RESEARCH PROGRAM ON Livestock

More meat, milk and eggs by and for the poor

CGIAR Research Program on Livestock Youth strategy

Version 2

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CGIAR is a global partnership that unites organizations engaged in research for a food-secure future. The CGIAR Research Program on Livestock provides research-based solutions to help smallholder farmers, pastoralists and agro-pastoralists transition to sustainable, resilient livelihoods and to productive enterprises that will help feed future generations. It aims to increase the productivity and profitability of livestock agrifood systems in sustainable ways, making meat, milk and eggs more available and affordable across the developing world. The program brings together five core partners: the International Livestock Research Institute (ILRI) with a mandate on livestock; the International Center for Tropical Agriculture (CIAT), which works on forages; the International Center for Research in the Dry Areas (ICARDA), which works on small ruminants and dryland systems; the Swedish University of Agricultural Sciences (SLU) with expertise particularly in animal health and genetics and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) which connects research into development and innovation and scaling processes.

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Abbreviations

CIAT	International Centre for Tropical Agriculture
FAO	Food and Agriculture Organization of the United Nations
ICT	Information and communication technologies
ILRI	International Livestock Research Institute
M&E	monitoring and evaluation
ToC	Theory of change
UNESCO	United Nations Educational, Scientific and Cultural Organization

Executive summary—main findings and recommendations

1. The study of 'youth' is not new. However, interest in the topic of youth has recently intensified due to the current and projected population growth in Africa, and to a lesser extent in Asia, which will lead to a historically large youth population.
2. Over the next few decades, the world will see an unprecedented number of youth enter the labour market. One narrative perceives this is an opportunity, the potential of a demographic dividend. However, the more dominant narrative sees this 'youth bulge' as a challenge: a large number of underemployed or unemployed youth poses security risks and could increase international migration.
3. The agrifood sector is key for future youth employment scenarios. In low-income countries, it is the main provider of employment, but even for youth in lower-middle-income countries, and especially those living in rural areas, agriculture is an important livelihood option.
4. There is no 'perfect' age range for youth. This strategy recognizes that age categories should be context specific and may vary per research design.
5. Besides being 'young', youth simultaneously hold many other identities. An intersectional approach takes these identities (gender, race, religion, education, socioeconomic status, etc.) into account. In addition, we cannot study and target youth in isolation. A social-relational approach helps to see young people within the context of key relationships, such as with parents are key.
6. The categories of gender and youth share similarities, and ender and youth research can support each other. However, there are clear differences. Gender is embedded in feminist theory and has often been framed as an equity and moral issue first, and an economic issue second. Youth is often framed in terms of security and jobs. Moreover, women of all ages often face more systemic oppression than young men. Indeed, some of the disadvantages related to be a young person will decrease with age.
7. This report provides an analytical framework, largely adopted from Ripoll et al. (2017). This framework helps to study youth, and their ability to assert their 'agency', in relation to the larger political-economic context and sociocultural structures.
8. There is a tendency to perceive all youth as potential entrepreneurs. In reality, most entrepreneurs in low-income and low-middle-income countries engage in entrepreneurship out of necessity, not because of opportunity. Examples of and potential for the kind of entrepreneurship that goes beyond 'to get by' and transforms into a business which can employ other youth is very limited.
9. For the majority of the working population active in livestock now and in the future, the best case scenario is one of modest productivity increases—raising incomes while kickstarting structural transformation. For a smaller segment of society, opportunities exist to set up or grow a significant business venture. The potential of youth to participate in these more profitable businesses will be part of the research agenda, likely through the entrepreneurship angle.
10. Most of the perceived challenges and opportunities for youth are not new nor do they apply specifically to youth. For the most part, youth are not inherently different than non-youth. As such, a significant increase in research (for development) with a specific youth lens will be of limited added value. In some cases, the challenges that youth face are the same as for the general population, but their effects are larger, in particular, the effect of climate change, degrading natural resource base and need for quick returns.
11. The CGIAR Research Program on Livestock youth strategy is therefore not about devoting an entire research program to youth. Rather, a 'youth lens' will be added to current and future research projects. In addition, the program will integrate youth perspectives on the livestock sector and its livelihood potential by interviewing youth in the field.
12. A select few challenges and opportunities do require a more specific youth lens. These topics include access to land and finances, and migration.
13. All CGIAR research programs have an element of focus on youth in their strategies for 2017–22. Yet specific research activities related to youth are still limited within the CGIAR system.
14. Although youth is clearly integrated throughout the CGIAR Research Program on Livestock proposal and flagship strategies, including the allocation of funds, knowledge on the participation of youth in livestock value chains is limited.
15. Currently, youth participation is hard to estimate as generally age disaggregated data are not collected. The limited data available show youth participation is low (~15%).
16. Three pathways, or objectives, for increased youth engagement are proposed.

    a. The first objective aims at integrating a youth lens across the CGIAR Research Program on Livestock to ensure benefits are optimized for youth, at farm and value chain levels

    b. The second objective is to identify strategies for how livestock development can be effective in creating youth employment and entrepreneurship opportunities.

While the first objective takes the existing CGIAR Research Program on Livestock work as a starting point to enhance youth engagement, the second objective begins with the youth themselves.

c. The third objective is to improve our understanding of the nature and drivers of youth involvement in livestock activities and the particular constraints they face, both fundamental and immediate (strategic research on youth). A number of topics have been identified: migration, access to land and finances. The online consultation identified other topics: climate change and pluri-activity (youth engaging in and out of livestock value chains based on the relative returns to livestock and other activities). Cooperation will be sought with other CGIAR research programs as most strategic research is not necessarily livestock specific.

17. Regarding the second objective, there are several opportunities for agricultural research to be involved in supporting youth employment and entrepreneurship. The CGIAR Research Program on Livestock is well positioned to design the overall structure of the intervention, carry out the initial value chain research, design the training modules, and design and implement a monitoring and evaluation (M&E) protocol. Indeed, there is a huge challenge in designing interventions to contribute to youth employment that can be brought to scale and show significant impact in a cost effective manner. Both training and finance, the usual ingredients for entrepreneurship programs, often fail the cost effectiveness test. Best practices for youth employment projects, especially in agriculture and livestock, are very limited.

18. This strategy builds on the youth framing paper as well as the online consultation that took place in November 2018. It is a living document that will be updated based on new findings.

Rationale—the 'youth bulge': threat or opportunity?

There is considerable attention and interest among donors, governments and development agencies to involve more youth in the agriculture and livestock sectors, as a 'youth bulge' is occurring in Africa and parts of Asia. Indeed, in the next few decades, rapid population growth in Africa and Asia will lead to an unprecedented number of youth entering the labour market. While this may present an opportunity to realize the demographic dividend which fuelled the East Asian miracle a few decades ago, there are also fears about negative consequences, including mass under or unemployment and violence. This has led to an increase in interest for youth and the role of agriculture, or the agrifood sector, as a potential pathway to provide employment opportunities. This, in turn, has spurred donor interest, resources and a flurry of academic papers and status reports. At the same time, the evidence base on youth employment—especially in agriculture and livestock—is still rather thin (Fox and Kaul 2017).

It is against this background that both development organizations and agricultural research are increasingly taking steps to engage with the youth issue. CGIAR mentions youth specifically in its Strategy and Results Framework 2016–2030 (CGIAR Consortium 2015). In addition, in 2015, CGIAR required proposals for the second phase of the research programs to specify how youth will be engaged (Ripoll et al. 2017).

The CGIAR Research Program on Livestock Narrative Proposal for 2017–22 addresses youth in the Theory of Change (Toc) of the various flagships. More generally, it acknowledges the importance of the subject, stating that 'achieving the aspirational outcomes of the Livestock CRP will only be possible if new approaches to engaging young people in the livestock sector are identified and implemented' (Livestock CRP 2016).

In line with the current framing in popular discourse of youth as an employment issue, the CGIAR Research Program on Livestock focus on youth has been formulated to revolve around 'employment, entrepreneurship and capacity development'. Its objective is to 'design and implement interventions that will allow young people to build their future in livestock development and associated subsectors' (Livestock CRP 2016).

This strategy is based on the Framing youth in livestock paper (Kleijn et al. 2019) complemented by internal discussions. This document was also discussed during an online consultation in November 2018, to collect and incorporate the inputs of as many scientists involved in the CGIAR Research Program on Livestock as possible.

These documents are the result of primary and secondary data collection (literature review). Primary data was obtained from interviews with scientists working in the CGIAR Research Program on Livestock (flagship leaders, director, others) and other resource persons in CGIAR. In addition, youth assessments were conducted in Uganda, Ethiopia and Nicaragua. The assessments provided input for the framing paper and support efforts to incorporate youth in current and future activities in the countries where the field work has been conducted.

Towards an understanding of youth

The study of 'youth' is not a new. However, over the last decade or so, the attention on youth has increased (Sukarieh and Tannock 2015). This has resulted in a myriad of academic papers and studies, as well as interest by the development sector, e.g. the World Bank (Filmer and Fox 2014), the Alliance for a Green Revolution in Africa (AGRA 2015), the African Development Bank (2016) and the Food and Agriculture Organization of the United Nations (FAO) (2014).

Between 2015 and 2030, the world population is expected to rise to over 8.5 billion people, and to 9.8 billion in 2050, corresponding to a 32% population increase compared to 2015. This trend is largely fuelled by population growth in Asia and

Africa: the two continents account for a staggering 89% of the world population growth from 2015 to 2030 and 91% from 2015 to 2050. And while Asia's contribution to the increase will gradually decline after 2030, Africa's population boom will contribute an incredible 68% to world population growth in the period from 2030 to 2050.

Figure 1 shows the absolute number of young men and women (defined as those between 15 and 24) in Sub-Saharan Africa increasing rapidly in the near future. But the share of youth in the total population in Sub-Saharan Africa will only decrease beginning in 2040 (Figure 2), as fertility rates slowly decrease (Filmer and Fox 2014).

Figure 1: Each bar shows an estimate or a projection of the number of 15 to 24-year-olds for one year at five-year intervals (Filmer and Fox 2014)

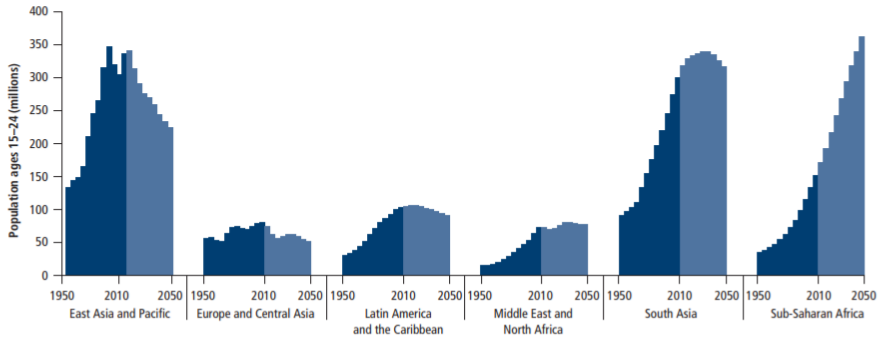
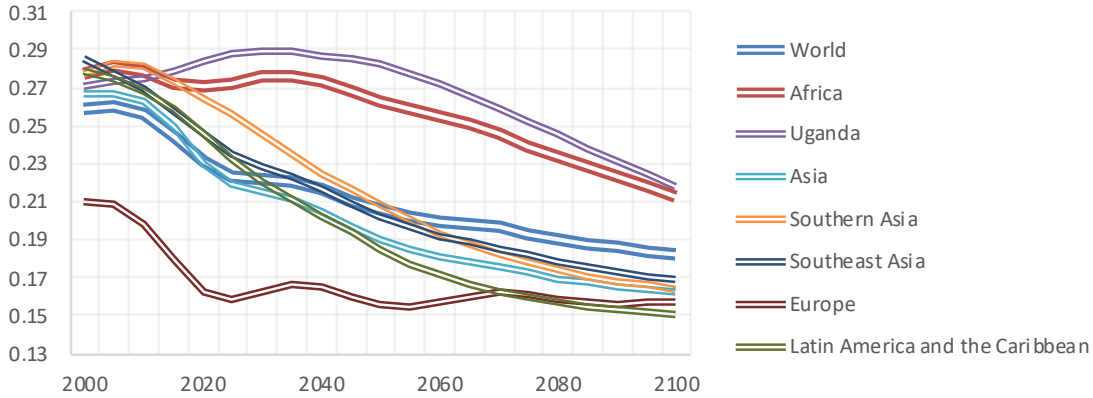


Figure 2: Per cent of 15–29 year olds in the total population (UN Population Database 2017)



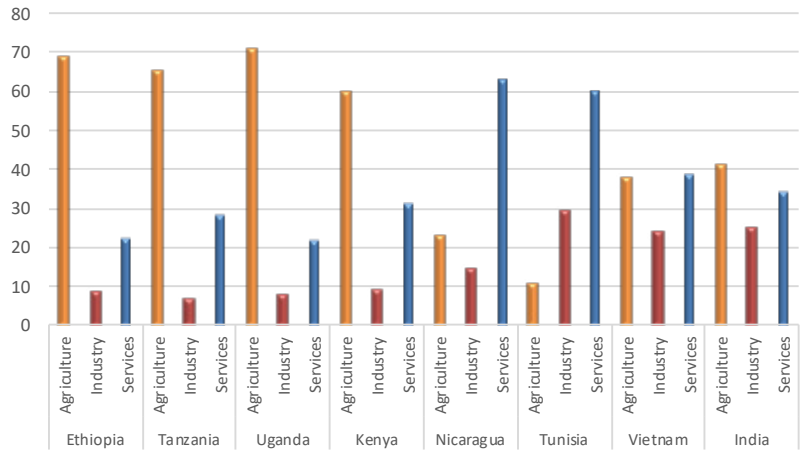
Over the next few decades, the world will see an unprecedented number of youth enter the labour market, especially in Africa. This is the backdrop against which the current attention on youth occurs. Based on current and projected demographics, two narratives, or scenarios, are commonly evoked.

The first narrative is that of the demographic dividend. As young adults enter the labour market, the dependency ratio of a country—the ratio of the working age population versus those too old and too young to work—increases, also known as the 'youth bulge'. If these young adults find productive employment, the average income per capita will increase (Lin 2012). East Asian countries have been successful at utilizing this demographic advantage. An increase in population is credited as a significant factor in the 'East Asian miracle', by some estimates attributing to up to half of total economic growth. The key behind this success is the demographic dividend in combination with 'the social, economic, and political institutions and policies that allowed them to realize the growth potential created by the transition' (Bloom and Williamson 1998; Bloom et al. 2000).

A second, more prevalent, narrative, is that of the 'ticking timebomb' or 'angry young men' scenario. The World Bank estimates that one billion additional youth will enter the global job market in the next 10 years. Only 40% are expected to find employment, based on the current job market. This means 600 million jobs need to be created over the next decade, which amounts to five million jobs each month (World Bank 2011). Many argue that this arduous challenge poses severe security risks, linking unemployment of youth to violent conflict (Urdal 2010; Huntington 2001).

Agriculture is deemed a crucial pathway to find solutions to the youth 'challenge' for two main reasons. First, according to projections, the biggest source of employment over the next few decades in most low-income countries will be found in the agricultural or 'agrifood' sector (ILO 2016). As Figure 3 on employment structures in the different CGIAR Research Program on Livestock countries up to 2021 shows, agriculture remains the most important provider of jobs for four of these countries, three of them being in the 'lower income countries' category. For the lower-middle income countries (Tunisia, Kenya, Nicaragua, Vietnam, India), the estimated employment derived from agriculture is considerably smaller, yet still key.

Figure 3: Employment structure projections 2021 (in per cent)



Agriculture provides job opportunities both on and off the farm. In a large study on Rwanda, Tanzania and Nigeria by Allen et al. (2016), off farm activities were found to grow much more rapidly than on farm activities. However, off farm activities grow from a lower base; primary production remains more important as a source of potential employment.

A second reason why agriculture is an important pathway for youth employment is the multiplier effect (Filmer and Fox 2014; Allen et al. 2016). An increase in agricultural productivity and production through smallholders generates purchasing power. Not only does this lead to an increase in the availability of food and a reduction of costs, demand for goods and services goes up as well. As a result, employment opportunities in the industrial and services sectors increase, with labour moving to the off farm sectors, a process known as structural transformation (Lipton 2005).

Within the field of agricultural development, one additional reason that might have sparked the interest in youth is the recognition that youth do not seem to be very interested in agriculture. Agriculture and livestock just seem less 'sexy' to them (Brooks et al. 2013; Pyburn et al. 2015).

Conceptualizing youth: youth as an heterogenous group

This section describes in more detail the way 'youth' can be conceptualized. It describes how an intersectional and social-relational approach help to better understand youth aspirations, challenges and opportunities.

Generally speaking, 'youth' refers to the period between childhood and adulthood. Yet different age ranges are used to statistically define 'youth'. A common one is a definition given by the United Nations Educational, Scientific and Cultural Organization(UNESCO), which defines youth as people between 15 and 24 years of age. The African Youth Charter refers to youth as anybody 'between the ages of 15 and 35 years' (African Union 2006). The Commonwealth's definition of youth includes those between 15 and 29 years (Commonwealth.org).

There is no 'perfect' age range; the transition from childhood to adulthood is a fluid process that depends, among other factors, on the consensus within different societies on what it is to be young. In many cultures, for instance, 'youth' ends the moment an individual enters into marriage. Indeed, the concept of youth is culturally and historically constructed (Leavy and Smith 2010). As such, the concept of youth also changes over time. Many rural youth today are considered to be 'youth' longer than in the past. Their youth is prolonged due to increased access to education, which postpones their entry into the labour market, while the average age of marriage is on the rise (White 2012).

The CGIAR Research Program on Livestock strategy recognizes that age categories should be context specific and may vary across research designs. The conceptualization of 'youth' takes a more sophisticated approach going far beyond age, incorporating intersectionality and interrelationality, which will be elaborated upon in this section.

Intersectionality refers to social identities of an individual in relation to oppression and domination. An intersectional approach is important as youth are not a homogenous group (Pyburn et al. 2015). Besides being 'young', youth hold many other identities as well. These identities are related to religion, gender, tribe, income level, location (urban/rural), agroecological zone, natural resources, market access, education level and access to health facilities.

Our understanding of youth should also borrow from a social-relational approach. Young people do not exist in a vacuum. Their realities are shaped by the social contexts in which they live and the relations they uphold. A relational approach aims to study youth in the context of relationships to other individuals and social groups.

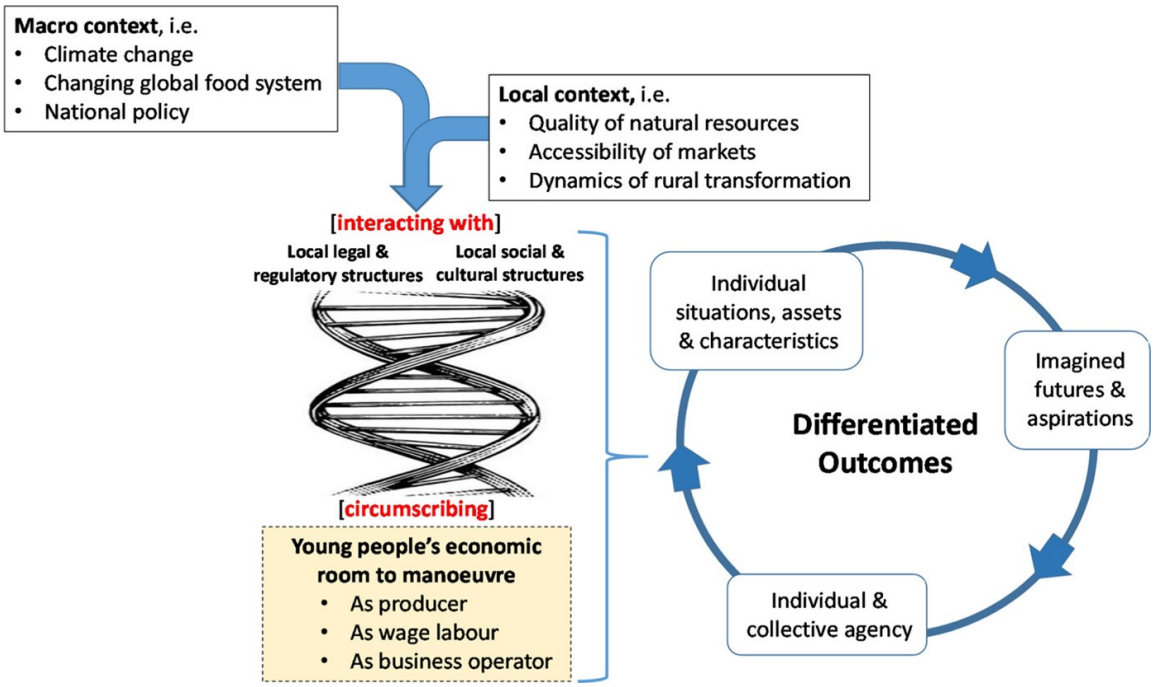
For instance, the relationship with parents or other caretakers (e.g. community members, family members) plays a fundamental role in the aspirations and agency of youth. Flynn and Sumberg (2017) conclude that, based on field work in Tanzania, Zambia, Uganda and Ghana, the engagement of youth with savings groups in Sub-Saharan Africa depends heavily on the networks of

family and social relations. Field work in Uganda and Ethiopia reveals that relationships with parents can both enable as well as discourage youth from engaging with the livestock sector.

An analytical framework

To ground the discussion, a simple analytical framework is presented in Figure 4, largely adopted from Ripoll et al. (2017). It analyses youth in relation to the large political-economic context, sociocultural structures and agency within these structural forces.

Figure 4: An analytical framework to understand the ability of youth to 'make their future'



The macro context relates to the larger political-economic structures and changes in those structures. For instance, the increase in world population will lead to an increase in demand for agricultural products. Other features of the macro context include international policies guiding agricultural development (e.g. the Comprehensive Africa Agriculture Development Programme) as well as national policies and strategies. At a national level, many countries have had national youth policies in place years before the recent attention on youth. Other macro-level variables may include infrastructure, electricity, political stability and the imminent threat of climate change. All of these higher level factors shape the outcomes of any interventions related to youth employment. The structure of the economy also falls into this category. The level of structural transformation highly impacts the type of employment available for youth.

The local context includes many of the local effects derived from the trends and structures at the macro level. These factors are the availability of technologies, land, access to water, inputs and electricity, infrastructure, finance, local impact of climate change, penetration of communication technologies, proximity to and density of urban centres, the accessibility of markets, natural resources and agroecological circumstances (e.g. soil fertility, disease prevalence, weather).

The macro and local context interact with the social structures. Ripoll et al. (2017) define social structures as 'laws, regulations, traditions, expectations, values and norms – formal and informal – that act to constrain or enable people's individual and collective agency'. Social structures evolve but are normally rather stable.

It is the interplay between the macro context, local context and social structures that define the space within which youth can operate to make decisions and to take advantage of economic opportunities. This interacts with the circumstances of the individual youth (their situations, assets and characteristics). Young men and women can operate individually or collectively to take advantage of this space, depending on their socioeconomic status. They can also challenge the structures in place, contesting gender and age norms (Kea 2013), reclaiming customary entitlements to land and other resources (Chauveau 2006) or demanding state intervention in their favour (White 2012).

What is special about youth?

Now what do young people want? I think they want the same thing as what all of us want.

—Secretary of State Hillary Rodham Clinton at a town hall meeting with Tunisian youth (US Department of State 2012)

To develop the entry points of the CGIAR Research Program on Livestock focus on youth, a critical underlying question needs to be addressed: What is different about youth and do these differences warrant a different approach? Interviews conducted with program staff revealed a certain discomfort regarding the targeting of youth and a youth specific approach (including a 'youth strategy'). In the words of one staff member: 'What is really different about young people?' The quote by former Secretary of State Hillary Clinton is telling. Indeed, if youth want the same thing, why do they need special attention? We look at the literature on constraints, or challenges, faced by youth, before analysing their opportunities.

Challenges for youth

There is a growing body of literature related to the challenges youth face in agriculture. For example, the FAO report (2014) on youth in agriculture singles out seven main challenges: insufficient access to knowledge, information and education, limited access to land, inadequate access to financial services, difficulties accessing green jobs, limited access to markets and limited involvement in policy dialogue. Most of these challenges also feature in general analyses on agricultural development and the challenges smallholders face. They may be more acute for youth but are often present for non-youth or socially disadvantaged groups such as women and people with disabilities. Filmer and Fox (2014) identify four main challenges for youth: financial services, land policies, infrastructure and capital. Yet again, all of these are also cited as challenges for smallholders in general (World Bank 2008). The same argument can be made for macro level constraints such as research and development, extension, infrastructure, health and education, which apply just as much to youth as they do to non-youth. Filmer and Fox (2014) agree, stating that studying the issue of youth employment, for example, is much like studying overall employment.

Nevertheless, in popular and academic discourse, some specific challenges are repeatedly mentioned in relation to youth and agriculture, which may warrant a different, youth sensitive approach. These specific challenges include access to land and finance, and migration.

Limited access to land and finance

The dynamics of land access are creating a new reality in agriculture, especially for youth. Both Asia and Africa are witnessing a decrease in farm size and land distribution, which is primarily a consequence of growing rural populations and subdivision of land upon inheritance (Djurfeldt and Jirström 2013). Also, the urban elite is increasingly acquiring land, contributing to scarcity. Latin America and the Caribbean is the region with the greatest inequality in the distribution of land; land ownership is dominated by large farms (FAO 2017; Oxfam 2016).

In some areas, land is still abundant, but this land is often quite concentrated. For instance, in Sub-Saharan Africa, 90% of surplus arable land is concentrated in six to eight countries, depending on the definitions used (Jayne et al. 2016). Differences also exist within countries. Field work conducted in Uganda for the youth in livestock framing paper revealed that in some rural areas, land is becoming scarce. However, certain livestock ventures, such as pig farming, does not require much land, so youth are usually not constrained in their access to land. In more urban areas, access to land is a bigger challenge. In Ethiopia, the youth assessment identified access to land as a major challenge. Indeed, one would be correct in arguing access to land is a challenge for agricultural development in general (World Bank 2008). Yet due to population growth in Asia, Africa and Latin America combined with private investment in land, land is becoming scarce at an unprecedented rate. As such, access to land is not a new issue, but it is definitely more pressing for youth.

Often mentioned in the same sentence as land is limited access to financial services (Rutten and Fanou 2015; AGRA 2015). However, access to finance seems to be improving, whereas access to land is becoming more difficult. Formal and informal money lenders are increasingly offering access to financial services, facilitated by new technologies. For instance, the mobile payment service M-Pesa in Kenya has been credited with significant poverty reduction (Suri and Jack 2016). However, access to finance, especially for the rural poor, is still a major challenge (Rabobank 2013). Access to land and finance are challenges that affect smallholders in general but may be more acute for young people as their collateral is often nonexistent (Asciutti et al. 2016). However, as young men age, some 'grow out' of these problems. The current generation of youth is not disproportionately exposed to these challenges. For women, services are less accessible, but this is mostly a consequence of prevailing gender norms.

Climate change

There is clear evidence that climate change is already affecting the distribution of animal and plant pests and diseases, causing erosion, soil degradation, droughts and erratic rains; the complete effects are difficult to predict. However, it is likely that climate change will render agriculture and livestock more knowledge intensive and less of an attractive livelihood option (FAO 2017). As such, it will affect the interest and engagement of youth in agriculture (AGRA 2015). Some even stipulate migration streams are very likely to intensify due to the increased pressure caused by changes in the environment (Quartz India 2018).

Climate change shares similarities to the challenge of access to land. Interventions that help to manage the impact of climate change do not necessarily require a youth perspective and ought to include all social groups (depending on the degree of exposure to climate change). However, mitigation of and adaption to climate change are more acute for youth than for non-youth as the impact of climate change is expected to increase. Evidence suggests young people have an understanding of climate change and how to adapt to it, yet they do not necessarily have the means to do so (Amsler 2017).

Additional research on the impact of climate change on young farmers' waning interest in agriculture and livestock would be welcome. This could shed light on the question regarding the extent to which this affects their motivation to engage in sustainable and profitable farming and agribusiness. This could be tied to research on migration.

Lazy, uninterested youth and quick returns

Another challenge frequently discussed in relation to youth and their engagement in agriculture is their lack of interest in the sector (Bennell 2007; Anyidoho et al. 2012). Some fear that youth will abandon agriculture, hurting the sector and broader goals of food and nutrition security (Pyburn et al. 2015).

At times, this is part of a narrative in which youth are described as lazy and or even deviant (Anyidoho et al. 2012). Field work in Uganda revealed that youth themselves started to internalize such stigmas and see their peers as impatient and lacking dedication. At times, a desire by youth for quicker returns or 'quick money' is mentioned in this context (Ochilo 2014). The Kenyan Youth Policy 2017–21, for instance, states that 'the desire for quick returns and impatience [of the youth] often leads to poor decision making and inability to grow and nurture agricultural enterprises' (Ministry of Agriculture Livestock and Fisheries 2017).

An emerging body of research shows that the interest of young people in agriculture is indeed waning in some countries and areas. For example, in a recent survey by the Aga Khan Foundation, youth interest in the agricultural sector is generally low:

- In Kenya, only 11% would wish to go into farming compared to 48% into business
- In Uganda 12% farming versus 48% business
- In Tanzania 20% farming versus 50% business
- In Rwanda 5% farming versus (65% business[1]

However, the reasons for this lack of engagement do not seem to be caused by some form of laziness or 'slacking'. For example, Kosec et al. (2017) observe low interest in agriculture in Ethiopia as well. They find that the interest in farming is significantly affected by the access to land (push factors) in comparison with pull factors. This is in agreement with findings by Bezu and Holden (2014) for Ethiopia as well as similar findings in Ghana (Amanor 2010) and Burundi (Berckmoes and White 2014). In all cases, limited access to land affects the interest of youth negatively, although little comparative analysis was done between push and pull factors.

However, Tadele and Gella (2012) found that, although land is a significant issue in Ethiopia, youth perceive rural life and agriculture as 'backward, demanding and even demeaning – especially for those who have gone through years of education with higher hopes and expectations' (p. 41). In a multi country study conducted in 23 rural, urban and peri-urban communities in low- and middle-income Asian, African and Latin American countries, Leavy and Hossain (2014) conclude that the lack of interest by youth in agriculture is a combination of two determining factors. One is economic power (access to land and credit), the other constitutes 'sociological explanations governing work and occupational choice – status aspiration and merit on the one hand, and perceived risk on the other'.

In summary, while youth seem to have less interest in agriculture than in other sectors, it is hard to determine if this interest is considerably lower than a generation ago. In any case, the lack of interest is largely a result of structural push factors (most significantly land), while in some cases pull factors also play a role. Although there are certainly cases of apathy and laziness, and gambling and alcohol abuse are real issues, there is no evidence for widespread apathy or laziness among youth.

The same applies to youth wanting quick money. Most agricultural and livestock activities require time before providing a return on investment. A range of potential threats such as weather and diseases render agriculture a risky and unattractive enterprise. This fact is often used as an argument as to why youth are said to prefer, for instance, vegetable farming over staple crops or poultry over livestock keeping. In a study on youth involvement in tomato production in Ghana, Okali and Sumberg (2012) observe that youth engage in tomato production to satisfy short-term capital needs, often used for activities outside of agriculture such as marriage, business development, construction and recreation. Yet in another study in Ghana by Yeboah and Sumberg (2016), youth did not rank 'quick money' as one of their main priorities. However, none of these studies conducted a comparative analysis with non-youth.

Migration

Youth and migration are closely related issues. Migration generally falls into two categories: cross-border (international) and within countries. International migration drives part of the agenda on youth employment. Western countries are concerned with migrant flows and there is fear that unemployed youth will join terrorist groups. These concerns have spurred an increase in aid expenditure on migrant control but also provide a rationale for policy makers, funders, development and research organizations

[1]Methodology is a point of emphasis here. In some studies (e.g. Kosec et. al. 2017; Aga Khan Foundation 2017), youth are asked about their preferred sector of employment. Often, services/industry-based employment is preferred due to preference for steady, formal wage jobs. However, this does not necessarily mean that there is zero interest in agriculture.

to focus on activities targeting youth in developing countries. An example is the 3.2 billion euro European Union Emergency Trust fund for Africa (European Commission 2017).

However, the vast majority of migration occurs between neighbouring countries and within countries, from rural to urban areas. Aggregate-level data on internal migration are not available due to the variability in data collection methods across countries. Questions remain regarding youth and migration. However, in many low-income and lower-middle-income countries, most of the migration from rural areas to towns and cities appears to be constituted by youth, often twice to three times more than adults (Goldin et al. 2017).

To categorize migration as a challenge is somewhat problematic as migration has clear benefits. Migration has the potential to unlock access to education and improved incomes. For women, it can support their empowerment (Goldin et al. 2017). More generally, structural transformation has historically been linked to migration, as labour moves out of agriculture and into the industrial sector.

But there are also clear challenges. Youth migration puts pressure on urban centres, increasing the need for local youth employment solutions both in urban and rural areas. Moreover, youth in rural areas are highly mobile. This holds implications for activities targeting youth. Who are the youth that leave, and which youth remain and why? During project implementation, how do you account for the fact that some of your target population may choose to move? For instance, field work for the ILRI Accelerated Value Chain Development program revealed that some youth drop out of saving groups when they move to the city (KIT 2017). The same trend was observed in the Index-based Livestock Insurance (IBLI)project in which livestock insurance agents were considered tech savvy, yet also quite 'mobile' and therefore at times unreliable.

Opportunities for youth

In spite of the challenges youth face, the literature identifies advantages youth hold for agricultural development. Filmer and Fox (2014) state, 'Young people bring energy, vitality, and innovation into the work force, and when their willingness to contribute is matched with opportunity; they can have a transformative impact on economic growth and social development.' These opportunities are associated with this generation of youth's innate characteristics, skills and assets (quality) rather than to a potential demographic dividend (quantity). The main opportunities, or advantages, discussed are education and skills, and Information and Communication Technologies (ICT).

Education and skills

The current generation of youth is better educated than any before. As such, the thinking goes, youth have more opportunities than adults at getting a reasonable job is a consequence of both demand (the number of jobs) and supply, represented by the appropriate skills and education of the youth population. Evidence suggests that those with education and the right skills are more likely to increase their incomes by responding to market opportunities and adopt improved technologies (World Bank 2017b; Filmer and Fox 2014).

Education in developing countries is indeed vastly improving in terms of numbers. More children attend school than ever before. Yet a recent report by UNESCO (2017) concludes that 387 million children of primary school age and 230 million adolescents of lower secondary school age (56% and 61%, respectively) will not achieve minimum proficiency levels in reading and math. In Sub-Saharan Africa, 202 million children and adolescents—nearly 90%—are not attaining proficiency in these fundamental subjects. In central and south Asia, 81%, or 241 million, are deficient in these subjects.

Two-thirds of these children who fail proficiency tests in reading and math are in school. This suggests that, alongside problems of lack of access to education and high dropout rates, a major challenge is the quality of the education offered (UNESCO 2017).

Formal education may contribute to the so called 'deskilling' of youth. Many rural youth do not learn the necessary agricultural and business skills necessary to survive the current labour market (Eissler and Brennan 2015). According to Leavy and Smith (2010), there is a 'fundamental tension between [Millennium Development Goal 2] (universal primary schooling) and the desire to see young people maintain an engagement in farming' (2010). The increase in access to education does not necessarily render youth well equipped to adopt new technologies and to engage in agriculture and livestock in a more sustainable manner. Indeed, while youth are keen in testing new practices and technologies, they may not have the relevant knowledge.

ICT

Over the last decade or so, ICT are increasingly used as tools to enhance agricultural development. Youth in combination with ICT are often seen as a promising opportunity which will revolutionize the agricultural sector and generate employment (AGRA 2015).

There are several ways through which ICT can help to stimulate agricultural development directly, which include:

- information on agricultural practices, diseases and weather conditions (e.g. iCow, Feed Assessment Tool)
- price information and market channels (e.g. Mkulima Young, Livestock Market Information Systems)
- facilitating access to financial services (e.g. IBLI)
- organizing farmers

There is a tendency to view ICT as a silver bullet, with the power to completely revolutionize smallholder-based agriculture and livestock. ICT does hold promise for smallholders and younger people tend to adopt ICT more readily (World Bank 2017a). However, challenges remain regarding ICT in agriculture (FAO 2015). For instance, the access to internet and penetration of smart phones is still low in many developing countries, especially in rural areas (Sakil 2017). Moreover, many applications are not economically sustainable (World Bank 2018), although the argument can be made that in some instances, financial support from the public sector is a worthwhile investment. Finally, an app or text message service alone will not solve the structural problems that limit agricultural development and structural transformation. For instance, with regard to education, Filmer and Fox (2014) note that 'much depends on whether the individual user of ICTs is able to frame relevant questions based on learning acquired in good primary schools, coupled with practice in imagining states of the world other than those already experienced'.

The merits of a youth specific approach

Youth has emerged as a topic on the development agenda and it is likely to remain there for a while, considering the demographic situation described above. This presents both opportunities for funding, as well as increased pressure from donors to incorporate the 'youth perspective'. Acknowledging these realities, we first need to assess if a specific youth approach to agricultural research makes sense. Based on the previous section, the following conclusions can be drawn:

1. A large set of challenges are not youth specific

The evidence shows a mixed picture. Most of the perceived challenges and opportunities for youth are not new nor do they apply specifically to youth. For the most part, youth are not inherently different than non-youth. As such, a significant increase in research (for development) with a specific youth lens, for instance on agricultural extension, farmer organization, input systems and access to finance, will be of limited added value.

This assertion aligns with an emerging body of literature which critiques the youth lens. In a framing paper for the CGIAR Research Program on Maize, Ripoll et al. (2017) argue that the focus of agricultural research should be on structural challenges that inhibit socioeconomic development for smallholder agriculture and livestock, which leaves only a limited role for research on youth. The risk is to fall for the 'silver bullet trap'. Losch (2016) makes a similar argument, stating that 'the policy priority today is not to seek silver bullets which would give youth direct access to decent jobs, it is to seriously focus on youth specifics within an overall strategy for an inclusive economic and social development…youth employment will stem from a dynamic process of change, and it is crucial to identify the indispensable building blocks in order to facilitate transitions'.

2. Only a limited set of challenges and opportunities have a youth specific dimension and require more youth specific research

A select few challenges and opportunities identified in the previous sections do require a more specific youth lens. Land is increasingly a constraint for youth and their integration into agriculture. ICT hold promise and can assist actors along the value chain in general, and youth specifically. ICT are key to enhance data collection and analysis. However, ICT and youth as a subject and portfolio of agricultural research is not optimal. Agricultural research can play a modest role using ICT in the following two ways. First, by the identification of opportunities for ICT solutions. Development of ICT applications will be outsourced to third parties. Second, through the development of tools to improve delivery of improved technologies and practices. Training aids can be developed based on blended learning approaches, a combination of face to face and digital learning. Digital tools include e-learning courses, text messages and interactive voice response.

Finally, migration among youth is significantly higher than adults. Using an intersectional approach to better understand how migration affects target groups and adoption patterns could be useful. Selective structural research to identify the links between migration and climate change is necessary. Also, the links between youth employment opportunities and migration require attention. Are youth with higher incomes and more employment opportunities more or less likely to migrate? However, this type of research is probably better positioned outside of a program with a specific focus on livestock.

Overall, the uniqueness of youth is highly questionable. It is mostly the number of young men and women, in the context of limited employment opportunities, that warrants attention. But solutions to this challenge are not necessarily different than the ones researchers have been studying for decades. Perhaps the quality, and practicality, of this research should be questioned, which is not the aim of this strategy paper. Using a youth lens, however, will not solve such issues.

3. More youth should become target beneficiaries, which holds limited implications for research

Although using a youth specific research lens to reduce structural problems is ill advised, increased targeting of youth through development interventions warrants support. As demonstrated above, there is a significant opportunity, or challenge (depending on one's perspective), associated with the large youth cohorts now and in the decades to come. Livestock is one of the pathways through which some type of employment (wage, household enterprise, self employment) can be found. Moreover, an increase in productivity and employment of youth can help to create the necessary multiplier effects, which contribute to overall structural transformation.

Goals and objectives

The goal of the CGIAR Research Program on Livestock youth strategy is to increase youth engagement in the livestock sector, as well as to enhance the benefits they derive.

To achieve this goal, three objectives are being pursued:

1. Introduce and integrate a youth lens across the CGIAR Research Program on Livestock to ensure benefits are optimized for youth, at farm and value chain levels. This would ensure that at least a subset of our research outputs is intentionally youth sensitive.

The first objective is to build on the existing research work in the different flagships and use a 'youth lens' when identifying, testing and evaluating technologies (e.g. vaccines—youth incentive and ability to adopt the Infection and Treatment Method technology against the East Coast Fever disease), practices (e.g. feeding practices), or institutional arrangements (e.g. hubs—include youth interests and needs), either as livestock keepers (technologies, practices) or as other value chain actors engaged in the delivery of inputs and services. Two approaches are proposed: one is focused on youth mainstreaming to increase the participation of youth in activities promoting program supported technologies, practices and institutional arrangements, when relevant. The second objective focuses on youth responsive design. This objective aims to increase youth engagement in the livestock sector.

2. Identify strategies for livestock development to effectively create youth employment and entrepreneurship opportunities.

While the first objective takes the existing CGIAR Research Program on Livestock work as a starting point to enhance youth engagement, the second objective starts with the youth themselves. Two main approaches are proposed: one is focused on youth employment and one on entrepreneurships which includes the work around business incubators. This objective therefore deals with how youth can leverage the livestock sector to improve their livelihoods.

In summary, the first objective is about how can youth support the livestock sector (by increasing their engagement) while the second objective is about how youth can leverage the livestock sector to improve their livelihoods. The two objectives therefore complement one another.

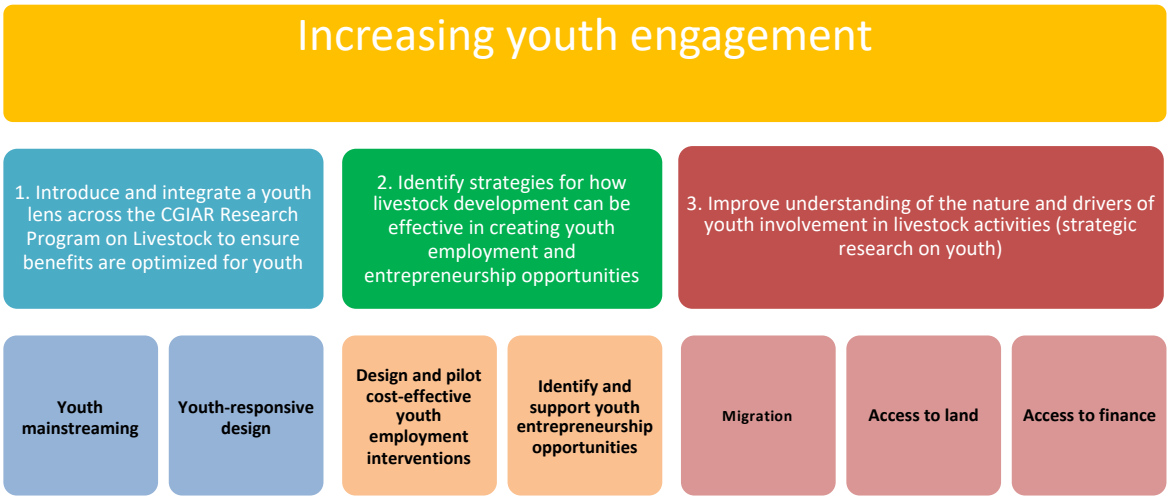
3. Improve understanding of the nature and drivers of youth involvement in livestock activities and the particular constraints they face, both fundamental and immediate (strategic research on youth).

The literature review conducted for the youth framing paper concludes that youth are not inherently different from the general population of livestock keepers; youth encounter similar constraints, and opportunities. The strategic research on youth will therefore focus on specific topics that require more investigation, with clear links to the other two pathways. These three topics are currently migration, access to land and access to finance. Cooperation will be sought with other CGIAR programs as most strategic research is not necessarily livestock specific.

While the first two objectives are more impact oriented, the third objective, understanding the nature of youth involvement, is critical to justify whether our efforts on the first two are well targeted.

Figure 5 presents the three objectives, or pathways towards greater youth engagement in the livestock sector.

Figure 5: Goals and objectives of the CGIAR Research Program on Livestock youth strategy



Research questions and priority activities

Regarding Objective 1 on introducing and integrating a youth lens across the CGIAR Research Program on Livestock to ensure benefits are optimized for youth, at farm and value chain levels:

- What is the current level and extent of youth engagement in livestock activities, in the focus value chains and systems of the program, in the priority countries? Are there differences driven by the value chain characteristics, policy and institutional contexts, or social norms?
- What are the specific constraints faced by youth in the adoption of technologies at farm level, and can technologies and practices be designed or packaged differently to incentivize uptake? On the other hand, are there technologies or practices that youth are more likely to adopt and benefit from?
- At what node of the livestock value chains are youth more present, what challenges do they face and why, and how does that impact the overall value chain performance?
- How do we design institutional arrangements that allow stronger youth engagement? What business approaches are likely to increase youth benefits youth through greater engagement and rewards?
- What are the barriers to increased youth engagement, considering technical, capacity and external factors like social norms?
- Are youth more engaged in livestock as a sole enterprise or when combined with other agricultural or non farm activities? Why, and how does that impact the productivity and overall value chain performance?

As a starting point, suggested priority activities are as follows:

1. Develop an assessment tool to assess whether a proposed innovation is youth friendly (possibly using a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis) and identify ways to mitigate possible bias with the design and/or implementation of the innovation.

2. Assess the current level and extent of youth engagement in livestock activities, focusing on the value chains and systems of the program in the priority countries, and associated constraints (e.g. access to land) and opportunities (e.g. better ability to use ICT), to identify ways to relax a specific constraint, e.g. how could youth without land own and benefit from a dairy cow? This would also provide the opportunity to showcase successful youth working in livestock (positive deviance) and learn lessons for wider use.

Regarding Objective 2 on identifying strategies for how livestock development can be effective in creating youth employment and entrepreneurship opportunities:

- At what node of the livestock value chains are youth currently employed and for what kind of jobs?
- What are the entry points and approaches to enhance youth employment in livestock systems and value chains, focusing on the program priority countries? What kinds of jobs are they performing, what constraints are they facing, and is their involvement by choice?
- What is the current level of youth entrepreneurship in the livestock sector of the program priority countries, for which activities?
- What are the barriers to youth entrepreneurship, in terms of technical constraints, capacity, financial or other factors? What are the different mechanisms to encourage more youth to be entrepreneurs, and under which circumstances are incubators successful? What combination of technical and financial support, and mentoring is most promising, for different value chains in the program priority countries?
- Are unconditional and/or conditional cash transfers used by youth to start livestock related businesses?
- Are internships good mechanisms to harness and increase youth interest in livestock, and what form is more successful?
- Do young entrepreneurs focus on livestock business, or are their activities combined with other agricultural or non farm businesses?
- What policies and investments support youth as entrepreneurs? E.g. how does the various countries' school curriculums influence youth decisions to engage in livestock?

As a starting point, suggested priority activities are as follows:

1. In the context of youth employment, review business models in a broad livestock value chain context to assess whether and how other programs have provided increased job opportunities for young people (e.g. how necessary skills are provided through different forms of education and extension services for both technical/livestock related skills as well as general business skills).
2. Review existing youth employment and entrepreneurship programs in priority countries to assess lessons learned: which programs, or elements of it, contribute to success, or lack of it?
3. At the same time, work with partners to actively explore options to pilot test promising options (e.g. incubator approach). The program will implement an M&E protocol to generate lessons learned for a broader audience.

Regarding Objective 3 on improving the understanding of the nature and drivers of youth involvement in livestock activities and the particular constraints they face, both fundamental and immediate (strategic research on youth):

- Do youth find agriculture less 'sexy/attractive' compared to non youth, and why does this perception differ within value chains and countries?
- What are the links between youth income, including from livestock, and decision to migrate internationally? Are there livestock related investments that are more likely to affect youth decision to migrate?
- How does local and regional migration of youth (mainly to cities) affect the development of the livestock sector, and vice versa?
- Given the increasing land pressure, what innovative mechanisms can be promoted to improve youth access to land, e.g. intergenerational land transfer schemes, state land transfer to youth, or collective action at production level?
- What alternative livestock value chain activities which do not require much land support youth engagement in livestock?
- What is the impact of climate change on youth ability and interest to invest in livestock, and on youth migration?
- How does rural transformation affect youth migration and shifts from farm to non farm enterprises? What are the push-pull factors?
- How are these questions answered when taking a 'life cycle' career perspective?

As a starting point, suggested priority activities are as follows:

1. Assess the extent of youth involvement in existing program projects (type of activities, what node, percentage, include gender disaggregated data).
2. Based on existing data from sources both within and outside of the program, (e.g. Demographic Health Survey data), build the evidence base to understand the current role and trends for youth involvement in livestock activities and the associated drivers (incentives, constraints).
3. Assess the feasibility of collecting age disaggregated data for all projects (training, workshops, field activities etc.).
4. Build alliances with other CGIAR programs on the above mentioned topics (migration, access to land, access to finance).

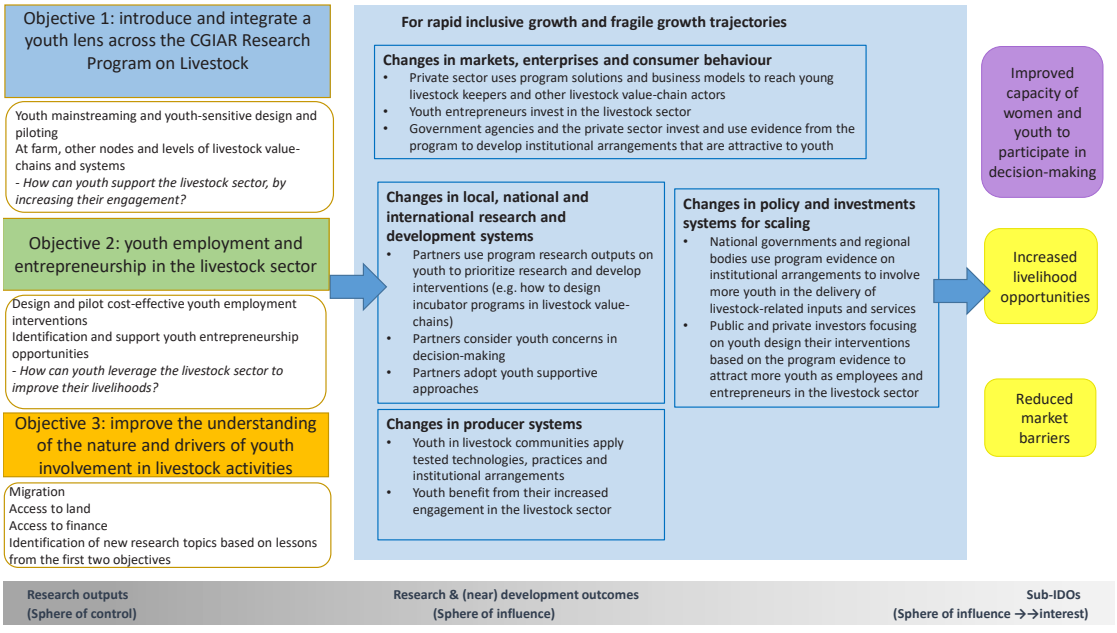
ToC

Figure 6 presents a ToC with a youth lens, based on the overall CGIAR Research Program on Livestock ToC, presenting the three spheres, from the research outputs (objectives as described above) in the sphere of control, followed by the expected research outcomes in the sphere of influence, and finally the sub IDOs (intermediate development t outcomes) of relevance to the youth work in the sphere of interest. We included the sub IDOs already incorporated into the overall program ToC.

The research outcomes are organized by the four domains of change, as per the overall program ToC. While such high-level representation is useful conceptually to identify broad level of engagement, a ToC at a lower level, for example for a key output under an objective, is more useful to articulate the activities, actors and stakeholders to engage, and the sequence of actions. The development of a more detailed ToC is a next step.

Note that the assumptions are yet to be formulated, in two sets: one from the research outputs to the research outcomes, and the other set from the research outcomes to the sub IDOs. They may match the overall CGIAR Research Program on Livestock ToC or they may be adjusted. Thinking through the assumptions will allow us to revisit the research questions, and these would be more pertinent when developing more detailed ToC at key outputs (or product line) level.

Figure 6: Theory of Change—CGIAR Research Program on Livestock for youth



Core staffing and institutional capacity

Core staffing

As stated above, most of the youth 'issues' are not specific to this population, with most of the constraints youth face being the same as the rest of the livestock actors. This strategy has identified youth specific research topics, and social scientists will be well placed to lead this research. While partners within and outside of the CGIAR Research Program on Livestock all have strong social sciences expertise, it is likely that the social scientists will have limited time to dedicate to youth issues given their current research focus. The development of the youth framing paper and this strategy was possible through investments by the CGIAR Research Program on Livestock management unit and support from the Young Expert Programmes of The Netherlands with the secondment of a youth expert from KIT in 2017. To avoid losing momentum, it is suggested that a youth program focal person be nominated to coordinate the work across the flagships and the different partners until a sufficiently strong youth portfolio can be built to warrant the recruitment of a fulltime youth scientist.

This expertise will be supplemented by partnerships with universities, research and other organizations as described in the next section.

Collaboration with partners

Collaboration with partners has two objectives: bring in complementary skills and engage boundary partners to meet the expected research outcomes as per the ToC. Potential partners are listed below.

- KIT—given the previous engagement in developing the youth framing paper, expertise and the fact that KIT is already working on other topics within the CGIAR Research Program on Livestock
- International Institute of Tropical Agriculture (Nigeria) Youth Agripreneur Initiative
- African Migration and Development Policy Centre—ongoing discussion with ILRI on migration topics
- Heifer International—longstanding partner of ILRI and CIAT; currently implementing the East Africa Youth Inclusion Project with the support of the Mastercard Foundation
- Young Professionals for Agricultural Development—an international movement
- Other nongovernmental organizations working on youth issues in the agricultural sector, including Netherlands Development Organization
- Africa Agribusiness Academy—a pan-African business platform aiming to stimulate entrepreneurship
- CTA International (www.cta.int), the Technical Centre for Agricultural and Rural Cooperation—recently involved in a series of workshops on next-generation African Caribbean and Pacific group of States agriculture through youth entrepreneurship, job creation and digitalization. It identified seven critical success factors for rural entrepreneurship and job creation: access by youth to investment and finance, scalable approaches and models that can be taken up, enabling policy environments for youth, agriculture that is attractive to youth, access by youth to markets, business models that work, and access to a pool of appropriate skills, capacities and knowledge and ways to grow these. A strong case was made for market access as the most critical element; business will not be profitable without a market, regardless of inputs such as skills and venture capital.

Management system

For the same reasons as those stated in the previous sections, only a 'light' management system is suggested. The overall coordination responsibility will be given to the youth program focal person, working with a contact person in each of the program partner organizations. A youth working group will be formed, composed of the appointed youth program focal person and the youth contact persons of the different program partner organizations. The group would bring in additional members when needed.

The coordination entails the following tasks:

- Identify how success of the youth strategy will be measured (including metrics)
- Guide program management and research teams in prioritizing level of efforts by objective
- Be informed of new opportunities and initiatives, and share the information to stimulate collaboration between the program partners and beyond
- Regularly update the list of relevant publications
- Organize the youth working group regularly (twice yearly, virtually or physically if possible)
- Review the youth monitoring data and support the program management in synthesizing youth related work for the annual report

M&E

Regarding monitoring of activities and outputs, the CGIAR Research Program on Livestock is using MARLO (Managing Agricultural Research for Learning and Outcomes), which requires flagships to provide information on 'youth' at major activity and deliverables levels. At this stage, such data are likely to be sufficient.

From 2019, the Livestock Livelihoods and Agri-Food Systems (LLAFS) flagship plan of work and business (POWB) includes a major activity on 'youth' as part of its cluster on Gender and Social Equity. This is to provide a 'home' to these activities, while still supporting the integration of youth in other major activities.

The next step is to agree on a minimum set of indicators to track, based on the ToC, and as part of the development of the overall CGIAR Research Program on Livestock M&E framework. This would likely include the following:

- The collection and use of age and gender disaggregated data on youth participation in research activities
- An assessment of youth uptake of program supported technologies, practices and institutional arrangements
- How such uptake influences youth income and other indicators of livelihoods
- Whether and how the program evidence on youth influenced investments and policies

Budget

No separate budget allocation has been made for research on youth on W1/2 while there is currently no bilateral project mapped to the Youth Major Activity. In 2017, as stated above, program management invested USD100,000 for the development of the youth framing paper and the strategy.

References

African Development Bank Group. *2016. Jobs for youth in Africa: Strategy for creating 25 million jobs and equipping 50 million youth 2016–2025*. (Available from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Boards-Documents/Bank_Group_Strategy_for_Jobs_for_Youth_in_Africa_2016-2025_Rev_2.pdf) (Accessed 7 February 2019).

Allen, A., Howard, J., Kondo, M., Jamison A., Jayne, T. et al. 2016. *Agrifood youth employment and engagement study (AgYees)*. Michigan State University. (Available from www.isp.msu.edu/files/4814/7249/7008/AgYees_Report_FINAL_web.pdf) (Accessed 7 February 2019).

Alliance for a Green Revolution in Africa (AGRA). 2015. *Africa agriculture status report: Youth in agriculture in Sub-Saharan Africa*. Issue No. 3. Nairobi, Kenya. (Available from https://agra.org/AGRAOld/wp-content/uploads/2016/04/africa-agriculture-status-report-2015.pdf) (Accessed 5 February 2019).

Amanor, K.S. 2010. Family values, land sales and agricultural commodification in south-eastern Ghana. *Africa* 80(1): 104–125. doi:10.3366/e0001972009001284.

Amsler, K., Hein, C. and Klasek, G. 2017. *Youth decision making in agricultural adaptation to climate change*. CCAFS Working Paper no. 206. Wageningen, the Netherlands: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

Anyidoho, N.A., Kayuni, H., Ndungu, J., Leavy, J., Sall, M. et al. 2012. *Young people and policy narratives in Sub-Saharan Africa*. FAC Working Paper 32. Brighton: Future Agricultures Consortium. (Available from http://www.ids.ac.uk/files/dmfile/FAC_Working_PaperYoungPeoplePolicyNarativesinsub-SaharanAfrica.pdf) (Accessed 31 May 2019)

Asciutti, E., Pont, A. and Sumberg, J. 2016. *Young people and agriculture in Africa: A review of research evidence and EU documentation*. Institute of Development Studies Research Report 82. (Available from https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/12175/RR82.pdf;jsessionid=2B92E927B083513A908E6D1482B199A0?sequence=1) (Accessed 31 May 2019)

Bennell, P. 2007. Promoting livelihood opportunities for rural youth. (Available from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.360.2874&rep=rep1&type=pdf) (Accessed 31 May 2019)

Berckmoes, L., and White, B. 2014. Youth, farming and precarity in rural Burundi. *European Journal of Development Research* 26(2): 190–203. doi:10.1057/ejdr.2013.53.

Bezu, S. and Holden, S. 2014. Are rural youth in Ethiopia abandoning agriculture? *World Development* 64:259–272.

Bloom, D.E. and Williamson, J. 1998. Demographic transitions and economic miracles in emerging Asia. *World Bank Economic Review* 12(3): 419–55.

Bloom, D., Canning, D. and Malaney, P.N. 2000. Population dynamic and economic growth in Asia. *Population and development review* 26(S): 257–90.

Brooks, K., Zorya, S. and Gautam, A. 2013. Employment in agriculture: Jobs for Africa's youth. In: *2012 Global Food Policy Report.* Washington, D.C., USA: International Food Policy Research Institute: 48–57

CGIAR Consortium. 2015. *Strategy and results framework 2016–2030*. https://hdl.handle.net/10947/3865

Chauveau, J.P., Colin, J.P., Jacob, J., Lavigne, D.P. and Le Meur, P. 2006. *Changes in land access and governance in West Africa: Markets, social mediations and public policies: Results of the CLAIMS Research Project*. London: IIED.

Djurfeldt, A.A. and Jirström, M. 2013. *Urbanization and changes in farm size in Sub-Saharan Africa and Asia from a geographical perspective: A Review of the literature*. A foresight study of the ndependent Science and Partnership Council, Consultative Group on International Agricultural Research, Washington, D.C. (Available from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.365.7744&rep=rep1&type=pdf) (Accessed 31 May 2019)

Eissler, S. and Brennan, M. 2015. *Review of research and practice for youth engagement in agricultural education and training systems*. (Available from http://innovate.oired.vt.edu//wp-content/uploads/2015/09/EisslerBrennanYouth-EngagementFINAL.pdf) (Accessed 31 May 2019)

European Commission. 2017. *The EU Emergency Trust Fund for Africa*. (Available from https://ec.europa.eu/europeaid/regions/africa/eu-emergency-trust-fund-africa_en) (Accessed 31 May 2019)

FAO. 2015. e-agriculture 10 year Review Report: Implementation of the World Summit on the Information Society (WSIS) Action Line C7. ICT Applications: e-agriculture, by Kristin Kolshus, Antonella Pastore, Sophie Treinen and Alice Van der Elstraeten. Rome, Italy: FAO.

FAO. 2017. *The state of agriculture 2017. Leveraging food systems for inclusive rural transformation*. Rome, Italy: FAO.

FAO, CTA and IFAD. 2014. *Youth and agriculture: Key challenges and concrete solutions*. Rome, Italy: FAO.

Filmer, D. and Fox, L. 2014. *Youth employment in Sub-Saharan Africa*. Washington, D.C., USA: World Bank and Agence Française de Développement.

Flynn, J. and Sumberg, J. 2017. Youth savings groups in Africa: They're a family affair. *Enterprise Development and Microfinance* 28(3).

(Available fromhttp://www.developmentbookshelf.com/doi/abs/10.3362/1755-1986.16-00005) (Accessed 31 May 2019)

Fox, L. and Kaul, U. 2017. The evidence is in: How should youth employment programs in low income countries be designed? USAID. (Available from http://conference.iza.org/conference_files/GLMLICNetwork_2017/fox_l4959.pdf) (Accessed 31 May 2019)

Goldin, N., Adhikari, S., Glick, P., Romero, J. and Smith, R. 2017. *Toward employment solutions for youth on the move. Solutions for youth employment*. (Available from https://www.s4ye.org/sites/default/files/2017-09/S4YE%20Youth%20on%20Move_Complete%20Final%20Report%20July2017.pdf.) (Accessed 31 May 2019)

Huntington, S.P. 2001. So, are civilizations at war? Interview, The Observer, Sunday October 21. (Available from https://www.theguardian.com/world/2001/oct/21/afghanistan.religion2) (Accessed 31 May 2019)

Jayne, T.S., Chamberlin, J., Traub, L., Sitko, N., Muyanga, M. et al. 2016. Africa's changing farm size distribution patterns: the rise of medium-scale farms. *Agricultural Economics* 47: 197–214. doi:10.1111/agec.12308

Johnston, B. F. and Kilby, P. 1975. *Agriculture and structural transformation: Economic strategies in late developing countries*. New York, USA: Oxford University Press.

Kea, P. 2013. The complexity of an enduring relationship: gender, generation, and the moral economy of the Gambian Mandinka household. *Journal of the Royal Anthropological Institute* 19:102–119.

Ministry of Agriculture Livestock and Fisheries. 2017. *Kenya youth agribusiness strategy 2017–2021. Positioning the youth at the forefront of agricultural growth and transformation*. Nairobi, Kenya. (Available from www.ypard.net/sites/default/files/resources/kenya_youth_in_agribusiness_strategy_2017-2021_a.pdf) (Accessed 31 May 2019)

ILRI. 2017. *Report on youth engagement in the Accelerated Value Chain Development project*. ILRI internal report. Nairobi, Kenya: ILRI.

Kleijn, W. Baltenweck, I., de Haan, N. and Pyburn, R. 2018. *Livestock CRP framing paper*. ILRI internal document.

Kosec, K. Ghebru, H., Holtemeyer, B. Mueller, V. and Schmidt, E. 2017. The effect of land inheritance on youth employment and migration decisions: Evidence from rural Ethiopia. Washington, D.C., USA and Addis Ababa, Ethiopia: International Food Policy Research Institute (IFPRI) and Ethiopian Development Research Institute (EDRI). (Available from http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/131116) (Accessed 31 May 2019)

Leavy, J. and Smith, S. 2010. *Future farmers: Youth aspirations, expectations and life choices*. (Available from https://www.ids.ac.uk/files/dmfile/FAC_Discussion_Paper_013FutureFarmers.pdf) (Accessed 31 May 2019)

Leavy, J. and Hossain, N. 2014. *Who wants to farm? Youth aspirations, opportunities and rising food prices*. Working Paper 439. Brighton, UK: Institute of Development Studies. (Available from https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/3550/Wp439r.pdf?sequence=4) (Accessed 31 May 2019)

Lin, J. 2012. *Youth bulge: A demographic dividend or a demographic bomb in developing countries?* (Available from http://blogs.worldbank.org/developmenttalk/ youth-bulge-a-demographic-dividend-or-a-demographic-bomb-in-developing-countries) (Accessed 31 May 2019)

Lipton, M. 2005. *Crop science, poverty, and the family farm in a globalizing world*. 2020 IFPRI discussion paper No. 40. Washington, D.C., USA: International Food Policy Research Institute.

Research Program on Livestock. 2016. *Proposal, Livestock Agri-Food Systems CGIAR Research Program overall and flagship narratives*. (Available from https://cgspace.cgiar.org/bitstream/handle/10947/4398/2.Livestock%20-%20CRP%20and%20FP%20Narratives%20Proposal%202017-2022.pdf?sequence=1) (Accessed 31 May 2019)

Losch, B. 2016. *Structural transformation to boost youth labour demand in sub-Saharan Africa: The role of agriculture, rural areas and territorial development*. Geneva: ILO

Ochilo, W. 2014. *Youth changing the face of agriculture in Kenya*. (Available from https://blog.plantwise.org/2014/05/19/youth-changing-the-face-of-agriculture-in-kenya/) (Accessed 31 May 2019)

Okali, C. and Sumberg, J. 2012. Quick money and power: Tomatoes and livelihood building in rural Brong Ahafo, Ghana. *Institute of Development Studies Bulletin* 43(6): 44–57.

Pyburn, R., Audet-Bélanger, G., Dido, S., Quiroga, G. and Flink, I. 2015. *Unleashing potential: gender and youth inclusive agri-food chains*. KIT SNV Working Paper Series 7.

Quartz India. 2018. *Climate change may force 200,000 people in Bangladesh to migrate*. (Available from https://qz.com/india/1432375/climate-change-may-force-200000-people-in-bangladesh-to-migrate/) (Accessed 31 May 2019)

Rabobank. 2013. *Access to finance in Rwanda*. (Available from https://www.youtube.com/watch?v=IWgPIEPUm-4) (Accessed 31 May 2019)

Ripoll, S. Andersson, J., Badstue, L., Bu¨ttner, M., Chamberlin, J., Erenstein, O. and Sumberg, J. 2017. Rural transformation, cereals and youth in Africa: What role for international agricultural research? *Outlook on Agriculture* 46(3).

Rutten, L. and Fanou, S.L. 2015. Innovative and inclusive finance for youth in agriculture. In: Alliance for a Green Revolution in Africa (eds.), Africa Agriculture Status Report: *Youth in Agriculture in Sub Saharan Africa*. Issue No. 3. Nairobi, Kenya: 94–117. (Available from http://www.ypard.net/sites/ypard.net/files/finance%20agriyouth.pdf) (Accessed 31 May 2019)

Sakil, A.H. 2017. ICT, youth and urban governance in developing countries: Bangladesh perspective. *International Journal of Adolescence and Youth* 1-16. doi: 10.1080/02673843.2017.1330697.

Sukarieh, M. and Tannock, S. 2015. *Youth rising? The politics of youth in the global economy*. doi 10.4324/9781315884660.

Suri, T. and Jack, W. 2016. The long-run poverty and gender impacts of mobile money. Science Magazine. pp. 1288–1292. (Available from http://science.sciencemag.org/content/354/6317/1288.full) (Accessed 31 May 2019)

Tadele, G. and Gella, A.A. 2012. A last resort and often not an option at all: Farming and young people in Ethiopia. *Institute of Development Studies Bulletin* 43(6):33–43

Oxfam International. 2016. Unearthed: Land, power, and inequality in Latin America. (Available from https://www.oxfam.org/en/research/unearthed-land-power-and-inequality-latin-america) (Accessed 31 May 2019)

UNESCO. 2017. More than one-half of children and adolescents are not learning worldwide. Fact Sheet No. 46. http://uis.unesco.org/sites/default/files/documents/fs46-more-than-half-children-not-learning-en-2017.pdf

United Nations, Department of Economic and Social Affairs, Population Division. 2017. World Population Prospects: The 2017 Revision, custom data acquired via website.

Urdal, H. 2004. *The devil in the demographics: The effect of youth bulges on domestic armed conflict, 1950–2000*. Social Development Papers 14. Washington, D.C., USA: World Bank.

White, B. 2012. Agriculture and the generation problem: rural youth, employment and the future of farming. *Institute of Development Studies Bulletin* 43(6): 9–19. (Available from https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/7535/IDSB_43_6_10.1111-j.1759-5436.2012.00375.x.pdf?sequence=1) (Accessed 31 May 2019)

World Bank. 2008. *World development report: Agriculture for development*.

http://hdl.handle.net/10986/5990

World Bank. 2017a. *ICT in agriculture (updated edition): Connecting smallholders to knowledge, networks, and institutions*. http://hdl.handle.net/10986/27526

World Bank. 2017b. *Future of food: Shaping the food system to deliver jobs*. http://hdl.handle.net/10986/26506

World Bank. 2018. *Working with smallholders: A handbook for firms building sustainable supply chains*. http://hdl.handle.net/10986/29764

World Development Report. 2011. *Conflict, security, and development*. (Available from https://siteresources.worldbank.org/INTWDRS/Resources/WDR2011_Full_Text.pdf) (Accessed 31 May 2019)

Yeboah, T. and Sumberg, J. 2016. Perspectives on desirable work: Findings from a Q study with students and parents in rural Ghana. *The European Journal of Development Research* 29(2): 423–440.