand smallholder decisions and effective ways to ensure adoption of agricultural innovation practices in agricultural sector. Improved technologies may have little value unless they are rightly judged by smallholder farmers to be appropriate to their local context and to subsequently adopt them. This underscores the need not only to develop innovative agricultural technologies but that such interventions are promoted to ensure that they are adopted and used by smallholder farmers.

5. Rural youth perceptions and aspirations

The perceptions and aspirations of young people regarding their engagement in the agricultural sector and the rural economy more broadly are highly crucial for the design and implementation of policies and programmes seeking to promote youth employment in rural Africa. This section of our evidence-based review focuses on a synthesis of the available research literature on youth perceptions and aspirations of agriculture and rural based livelihoods, and their implications for agricultural policies and rural development more broadly. Our review brings to the fore the fact the perceptions and aspirations of rural young people concerning agriculture and rural areas are highly complex and often nuanced, and that narratives that suggest that rural young people are not interested in agriculture and rural life may not hold true for all young people in rural Africa. We explore this issue in-depth, bringing to light the conditions or circumstances which inform the perceptions and aspirations of rural youth towards agriculture and rural life and what this means for agricultural development policies.

There is long widely held view in the existing research and policy literature that African rural youth are not interested in farming and are 'exiting agriculture' and rural areas (AGRA, 2015; Mabiso and Benfica 2019). While more recent literature has shed different light on the matter, two common explanations are offered to support this claim, although the set of explanations differ from one context to the other.

5.1 Access to productive resources and rural youth aspirations

The first relates to the difficulties that young people encounter in accessing productive resources (e.g. land) in order to farm (Bezu and Holden, 2014; Andersson Djurfeldt et al., 2019). For example, many young people who participated in a study carried out in SSA (Kenya, Zambia, Burkina Faso and Ethiopia) narrated that the difficulties with accessing productive resources including land, capital and other inputs prevented them from considering agriculture as a livelihood option. Land fragmentation arising mainly from population pressure made agriculture not the favoured option for the future (Leavy and Hossain, 2014). In Ethiopia, where the majority of the youth live in rural areas and farming has traditionally been the major source of livelihood of the people, Bezu and Holden (2014) found that only a small proportion (9 percent) of a sample of rural youth planned to pursue farming as livelihood activity. In comparison with the other livelihood options, the youth who aspired to a farming future were relatively older, more likely to be married, had experience of farm work, and expected to inherit land from a family member. Among the sample who opted for urban based professional salaried employment, many comprised students. A comparison of the assets across households revealed that rural youth who chose off-farm livelihood activities came from households with larger numbers of children and the relatively poorer households. Young people who had expectations to inherit land were less likely to choose off-farm wage employment compared to other livelihood options (Bezu and Holden, 2014).

These finding echoes evidence from Ghana that rural young people aspired to a farming future but that the processes of commodification played a crucial role in limiting the availability of family land which historically young people would have accessed to pursue farming as a livelihood (Amanor, 2010). In the same country, Anyidoho et al. (2012) provided a typology of young people's stated aspirations towards cocoa farming: 1) farming on one's own farm as the primary economic activity; 2) farming as an avenue to accumulate financial resources to invest in a non-farm economic activity; and 3) formal work as a primary occupation, with no direct engagement with farm work. Land fragmentation was key in driving many of the young peoples' aspirations out of the cocoa sector, although there was also a perceived hierarchy across the different categories – with formal work considered to be of high status in contrast to own-farm agricultural production. A further insight from the study is that the aspirations of the young people in the cocoa growing areas were echoed in their parents' own expectations for them. Nonetheless young people clearly articulated what it would take for them to consider cocoa farming as a long-term occupation, including improved access to credit, greater support and investment in new technologies and inputs by the state and higher prices, along with measures to improve living conditions in rural areas. For them such actions would mean that government clearly values the cocoa sector and is thus willing to improve the conditions of rural cocoa farmers (Anyidoho et al., 2012).

In a sense this reflects the work of Kristensen and Birch-Thomsen (2013) who studied the livelihoods and aspirations of rural youth in two country contexts: Uganda and Zambia, and reported that whether young people remain in agriculture or in rural areas was contingent on local contextual factors and this varied considerably between the two countries. They found that in Zambia, favourable agricultural conditions, most notably, access to land meant that many rural youths chose to remain in the villages and pursue agriculture as a livelihood, and many saw the prospects of having greater chances to succeed in the rural economy than moving to urban areas. In contrast, fragmentation of land holdings in the Ugandan context, and the general lack of income earning opportunities as well as young people's own aspirations to pursue education motivate them to move to urban locations (Kristensen and Birch-Thomsen, 2013).

5.2 Agriculture/rural economy as the problem, gender norms, education and the rising expectations of rural youth

The second common explanation relates to agriculture as a problem on the one hand, and education and the rising expectations of rural youth on the other. With this narrative, agriculture is seen as a backward, dirty, low status economic activity (provides little income), and as an employer of last resort (Leavy and Hossain, 2014; Juma, 2007; Anyidoho et al., 2012; Tadele and Gella, 2012). For example, findings from a Q-methodology study carried out by Sumberg et al (2017) with rural secondary school students in Ghana show that across both genders, young people expressed negative attitude towards farming; nevertheless this negativity was rooted in quite different understandings and perceptions focusing variously on young people themselves and their desires for modern jobs, lack of services and facilities in rural areas, society's lack of respect for farmers, and the need to modernise farming shapes young people's attitude towards farming as key to determining the attitude of young people towards farming. Thus, while some of these perspectives could be addressed through interventions including training and awareness creation, others may not. This points to the need for a more targeted approach to policy and interventions that seeks to promote youth employment through the agricultural sector. These findings reflect the work of Gastineau and Golaz (2016) who report that young people in Africa find rural areas have little appeal. For them, there is a shift or discrepancies between generations, with today's young people being more educated, more mobile and more open to modern ways of life through connection with digital world (.i.e ICT infrastructure), and aspiring to a different lifestyle than that of their parents.

A multi-country study involving nearly 1,500 young people and their parents, including five sites in four African countries (Kenya, Zambia, Burkina Faso and Ethiopia) concluded that 'that farming is not a favoured option for the younger generation in rural areas of developing countries, even those in which agricultural remains the mainstay of livelihoods and the rural economy' (Leavy and Hossain, 2014: 38). The view that farm work is tough, dirty, low status, physically demanding and is associated with little financial reward made agriculture unattractive to many of the young people. On the other hand, Leavy and Hossain (2014) report a strong sense and widespread desire of the young people to attain and use formal education to obtain professional salaried jobs, which are mostly found in urban areas. In contrast to rural life, urban life was perceived as easier, cleaner and relatively more comfortable. This links with research findings from rural Ethiopia where young people regarded farming and rural life as backward, demanding, and even demeaning (Tadele and Gella, 2012: 41). Overall education, gender, one's asset base and local contextual issues were important factors in determining which category of rural young people may become farmers and who may not. The authors found that education raised the expectations and hopes for non-agricultural, urban based professional salaried employment to the extent that the perceptions or desires of becoming a farmer remained the preoccupation of rural youth who had little or no education, and therefore little non-agricultural skills, as they envisaged no other livelihood options. In the villages, where land scarcity remained a major challenge, and where land rental and sharecropping were virtually non-existent, young people, particularly the educated youth, saw no possibilities of pursuing farming in the future. Migration, and engagement in non-farm employment were considered only when the education-employment trajectory failed to materialise. The influence of gender in shaping the transition to being a farmer manifested mainly through public and political discourse that regarded farming as a livelihood option for males, which meant that young women could not be considered to be farmers by themselves without a husband. The fact that young women had far narrower opportunities for working and accumulating an asset base limits their chances of pursuing farming on their own even when they had plans to challenge gendered cultural norms or abide by them by hiring labourers to assist with farm work. In this regard the only potential pathway to farming life for young women was by way of marrying a farmer and becoming a farmer's wife (Tadele and Gella, 2012). However, it is important to also note that

young people with higher education and enhanced access to resources (e.g., financial and social capital) are also able to identify farming as a potentially lucrative activity, once proper investments are made (see Mwaura, 2017, for well-educated youth farmers).

In Swaziland, where agriculture employs nearly three quarters of the population, young people who had no experience with farm work and were employed in the non-farm sector generally expressed negative perceptions of farming (Douglas et al., 2017). Gender was found to be positively and significantly related to youths' perceptions towards farming. Gendered cultural norms, which allow young men to inherit land and other sources of wealth of the parents, meant that young men could choose a career in farming more so than their female counterparts (Douglas et al., 2017). The importance of gender in structuring the occupational aspirations, perceptions, opportunities and realities for rural young people in agriculture is also evident in a cross-country research carried out in some selected countries in Latin America (Mexico), North (Morroco) and Sub-Saharan Africa (Mali, Malawi and Nigeria), South and Southeast Asia (India and Philippines) (Elias et al., 2018). The study, which was based on 25 selected case studies from across the different contexts, reported that young rural women and men predominantly aspired to professional salaried employment. However, these youth experienced an achievement-aspiration gap, as the promise of formal education in securing professional work did not materialise, compelling many to continue their engagement with family farm work. Nonetheless, and in contrast to young women, the vast majority of young men aspired to engage in knowledge-intensive or 'modern' agriculture-related occupations including being an agronomist to apply knowledge in farming learning centres in rural areas (in Mali), securing a job on a modern farm (in Morroco), agricultural scientist (in India), having everything to engage in farming (in Malawi), and being a great farmer (in Nigeria). Further, young men aspired to engage in agricultural trade related businesses including agricultural inputs (seeds, fertiliser, pesticides), dried vegetables as well as pipes and sprinklers.

Behind these gendered aspirations were strong values and norms, which portray agriculture as an economic activity which financially benefits men (especially when it is performed under mechanised conditions). In Malawi, girls cannot perform certain tasks such as sourcing fertiliser, building a shed, or tilling the land, whereas in Nigeria, young men noted that tedious work including land preparation and farming in general are meant for men. Social stigmas associated with a breach in the normative gender division of labour, norms limiting women's access to information, asset, credit and physical mobility all served as barriers for young women to engage in agriculture. These, by implication, limited the opportunity space for young women to learn and practice new agricultural techniques, thereby limiting their agricultural opportunities and orienting their aspirations away from the agricultural sector (Elias et al., 2018). Thus, young women who participated in the study expressed little interest in agriculture related occupations, and consistently highlighted their aspirations of achieving higher levels of formal education. For the young women, farming was regarded as a normal part of daily rural life rather than as employment per se that could enable them earn income, realise economic independence and achieve upward social mobility.

5.3 Mixed but largely positive perceptions and aspirations towards agriculture

Recent scholarship has provided a more nuanced view regarding the perceptions and aspirations of rural youth in rural based and agricultural livelihoods. Indeed, the reality of young people's perceptions and aspirations is often mixed and very much dependent on context. For example, Stührenberg (2015) found in her report on rural youth employment in West Africa that while some rural young people commented on their disinterest in and drudgery of agricultural work, others were happy to engage in agriculture when it was accessible and remunerative. This findings links with an analysis of the ILO's School ILO's School-to-Work-Transition Surveys (SWTS), which included students (aged 15-29) from 11 African countries (OECD, 2017). The key message from this study is that the aspirations of the students were rooted in their social standing in society: more educated youth aspired to more highly skilled jobs while the less-well educated young men aspired to lower skilled jobs including farming.

Along similar lines, in the Midelt Province, Morocco, Guiliani et al (2017) found that young people, of both genders, held a more balanced or mixed perceptions about agriculture, and the decision to pursue agriculture or otherwise were firmly rooted in their careful consideration of the advantages and disadvantages associated with farm work. Those who held a neutral view suggested that agriculture provides their only source of income. Both male and female youth engaged in rainfed farming, as well as young women involved in pastoral and irrigation system of farming expressed negative perspective about

agriculture, and linked these to concerns about insufficiency or fluctuation of their income, the harsh nature of farm work, and the absence of progress and the perceived outdatedness of farming activities. On the contrary, young people who expressed positive perceptions of agriculture were of the view that farm work is associated with autonomy (being your own boss). They further saw agriculture as the only profession in which they were experienced and knowledgeable as well as indicated the pride and heritage associated with agriculture and the perceived rural life as being calm and peaceful in contrast to urban areas. But overall, and in contrast to the male youth, fewer female youth expressed positive arguments in favour of agriculture. However, there was no significant differences in relation to the youth perception of agriculture based on their educational levels (Guiliani et al., 2017).

Also, in the Saiss region of Morocco, young people aspired to a better future by combining rural and modern life, by blending, for example the identity of a farmer with that of enterprising businessperson or motherhood with some financial independence (Bossenbroek et al., 2015). The realisation of this aspiration meant that young people had to negotiate and modify patriarchal family and kinship hierarchies as well as challenging existing gender ideologies and power structures in which their lives are domiciled/. However young people struggled to negotiate these structures and, in the process, got discouraged or disappointed. There was a gender dimension to this with young women experiencing severe constraints that hampered their realisation of their aspirations (Bossenbroek et al., 2015). This chimes with the findings of Petesch and Rodríguez Caillava (2012) who studied the aspirations of rural youth in in SSA. Young people who took part in the 32 focus group discussions in six African countries, namely Burkina Faso, Liberia, South Africa, Sudan, Tanzania, and Togo held mixed views about the desirability of farming livelihoods, and also that livelihood aspirations were strongly shaped by gender norms (Petesch and Rodríguez Caillava, 2012).

It is evident that from our review that with the right investment and policies, agriculture and the rural space can become attractive to young people in Africa. For example, a study by Melchers and Büchler (2017) which sampled 10,000 young people aged 18 to 35 years from rural regions in 21 African countries asked them about their perceptions, wishes and values. When asked about which sectors, they would like to work in, almost a quarter of all the young people stated their desire to work in agriculture and the food sector although readiness to work in agriculture, both in the upstream and downstream sectors, was conditioned upon certain factors. Interestingly, only a small proportion of the youth (3 percent) completely disregarded the idea of working in agriculture. In rural Zambia, young people carefully considered the prospects and challenges associated with agriculture and rural areas, and still emphasised their desires to engage in agriculture particularly if they could have access to agricultural finance, ICT tools, electricity, fertiliser and draught animals to cultivate more land than what is possible with manual labour (Daum, 2019). Also, in Zambia, rural youth clearly narrated their aspirations to engage in farming, but hopefully in more modern and professional manner based on technical knowledge and skills (Andersso Djurfeldt et al. 2019). Finally, a more recent evidence from rural South Africa shows that young people held positive economic perceptions of agriculture and along with the provision of substantial financial support and secondary school agriculture education, these perceptions positively influenced the youth desires to engage in the agricultural sector (Magagula and Tsvakirai, 2020).

6. Government interventions and support to rural youth employment

In recent years, there has been an increasing attempt to understand what interventions work best to increase youth employment outcomes, both in LMICs, and around the world. Though evaluations of interventions related to rural youth employment in Africa were scarce a few years ago, a recent review by Yami et al. (2019) helps to bridge this gap in the knowledge base. Still, we base our review of the evidence on several systematic and others reviews on the relevant evidence around youth employment interventions. This includes reviews from interventions around the world (Kluve et al. 2016; Kluve et al., 2017), in LMICs (Fox and Kaul, 2017) and developing countries (Ismail, 2018), and in rural areas where such information was available at the time. For comprehensiveness and analytical purposes, this section reviews both existing systematic reviews and individual research findings of interventions/programmes from different regional contexts in Africa along lines of the typology provided by Betcherman and Khan (2015); 1) Skills Development and Training, 2) Employment Creation/Services, 3) Self-employment/Entrepreneurship, and 4) Agriculture related interventions. It should be noted however that some interventions offer multiple services that can fall under more than one of the above-mentioned typologies. This is particularly so for interventions that recognise how the barriers or challenges that young people face in finding employment are highly multifaceted.

6.1 Skills development and training interventions

By far, skills development and training interventions appears to be the most widely used labour market interventions to promote youth employment, including in SSA (AfDB et al., 2012; Betcherman and Khan, 2015, 2018; Ismail, 2018; Hatayama, 2018; Kluve et al., 2017). The same is true for North Africa where many youth employment interventions focuses on technical skills training followed by soft skills training (Kabbani, 2019). Skill training interventions, which tend to focus more on non-farm sector employment, are broad and can fall under the following; vocational/technical skills; soft and life skills trainings; formal and non-formal apprenticeship schemes; second chance education programmes; and financial incentives for employers to provide workplace training (Betcherman and Khan, 2015). According to Ismail (2018) interventions that promote the development of skills (eg. vocational, life skills and formal education including second chance programme providing basic formal education to young people) may vary considerably both in terms of their content and length, and may be delivered mainly through public or private sectors but also public-private partnership (Betcherman and Khan, 2015, Kluve, et al, 2017; Fox and Kaul, 2017; Ismail, 2018).

We start by looking at the results from a systematic review of the impact of youth employment programmes (across the world) on labour market outcomes (Kluve et al., 2016; Kluve et al., 2017). Overall, they found that skills programmes as well as entrepreneurship programmes were the most effective interventions among all the those reviewed in promoting youth employment. However, only a third of all the programmes they reviewed (including other types of interventions) generated significant and positive effects.

Additionally, they found that combining multiple elements within a programme increases the success of a given programme, and this is particularly the case for low- and middle-income countries (with the magnitude of effects ranging from 0.5 to 0.9 standard deviations, and the probability of success from 14 to 21 percent). This is consistent with the authors' theory of change: "Most population groups are likely to face multiple constraints affecting their likelihood of getting a job, the types of jobs they get, and associated earnings." (Kluve et al., 2016: 28) One example the authors mention is the Economic Empowerment of Adolescent Girls (EPAG) in Liberia which had strong evaluation results, and which combined skills training with employment services. Girls had a combination of six months of classroom-based training followed by six months of support and follow-up entering wage employment or starting a business.

There is also evidence of the impact of skills training programme implementation/design on outcomes (e.g. beneficiary profiling, incentives for success, beneficiaries paying for participation, etc.) (Kluve et al., 2017). Interventions provided solely by the private sector perform better than other programmes (SD impact of 0.3 to 0.4, and 20-30 percent higher likeliness of having a positive and significant impact) – may have more built-in incentives for better performance; however, the inverse is true for high-income

countries (Kluve et al., 2016). In terms of impacts on age and gender, the authors of the review do not find larger effect sizes for these categories, but they do find a greater beneficial impact on more vulnerable workers (low-income workers or youth at risk) (twice the impact than interventions not targeting these groups) (Kluve et al., 2016).

Another review of the evidence on youth employment interventions, this time on LMICs exclusively, is from Fox and Kaul (2017). They found that for wage employment outcomes specifically, 'on average employment effects from youth training programs are limited, mostly short-term, and achieved at high cost' (Fox and Kaul 2017: 21). They also reviewed technical and vocational training (TVT) programmes, which Kluve et al. (2016; 2017) did not (the latter only reviewed skills training programmes outside of the formal education system). Their findings, for example on public TVT provision were that 'public TVT is 4–10 times as expensive on a per capita basis as general secondary school' (Fox and Kaul, 2017: 21). They also advised caution for privately-run TVT programmes, such as for the Jóvenes programme in Argentina, where though the incomes of participants were found to increase, these were declining over time, and were relatively not that high.

More recently, Ismail (2018) carried out a systematic review of existing studies focusing on evaluations of youth employment programmes in developing countries and found that skills development interventions generally improve young peoples' employability. Outcomes of technical and vocational training on employment were largely mixed but trainings tended to be more effective if it had an internship component and aligned to the needs or demands of employers (Ismail, 2018). Ismail (2018) noted that private sector programmes are mainly concentrated in urban areas, and that only very few rural youth had participated in them up until then.

Along similar lines, Hatayama (2018) in her review of what employment interventions work in rural settings in developing countries reported that skills training alone had limited positive outcomes of creating employment for rural young people. However, when combined with other interventions such as internship and life skills development, skill training can increase employment and earning outcomes among rural young people. This clearly underscores the importance of how an integrated approach to skills training and development could yield positive outcomes than single interventions (Fox & Kaul, 2017: 20).

This echoes the work of Yami et al. (2019), who analysed 65 studies that focused directly on government and development partners' interventions to facilitate rural youths' engagement in agribusiness in Africa. A key finding emerging from their review is that interventions that adopted an integrated approach by combining training, continuous mentorship on technical and financial dynamics of agribusiness with financial support for start-ups proved successful in enhancing youth engagement in agribusiness. In relation to skill development, Yami et al. (2019) cite a number of interventions such as the AFOP programme in Cameroon and the Songhai model, the Technical and Vocational Training (TVET) programme in Benin as examples of programme that combine trainings (business skills, leadership, technical competencies and financial management) with mentorship, advisory services, agricultural extension and ICT for agribusiness. Such interventions were found to have resulted in positive outcomes such as improved knowledge, and facilitating a change in attitude of young people, enabling the starting of agribusiness ventures. In Nigeria, rural youth who participated in such programmes tend to become important community actors who share information that relates to agribusiness activities with their peers, family and broader social relations (Auta et al., 2010).

There is growing emphasis in the literature on the importance of soft skills training on youth employment outcomes. In North Africa, where the youth unemployment is particularly challenging, there is evidence from research (Kabbani, 2019; Amman, 2017) that (soft) skills training interventions positively impact on employment and earnings particularly among marginalised youth and those struggling to complete school-to-work transitions. For example, in Egypt, the ILO implemented six Training for Employment (TfE) schemes for young people to help fill job vacancies and bridge skills gaps. In partnership with Forum for Training and Education (FORTE), the programme provided subsidised off-job-training that covered life and soft skills (leadership, communication, time management and teamwork), work ethnics the Egyptian labour code, work rights and responsibilities. Disadvantaged young beneficiaries who had no prior relevant work experience were provided with a further three months on-the-job training during their probation period. An evaluation carried out 18 months after the completion of the TfE scheme found that the programme had positive outcomes; beneficiaries reported "high job satisfaction, were more likely to be formally employed with better benefits, greater job security and a clearer promotion path in

their place of employment" (Amman, 2017: 33). A recent study of inclusive agri-skills development for smallholder farmers in Uganda by Atukunda (2020) noted that there is no one one-size-fits all model for inclusive agri-skills development. However making smallholder farmers more competitive in agricultural markets calls for skills developmentinterventions that goes beyond agronomic skills to improving skills necessary for effective competition along the entire agriculture value chains. Based on these findings, Atukunda (2020) concluded that achieving the goal of inclusiveness in skills development and knowledge of smallholders calls for adoption of context-specific approach that recognises the heterogeneity of smallholder capacities and circumstances.

A randomised experimental evaluation in Togo compared the outcomes of soft-skills personally based training (with standard business training (marketing, accounting skills) (Campos et al., 2015). It became evident that soft skills personality-based training programmes had greater short-term impact. The results show that soft skills training had statistically significant impact on a range of outcomes: higher sales, and total business profits. However, the standard managerial trainings had no statistically significant impact on the outcome variables. Thus, the informal small entrepreneurs who participated in soft skills training realised higher sales and profit than those who participated in standard business trainings. Differences in outcomes stemmed mainly from different investments in labour and capital after training and not necessarily the deployment of differential business practices. However, the differences in investments were positively correlated with the entrepreneurial training focus on innovation as well as access to finance (both through formal and informal channels) (Campos et al., 2015).

An important lesson from the evidence review in relation to skills training is the crucial role that the private sector can play in ensuring the effectiveness of skill development interventions. Private sector trainers are well-known to adapt training programmes to the requirement of the labour market and to some extent can improve performance and quality through innovation and competition (Yami et al., 2019; Betcherman and Khan, 2015). Ismail (2018) notes that skill development programmes tend to be more effective when it is carried out by private sector entities than public sector training providers. This may be due to bureaucracies and longstanding inefficiencies that characterise public sector interventions. Nonetheless, private sector and NGO training interventions may lack the capacity for scaling up training interventions. Based on lessons learnt from impact evaluations of youth employment interventions in North Africa, Kabbani (2019) suggested that skills training should be combined with on-the-job training and in consultation with private sector actors who are deemed to be in a better position to identify relevant skills gaps in the labour market.

6.2 Employment Services

Employment services interventions encompass programmes that offer counselling, job search assistance, and placement designed to enhance the functioning of the labour market. An important consideration for embarking on these services is premised on the notion of information failures in the labour market (Betcherman and Khan, 2015). Fundamentally, much of such services are undertaken by public employment agencies, but in recent decades, private sector actors also play a crucial role in this endeavour (Betcherman and Khan, 2015). In contrast to skills development and trainings, employment services are highly limited in SSA and North Africa (Ismail, 2018; Betcherman and Khan, 2015). However, a review of the limited available evidence on the impacts of such services is highly mixed in terms of outcomes on youth employment creation.

On the one hand some studies point to positive outcomes of employment services initiatives Betcherman and Khan (2015) found that employment services tend to improve employment and earning prospects for beneficiaries, and their less expensive nature in comparison with other ALMPs, makes such services cost-effective as a youth employment intervention. Similarly, Hatayama (2018) in her evaluation found that employment matching services, including job fairs and provision of incentives for job searches (e.g., lowering transportation cost) tend to improve employment and income of rural youth. The author cites examples from Ghana and India where rural youth (particularly women) who received recruitment services had positive employment and income effects. Evidence from South Africa demonstrate that a wage subsidy scheme incentivised schools graduates to engage in job search for longer periods, and this resulted in increase in the number of those in wage employment, although there is the potential that this could have led to displacement of labour (Fox and Kaul, 2017; Hatamaya, 2018).

On the other hand, some studies show no positive effect of employment services on employment outcomes for rural young people; as alluded to below, this could have to do with programme implementation and/or design. Fox & Kaul (2017) found in their evaluation that employment matching services in Ethiopia and Jordan did not improve employment outcomes among young people. In Ethiopia, people and firms were randomly invited to a job fair, and despite high turnout, only one job was offered for every 10 invited firms – this may also have had a 'displacement effect' (see also Abebe et al., 2017). In Jordan, the job matching service based on a formal assessment of candidates saw high dropout rates, no significant impact and a very high cost for each job matched (~US $20,000 per job) (see also Groh et al., 2015). It is important to note that these interventions were implemented in urban settings of the country. The authors concluded that the usefulness of employment matching services tends to be somewhat limited and they appear to be more relevant in improving employment outcomes for skilled youth than the unskilled who mostly reside in rural locations (Fox & Kaul 2017). A World Bank report (2012) notes that such interventions tend to be are more appropriate for formal wage employment and may have very limited impact especially in countries where agriculture and self-employment are the major source of employment for rural youth. Consequently a survey of experts that carried out in 37 countries in Africa (SSA and North) reported that neither public nor private agencies that provides employment services were helpful in assisting (rural) young people: to the extent that it is only in seven countries that public agencies were able to reach young people seeking to enter the labour market (Betcherman and Khan, 2015). Overall while employment services may not be the favoured option used by majority of young people in Africa (SSA and North Africa), it does not obscure the fact that information asymmetry remains a key challenge on the continent. Indeed, nearly half of expert survey in 37 countries in SSA and North Africa mentioned lack of information as a key constraint for young people, but just a small proportion of young people themselves rated lack of awareness of available employment opportunities as a problem (Betcherman and Khan, 2015).

6.3 Entrepreneurship/Self-employment

Entrepreneurship interventions mostly aim to support young people to establish a business or increase the performance of existing micro, small or medium-sized enterprises (Kluve et al., 2016). Several multilateral agencies, the ILO and governments in Africa have introduced entrepreneurship support programmes as a way to create employment among the youth (Flynn et al., 2017). There appears to be a consensus that two key factors shape the success of self-employment/entrepreneurship programmes (Betcherman and Khan, 2015). The first relates to finance and technical support which are deemed as crucial to addressing key constraints to starting business. The other relates to the need for proper targeting as not all rural youth may have the desires or may be suited to start their own ventures (Betcherman and Khan, 2015). A review of the evidence-base on evaluations relating to the impact of such interventions shows that their outcomes are largely inconclusive; some studies report positive outcomes while others found no positive effects.

In North Africa, an entrepreneurship education programme (Know About Business) introduced by the ILO across the region (not necessarily rural-specific) is reported to have increased young people's knowledge of business concepts and further stimulated their interest to start their own business. University students in Tunisia who had the opportunity to graduate with a business plan rather than following solely the standard school curriculum were found to be more likely to become self-employed (Kabbani, 2019). The same intervention (i.e KAB) was implemented in Egypt, and assessment carried out shows that the programme made a success; it raised young people's interest in choosing entrepreneurship as a career path. Young people who benefited from the intervention reported improved knowledge in entrepreneurship and greater awareness of the potential challenges in starting up their own businesses in rural agriculture and non-farm employment activities. Nevertheless, the youth raised concerns about the course implementation set-up and the extent to which they could utilise their new knowledge to begin their own businesses in the context of financial and non-financial difficulties (Kabbani, 2019).

Similarly, an evaluation of the ILO's Start and Improve Your Business Programmee (SIYB) programme, which provides training, loan and cash grants to young people in Uganda found that self-employed beneficiaries increased their profit margin by 54 percent six to nine months after programme implementation (Kluve et al., 2017). In the same country, Ahaibwe and Kasirye (2015) assessed the The Uganda Youth Venture Capital Fund introduced by the Ugandan government to create employment mainly through enterprise development, business skills training and job creation. Overall, they find that while the programme had

a positive effect on youth beneficiaries particularly in the area of business expansion, there was no significant evidence to show positive effect on job creation. Participation in the programme was shaped by contextual factors; 1) age of the young entrepreneur (compared to the relatively younger youth 18-25 years, older youth were more likely to access the fund); 2) type of business, with those in services sector mainly women traders more likely to benefit; 3) location- with urban businesses more likely than rural businesses to benefit; and 4) the level of business maturity (Ahaibwe and Kasirye, 2015). The findings on no positive association of the Youth Venture Capital Fund on job creation in Uganda is consistent with the outcome of a systematic review of 26 impact evaluations of access to finance interventions for enterprises in LMICs carried out by Grim and Paffhausen (2015) which demonstrated that more than half of the 26 financing interventions, in most cases, microfinance loans, were ineffective in creating new businesses for young people. Nevertheless, the study found positive effects on creation of new firms and expansion of well-established large firms, but not to the benefits of SMEs where rural youths derive their livelihoods. This could be attributed to the fact that "subsistence-type microenterprises face difficulties in expanding employment and growing into larger firms even if they improve their production" (Hatamaya, 2018 p.8-9). In a sense, this reflects the findings of an evaluation of microloan intervention carried out in three country contexts: Morocco, Ethiopia and Mongolia which found that such schemes had no positive influence on rural SMEs to expand their employment (Banerjee et al., 2015).

It should be noted that there are entrepreneurship/self-employment interventions in the developing (including in Africa) that focuses explicitly on boosting employment outcomes among women entrepreneurs. An example is the ILO's GET Ahead for Women in Enterprises. The programme targets rural, low-come female entrepreneurs with low levels formal education in over 18 different countries in Africa, Latin America, the Middle East and South East Asia. A key objective of the programme is to assist female entrepreneurs to move their enterprises from being marginal income generation to profitable business development by addressing gender-based constraints to business success. Rather than adopting the traditional classroom concept of teaching and learning, the programme deployed a participatory approach (individual and group-based activities, role plays, problem-solving) that builds on the women's existing knowledge and real-life experiences. Findings from a preliminary qualitative assessment of the programme in four counties in Kenya concluded that rural (young) women who participated in the programme experienced improved knowledge in investing and managing their businesses, as well as better engaging their customers. Moreover women beneficiaries had gained diverse skills in relation to performing their businesses, and further reported improved economic wellbeing for themselves, and families. Nevertheless, the women were still confronted with the challenge of not being able to access financial capital (loan) to expand their businesses due to rigorous lending regulations of financial institutions in the country (Spangl et al., 2015). Additionally, the findings demonstrated that women beneficiaries could not fully grasp knowledge and skills in relation to risk-taking, goal setting, gender-specific content and business planning. Women beneficiaries, implementing organisations and trainers highly commended the programme in relation to the training manual, content, structure, logistics and implementation procedures (Spangl et al., 2015).

Despite these outcomes there were recommendations from women entrepreneurs to further strengthen the content and implementation of the programme; for example extending the length of time of training to provide space for beneficiaries to learn certain skills (book keeping) and put lessons into practice in between training session as well as translating training manuals from English into the local language and allowing more time (Spangl et al., 2015).

6.4 Agriculture-related interventions

As mentioned in the introduction section of this paper, most rural young people in Africa work in the agricultural sector, and many will continue to enter the sector in decades to come. However there are longstanding barriers–many of which are structural –to increased agricultural productivity and income in rural Africa; lack of mechanisation, poor infrastructure, land tenure regimes (including constraints to intergenerational transfer of land) , low yield crops, low levels of technology, and low status of small scale farming (Brookes et al. 2012; Filmer and Fox, 2014; Betcherman and Khan, 2015; Sumberg et al., 2017).

As noted earlier while these constraints may inhibit young peoples' desires to pursue agriculture and farming livelihoods, the turn away from agriculture and rural areas is also associated with education and the rising aspiration of young, and the changing nature of employment markets (Sumberg et al.,

2017). Addressing these barriers and improving the quality of employment in agriculture production (crop farming and livestock), as well as in value chain activities including food processing and distribution is crucial to addressing the youth employment challenge in Africa. Betcherman and Khan, (2015: p. 23) argue that improving the quality of employment of young people in agriculture will require a combination of interventions "that fall well outside the traditional envelope of youth employment interventions". This section reviews the evidence of what we know about the impact of agricultural related interventions to promote youth employment in Africa. The analysis is structured to look at two main areas: 1) programme interventions and 2) agricultural education initiatives.

6.4.1 Agricultural related initiatives, rural youth orientation and employment

A key message from the literature suggests that interventions implemented by African government and development partners to boost youth employment in the agricultural sector has yielded some gains in inspiring youth to see the employment potentials of agriculture/value chains. However, the evidence also points to existing structural constraints which still hinder youth engagement in agricultural and value chain activities. A systematic review of existing studies by Yami et al (2019) found that interventions implemented in diverse contexts in Africa to inspire youth engagement in agriculture have worked to change the attitude of youth toward agribusiness. For example, in Cameroon, the AFOP National Programme is reported to have worked to change the mindsets of youth toward agribusiness as a career mainly by addressing the negative narratives and biases of the media, family and friends against choosing agriculture as a career path. An important outcome of the programme was the change in attitude of youth towards agribusiness activities. In the same vein the agribusiness parks in DRC provided trainings and provided interventions for youth to use improved technologies, add value to agricultural products, linking outgrower schemes to agribusiness and agro-processing units. The programme also provided incentives for private sector engagement and stimulated competitiveness of markets, and these resulted increased youth engagement, improved livelihoods and incomes (Yami et al., 2019).

In Nigeria, the federal government implemented the Youth Employment in Agriculture Programme (YEAP). Borne out by recognition of agriculture as sector that can generate much needed employment, food security and poverty reduction, YEAP aimed "to increase decent rural employment opportunities for Nigerian youth along area-based priority agricultural value chain" (FAO, 2016: para. 2). Implementing organisations in the country received both technical and institutional support from FAO in collaboration with ILO to provide enabling environment for young people to engage in agriculture in a more profitable manner. The programme was designed to be implemented over a 5-year period to create 750,000 jobs in the agricultural sector for rural youth. The deployment of the Junior Farmer Field and Life Schools in secondary schools under the YEAP programme is reported to have changed the mindset and perceptions of the youth about agriculture as employer of last resort to 'agriculture as a business', with prospects for high profit margin. Over 80% of young beneficiaries of the programme were reported to have established their own businesses and learnt the skill of marketing, enterprise management and record keeping. In effect the YEAP programme helped the youth to value agriculture as a profession as opposed to as being part of daily rural life, leading to gainful employment, and increased quality of agricultural products and sales (Yami et al., 2019),

In the same country, Adeyanju et al (2020) assessed the impact of the Fadama Graduate Unemployed Youth and Women Support (FGUYS) programme which focuses on promoting youth engagement in agribusiness. The FGUYS, which was launched by the Federal Government of Nigeria in collaboration the World Bank, sought to orient the mindset of unemployed youth by exposing them to new ideas in agribusiness in order to drive their motivation and energy towards stimulating the agenda for national economy diversification and achieve food security. The programme adopted an integrated approach whereby young people between the ages of 18 and 35 years received training in different agribusiness field: agricultural production (crop and livestock), financial management and agricultural marketing. Adeyanju et al (2020) assessment of the (FGUYS) which was based on a sample of 997 respondents (455 beneficiaries and 522 non-beneficiaries) across three states in Nigeria found that participation in the programme increased the probability of youth to engage in agribusiness by 53 percent. This finding underscores the importance of training interventions to promote youth employment. Nevertheless, the results show that participation in the programme was shaped by youth perceptions of agriculture, age, years of formal education and type of employment.

The importance of skills training for rural youth employment creation in the agricultural sector is also reflected in the work of Ampadu-Ameyaw et al (2020) who empirically assessed four of youth employment initiatives in rural Ghana: Rural Enterprise Programme; Youth in Agricultural Programme; National Entrepreneurship and Innovation Programme and the Council for Technical and Vocational Training skills development programme. Among other things, participant beneficiaries (mainly crop farmers) benefitted largely from trade/skills training (77 percent) but also marketing, leadership, clerical, computer and accountancy training (23 percent). More than two thirds (69 percent) of those who participated in the training had managed to secure a job or created their own income generating activities a year after training, and of these, the highest proportion (74 percent) benefitted from training in relation to trade/skills. In effect greater share of the youth (81 percent) who benefited from the youth employment programmes were employed with just a few (19 percent) who were not in any gainful employment. On overall programme effectiveness, they found that among the interventions studied, the REP had been more effective in providing better and sustainable employment in rural areas owing to the fact that the programme had administrative offices in all the districts studied, and this made it easier for large numbers of rural youths to access services directly. In contrast, the other programmes were largely urban centred with no administrative offices in the rural areas, which meant that rural youth could not easily access services under these initiatives. They also report that, in contrast to the other interventions, the REP was to a large extent apolitical, and the models of skills development reflected the needs of rural youth (Ampadu-Ameyaw et al., 2020). In the same country Baah (2014) found that rural youth were attracted to the YIAP programme mainly because the programme provides agribusiness management training, agricultural extension as well as land and agro-inputs. Participation in the programme inspired and changed youth negative perceptions about agriculture, and youth beneficiaries who pursued farming after exiting the programme generated appreciable income. Nonetheless, young people particularly the educated who were unemployed had no desire to participate in the programme.

Tigabu and Gebeyehu (2020) recently published the results of an assessment of the Government Youth Revolving Fund programme which provides capacity building training, financial capital and continuous support and consultations for youth to engage in both on-farm and off-farm livelihood activities in rural Ethiopia. Access to funds and trainings (mainly in rural activities, such as livestock rearing, wood and metal work, crop farming, etc.) enabled the youth beneficiaries to establish their own business, and youth earned on average, 2,879 ETB (92.2 USD) per month, which is slightly higher than the average monthly salary of agro-processing and leather factory workers in Ethiopia. The youth identified several untapped opportunities for employment and business for rural youth including food processing, electronic maintenance and retail, farm trading (inputs), hotel, mining and provision of different services. They linked these untapped potentials to lack of credit, working capital shortages, lack of skilled labour, government regulations and bureaucracies (Tigabu and Gebeyehu, 2020a).

In another publication (Tigabu and Gebeyehu, 2020b), the same authors evaluated four of the large youth employment initiatives (i.e The National Youth Policy (NYP), The National Rural Youth Development Package (2006), the Rural Job Opportunity Creation Strategy (RJOCS) 2017, and the Youth Revolving Fund (YRF 2017). Overall while these interventions made some progress in job creation, there were several common limitations which hindered the interventions from leaving up to their expectations. For example, while the YRF created funds for the establishment of 39,003 businesses within two and half years of its operations, young people started their own businesses in rural locations continued to face challenges due to limited infrastructural development, and poor market linkages. Entrepreneurs running small-scale businesses struggled with shortage of power supply, limited access to credit and lack of adequate working premise. While the programmes recognised the structural and institutional barriers confronting the youth, there were no clear set measurable targets in terms of number of jobs they sought to create, in addition to poor data capture, which made it difficult to monitor and evaluate the effectiveness of the programmes (Tigabu and Gebeyehu, 2020b). For the most part, these programmes were implemented following political instability in Ethiopia, which meant that "the packages could be short-sighted, developed primarily to get legitimacy and to consolidate power instead of primarily aiming at containing youth unemployment problems strategically" (Tigabu and Gebeyehu, 2020b: 5).

These findings echo the work of Gondwe et al. (2020) who carried out an exploratory study to assess the impact of large interventions to promote youth employment in the agricultural sector of Malawi. Findings from the research show that limited data availability made it challenging to properly track the impact of employment interventions. Moreover, youth participation in the programme was constrained by inappropriate technologies to address production challenges, lack of land for farming, high levels of illiteracy, lack of electricity in rural areas and limited technical skills (Gondwe et al., 2020).

6.4.2 Agricultural education, youth orientation and employment

Agricultural education, both in and out of school settings, can play a crucial role in shaping the perceptions and aspirations of youth towards agriculture, and in activities along the downstream stages of the value chains. Development organisations, schools, teachers, mentors and peer-to-peer learning approach can instil a sense of positive image of agriculture through explaining 1) the different aspects of agriculture to young people, 2) the career opportunities and 3) the importance of agriculture to everyday survival (Njeru et al., 2015).

There is some evidence of the positive impact of agricultural education, particularly peer-to-peer learning, on youth aspirations and orientations about agriculture and employment. An OECD (2018) report notes that one of the most effective ways to convince young people to engage in agriculture and along the downstream stages of the value chain is through peer-to-peer learning. Such an approach has recently proved effective in providing agricultural extension services. Young people in developing countries including in Africa, with higher levels of education, are beginning to see opportunities in agri-food business, and in some context these youth serve as role models for other young people and are fundamental to creating and investing in small scale industries in rural areas, building networks and generating employment (OECD, 2018). Afere et al (2019) argue that, having young farmers act as role models for other young people; the promotion of faming in schools; promotion of modern farm technologies and emerging opportunities; and encouraging and supporting youth champions and proactively communicating positive perceptions of agriculture as a career are crucial steps in making agriculture more attractive to the next generations of young people in Africa Caribbean and Pacific Countries. The youth Agripreneurs team at the International Institute of Tropical Agriculture in Nigeria employs a peer-to-peer learning approach to crops, fisheries and livestock production and processing along the value chain. This has enabled graduates to establish agro-enterprises in several SSA countries (eg. the Democratic Republic of Congo, Nigeria and elsewhere) (Afere et al 2019). Another example is the 'youth champions' initiative of the Food and Agriculture Organisation of the United Nations. At its core, the initiative aims to raise the profile of agriculture and inspire the youth to see the potentials in the agricultural sector. In Uganda, the intervention identified 25 young innovators in the agricultural sector and provided them with mentoring and training to help them further develop their enterprises. These 'youth champions' were then engaged in radio shows and other events (eg. National Agricultural Show), serving as role models for prospective young farmers and agriprenuers (Afere et al 2019).

There is evidence that the inclusion of food and nutrition issues in school curricula often from as early as primary school also contribute to orienting young people's interest and aspirations towards agriculture and the food sector (FAO, 2018). Such an approach contributes to boosting local food production and nutrition especially in the context where parents and local communities get involved with teaching and preparation of school meals. The Springboard's 'Farm to School' initiative in Nigeria, which adopts a farm to market approach– training of teachers, assisting schools to establish school farms and gardens and promote the development of organic school markets– teaches young people the knowledge and build their skills to see agriculture as a business, rather than as a subsistence activity. As of 2019, the initiative had orientated more than 2,000 students and teachers in five schools in Nigeria to see agriculture and food production as a business. In rural Kenya, successful agriprenuers and farmers are recruited to participate in mainstream media to share success stories and also visit schools to help promote awareness about the career opportunities in agriculture (Afere et al., 2019).

It should be emphasised that the type of medium used and content of agricultural education interventions shape the outcome of orienting rural youth aspirations of agriculture. Yami et al (2019) in their review provided two contrasting interventions to show how the type of media used and content delivery of interventions influence the success or otherwise of youth engagement in agribusiness in Africa. They found that the success of interventions is dependent largely on the type of media used and the ways the contents of interventions are delivered. In Nigeria, an education entertainment intervention that uses music album to mobilise youth towards agribusiness was not successful in changing the long-held youth perceptions about agriculture as employer of last resort. In contrast the Songhai Center in Benin which employs talk shows via radio and television was successful in inspiring and attracting youth to agriculture training programmes.

7. Conclusion and Policy Recommendations

In this paper, we have reviewed the evidence around rural youth employment in Africa, and particularly around employment opportunities that arise from growth in the agricultural sector. Within our analysis, we have looked at the role of agriculture as an 'economic engine', and particularly whether growth in this sector can generate improved employment opportunities for rural young people both on the farm and in the non-farm sector. We then examined the conditions of employment available under various agricultural arrangements in African agriculture, as well as the impact of technology uptake on agricultural outcomes. This analysis was followed by a review of rural youth aspirations and perceptions of agriculture. Finally, we reviewed the literature around rural youth employment interventions, drawing from the evaluation literature where possible.

An important lesson our evidence review shows is that the contexts in which opportunities arise, the characteristics of the young people who respond to them, and the way they are fostered and implemented by governments and other actors affect their effectiveness and the way young people respond to them. There is still an important share of opportunities for improved employment that lie directly in the on-farm sector in lower income countries in Africa, as these countries also tend to be in the earlier stages of structural transformation. While there is still potential to increase the productivity of the sector (in terms of overall output), there is also potential for improved employment outcomes especially in terms of incomes. As countries move along the income and structural transformation path, there is less scope for broad based and extensive improvements in agricultural livelihoods, though better remunerated and higher quality employment opportunities start to arise in more specialised commercial agriculture, and in the non-farm economy further down the value chain. Although more specialised argricultural and agri-business related chains offer improved employment conditions, it's not clear that such industries offer immediate conditions for decent employment. Where possible, initiatives that foster improved employment conditions should be supported, but it's likely that, like structural transformation, the pathway to a broader base of decent employment is a gradual process.

As mentioned, the development process does not happen uniformally, even under similar economic conditions. It is important for programmes, including those revolving around the promotion of technology adoption, to understand the key constraints and social characteristics of targeted populations in order for the interventions to be truly supportive. While some interventions may pique the interest of some or most young people in certain locations, it is likely this will depend on what other opportunities are perceived to be available within young people's landscapes, including in urban or peri-urban areas. Where it is perceived that many opportunities exist outside of the agricultural or rural economy, there is less likelihood that young people will remain in the sector. It will also depend on young people's access to agricultural or off-farm resources in the rural economy, where those with greater access to productive resources more likely to stay, and those with lesser access less likely to stay – unless these are counter-balanced within interventions. Interventions that support young women's aspirations, and that take into account social norms around their access to productive resources will likely be more much successful in providing them with improved employment opportunities within the rural economy.

7.1 Recommendations

- Invest in the agriculture to provoke more economy-wide growth. Investing in and ensuring access to key resources such as infrastructure (e.g., roads, electricity, irrigation), land, inputs, credit, and extension will improve productivity and help to unlock markets to enable producers to take advantage of economic opportunities in the rural African economy.

- Ensure access to quality education both now and over the long term to enable a transition from primarily agrarian economies to more highly skill-based economies, leading to better employment outcomes (including quality) for workers.

- Understand and address specific constraints to accessing resources or opportunities for young women and men to overcome barriers and benefit from agricultural development. National, regional and local actors will need take contextual factors specific to rural young people into account when developing policies or implementing programmes in order to maximise the potential benefits of rural and structural transformation.

- Skills training interventions have been shown to be more effective when aligned with the needs of the private sector/employers. Such interventions in lower-middle income countries are 20 to 30 percent more likely to have a positive and significant when provided solely by the private sector. In the agricultural sector specifically, interventions that combined multiple interventions, such as training, mentorship on technical and financial dynamics of agribusiness, and financial support for start-ups proved successful in enhancing youth engagement in agribusiness.

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Annex

Annex 1: The youth population (15-34) of Africa by age and sex (1990-2050), per thousand

Year	Age and sex							
1950-2050	15-19		20-24		25-29		30-34	
	Female	Male	Female	Male	Female	Male	Female	Male
1990	32,786	33,260	27,463	27,434	23,054	22,903	19,241	18,931
1995	38,174	38,730	31,884	31,911	26,681	26,204	22,374	22,062
2000	44,296	44,856	37,203	37,343	30,799	30,521	25,576	25,006
2005	49,460	50,177	43,098	43,210	35,933	35,743	29,576	29,159
2010	54,292	55,114	48,242	48,477	41,780	41,423	34,588	34,190
2015	60,491	61,573	53,221	53,735	46,924	46,924	40,491	40,010
2020	68,415	69,850	59,582	60,450	52,193	52,484	45,888	45,647
2025	77,980	79,830	67,493	68,681	58,568	59,219	51,189	51,317
2030	87,905	90,189	77,088	78,670	66,501	67,449	57,576	58,037
2035	95,182	97,644	87,035	89,016	76,097	77,396	65,495	66,213
2040	102,112	104,681	94,332	96,465	86,037	87,693	75,064	76,089
2045	109,396	112,080	101,284	103,497	93,353	95,126	84,993	86,331
2050	116,871	119,698	108,589	110,888	100,324	102,142	92,321	93,741

Source: World Population Prospects, 2019 (https://population.un.org/wpp/)

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BOOSTING DECENT EMPLOYMENT FOR AFRICA'S YOUTH

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About INCLUDE

INCLUDE was conceived in 2012 by the Dutch Ministry of Foreign Affairs to promote evidence-based policymaking for inclusive development in Africa through research, knowledge sharing and policy dialogue. INCLUDE brings together researchers from African countries and the Netherlands who work with the private sector, non-governmental organizations and governments to exchange knowledge and ideas on how to achieve better research-policy linkages for inclusive development in Africa. Since its establishment, INCLUDE has supported more than 20 international research groups to conduct research on inclusive development and facilitated policy dialogues in Africa and the Netherlands.