EUROPEAN UNION DELEGATION TO ETHIOPIA

Assessing the root causes of recurring food insecurity in Ethiopia

Sharpening the debate by reflecting on weather, climate change, demographic, technological, policy and governance factors

18 May 2016

1 Executive Summary

Ethiopia's food security crisis of 2015-2016 is the latest in a string of such crises that have blighted the country's modern history. While its immediate cause is the current *El Niño*-induced drought and its devastating consequences on crops in agro pastoral areas of the country, this paper digs deeper to search for the root causes of the crisis, which has left 10.2 million Ethiopians dependent on emergency aid for their survival. The question of persistent and recurring vulnerability is topical now, eleven years after the government declared food security a reality, after more than a decade of breakneck economic growth, and after billions of dollars in public funds poured into the Productive Safety Net Programme, which was meant to build the assets of regular food aid recipients and put an end to their dependence. An overview of the root causes follows.

Exponential demographic growth has seen Ethiopia's population more than triple in just over forty years, from 30 million in 1974 to close to 100 million people today. In the absence of a green revolution in Ethiopia, food production grew but it was not able to keep up with the ever-increasing needs of an exploding population. Some areas of the country such as the vast Afar Region are already overpopulated in relation to their capacity to produce food and, short of perpetual dependence on external aid, the only future for many of their inhabitants lies in migration. More and more areas will face such pressures as Ethiopia's population reaches 200 million in forty years' time. There's a clear need for public policies that will accelerate the drop in fertility rates that the country is already experiencing.

Ethiopia's climate is not solely to blame for persistent food insecurity. Even in drought years, rainfall still tends to be higher than in Southern European countries. However, dry spells and erratic rains are becoming more frequent across the country, and this is a serious problem for a nation that relies on rain-fed small-scale farming for most of its food production. Reducing farming and livestock's vulnerability to increasingly unpredictable weather requires water harvesting and all manner of irrigation schemes – large, small and micro.

In recent years, crop yields have been increasing in Ethiopia, but it still has some of the lowest agricultural productivity in Africa. This is a millstone for a country where 77% of the population make a living from farming. Land lies at the centre of the multiple factors that contribute to low productivity in Ethiopia. With an average size of 1.2 ha, or as low as 0.5 ha in more vulnerable areas, farm plots are much too small and fragmented to reap economies of scale or even to feed the average family of five. Livestock and crop farming is practiced without consideration for the suitability of an area for specific uses. Because land is all state-owned and farmers' tenure is less secure as a consequence, smallholders' incentives to invest in their plots are diminished, as is their ability to obtain finance for investments.

Productivity is also reduced by several other material and know-how factors. Inputs such as improved seeds, fertiliser and pesticides can dramatically boost crop yields, but these are all in short supply on Ethiopian farms. For most crops, national supplies of improved seeds (drought or pest resistant, higher-yielding, nutrient-rich) cover less than 10% of demand. Likewise, fertiliser use in Ethiopia is far below optimum levels and far behind average kilogrammes per hectare used in other fast-growing African countries. Chemical and biological pest controls are also parsimoniously applied; pre-harvest cereal losses due to insects are estimated at 31% to 61%. Better extension services could also help raise production by taking account of Ethiopia's diverse agro-ecological zones when dispensing crop management advice and training to farmers.

As much as immense increases in productivity are needed for Ethiopia to feed its fast-growing population, the countryside will not be able to absorb many of the growing ranks of rural youth seeking employment. Ethiopia's most productive lands are already under cultivation, and the agricultural frontier cannot be pushed much further without damaging fragile ecosystems in the country's periphery. Ethiopia will therefore need to redouble efforts to develop the industrial and service sectors so jobs become available to internal migrants as urbanisation accelerates. Ethiopia should also expand production of exportable goods, whether manufactures or commodities such as coffee and minerals, so that it can purchase more food supplies on international markets. Costly and pointless constraints on the private sector should be removed to unleash the country's greatest untapped potential for job creation and further economic growth.

All of the above actions to uproot the causes of food insecurity call for vigorous public policy changes and large investments. Unfortunately, Ethiopia's governance system is not well-equipped to choose between different reform paths. This would require broad public participation in open and inclusive consultations where trade-offs between stakeholders could be understood and factored into decision-making. To get there, Ethiopia would need to: strengthen accountability mechanisms with a prominent role for free media, civil society organisations, farmers' representatives and political parties; establish genuine participation mechanisms at the local, regional and federal levels; and reinforce transparency through regular information sharing and involvement of independent media.

Though not a root cause of food insecurity, an effective humanitarian response is fundamental in saving people from hunger. This should be based on a professional disaster prevention and risk management system that mitigates and reduces the impact of shocks as much as possible. In Ethiopia, the strategic grain reserve system needs to be ready to act as soon as food shortages appear, and linkages should be strengthened so that development interventions can build on humanitarian actions in order to avoid the full depletion of assets following a shock.

2 Introduction

Background

Ethiopia is the second most highly populated countries in Africa with about 99.4 million people, which is projected to reach 125 million by 2025[i]. Agriculture employs 80% of the population, forming the basis of Ethiopia's economy. Ethiopia has achieved significant economic growth during the past 10 years with steady 10% annual increases in GDP and significant increases in access to basic services (health, potable water, sanitation, education, etc.). Poverty levels have decreased from 28.8 million in 2004 to 27.1 million in 2012 and Ethiopia has shown progress in achieving the MDGs, particularly those pertaining to child mortality, extreme poverty and hunger.

The country has a long history of famines and humanitarian crises under different governments**,** which have often tried to play them down until they reached famine proportions and had to be addressed (see Box 1).

Box 1: Major food insecurity and famine occurrences in Ethiopia's recent history

The 1972-1974 famine: This famine caused 200,000 deaths from starvation and its attendant diseases. As reports about the famine were building up, the imperial government claimed that rumour-mongers were fabricating a crisis in order to discredit the government. The claim only lasted until the situation exploded when a film made by British Journalist Jonathan Dimbleby's exposed the horrifying scenes to the entire world. The government's negligence contributed to the downfall of Emperor Haile Selassie (1930-1974) and led to the rise of Mengistu Hailemariam (1974-1991) who became the leader of the military junta known as the *Derg*.

The 1984-1985 famine: This famine affected some 7.9 million people and caused an estimated 400,000 to 1 million deaths and made millions more destitute. History repeated itself, as Mengistu's regime applied the same claim made by the Hailesellasie regime and understated the magnitude of the disaster. BBC news reportage by Michael Buerk and cameraman Mohamed Amin galvanized a huge international response leading to the largest humanitarian operation since WWII[ii].

The 2002-2003 food crises: In his first press conference made after the EPRDF took power in 1991, prime minister Meles Zenawi declared that the test for the success of his government should be whether Ethiopians were able to eat three meals a day or not. Despite this, the proportion of Ethiopians affected by food insecurity rose from 4% of the population in the 1972-1974 famine to over 20% during the 2002-2003 food crisis[iii]. At the same time, the number of people requiring food aid also reached its highest level of about 13 million people in 2003 and some 60,000 deaths were reported. As a result, the amount of food aid required to mitigate the impact of food insecurity in 2002-2003 was the highest in Ethiopian history, with an estimated amount of 1.4 million tons[iv]. Once more, although in 2005 the prime minister said that "*food security in Ethiopia is done*", the claim did not prove true as the number of people in need of food assistance and aid requirements kept on increasing (Fig. 1).

The current humanitarian crisis (2015-16)

The current El Niño phenomenon is causing the worst drought in decades and severe food insecurity. According to the 2016 Humanitarian Requirements Document (HRD), 10.2 million people in Ethiopia require urgent food assistance. This figure should be added to the 7.9 million chronically food insecure people who are already provided assistance by the government's Productive Safety Net Programme (PSNP). Beyond the food needs, access to water is also a major challenge. The HRD appeal to respond to this crisis is 1.4 billion USD.

The government initially claimed the situation to be under control as it channeled available resources in a timely manner until, owing to the magnitude of the problem, it called on the international community for immediate assistance. Both the government and international donors are mobilising substantial funds to respond to this crisis and more than half of the appeal had been secured by March 2016.

The government is extremely concerned that Ethiopia's image as a rising economic star will be damaged by the dimension of this humanitarian crisis.

Structural Food Insecurity

Beyond the periodic humanitarian crises described above, every single year, there is a significant number of people in need of aid assistance, some of them being chronically food insecure and some others only affected in a transitory way. Since 1984, more than five million people have been annually dependent on food aid, reflecting the chronic nature of food insecurity. The Ethiopian government has in recent years made considerable investments aimed at preventing the recurrence of severe episodes of food insecurity. However, measures like the PSNP, introduced by the government in power, have not addressed root causes[1], though they have undeniably helped to make predictable transfers such that chronically affected people are not forced to deplete their assets. In 1999-2000, for example, of the estimated 62 million people in the country, 16% received food aid[v], whereas the proportion of Ethiopians affected by drought and famine (both emergency and PSNP caseloads) rose from 4% in the 1972-1974 famine to about 18% currently (2015/2016) (Fig.1). Massive investments in food aid, such as relief and rehabilitation programs, have not drastically changed the situation, as many of them were meant to target symptoms rather than root causes.

Ethiopia is once again going through a deep food insecurity crisis despite the significant economic growth achieved in past years and decades of development assistance from donors[2] (see Fig.1).

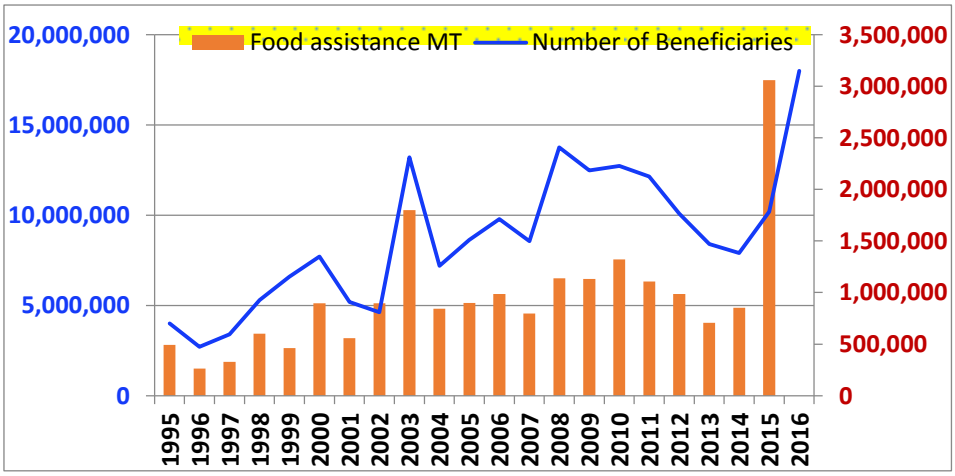


Fig. 1. Number of food aid beneficiaries (emergency assistance and PSNP 1995-2016[3]; source computed from various reports)

[1] The PSNP started by assisting 5 million people; by the end of the first phase of the program in 2009, however, the number of beneficiaries had reached 8.3 million people, indicating that the root causes of the food insecurity situation are still present. Likewise, high level transitory and chronic food and nutrition insecurity (with child stunting and wasting rate of 40% and 9%, respectively) prevail in contemporary Ethiopia.

[2] Ethiopia receives substantial support from the international community (ranked among the top ten country recipients of ODA in the world). Development assistance has significantly increased in the last 15 years and massive amounts of humanitarian aid flows into the country when a drought is declared.

There seems to be a wide agreement between the government and the international community on the fact that the current crisis in Ethiopia is solely the consequence of the drought induced by a particularly severe El Niño episode[4]. This is indeed the immediate cause of the current crisis. However, blaming the failure of rains alone for the current humanitarian crisis is a very simplistic analysis. Further analysis is needed to examine ultimate causes beyond the weather to determine what must be done to bring lasting food security solutions to Ethiopia

Considering the current situation, all the attention is focused on addressing the short-term symptoms and not sufficient attention is given to the long-term root causes of chronic food insecurity. This paper therefore examines the causal factors that explain the persistence of food insecurity[5] in Ethiopia and will hopefully contribute to the very much needed debate on the root causes of food insecurity.

3 Root causes assessed

3.1 Demographic challenges

Demographic growth

When the severe 1972-1974 famine hit Ethiopia, the country's population was about 30 million people, which then increased to 40 million when the 1983-1984 famine struck. During the 2002-2003 food crisis, Ethiopia's population had about 64 million people, reaching nearly 100 million people today. Projections show Ethiopia's population doubling to 200 million by 2050-2055[vi].

According to some studies such high demographic growth is propelled by inadequate family planning efforts[vii] and negative attitudes towards family planning for religious and cultural reasons[viii].

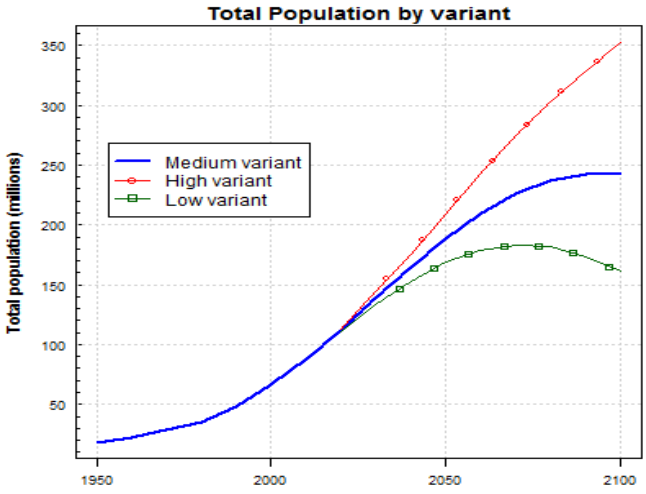


Fig. 2. Population growth projections for Ethiopia (Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision)

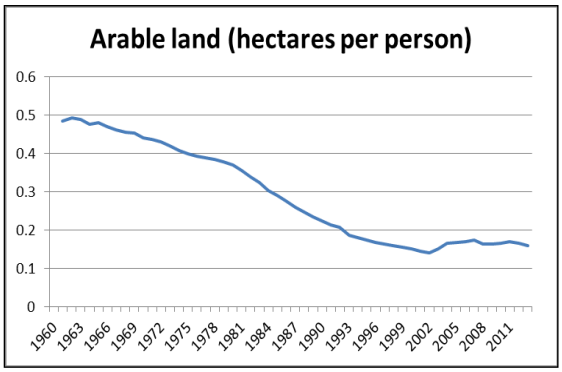
Nevertheless, the fertility rate in Ethiopia is significantly decreasing and the demographic transition (initially triggered by a reduction of mortality followed by a reduction of fertility) has already started. Despite the downward trend in terms of number of children per family, the population will dramatically increase in the coming years as shown in Fig. 2.

[3] PSNP started as of 2005 and represented 53-84% of the beneficiaries depending on the year (more % in 'normal' years when there is less emergency caseload and less % in bad years when there is high emergency case load.
[4] A periodic warming of a Pacific Ocean current which in 2015-16 has had global effects on the weather.
[5] Food insecurity is defined here as the absence of reliable access to a sufficient quantity of affordable food. Food insecurity can of course affect individuals or entire populations and can be chronic or acute; at a large scale, the latter is commonly known as famine.

Pressure on resources

Population growth is causing significant pressure on access to land, access to food and access to water.

Land holdings are becoming more fragmented, with the average plot reduced to a size of 1.2 ha (or as low as 0.5 ha in more vulnerable areas). Under current technological use, this is too small to produce enough food for the average five-person family, let alone to generate surpluses as safety margins or to generate income. Since the availability of potential agricultural land in the highlands has reached its limits, increasing productivity is the only viable option, not expanding the agricultural frontier.



Degradation of the natural environment

As farm holdings become diminutive and traditional farm practices persist, the struggle to make ends meet has led to over-cultivation of farmland, expansion of crop production into areas that are susceptible to degradation (erosion-prone steep slopes, hillsides, semi-arid lands) through clearing of vegetation, namely remnant shrubs and bushes. This eventually leads to severe land degradation in the form of water and wind erosion, entailing further losses in fertility and land productivity.

Over 85% of the land in Ethiopia is moderately to very severely degraded, and about 75% is affected by elements leading to desertification[ix]. Soil erosion, with its associated loss of fertility and rooting depth, water resource degradation and loss of bio-diversity[x] are critical problems that undermine land productivity in the high and low potential crop highland zones. In some areas such as Wag Himra, North and South Wolo, North Gondar, Tigray and Hararghe, 50% of the agricultural lands have soils with depths less than 10 cm, which make them unsuitable for crop farming[xi] [xii].

The annual rate of soil loss in the country is higher than the annual rate of soil formation, as the country annually loses over 1.5 billion tons of topsoil from the highlands to erosion which could have added about 1.5 million tons of grain to the country's harvest[xiii]. The steady growth of population and livestock numbers is continuing without commensurate changes in agricultural practices and technological uptake. The situation prevents the country from supporting its growing human and livestock population with its own production, despite Ethiopia's recent economic progress.

Carrying capacity of vulnerable areas and population movements

The areas where the prevalence of food insecurity is higher are often associated with overpopulation in comparison with the carrying capacity or the economic potential of the zone (both in the agricultural sector and off farm). Several studies related to some of these areas mention that in order to keep the local population resilient, part of their population should leave.

This is the case in certain areas of Ethiopia like the Afar region, where population increases are high, sexual reproductive health efforts are least effective and chronic food insecurity is ever-present. These areas are regularly dependent on humanitarian assistance and are structurally lacking in livelihood alternatives to crop and livestock production.

However, many humanitarian and development interventions in such areas tend to only address the provision of basic services and respond with short-term emergency interventions to address immediate food security, water, health and related needs without considering the long term sustainability of communities. Some studies[xiv] conclude that in certain areas humanitarian interventions are helping to maintain a higher human and livestock population than what the area could otherwise sustain. In fact, in order to provide food or cash assistance certain programs (e.g. PSNP) will require that the beneficiaries stay where they are, perpetuating dependency, erasing the incentives to look for more sustainable opportunities elsewhere, and artificially keeping people alive in unsustainable areas.

A study by AKLDP[xv] argues that the emergency interventions are simply contributing to overpopulating such drought-prone areas as Afar and others in terms of livestock as well as the human population. Some[xvi] even argue that the response mechanism in place has instilled a dependency mentality that hinders people from looking into other livelihood opportunities. The foregoing arguments suggest that Ethiopia should change its current approach in favour of instituting and pursuing strategies to address the root causes of food insecurity

In this context, rural people living in permanently difficult circumstances often have disincentives to migrate to areas where opportunities exist - an otherwise natural coping strategy.

Moreover, within the current ethno-federal model with ethno-linguistically defined regions since the adoption of the 1996 Constitution, people are more wary of moving out of their ethnic territories to settle in other parts where opportunities would be better. In its recent history, Ethiopia has witnessed several ethnic conflicts caused by disagreements about regional borders, the possession of or use rights to land, water sources, access to state resources (funds, jobs, and investments), cultural policies and prestige, ethnic autonomy, language policy in education and administration[xvii]. As a result, movements happen mostly to the rapidly growing and often already overcrowded cities and towns but not to where a potential for better agricultural livelihoods exists.

3.2 The climate factor

There is a tendency to associate humanitarian crises in Ethiopia with the occurrence of droughts. This is a simplistic association. On average Ethiopia receives more rainfall (848 mm per year) than most European countries[6]. The average annual precipitation on the central plateau, the most highly productive agricultural area of the country, is roughly 1.220 mm. Even in a year affected by drought the rainfall still tends to be higher than that of Southern European countries. Thus, the problem is not related to insufficiency of water in the country.

Nonetheless, in Ethiopia, around 95% of smallholder farmers rely on subsistence rain-fed agriculture, making them very vulnerable to droughts or irregular rainfall. The lack of proper and sufficient water harvesting and storage facilities is what makes the country so vulnerable to its climate.

Climate change is exacerbating this vulnerability. Ethiopia now suffers from the effects of frequent droughts more than it has ever before. The frequency of extreme weather conditions, such as more erratic and scarcer rainfall, has increased through time. For example, the *belg* rains have failed in seven out of the past ten years and both *belg* and *meher* rains in greater parts of Ethiopia have declined by 15-20% since the mid-1970s, manifested as a contraction of areas receiving adequate rainfall for viable agricultural livelihoods or increased dry spells for selected crop growing areas[xviii].

[6] Average precipitation (mm/year) in Ethiopia, which is 848mm, is the same as that in Belgium (847mm), Italy (832mm) France (867mm) and is even more than the precipitation in Germany (700mm), The Netherlands (778mm), USA (715mm), Spain (636mm), South Africa (495mm) and Israel (435mm).

During the last 20 years, the areas which in former periods were receiving sufficient *belg* as well as *kirempt* rains (500mm or more water is considered sufficient for viable farming and pastoral undertakings) have contracted, exposing many of these areas to damage to crops and livestock from drought-. Such climate change impacts are affecting greater proportions of crop production areas in northern areas (parts of Amhara and Tigray), the Rift Valley, the Southern Nations Region, and southern and eastern parts of Oromia regions. Areas receiving more than 500mm *belg* rains in the past now have contracted by 16%, affecting approximately 16.6 million inhabitants. As for areas formerly receiving more than 500mm rains in the *kirempt* season, they have also contracted, affecting approximately 12.6 million inhabitants. Areas receiving March-September (*belg* and *kirempt*) 900mm rainfall sufficient to support long cycle crops such as maize and sorghum are also exhibiting rainfall reductions with a risk of affecting 20.7 million inhabitants, with the additional risk of causing cereal price hikes due to low availability. *Belg* season rainfall declines or failure are largely reducing the quantity and quality of viable pastoral lands.

More frequent droughts in these areas are making it difficult for livestock to recover from poor rainy seasons, and are affecting almost all pastoral population. What is more alarming is that more rainfall reductions and temperature increases are projected to occur in the future too. Projected *belg* rainfall declines ranging from -150mm to -50mm as well as equal amounts of declines of *kirempt* rains and an expected 1^{o}C rise in temperatures across most parts of the country are expected to disrupt agricultural as well as pastoral activities[xix].

3.3 The performance of the agricultural sector and land policy

There is a tendency to compare overall national agricultural production with overall national food consumption and assume that there will be a crisis when one does not match the other. This is obviously not correct for many countries. There are plenty of examples in the world of nations enjoying a very high standard of living while only producing a small portion of the products they consume (e.g. Japan), though they have developed other sectors allowing them to purchase food supplies on the international market. This might suggest that Ethiopia's vulnerability is mostly related to an overall lack of development rather than to national agricultural productivity or climatic aspects.

In the real world, the livelihoods of 77% of the population in Ethiopia directly rely on agriculture. We can therefore assume that the performance of this sector is directly linked to the vulnerability of the rural population. Indeed, as a predominantly agricultural country, Ethiopia produces most of the food it consumes. This will not change in the foreseeable future, as the country's limited export earnings do not enable it to buy many food supplies on international markets. A large part of the gap between national food needs and production is made up by food aid. Therefore, it is important to look at Ethiopia's food security in terms of national food production.

Although significant efforts are being made to transform the agriculture sector in Ethiopia, deep change will not occur until better technologies are taken up by farmers. Ethiopia's crop and livestock sectors have always been characterized by their subsistence nature and low productivity, resulting in insufficient production to feed an ever-growing population, let alone to generate surpluses. According to IFPRI[xx], since 2000 there has been substantial growth in cereals in terms of area cultivated, yields and production, but yields remain low by international standards and overall production is highly susceptible to weather shocks, particularly droughts.

In recent years Ethiopia has experienced a significant increase in agricultural outputs, driven by strong yield growth (7% per year) and increases in cultivated areas (2.7%). However, it still remains one of the countries with the lowest productivity in Africa due to some of the following factors.

Landholding and land use

The land holding system has always been blamed for undermining investment in agriculture. During Haile Selassie's reign, the emperor, his ruling élites and the church owned most of the land. Under *Derg* and early EPRDF governments, state ownership of land was instituted with usufruct but not proprietary rights. In contemporary Ethiopia, since land policy is a constitutional matter, ownership is a settled subject and no flexible application of the policy can be envisaged[xxi]. The current system gives farmers more liberal rights of use, lease, donation, and inheritance of land, though the government restricts the power to sell and mortgage land under the argument of safeguarding security of tenure.

The government argues that farmers would sell their land in periods of hardship if given private ownership rights, leading to a high concentration of land**.** Others argue that the current land ownership system creates disincentives to make investments in agricultural land, as it cannot be used as collateral to access credits or inputs when land tenure is not guaranteed[xxii] [xxiii]. An FAO study[xxiv] argues that private land ownership motivates investment in agriculture which, by effectively increasing the productivity of agricultural labour, land and water, can reduce hunger by 25% compared to investment in any other sector. Productivity is the major determinant of farm income and it contributes to raising the living conditions of food insecure populations. Lack of investment in agriculture is seen as a major reason Ethiopia's population experienced hunger in the 1970s, when the population was one third of what it is today, farm holdings were not that diminutive and fragmented and climate change was not an issue.

Ethiopia has never enforced land use systems, seeing as crop and livestock farming is practiced without consideration for the suitability of an area for such uses. This limits attainable productivity levels, causes environmental degradation and undermines optimal use of available resources.

Overdependence on rainfall

Ethiopia's agriculture largely depends on highly variable rainfall. Virtually all food crops (97%) come from rain-fed agriculture, with the irrigation subsector accounting for only about 3% of food crops[xxv]. As most farmers have no access to irrigation and they do not practice water-efficient production, when the rains fail, disaster ensues. Dependence on unreliable rainfall has thus subjected agricultural growth to significant volatility, increasing the vulnerability of the poor[xxvi].

Extension service delivery

Ethiopia is endowed with at least 32 agro-ecological zones (MoARD 2005). Crop production under these diverse conditions requires crop varieties and management practices that take into account the specificities of each agro-ecology. Despite such agro ecological diversity, the national agricultural research and extension system and the formal seed system are not organized in a way that responds to farmers' varying technological requirements. For years, extension services proposed blanket recommendations due to their inability to respond to varied agro-ecological needs, and it always proved difficult to supply agricultural technologies suited to different environmental settings[xxvii], though improvements have been made in the recent past.

Underdeveloped farm mechanisation

Ethiopia is characterized by a low level of mechanization in crops and livestock. According to the World Bank's Development Indicators, there were 3,000 tractors in Ethiopia in 2008, a relatively low number compared to Kenya and Tanzania with 14,000 and 21,500 tractors each. Ethiopia had 2.1 tractors per 100 km² of arable land compared to 26.9 and 23.9 tractors per 100 km² of arable land for Kenya and Tanzania respectively[xxviii]. To prepare land, Ethiopian farmers have no choice but to use the *Maresha,* an inefficient ox-drawn plough used for thousands of years (see cover page). The *Maresha* does not turn a furrow like the conventional mould board plough, but only disturbs the soil

to a depth of about 15 cm, limiting root growth and water retention[xxix] and making crop growth and final yield suboptimal. However, the small size of the farms represents an obstacle to mechanisation.

Limited use of inputs

Agricultural transformation is closely linked to the increased utilisation of inputs, particularly improved seeds and fertilisers. Fertiliser use in Ethiopia is of clear net benefit across most crops and regions, though it has increased only marginally over the years. While consumption has in fact tripled in the past decade, it is still far behind other African and fast developing countries of the world. The national average fertiliser use remains 23.8 kg/ha, in contrast to a 62 kg/ha world average, 39.4 kg/ha in Ghana, 141.3 kg/ha in South Africa and 181.7 kg/ha in Brazil. Even though the use of improved seeds, coupled with other agricultural inputs, has an immense potential to drive major increases in production and productivity, the current national seed supply of improved varieties for most crops covers less than 10% of total agricultural land. These low adoption rates can partly be explained by limited capacity of the supply system, limited access to input credit, weak private sector participation, etc.[xxx].

Pre-harvest and post-harvest losses

Estimates of pre-harvest cereal losses due to insects lie between 31% and 61%, whereas pre-harvest losses due to diseases could range between 19% and 49%. For instance, a survey conducted in western Ethiopia's major maize belt estimated yield losses between 22% and 75% due to grey leaf spot disease for both improved and local varieties, whereas stem borers resulted in maize yield losses of 20% to50%[xxxi]. These figures would be lower if farmers had had the access and know-how to use biological and chemical disease and pest controls. Recent post-harvest loss estimates for major cereal crops in Ethiopia range between 15% and 30%[xxxii]. Such grain losses arise either from poor post-harvest handling or use of rudimentary storage systems.

High number of low output livestock

Ethiopia is home to about 54 million cattle, 25.5 million sheep and 24 million goats. Of the total cattle population, 98.95% are local breeds and the remaining are hybrid and exotic breeds, whereas nearly all the goat and sheep populations are local breeds. This livestock plays a vital role in generating income for farmers, creating job opportunities, improving food security, providing services, contributing to assets and sustaining livelihoods.

Despite the high livestock population and existing favourable environmental conditions, the current livestock output is modest. This is associated with several complex and inter-related factors such as inadequate feed and nutrition, widespread disease, the poor genetics of local breeds, market problems, and inefficient livestock development services pertaining to credit, extension, marketing, and infrastructure[xxxiii].

While raising livestock could open up very good economic opportunities and support rural livelihoods better than it does today, its extensive nature and the numbers involved exert pressure on available land, pasture and water resources and keep productivity low.

Rural finance

Another major challenge of the sector is the lack of financial services such as affordable crop insurance and credit for small holder farmers, which limits investments and creates market dysfunctions.

3.4 The wider economic aspects

Limits of agricultural expansion

Most of the agricultural land is already under cultivation in the most productive areas, especially the highlands. Expansion of crop farming through clearing of remnant trees and shrubs in high potential highland zones will be at the expense of destroying the natural environment. Expansion of crop farming into the country's low-rainfall lowlands will require huge investments in irrigation schemes, whereas expansion into mid tropical areas such as Gambella will require investment in drainage schemes. Increases in productivity are the only real alternative as arable land has almost reached its limits, but they will remain limited due to the prevalence of tiny holdings and low use of modern technology.

Ethiopia's high level of economic growth was propelled by the agricultural sector in the past. In light of the above-mentioned constraints, other sectors (mainly manufacturing and services) will have to pull the national economy. However, the development of manufacturing has been very slow so far. Indeed, this movement of the rural population to other sectors (mainly industry) has not yet materialised and so far only the booming construction sector has provided significant job opportunities.

Ethiopia is one of the most rural countries in the world with only 19% of the population living in urban areas. In the immediate future, a very considerable number of mostly young people from rural areas, where opportunities are very limited, will move to towns and cities in the hope of finding jobs in industry or services. All eyes are directed at Ethiopia's ambition and efforts to become a major industrial player to provide much-needed jobs for its youth.

The private sector

The constraints placed on the private sector by Ethiopia's poor business environment means that the greatest potential for job creation is yet to be unleashed. While top government leaders are now underlining the importance of the private sector for the country's development, until recently the *de facto* priority has been given to investments in national infrastructure and state-owned enterprises such as the Metals and Engineering Corporation of Ethiopia (METEC)[7], the Sugar Corporation and the Ethiopian Electric Power Corporation (EEPCO), to name just a few.

The relatively small Ethiopian private sector faces all kinds of challenges, such as a shortage of foreign currency hampering economic activity, limited access to financing for private investment, tax and customs matters, state controlled logistics and, last but not least, red tape or administrative burdens at all stages of business. New industrial parks are being built which aim to facilitate private sector investments, but it remains to be seen if they will manage to overcome existing business climate challenges.

[7] METEC is one of the institutions established by the Federal Democratic Republic of Ethiopia (FDRE, Council Of Ministers regulation number 183/2002) to enable the realization of the government's Growth and Transformation Plan (GTP) and to accelerate the ongoing transition of Ethiopia into industrialization and becoming a middle-income country.

3.5 The role of democratic governance

In his ground-breaking work, Nobel Laureate and renowned economist Amartya Sen observed that large-scale famines never occur under democratic regimes, only under authoritarian ones. This is explained by the lack of openness and accountability that characterises authoritarian regimes, which tend to repress and control the media.

A free press plays an essential role in helping prevent famines. First, the media gathers and transmits information on emerging food shortages in specific regions, thereby acting as an early warning system. The media also amplifies the voice of those affected by a crisis, of civil society organisations (CSOs) and of opposition parties. Finally, the media holds governments accountable on the speed with which they first react to a looming disaster and at every stage of crisis management. On their part, democratic governments have a very strong incentive to respond swiftly and effectively to emerging crises that affect large numbers of potential voters, who can make the difference between incumbents winning and losing the next elections. Authoritarian governments face no such incentives.

As discussed is this paper, governments have varying degrees of influence over the causes of food insecurity, whether through reactive measures such as the fast provision of emergency aid once a food shortage is declared, or proactive measures such as massive investments in irrigation schemes to reduce agriculture's dependence on increasingly erratic rainfall. In democratic countries where rural populations make up a large part of the electorate, organised farmers can advocate very effectively for greater public investment in farming.

In Ethiopia today, the accountability mechanisms described above are not in place[xxxiv]. The media is not free or independent, and opposition parties were swept out of the Assembly of Representatives as the ruling party and its affiliates took 100% of the seats in the 2015 elections. Proclamations related to CSOs, anti-terrorism and the media have had a chilling effect on independent and diverging discourse on all manner of public policy issues, including agricultural priorities. The lack of strong participation at the local level prevents a democratic culture from emerging and does not encourage policies to be adjusted to address the interests of different regions and communities.

The tragic human toll of the famines described in Box 1 at the outset of this paper should be understood in light of the democratic quality of the successive regimes in place at each moment in time in Ethiopia. As we have seen, food insecurity and famines have a variety of interlinked causes, but empirical evidence suggests that these will not be adequately addressed until a full transition to democracy takes place in Ethiopia.

3.6 Disaster Risk Management

Though not a root cause of food insecurity, a proper disaster risk prevention and management system should aim to mitigate and reduce the impact of shocks as much as possible.

Since 2005 the Government of Ethiopia, with the support of different development partners, has implemented the Productive Safety Net Programme (PSNP[8]). This program helps food insecure rural poor people to resist shocks, build assets and become food self-sufficient by providing predictable multi-annual transfers, in the form of food or cash, to help them survive food deficit periods and avoid depleting their productive assets. The fourth phase of PSNP (2015-2020) will support up to 10 million people. Despite this massive support, every year additional humanitarian funding must be mobilised through annual Humanitarian Request Document (HRD) appeals. In 2015, the government

[8] Program aimed at enabling the rural poor facing chronic food insecurity to resist shocks, create assets and become food self-sufficient through provision of multi-annual predictable transfers, as food, cash or a combination of both, to help such chronically food insecure people survive food deficit periods and avoid depleting their productive assets while attempting to meet their basic food requirements.

and donors agreed on the principle that both PSNP and HRD would be part of a single process including joint assessment of needs, joint planning and joint response. This agreement was never properly implemented and has even become more challenging due to the split of responsible institutions: the HRD is now under the responsibility of the new National Disaster Risk Management Commission reporting directly to the Prime Minister's Office and the PSNP is under the Ministry of Agriculture. This shows a lack a proper coordination between PSNP and humanitarian mechanisms that compromises the principles of efficiency and effectiveness, especially when intervening in the same areas, during crises like the current one (2015/2016 El Niño)

The lack of proper coordination could more widely be generalised to humanitarian and development interventions in Ethiopia. The implementation of different approaches in the same areas with the same beneficiaries provokes a sort of competition that often limits development gains. At the same time development interventions need humanitarian activities to prevent losses in long terms investments through assets depletion.

As a response to frequent food crises, in 1982 Ethiopia established a 60,000-tonne grain reserve system which then reached a maximum capacity of 405,000 tonnes in early 2000. The capacity is set to feed 4.5 million people for a 6-month period with relief rations of 15kg/person/month[xxxv]. The grain reserve size remained unchanged for years despite increases in population and hungry people. Cognizant of the recurring problem, under the GTP-I (2010-2015) the country planned to increase its grain reserve to 1,300,000 tonnes though this has not yet materialized.

Moreover, the country has not yet established a seed reserve mechanism and, in their current form, the certification and distribution systems do not meet most farmers' needs. Limited food reserves as well as the absence of seed reserves have exposed the country to the vagaries of climate, such as the current drought (2015/2016).

Reliable statistics are critical to proper planning and timely responses; unreliable production statistics can be misleading and detrimental. Determining whether annual grain production statistics are realistic is beyond the scope of this analysis. The Central Statistical Agency's (CSA) annual statistics should be complemented with independent assessments of seasonal agricultural performance that take into account resource availability (mainly water and inputs) for better response planning. Disseminating reliable agricultural production data is key to estimating food availability in country and planning necessary food procurement to fill the needs gap.

4 The way forward

The current humanitarian crisis, beyond the short-term considerations and focus, is a chance for the donor community and the government to analyse what has gone wrong and re-think or reprioritise long term strategies. This exercise requires a thorough analysis that goes beyond the scope of this note. However, the following are some general recommendations (for donors, implementing partners and the government) in terms of long term investments that could be considered to address some of the root causes of food insecurity in Ethiopia:

4.1 Demographic challenges

- Accelerating the demographic transition: Ethiopia must make a strong commitment to reducing the fertility rate through intensive family planning and education programs to accelerate the demographic transition.
- Carrying capacity and internal mobility: build resilience of the most vulnerable people and communities to shocks, but with a focus on sustainability. Following a shock, the approach should not be to go back to the previous situation, but to a more sustainable plain. The potential and carrying capacity of vulnerable areas should always be considered before planning interventions

to address long term vulnerabilities in a sustainable way. In this context, it is important to link vulnerable people with opportunities wherever they can be found.9.

- Proper management of urbanization: The current urbanization rate in Ethiopia has already reached 19% and evidence suggests that it will only accelerate in the coming years. It is hence imperative for the country to properly manage the rural to urban transition.

4.2 The climate factor

- Water: Prioritise the development of sufficient water harvesting / storage capacities in Ethiopia.
- Adaptation to climate change: Support interventions to adapt to the impact of climate change in the country (e.g. drought tolerant seed varieties, water efficient agronomic practices, etc.).

4.3 The performance of the agricultural sector and land policy

The Agricultural Transformation Agency (ATA) should play a key role in the strategic transformation of the agricultural sector. The following are some of the issues to be addressed:

- Land policy: engage with the government on a possible land reform agenda for better tenure security, entailing enhanced investment in agricultural land;
- Facilitate access to land and consolidate common land holdings in areas where plots are too small and fragmented to foster economies of scale;
- Promote redefinition of land use systems in vulnerable areas: This will facilitate a shift to production systems that are feasible, that will not further degrade the already degraded natural environment and that are justifiable to sustain livelihoods in such areas (e.g. shift from low-yielding crop cultivation to fruit tree farming in north and south Wollo hilly landscapes); shift from crops to tending adapted livestock breeds (*Abergele goat* for Wag Himra zone, *Awasi sheep* for North Wollo zone, etc.) with appropriate value chains and market linkages.
- Focus on land productivity-increasing measures: This encompasses supporting research-extension for site-specific and appropriate technology generation (including water efficient production technologies and systems, diversified and resilient agriculture systems with critical ecosystem services), as the future of agriculture lies more in sustainable intensification to increase the capacity of land productivity than on expansion.
- Develop irrigation schemes with a focus on small scale irrigation and systematic integration of good water and agricultural management practices including soil and water conservation practices.
- Foster agricultural innovation systems to enhance availability of progressive farm technologies and farm mechanisation transfers.
- Promote farmers' associations and access to finance for smallholder farmers to promote investment in land and support them to function as market-oriented businesses.
- Redefine the extension system so that it fosters innovation including public-private partnerships with farmers' associations.
- Empower women in agriculture.
- Systematically promote agricultural value chain development for job creation.

[9] This does not at all make reference to undertaking massive resettlement programs into unsettled areas without provision of basic services, as was done during the *Derg's* administration. Such kinds of resettlements entail more of negative outcomes in terms of degrading the natural environment and others which outweighs the expected economic gains.

- Develop rural infrastructure to enhance access.
- Enhance smallholder farmer's access to weather insurance for better resilience.
- Transform the livestock sector: support is needed in terms of animal feed and nutrition, animal health systems and veterinary services (public and private), improvement of commercial breeds, downstream support to the livestock value chain (slaughterhouses, markets, etc.) support for livestock access to water in pastoral areas.

4.4 The wider economic aspects

- Prioritise job creation, mainly through industrialisation, and not necessarily under the agricultural sector (manufacturing, small and medium enterprises, etc.), especially for vulnerable groups. This will also require an effort in terms of technical and vocational education and training (TVET) in order to train workers on marketable skills, and enhance access to credit through microfinance.
- Support industrial development (mainly manufacturing): this will provide the potential to absorb a part of the growing rural population and release some pressure from the already overcrowded farming sector.
- Create an enabling environment for the private sector with reduced red tape, better tax and customs administration, liberalisation of logistics, access to forex, etc. - that will eventually generate needed job opportunities.
- Provide better access to finance for private sector to facilitate local investment.

4.5 Governance reforms

- Establish genuine participation mechanisms at the local level (such as the social accountability programme) and at regional and federal levels when elaborating policies, along budget discussions and during policy implementation.
- Reinforce transparency through regular information sharing and involvement of independent media.
- Strengthen accountability mechanisms with a prominent role for independent media, CSOs, political parties and existing government bodies such as the councils, OFAG, etc.

4.6 Disaster risk management

- Improve the coordination between PSNP and HRD following the principles of joint assessment, joint planning and joint response.
- Strengthen the linkages between humanitarian relief and development: Development interventions should build on humanitarian actions in order to avoid the full depletion of assets following a shock.
- Strengthen the early warning and response mechanisms including the food grain and seed reserve systems: increasing the grain reserve and establishing a seed reserve would give Ethiopia a better and faster response capacity and improve the seeds certification and distribution systems.
- Improving information systems: the regular availability of reliable information in terms of agricultural production, seeds availability, etc., should be supported.

5 Conclusions

The root causes of Ethiopia's deep food security vulnerabilities go far beyond periodic rain shortfalls. Addressing these root causes require a long-term perspective and significant political and financial investments from the government and all development and humanitarian partners.

The above mentioned analysis and recommendations are obviously not exclusive and subject to debate.

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