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The case of Tanzania

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Abbreviations and acronyms

AGI	Africa Growth Initiative
ASDP	Agriculture Sector Development Program
ASDS	Agriculture Sector Development Strategy
BEST	Business Environment Strengthening for Tanzania program
CCM	Chama Cha Mapinduzi
CAADP	Comprehensive Africa Agriculture Development Program
DADPs	District Agricultural Development Plans
ERH	Ending Rural Hunger
FAO	Food and Agriculture Organization
FAOSTAT	Statistics division of the Food and Agriculture Organization
FNS	Food and Nutrition Security
FYDP	Five Year Development Plan
LBP	Land Bank Parcels
LGRP	Local Government Reforms Programs
MAFAP	Monitoring and Analyzing Food and Agricultural Policies program
MDGs	Millennium Development Goals
NAIVS	Input subsidies program
NBS	National Bureau of Statistics
NFRA	National Food Reserve Agency
NGO	Nongovernmental Organization
NPS	National Panel Survey
NMNAP	National Multi-sectoral Nutrition Action Plan
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SDG2	Sustainable Development Goal 2
AfDB	African Development Bank
TAFSIP	Tanzania Agriculture and Food Security Investment Plan
TDV	Tanzania Development Vision
TIB	Tanzania Investment Bank
TIC	Tanzania Investment Centre
UNDP	United Nations Development Project
DFID	U.K. Department for International Development
URT	United Republic of Tanzania
USAID	U.S. Agency for International Development
WB	World Bank

Executive summary

Ending hunger is an ambition formally enshrined in the Sustainable Development Goals (SDGs) and adopted by all 193 member countries of the United Nations. This report looks at Sustainable Development Goal 2 (SDG2), which focuses on ending hunger, achieving food security, improving nutrition, and promoting sustainable agriculture. Specifically, the report focuses on the rural population in mainland Tanzania, which accounts for 70 percent of the total population, 75 percent of the undernourished, and 80 percent of the hungry people in Tanzania (WFP; FAO, 2015). The goal to end rural hunger is truly about promoting transformational change in local food and agricultural systems, food distribution, quality and quantity of food produced, as well as sustainable consumption (ERH report, 2015). Success will not come easily, but there has already been some progress as the government is making some commitment of resources in agriculture like increasing the use of imputes such as fertilizer by reducing price fluctuations through fertilizer bulk purchase program.

To achieve the SDG2 targets, policymakers must shift away from erratic political attention and inadequate measurement of the relevant issues such as: access to food; quality of food in terms of protein, micronutrients, and vitamin content; access to finance; access to land for crop production; access to water; and access to agriculture input markets for a sustained, strategic, and evidence-based commitment to food and nutrition security (FNS). This shift requires a systematic and quantitative assessment of countries' progress towards achieving FNS (which includes addressing food access, malnutrition levels, and the agriculture productivity gap), and an assessment on how well countries put relevant strategies (policies) and adequate investments (resources) in place.

In Tanzania, access to food, nutritional needs, the agricultural productivity gap, and vulnerability to environmental shocks are among the top threats to FNS, especially in rural areas. Based on National Panel Set dataset wave 3, a significant proportion of the Tanzanian population suffers from undernourishment, low average dietary energy intake, and poverty. The urban-rural difference is stark as rural areas fare much worse: Undernourishment (29.5 percent versus 39.3 percent), low average dietary energy (31.1 percent versus 33.9 percent¹), and poverty (8.5 percent versus 26.7 percent) are relatively higher in rural areas (NBS, 2014). Equally important,

¹ The figure is measured as a percentage of population having that problem in urban and rural areas.

access to food and a lack of nutritional awareness are major obstacles facing the country, as they lead to the intake of an unbalanced diet. As a result, high rates of malnutrition are observed in the population, especially among children under five, leading the country to have above-average malnutrition rates compared to other countries in the region (NBS, 2014).

The country strategy to achieve SDG2 is embedded in various national policies, development plans, and strategies. Specifically, Tanzania has initiated the following strategies: the Agricultural Sector Development Program (ASDP I & II, 2006-2020); the Comprehensive Africa Agriculture Development Program (CAADP); the Tanzania Food Security Investment Plan (TAFSIP); Big Results Now (BRN); the Tanzania Development Vision (TDV 2025) embedded under Tanzania's five-year development plans (FYDP: FYDP I; FYDP II 2016-2020 (nurturing and industrial economy) and FYDP III-2021/22-2025/26 (realizing competitiveness-led export growth); the CCM² Manifesto; and the National Multi-Sectoral Nutrition Action Plan (NMNAP) 2016-2021.

Achieving SDG2 not only requires implementing relevant strategies but also adequate and sustainable funding. Many of the agriculture sector development programs in Tanzania are not allocated sufficient funds and rely heavily on donor funding. For example, in the past 10 years, less than 8 percent³ of the national budget was invested in the sector, and out of the invested funds 40 percent were government contributions and 60 percent donor funding (CARE, 2015). Inadequate funding to the sector affects transfer of technology, improvement of infrastructure, supply of inputs, and access to capital and markets, which in turn discourages production—hence hindering efforts to eradicate hunger by 2030. Furthermore, donor-funded programs, especially those outside of budget support, are often period specific and sometimes lack exit strategies (URT, 2016).

To hurdle the effect of low funding, achieve SDG2 and eventually improve the state of FNS in Tanzania, four priority areas need to be observed closely and deliberate efforts made to them: First, increase access to food through (a) improving food distribution by investing in improving road networks (both rural and feeder roads); (b) providing education on food utilization and quality through campaigns that emphasize the importance of the inclusion of the different food groups, especially for pregnant women and children; (c) increasing social marketing campaign aimed at farmers on the importance of soil nutrition and growing different food groups and bio-fortified crops to ensure a healthy diet; and (d) creating a social marketing campaign aimed at small-scale food

² CCM stands for Chama Cha Mapinduzi, the ruling party.

³ The figure presents the percentage of the national budget including donor funds channeled through budget funding.

processors on food fortification to improve food nutritional quality. Second, reduce vulnerability to environmental shocks in rural areas by increasing the capacity of small-holder farmers to exploit the vast irrigation potential available in the country by constructing shared irrigation schemes. Third, build the productive capacity of the agriculture sector to sustainably address and maintain long-term food security. And, finally, enhance the budget allocated to the agriculture sector.

I. Introduction

The absolute number of food insecure people in the world has been more or less stable over the last 40 years. Simultaneously, the ratio of people suffering from malnutrition in the world has declined from about 1-in-3 to 1-in-7 during this time (FAO, 2012). However, the situation in developing countries—where hunger remains a problem faced by the majority of the population—varies in reach and scope (FAO, 2011).

Sub-Saharan Africa is particularly at risk in regards to food and nutrition security (FNS) and is the only region where the average food supply (measured in calorie intake) is below the average daily requirements for adults (FAO, 2016; EIU 2012). During the last decade, Tanzania experienced a high degree of food insecurity despite its remarkable performance in economic growth. The insecurity is, however, not at the national level, but rather at the regional, district, and household levels. In the period 2000-2010, the country had an average annual economic growth of 7 percent (WB, 2012a). However, the number of poor and malnourished people has not reduced accordingly, and in recent years there has been the emerging double burden of malnutrition—under nutrition and over nutrition. In fact, nearly 10 million Tanzanian adults are overweight (34 percent women and 17 percent men) and diet-related non-communicable diseases in Tanzania are on the rise (URT/MAFSC, 2011; WB, 2012b; URT, 2016; Global nutrition report, 2016).

The weak relationship between economic growth; and food insecurity and nutrition outcomes in Tanzania is due to the low growth in the agriculture sector (agricultural growth rate averaged only at 4 percent despite the 7 percent annual economic growth (URT/MFEA 2011)); poor food utilization due to poor nutrition knowledge and availability of diversified foods; poor compliance of the 2012 fortification legislation, requiring all oil, wheat, and maize processors to fortify their products; and changes in consumer habits towards the consumption of processed foods rich in sugar, salts, refined grains, and cheap oils and fats (URT, 2016). Some of the regions that have food surpluses but are nutrition insecure include Kagera, Iringa, and Njombe (TAHA newsletter, Oct-Jan 2017)

Recognizing the importance of food and nutrition security for improving public health, labor productivity, and economic growth, African governments have expressed their commitment to end hunger by signing the Malabo Declaration in June 2014 under the auspices of the African Union, as well as the Sustainable Development Goals (SDGs) in September 2015 at the United Nations Sustainable Development Summit. The Malabo Declaration aims at reducing childhood

malnutrition (under-5 stunting to 10 percent and wasting to 5 percent) by 2025, among other FNS-related goals,⁴ SDG2 aims at ending hunger for all, achieving food and nutrition security, and promoting sustainable agriculture by 2030. This report assesses Tanzania's progress, challenges, and plans towards its targets on reducing poverty and food and nutrition insecurity and thus in achieving SDG2 by 2030. Section 2 outlines Tanzania's initiation and commitment to implementation of a number of agriculture, economic, and health policies and programs for meeting SDG2. Section 3 discusses Tanzania's progress towards meeting these goals. Sections 4 and 5 discuss its successes and challenges towards its targets on achieving the SDG2.

⁴ The Malabo Declaration has the following specific targets: Sustaining agricultural growth at an annual rate of six percent, halving poverty, doubling agricultural productivity and income, building resilience and maintaining an agricultural spending target of 10 percent of public spending.

II. Country strategy and programs implemented to achieve SDG2

Tanzania does not have a strategy that is solely aimed at achieving SDG2, but rather its FNS-related strategies are fragmented and embedded in various national and regional development policies and programs. The country's long-term development agenda is mainly expressed in the Tanzania Development Vision (TDV) 2025, which is operationalized through the LTPP (Long-Term Perspective Plan-2011/12-2025/26) and implemented through three Five Year Development Plans (FYDPs I, II, & III) (URT, 2012). The Vision emphasizes Tanzania's goal of becoming a prosperous nation through eradicating poverty, ignorance, and disease in the drive to becoming a middle-income country. The vision specifically aims to achieve high-quality livelihoods, peace, stability, unity, good governance, a learned society, sustainable economic growth and shared benefits, and a diversified semi-industrialized economy with a substantial industrial sector (MAFAP, 2013).

Food production and distribution in Tanzania is guided by Tanzania's Agricultural Policy (2013), which overtime has been influenced by macroeconomic changes within the country, the region and the globe. Under the current agricultural policy; programs, strategies, and plans geared towards achieving SDG2 include: the Tanzania Five Year Development Plans (FYDPs I, II, & III), the Agricultural Sector Development Program (ASDPs I & II), the Southern Agricultural Growth Corridor of Tanzania (SAGCOT), the Business Environment Strengthening for Tanzania program (BEST), Feed the Future programs like Tanzania Land Tenure Assistance (LTA), Tanzania Agriculture and Food Security Investment Plan (TAFSIP), Land Tenure Support Programme (LTSP), the National Multi-sectoral Nutrition Action Plan (NMNAP 2016-2021), the District Agricultural Development Plans (DADPs), the establishment of the Tanzania Agricultural Development Bank (TADB) and the Tanzania Land Bank Parcels (LBP), and projects to ensure low-interest, long-term loans in agriculture under the TIB (Tanzania Investment Bank) Development Bank. These national initiatives are linked to regional initiatives like the Malabo Declaration on CAADP (2014) (Comprehensive Africa Agriculture Development Program), a regional initiative for revamping agricultural development in Africa through the New Partnership for Africa's Development (NEPAD).

The FYDPs are broad—taking into account the overall national development goals, regional and international goals, policy objectives, and sectoral initiatives—and are operationalized through the Annual Development Plans (ADPs). FYDPI (2011/12-2015/16) aimed at unleashing growth and

put emphasis on access to land and a mindset transformation in agriculture; FYDP II (2016/17-2020/21) aims to nurture an industrial economy; and FYDP III (2021/22-2025/26) will aim to attain export growth and competitiveness. During the designing of the FYDP II (2016/17-2020/21), the SDGs and reviews from the FYDP I were used as guides.

The FYDPs address several issues related to SDG2. First, they assess and address bottlenecks related to infrastructure (in particular, rural roads), which helps address the problems of poor farm gate prices, markets, and distribution. Second, the plans analyze productivity in agriculture and the transformation of agriculture for food self-sufficiency and export. Third, the plans address production-cost minimization and an increase in medium-skilled workers in agriculture- and manufacturing-related sectors. Fourth, the plans cover the development of agro-processing industries.

In order to bring a multi-stakeholder coordinating structure to the food and nutrition sector, Tanzania went through an institutional transformation in 2015-2016. As a result, the country now has an annual joint national multi-sectorial review to analyze the implementation of the national nutrition strategy; there is also a nutrition focal person hired by the council in every district or region for the purpose of monitoring the implementation of nutrition programs and related policies. An advocacy tool for educating the government on different health and nutrition policies is also in place.

To do away with the bottlenecks that were a constraint to meeting SDG2, the National Multi-sectoral Nutrition Action Plan⁵ (NMNAP 2016/17-2020/21) was developed for the 2012 and 2016 National Nutrition Policy's strategic implementation action plan. In this way, the NMNAP involved more groups dealing with food and nutrition, and includes the implementation of SDG1 and SDG2. The NMNAP is different from the National Nutrition Strategy of 2011-2016 in several ways:

1. It involves all the nutrition-sensitive sectors (ministries and departments);
2. Its formulation and implementation involves donors, U.N. agencies, nongovernmental organizations (NGOs), the private sector, and academia;
3. Though the 2011-2016 National Nutrition Strategy had some aspects of a general nutrition strategy, the NMNAP's revised version is being developed with general results, resources, and an accountability framework;

⁵ The national nutrition strategy was replaced by NMNAP to involve more groups in tackling the national problem in the country.

4. It aims to enhance nutrition financing, tracking, and resource mobilization. In addition to the public expenditure review of the nutrition sector every two to four years and the annual joint multi-sectoral nutrition review, the multi-sectoral platform has a resource mobilization strategy to support the costed NMNAP by targeting resources from the government, donors, and the private sector; and
5. It has an improved financial tracking system through the action plan's common results and accountability framework.

After the Maputo Declaration in 2003, another regional initiative including heads of states and governments of the African Union meet again in 2014 and adopted two declarations that directly relate to CAADP and Africa's agricultural transformation and food security agenda in the 2015-2025 decade. The declarations included: (1) the Malabo Declaration on CAADP and the commitment to accelerate agricultural growth and transformation for shared prosperity and improved livelihoods; and (2) the declaration on Nutrition Security for Inclusive Economic Growth and Sustainable Development in Africa. The Malabo Declaration has several targets and goals set to ensure that the declaration is reached. The goals and targets that are directly related to SDG2 include: (1) recommitment to enhance investment finance in agriculture; (2) commitment to ending hunger by 2025; (3) commitment to halving poverty by 2025, through inclusive agricultural growth and transformation; (4) commitment to enhancing resilience in livelihoods and production systems to climate variability and other shocks; (5) reaffirmation of the commitment to end hunger by 2025 through strengthening of development policies as an effective investment in the human capital; (6) commitment to ending child stunting, by bringing down stunting to 10 percent and underweight to 5 percent by 2025, and focusing on the first 1000 days of a child; and (7) commitment to establish long term targets that give all children equal chances for success.

The Tanzania Agriculture and Food Security Development Plan (TAFSIP 2011-2021), which was formulated to respond to CAADP 2003, seeks to contribute to national economic growth through rationalizing allocation of resources to achieve 6 percent agricultural GDP growth. To boost accessibility to financial services in the sector and attract private investment, the establishment of the Tanzania Agricultural Development Bank (TADB), the agricultural window by the Tanzania Investment Bank (TIB), and the Tanzania Land Bank Parcels under the TIC (Tanzania Investment Centre) were put in place.

III. Food and nutrition security (FNS) needs in Tanzania⁶

Sub-Saharan Africa remains the world's most food-insecure region, characterized by high levels of child mortality and poverty, and low agricultural productivity (FAO, 2009). An estimated 90 percent of the population in the region depends on rain-fed crop production and pastoralism to meet its basic nutritional needs (Patt and Winkler, 2007). Rising temperature and erratic changes in rainfall patterns have negatively affected crop yields and water availability for irrigation. In addition, countries in the region heavily depend on a small-holder-based agricultural production. The combination of these factors have made agriculture the most vulnerable sector to environmental shocks, therefore posing great challenges to ensuring food and nutrition security in the region (Ziervogel et al., 2008; Barrios et al., 2008).

III.1. Access to food

When compared to other East African⁷ and sub-Saharan countries, Tanzania is food self-sufficient⁸ (URT/MAFSC, 2008; URT/MFEA, 2011a). Tanzania has been able to secure sufficient food at the national level and avoid famine in food-deprived and drought-affected parts of the country. However, the availability of food at the national level does not mean that food is accessible to all, especially to households located in rural areas. This is because food shortages are caused by poor rural connectivity and not only low production in the country.

Regarding to having enough money to buy food, Tanzania performs relatively better than the average for sub-Saharan Africa, but worse than the rest of the developing world (Figure 1). The country is ranked fifth in the East African region, 10th of 36 in sub-Saharan Africa, and 69 of 103 in the developing world for the indicator measuring the proportion of the population with enough money to buy food (ERH database, 2016). The result concurs with that from interviews with stakeholders (e.g., USAID and the Ministry of Agriculture, Livestock, and Fisheries) that argue that the country is food insecure because of food preference, not accessibility. Notably, food preferences differ from one region to another: For example, in Tanzania, mainland maize is the most preferred foodstuff while in Zanzibar rice is. Shortage or increase in prices of these crops are perceived as a food shortage, but there are other foodstuffs, like sweet potatoes and cassava,

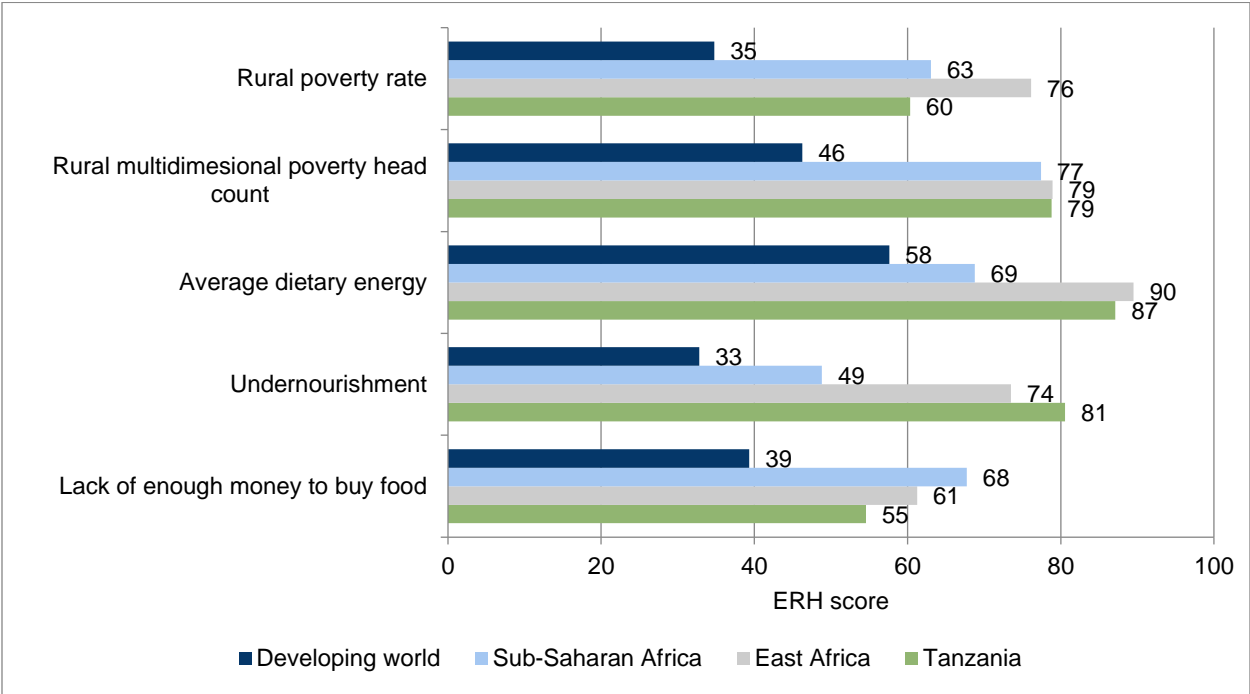
⁶ All the results in this section use scaled data, hence reflecting country scores on different indices (see methodological note in Appendix 4).

⁷ East Africa in this case refers to countries which make the Eastern bloc of the African continent as categorized by ERH database and includes the United Republic of Tanzania, Kenya, Uganda, Rwanda, Burundi, Ethiopia, Malawi, Mozambique, Madagascar, Somalia, Zambia, and Zimbabwe.

⁸ Food self-sufficient in this case refers to the country capacity to produce enough food to meet the country food needs though not necessarily nutritional needs.

that are produced in large quantities everywhere in the country and in many cases are available at relatively lower price than the maize and rice, but are not considered preferred foodstuffs by the community. This can contribute to food and nutrition insecurity at times of shortages (and price spikes) in the preferred foodstuff.

Figure 1. Calorie gap and rural poverty⁹



Note: Higher score = greater needs.
 Source: ERH data, 2016.

Looking at the rural multidimensional poverty headcount, Tanzania is at the East African average, which is relatively worse than the rest of sub-Saharan Africa (Figure 1). However, the country performs relatively better than East Africa and sub-Saharan Africa in the rural poverty headcount ratio at \$1.25/day (PPP) (Figure 1). The findings from the ERH database are in line with that of other research groups; for example, in 2007, Tanzania reportedly reduced rural poverty to 68 percent from 85 percent since 2000 (FAOSTAT, 2012). However, when poverty is measured using the food poverty line as a threshold, poverty levels were reported at 33.6 percent in 2007 and 28.2 percent in 2012 (URT, 2013).

Reflecting the inadequate access to food, the country performs poorly in undernourishment and average dietary energy compared to the rest of sub-Saharan Africa and the developing world.

⁹ Here and in subsequent figures, East Africa refers to countries which make the Eastern bloc of the African continent as categorized by ERH database and includes the United Republic of Tanzania, Kenya, Uganda, Rwanda, Burundi, Ethiopia, Malawi, Mozambique, Madagascar, Somalia, Zambia, and Zimbabwe.

The ERH data indicates that the country has a relatively higher prevalence of undernourishment and higher proportion of the rural population consuming below the average daily requirements (Figure 1) for adults than the average for sub-Saharan Africa and the developing world.

The results for dietary energy supply are a bit high (Figure 1) but in line with other studies by other stakeholders. The World Bank in 2012 reported that 34 percent of the population in Tanzania was not able to meet its daily caloric requirements. The report pointed out the reasons for the low supply of calories, including logistics barriers due to the high cost of moving food from surplus to deficit areas, droughts, underinvestment in agricultural development, and price fluctuations (FAO, 2011; UNDP, 2012; WB, 2012a).

The results from the ERH database indicate the priority areas to focus in order to meet SDG2 nutrition target and address rural poverty. Therefore, the country needs to direct its resources towards these areas for the realization of SDG2 targets.

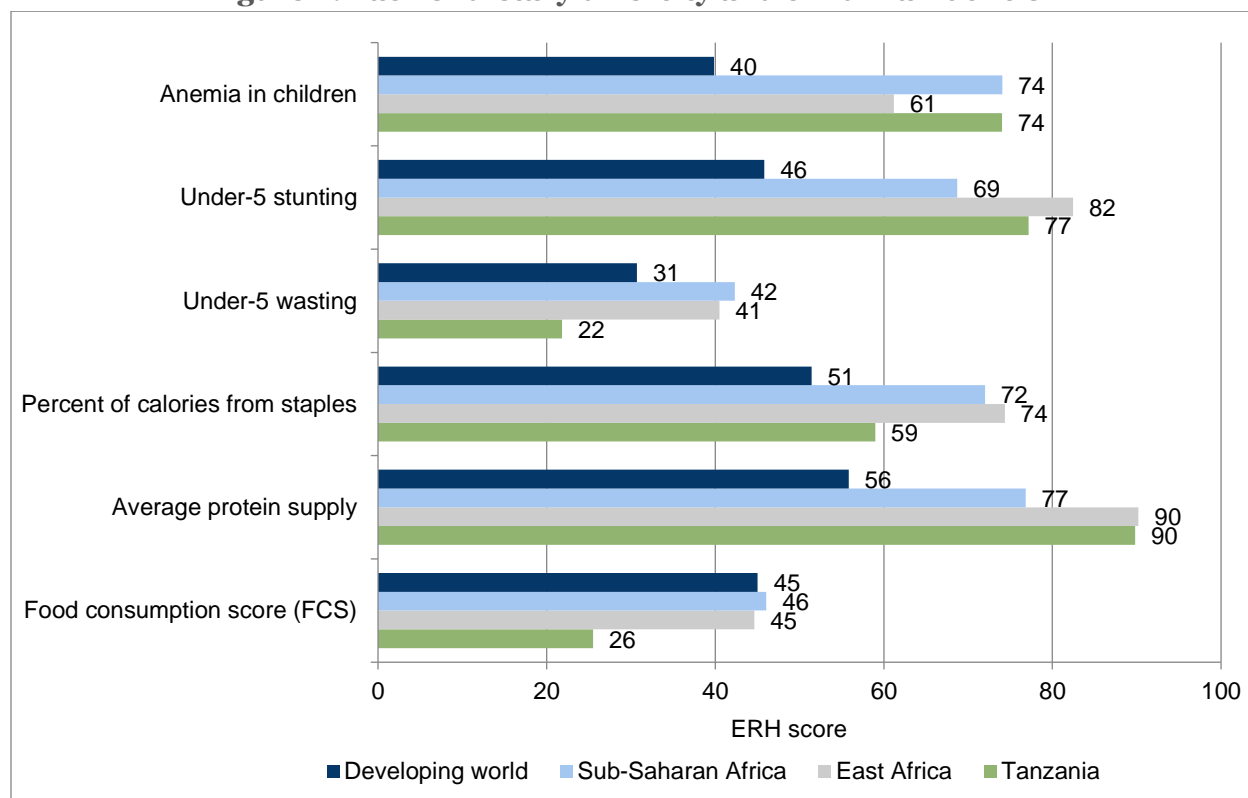
III.2. Malnutrition

Tanzania is a country that is more diversified in terms of dietary consumption than the rest of sub-Saharan Africa. The ERH database indicates that Tanzania has low needs in the “food consumption score”—a measure of dietary diversity that can adopt the following values: poor, borderline, or acceptable. Only 21 percent of Tanzania’s households are categorized as having an “unacceptable” food consumption score (a combination of “poor” and “borderline”) against the 34 percent African average. The country also performs well compared to other developing countries in the world.

Tanzania’s high score of 90 in the ERH database protein consumption indicator reflects the country’s high needs in that area. However, the country performs much better when it comes to calories extracted from staples, as Tanzanians only extract 57 percent of their calories from staples against the sub-Saharan Africa average of 63 percent. Furthermore, in terms of child malnutrition, under-5 stunting and anemia in children are the two most prevalent forms of childhood malnutrition in Tanzania, East Africa, and sub-Saharan Africa overall. ERH data indicates that the country has a higher proportion of children suffering from under-5 stunting than the rest of sub-Saharan African countries and the developing world (Figure 2). ERH data also indicates that the country is not performing well in curbing anemia in children: Tanzania has a higher proportion of children suffering from anemia than the rest of the East Africa (Figure 2). With

such a performance in child malnutrition, the country ranks 58 out of 115 developing countries overall.

Figure 2. Lack of dietary diversity and child malnutrition



Note: Higher score = greater needs.

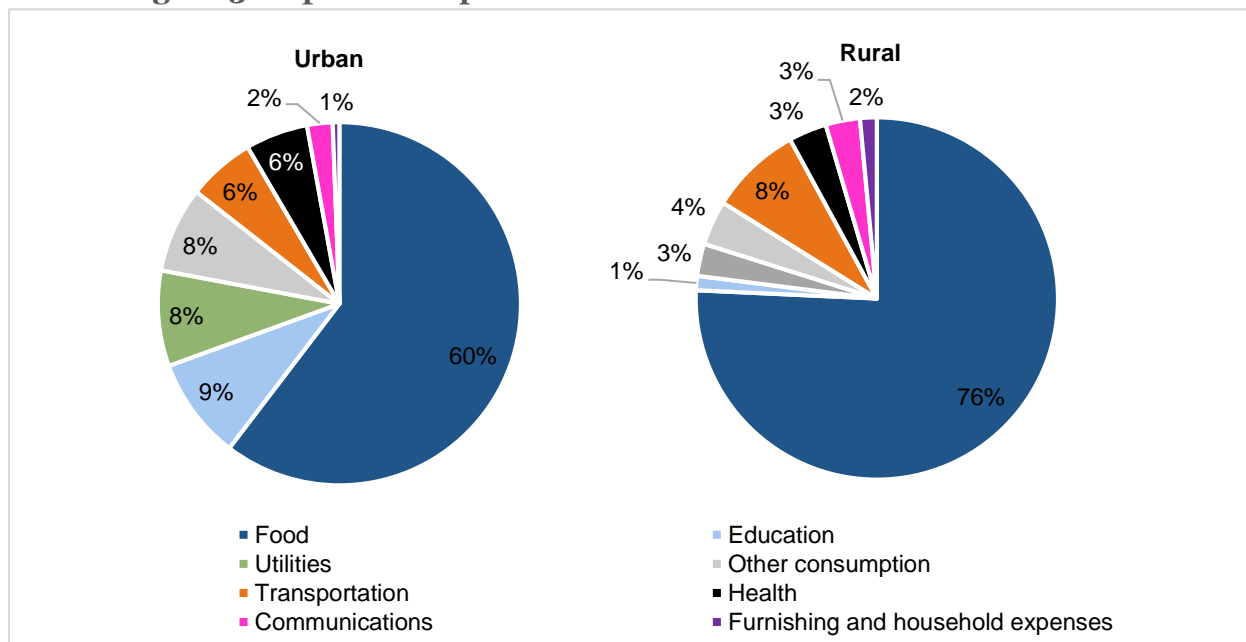
Source: ERH data, 2016.

When comparing the above results from the National Panel Survey Wave 3 dataset 2012/13, NPS data are contrary to the ERH data. According to NPS data, the rural population frequently consumes foods rich in protein and vitamins regardless of their income. The situation, however, is different for the urban population where consumption of foods rich in vitamins and protein is positively linked to income levels. These results are in line with the insights obtained from the interview with stakeholders: one interviewee attributes this trend to the fact that rural communities are the supplier of all types of foods and because of the nature of production, which is mainly subsistence, much of what is produced is consumed by a household. In urban communities, everything consumed by a household is purchased.

According to the reaction from stakeholders interviewed, various factors contribute to the high prevalence of food and nutrition insecurity in the country. According to USAID, DFID, the Ministry of Agriculture, Livestock, and Fisheries, and the Ministry of Health, Community Development,

Gender, Elderly, and Children, poor education of balanced diets in rural areas is a major problem in Tanzania. Notably, much of household income in Tanzania is spent on food, yet malnutrition is high (Figure 3). The national nutrition status survey conducted in 2014 indicated that rural communities suffer from malnutrition not because they lack foods rich in protein and vitamins, but because they have poor knowledge of food preparation (overcooking and poor combination of food stuffs), as 70 percent of food nutrients get lost during food preparation, hence it is likely that food preparation contributes largely to the malnutrition problem (URT, 2014).

Figure 3. Expenditure patterns between rural and urban consumers



Source: Authors' own calculation, NPS dataset wave 3, 2012/2013.

Other factors contributing to the high prevalence of malnutrition in Tanzania include food poverty, (which contributes to the poor consumption of protein and vitamins in consumer's daily diets (see Table 1)) and increased diets that are based on starchy cereals and tubers. According to FAO (2008), only 3 percent of the rural population in Tanzania eats fruits, vegetables, and foods from animal sources on a daily basis. Low consumption of animal products and fruits are also observed in the 2012 National Panel Survey; where only 26 percent, 12.7 percent, 13 percent, and 15 percent consume milk, animal products, fruits, and vegetables every day, respectively (see Table 1). To increase consumption of these products and, hence, reduce the prevalence of child stunting, increase in production is important. A study by IFPRI (2011) estimated that the successful implementation of the Tanzania Agriculture and Food Security Investment Plan (TAFSIP) will accelerate agriculture growth and increase production of different food stuff which in return will reduce the prevalence of child stunting.

Table 1. Consumption of protein and vitamin-rich foods per week (% of rural population)

Food item	Zero consumption	7 days consumption
Milk	60	26
Meat, fish, and animal products	22.92	12.7
Fruits	62	13
Vegetables	6	15

Source: Authors' own calculations, NPS dataset wave 3, 2012/2013.

III.3 Agriculture productivity and the technology gap

III.3.1. Agricultural productivity gap and growth

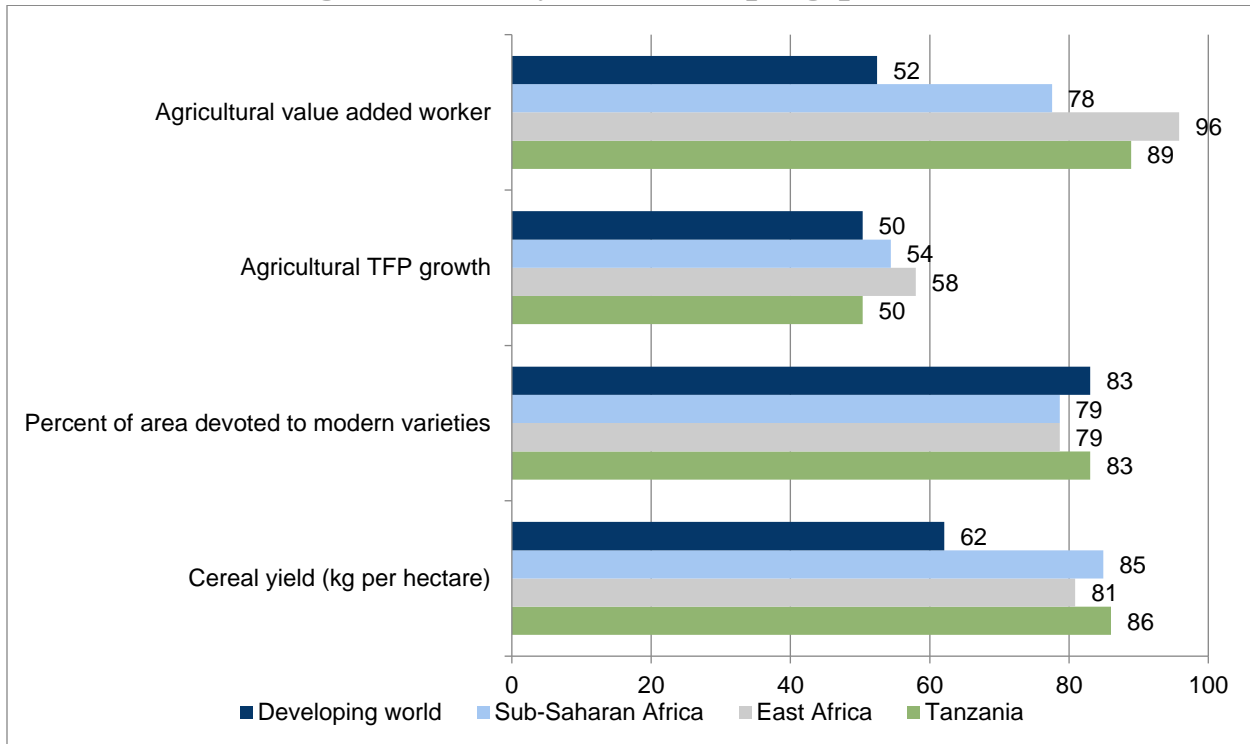
Improving agricultural productivity is essential to the country's success in achieving SDG2. However, performance in agricultural output and productivity has been disappointing despite apparent commitment in terms of policies and strategies to transform the sector. The ERH database indicates that the country's performance in cereal yield (kilogram per hectare) and agricultural value added per worker is poor (Figure 4). The findings from the ERH database are in line with the baseline household survey conducted by the World Bank in Tanzania, Zambia, Malawi, and Kenya, whereby the total cereal yield in Tanzania was below the levels in these neighbors (WB, 2013).

The low yield per hectare can be attributed to dependence on subsistence farming, poor access to improved seeds and fertilizers in a timely manner and at affordable prices, and farmers' use of poor farming technologies. For example, about 70 percent of Tanzanian farmers still depend solely on hand-hoes for cultivating their crops. In addition, in 2016/17, the use of fertilizers alone was at about 19 kg per hectare, which is well below CAADP's target of 50 kg per hectare (Budget Speech, 2017).

According to the Ministry of Agriculture, Livestock, and Fisheries, Tanzania's low yield per hectare¹⁰ is also attributed to low use of modern seed varieties. The ERH database reports that a large percent of the country's agricultural land is devoted to primitive seed varieties, and the gap from using modern varieties is higher than in East and sub-Saharan Africa (Figure 4). The results are similar to those reported by others (i.e., NPS), with only 16.8 percent of rural households planting modern varieties on their farmlands in 2010/11 (URT/MAFSC, 2011).

¹⁰For example under normal circumstances, when all agronomic practices are observed; maize yield should be 6 tones/h, but currently in many parts of Tanzania yield is at 1.55 ton/ha (URT, 2013).

Figure 4. Country score on output gap indices



Note: Higher score = greater needs.

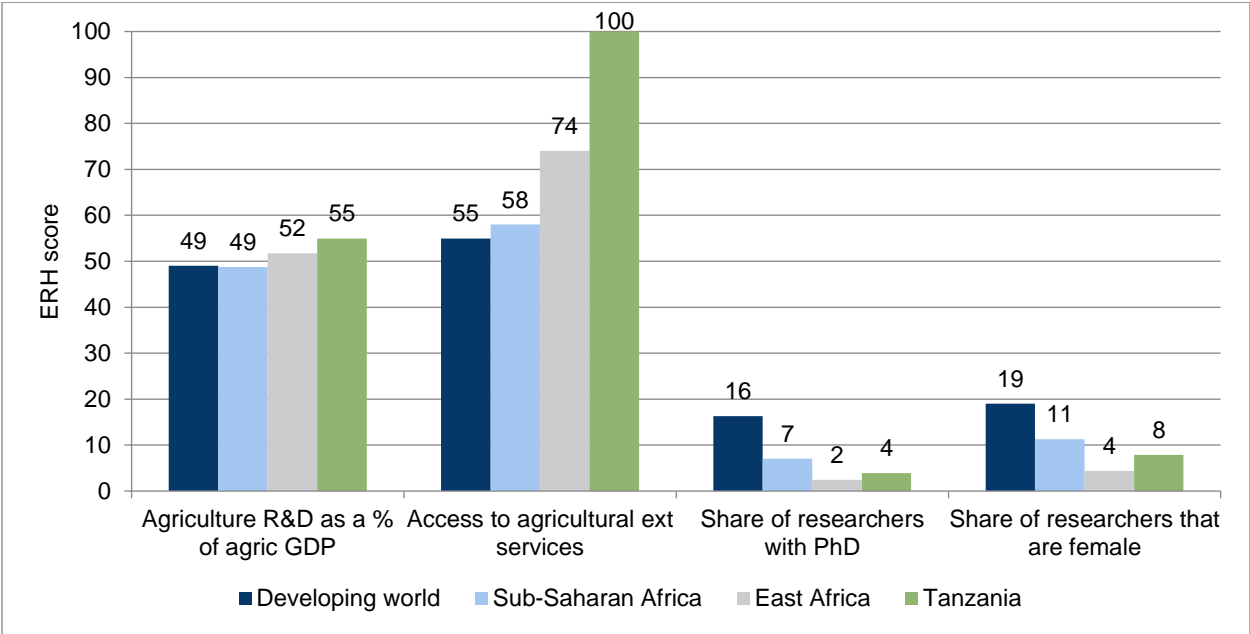
Source: ERH data, 2016.

As reported by stakeholders on the ground (e.g., Ministry of Agriculture, Livestock, and Fisheries, CARE International, and USAID), the low use of modern seed varieties is due to inadequate public and private investment in agriculture training, research and extension, untimely government directives on the use of modern technologies, and lengthy delivery of new varieties to small-holder farmers.

The low yield per hectare is also attributed to low investment in research and development (Leyaro et al., 2014). In line with Leyaro et al. (2014), the ERH database reports that only 0.6 percent of the sector's budget is allocated to research and development; as a result, very few agricultural technologies are invented. It is further shown that, in terms of accessibility to extension services, the country is ranked highly compared to the rest of the world. Tanzania's score of 100 does *not* imply that every farmer in Tanzania has access to agricultural extension services; rather it means that the country is performing significantly better than its peers (Appendix 1). This is explained by the presence of many programs and projects (e.g., ASDP, SAGCOT, Agricultural Marketing Co-operative Societies) and reforms (Local Government Reforms Programs, or LGRP I & II) that aim to reduce the poverty level by bringing services closer to the people and ensuring farmers have access to extension services. Nevertheless, poor dissemination and implementation of the

knowledge obtained, as well as the inability of farmers to adopt the knowledge from the extension service providers, may hinder the country’s success in food and nutrition security.

Figure 5. Share of research skills and extension



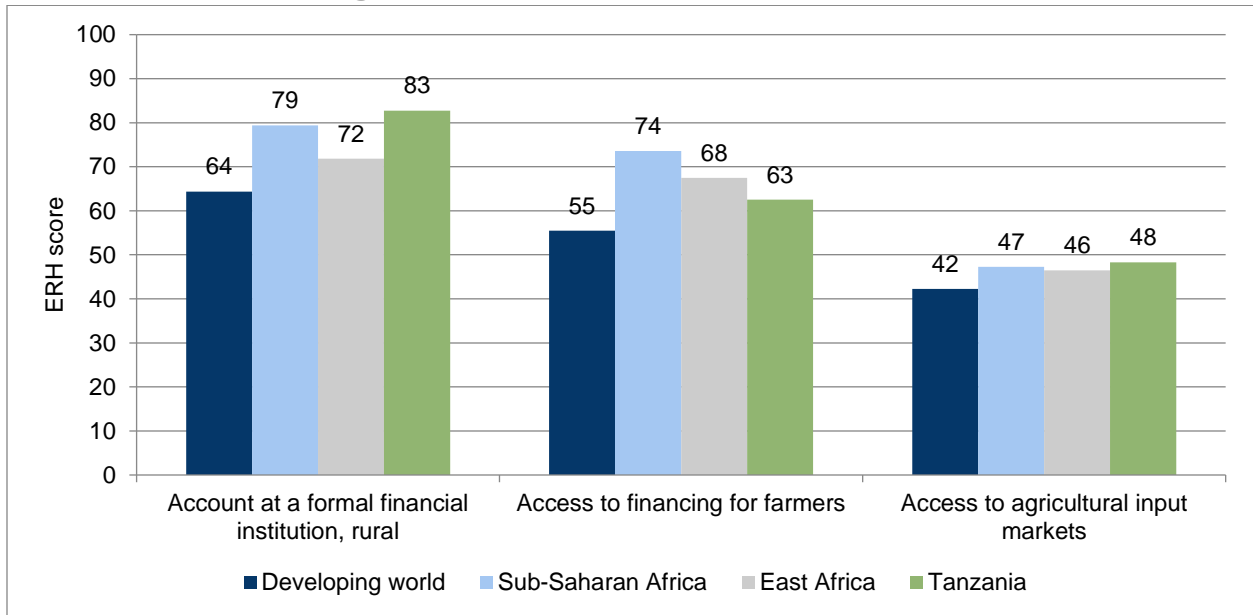
Note: Higher score = stronger policies.
 Source: ERH data, 2016.

III.3.2. Access to productive inputs

Access to agricultural finance

Lack of finance is one of the reasons for low agricultural productivity in developing countries and sub-Saharan Africa in particular. Tanzanian farmers’ access to finance is on average poor, but better than its regional peers (Figure 6). Lack of financial sources hinder farmers from accessing modern technologies such as improved seed varieties, mechanization of the sector, and value addition of agricultural products.

Figure 6. Access to financial institutional

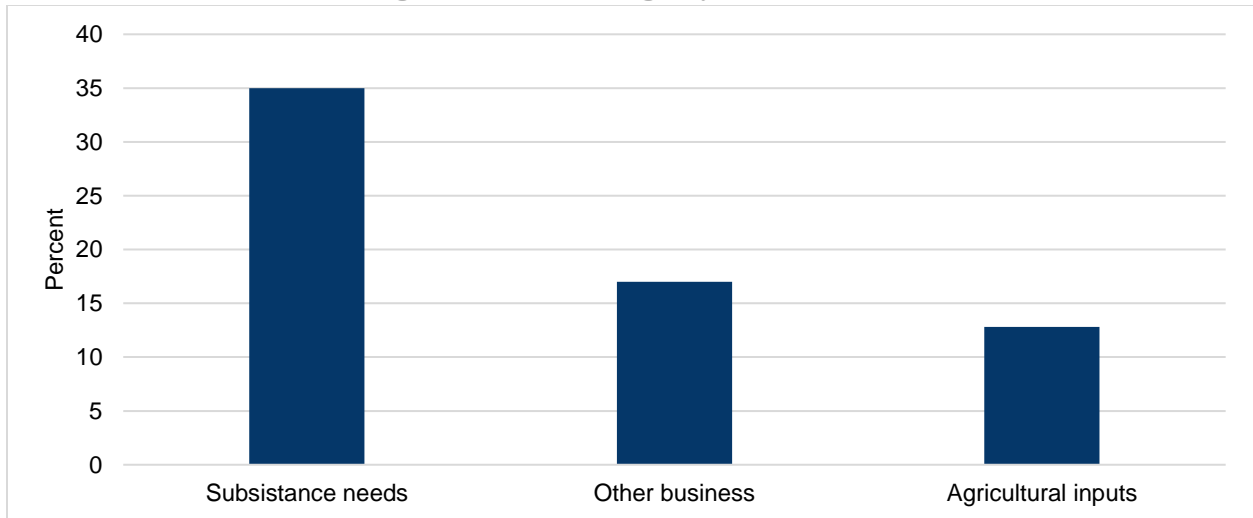


Note: Higher scores = greater needs/bigger gaps.

Source: ERH data, 2016.

In Tanzania, farmers find it difficult to obtain financial services within their area, and, when credit is obtained, it is not invested in agriculture (Ahmed et al., 2012). Indeed, the 2012/13 NPS data shows that very few loans obtained are invested in agriculture in rural areas (Figure 7).

Figure 7. Loan usage by households



Source: Authors' own calculation, NPS dataset wave 3, 2012/2013.

As reported by NAFKA (a Feed the Future project), one of the major constraints hindering farmers from accessing agricultural finance from formal institutions is the fact that, in Tanzania, institutions engaged in providing this service are commercial banks (over 90 percent). These

banks are profit-oriented and consider rain-fed agriculture a risky business; therefore, they charge high interest rates and require very high collateral. On the other hand, community banks and cooperatives that are largely owned by farmers play a limited role (less than 10 percent) in the sector. As a result, only 3 percent of agriculture households in Tanzania access agricultural loans from formal financial service providers (ESRF, 2012). However, with mobile account or credit services through mobile money services, the number of farmers with access to a credit should increase. At the moment, though, the loans from mobile services are too small to transform agriculture.

Access to input markets

Regarding access to agricultural input markets, the ERH data indicate that the country's performance is about average when compared to East Africa, sub-Saharan Africa, and the developing world (Figure 6. Access to financial institutional Figure 6 and Appendix 1). According to the Ministry of Agriculture, Livestock, and Fisheries, a major obstacle to access to agricultural input markets is variation in input prices over time, caused by changes in national policies and programs on inputs supply such as private sector involvement and government voucher system. The latter was created to reduce the burden small-holder farmers suffer due to input price fluctuation.

From the late 1980s, the private sector took over the government's role of supplying inputs. Despite the fact that the private sector improved access to input markets, from the late 1980s onward, the use of inputs, especially fertilizer, became stagnant overall (though there was an increase in uptake of both seeds and inorganic fertilizer in the Southern Highlands). Because the industry is determined by the market, there is inequality in input distribution; hence, poor farmers have had low access to input market chains (see Appendix 3). Furthermore, government overregulation of the input market chains accompanied by charges and levies make input prices (especially fertilizer) unaffordable; finally, limited quality control has led to low quality inputs, which have discouraged farmers from using them.

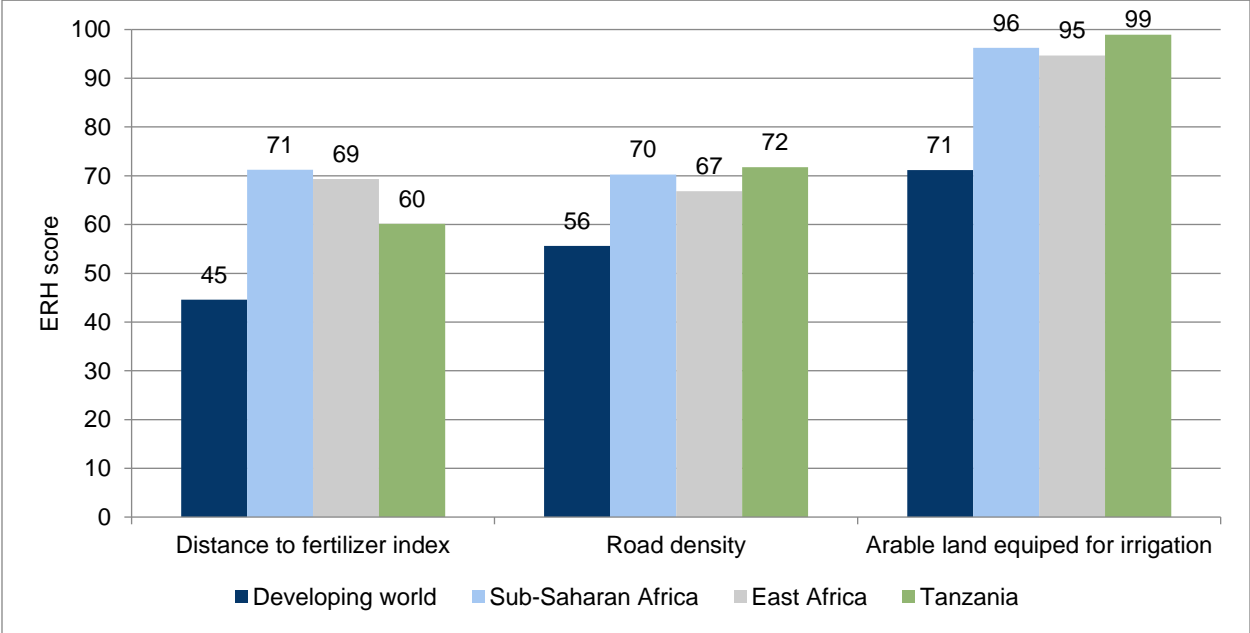
To reverse the situation and lower production cost and delays, the government enacted special regulations in the Fertilizer Act of 2017 and so is again taking over the role of procuring fertilizer in bulk. The move can help lower the prices of inputs, especially fertilizer, but it also can affect competition in the input market (especially companies who have invested in fertilizers other than the NPK fertilizer) and kill the existing private sector that provides private extension services to create demand for their products. Hence, this intervention could also compromise quality and

lower the growth of the sector (especially where private extension service is a solution for poor public extension services).

Infrastructure gap

Poor infrastructure, especially rural roads, increases production costs and hence the cost of transporting food to consumers, which in turn affects food availability, eventually lead to food and nutrition insecurity. Improving agricultural infrastructure is deemed essential to the country’s efforts to achieve SDG2 by 2030. The ERH data show that Tanzania performs poorly in road networks compared to the rest of East African countries and the world (Figure 8). The findings are in line with the NBS (2014), which reports that only 24 percent of the country rural population is living within 2 km of an all-weather road.

Figure 8. Agricultural infrastructure gap



Note: Higher scores = greater needs/bigger gaps.
 Source: ERH data, 2016.

With regard to arable land equipped for irrigation, Tanzania has vast potential, but little of it has been exploited: According to the ERH database, Tanzania ranks poorly in this category, however, is endowed with water bodies and valleys that are suitable for irrigation. The potential land for irrigation is about 29.4 million hectares out of which 2.3 million hectares have high irrigation potential, 4.8 million hectares, medium irrigation potential, and 22.3 million hectares, low irrigation potential (URT, 2013). According to the Ministry of Water and Irrigation, out of the 29.4 million hectares under cultivation, only about 450,392 hectares are currently under irrigation.

Also according to the Ministry of Water and Irrigation and USAID through NAFKA, the harnessing of this potential is constrained by low investment by both the government and the private sector. Furthermore, USAID through NAFKA notes that the technical capacity of most small-holder farmers to develop this potential and sustainably manage irrigation infrastructure is very low. However, through agricultural programs like CAADP and SAGCOT, the government has committed to investing in irrigation schemes (URT, 2013). The 2007 national irrigation policies and the waiver of value-added tax on irrigation equipment in 2013 are some of the strategies already in place.

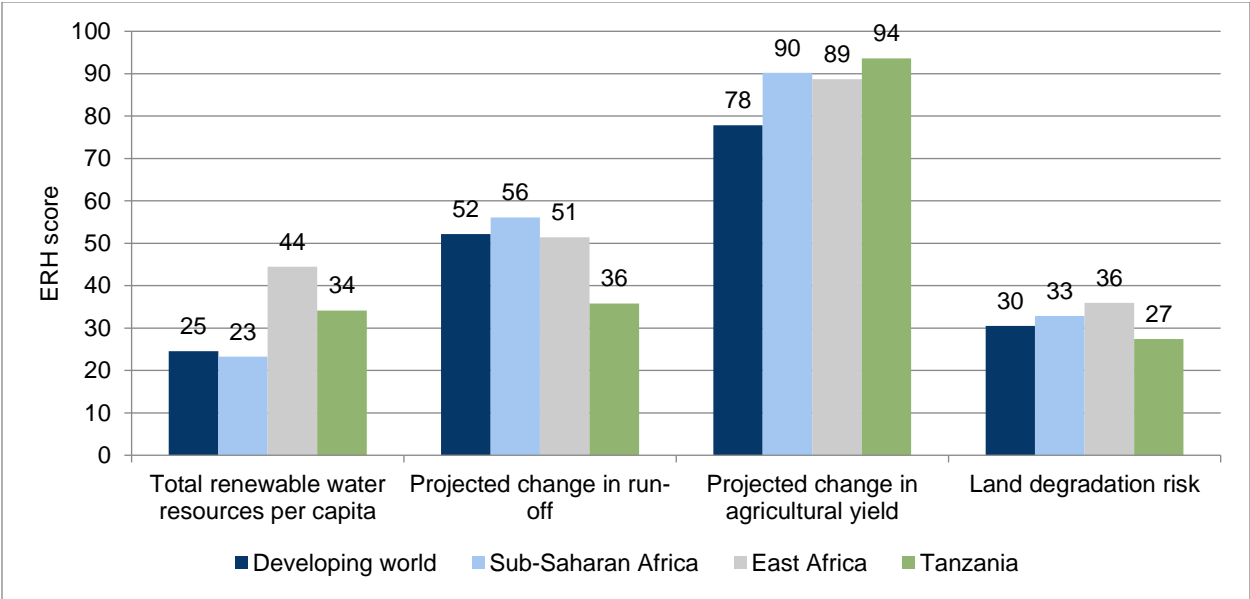
III.4. Vulnerability to environmental, production, and consumption shocks

When the agricultural sector is largely based on small-holder farmers and farming is largely rain-fed, countries become vulnerable to environmental, production, and consumption shocks. Under rain-fed agriculture, unfavorable weather results in poor agricultural performance. In addition, low labor and land productivity due to the application of poor technology and overreliance on unreliable and irregular weather conditions are also concerns in efforts to achieve SDG2. Studies on sub-Saharan Africa have found a strong linkage between environmental shocks (such as unpredictable onset and end of rainfall and raining period/length) and decreased production and consumption of a balanced diet (FAO, 2016). In countries where the agriculture sector dominates the economy, there are direct linkages between weather and income: Climate change and weather fluctuations translate into income shocks faced by small holders, i.e., their income tends to be highly volatile (Sanga et al., 2014). In addition, when income is based on rain-fed subsistence farming, this link has substantial implications for food security (Barrios et al., 2010; Hsiang, 2010; Bruckner and Ciccone, 2011; Dell et al., 2012). Therefore, reducing environmental effects is crucial for increasing production overall and mitigating consumption shocks—eventually achieving SDG2.

Although environmental shock predictions are less consistent, their effects are impactful. Studies indicate that in the next 100 years, rainfall will decline by 10 to 20 percent of the 1950-2000 average rainfalls in East Africa (Sanga et al., 2014; Agrawal et al., 2003). The ERH data indicate that, compared to sub-Saharan Africa, Tanzania has below-average water resources and above-average land degradation risk. The country is predicted to be less affected by changes in run-off than its neighboring East African countries and sub-Saharan Africa as a whole. But climate change is predicted to affect its agricultural yields more (Figure 9). These results are line with that from National Environment Management Council, which attribute the situation to the fact that

Tanzania is endowed with nine large water basins and a significantly large share of all the Great Lakes of East Africa, unlike its neighbors. Tanzania is thus at a lower risk of being affected by environmental shocks like other countries in the region. Thus, if this potential is tapped by investing on irrigation infrastructure, Tanzania can become a net exporter of food to neighboring countries and sub-Saharan Africa.

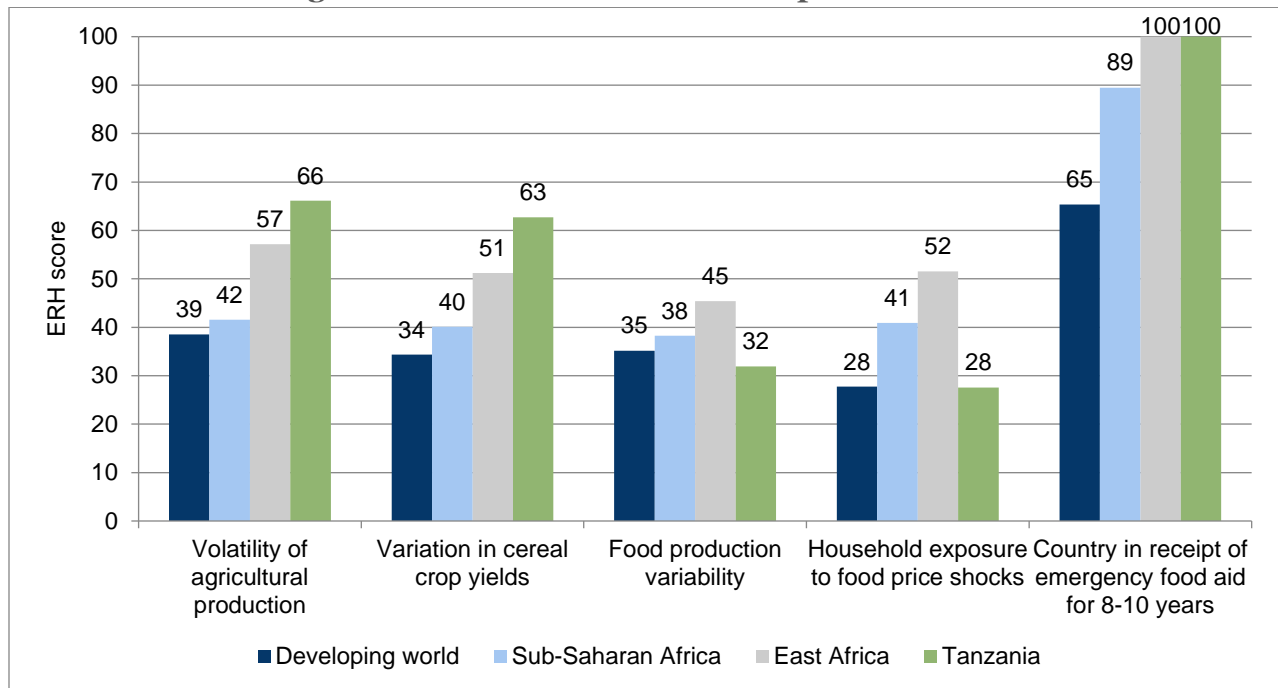
Figure 9. Environmental shocks



Note: Higher scores = greater needs/bigger gaps.
 Source: ERH data, 2016.

However, the ERH database indicates that Tanzania is more vulnerable to the volatility of agricultural production and variation in cereal crops yields, which position the country as one of the largest recipients of food aid in the region. The country’s score on this index is higher than its neighboring countries, sub-Saharan Africa, and the developing world (66 compared to 57, 42, and 39 respectively) (Figure 10). These results concur with that of the Ministry of Agriculture, Livestock, and Fisheries, which attributes this trend to the fact that much of the agriculture practiced in Tanzania is rain-fed and the country faces high variability of rainfall from season to season. This situation significantly affects crop production, which in turn translates to farm households’ vulnerability to consumption shocks.

Figure 10. Production and consumption shocks



Note: Higher scores = greater needs/bigger gaps.

Source: ERH data, 2016.

Though the country performs relatively better on household exposure to food price shocks compared to other countries in the region (Figure 10), evidence from the literature indicates that the country does suffer from price shocks resulting from inter- and intra-seasonal weather fluctuations. When these fluctuations adversely affect agricultural production, the widespread reduction in supply of main staple crops causes a significant increase in local food prices, especially in isolated rural areas (Brown, 2014). Also, the higher incomes spent on food is a clear indication of households' exposure to food price shocks. The National Food Reserve Agency (NFRA) acts as a price shock absorber, where when operating effectively it buys at a fair price when there is surplus and sells its reserves during a deficit in order to absorb the price shocks.

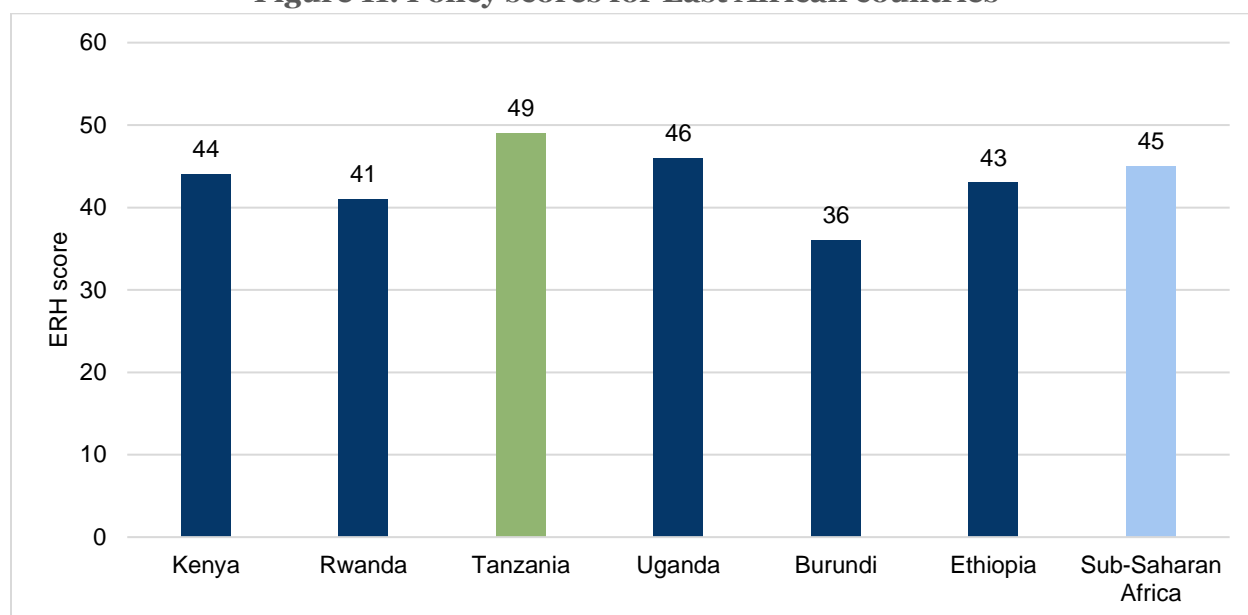
IV. Policies to address the needs

Assessing the role played by the country's policies in addressing the needs is one of the very important aspects in tracking the country's progress in achieving SDG2. Tanzania, like other countries in the region, has several policies, projects, and programs within which SDG2 targets are embedded. These include: the National Food and Nutrition Policy of 2016, currently under review; the Tanzania Five Year Development Plan (FYDPs II & III); the NMNAP 2016/2017-2020/21; the CCM (Chama Cha Mapinduzi) manifesto; ASDP II; SAGCOT; the Business Environment Strengthening for Tanzania program (BEST); CAADP; TAFSIP; the DADPs; the Local Government Reform Program (LGRP); the Feed the Future project; the establishment of the Tanzania Agricultural Development Bank (TADB) and the Tanzania Land Bank Parcels (LBP); and projects to ensure low interest-long term loans in agriculture under the Tanzania Agricultural Development Bank .

IV.1. Agricultural economic policies

Looking at agricultural economic policies, which include policies that are geared to encourage and increase rural investment, improve agricultural crop pricing, minimize trade distortions, boost research and extension, and enhance political prioritization, Tanzania has fairly good policies compared to other East African countries. The ERH database gives Tanzania a score of 49 out of 100 on policies, measured in terms of how good FNS-related policies and government development plans a country has had in the last three years. The country ranks 64th in the developing world (Figure 11).

Figure 11. Policy scores for East African countries¹¹



Note: Higher scores = stronger policies.ⁱ

Source: ERH data, 2016.

IV.1.1. Rural investment climate

According to the World Bank (2008b), a rigorous rural investment climate and rapidly expanding agriculture are basic ingredients of a dynamic rural economy. The investment climate consists of the political, administrative, economic, and infrastructural conditions for getting a reasonable return on investment as perceived by potential private investors. The ERH data show that Tanzania scores higher than the average for East African countries on investment climate for rural business and ease of doing business in general (Figure 12).

However, according to the World Bank's *Doing Business* report, compared to other economies in respect to regulatory best practices to ensure ease in doing business, Tanzania, which ranks 132 out of 190 countries, fares worse than Kenya (which ranks 92nd) and Uganda (115th) but is better than Ethiopia (159th). Overall, the business environment in Tanzania has more or less remained in the same position here since 2012, but has actually moved backwards in terms of protecting minority investors¹² (from 97/183 in 2012 to 145/190 in 2017); starting a business (from 123/183 in 2012 to 135/190 in 2017); and paying taxes (from 129/183 in 2012 to 154/190 in 2017).

¹¹ The policy scores include measurement of the Agricultural Economic Policy and Political Prioritization. Where the Agricultural Economic Policy include investment measurement of rural investment climate, pricing and trade distortions that affect national agricultural markets, and the level of expertise in science, technology and extension services. Political prioritization includes measurements of the government's prioritization of agriculture, nutrition, rural social assistance, and the enabling environment for women farmers.

¹² Minority investors are defined as holding a stake in a certain company that is not large enough to allow them to control the company.

However, it has improved significantly on ability to get credit (from 98/183 in 2012 to 44/190 in 2017) (*Doing Business*, 2012; 2017)—though this finding comes with a caveat: According to stakeholders (i.e., NAFAKA), much of these credits go to medium and large-scale farmers, not small holders.

Business environment deterioration was reported by two of the interviewed stakeholders, who noted that this weakening is due to the new fertilizer regulation, long time to export, and multiple regulations and taxes. The government is planning to address these some of these hindering issues: For example, in the 2017/18 Budget Speech, the Ministry of Agriculture, Livestock, and Fisheries promised to abandon 80 out of 139 payments/taxes related to agriculture.

According to the ERH data (Figure 12),¹³ Tanzania scores relatively higher than the rest of East Africa, sub-Saharan Africa, and the developing world on policies that guide access to land and water for agriculture. In conditions related to access to land and water for agriculture, Tanzania far outperforms its neighbors, sub-Saharan Africa, and the developing world more broadly. (also, see Appendix 3).¹⁴ Despite this progress, farmers still depend on rain-fed agriculture, and as noted above, the percent of arable land equipped with irrigation facilities is very low (less than 2 percent of total arable land is equipped for irrigation). Investment in irrigation schemes is one of the key issues that stakeholders identify as key for poverty alleviation, food security, agricultural sustainable growth, and achieving SDG2. To address these challenges, the government of Tanzania and its development partners have made irrigation development a high priority. Irrigation development is prominently cited in all major agricultural and poverty reduction policies and strategies.

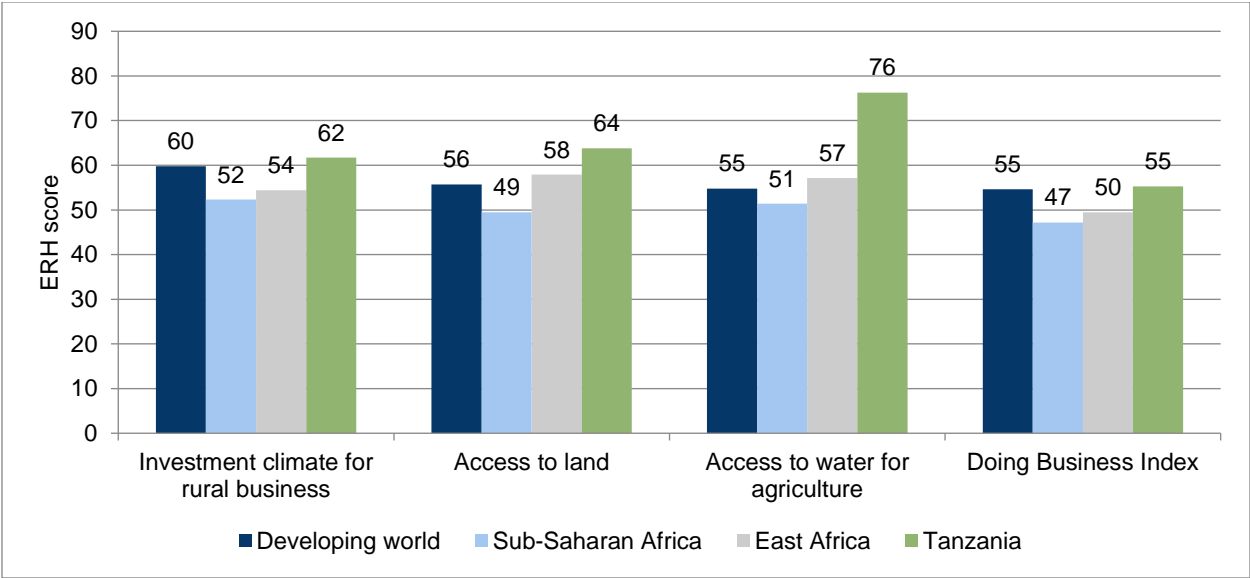
Notably, the high score on access to land reported from the ERH database is not felt on the ground. For example, very few farmers own land registration titles (Certificate of Customary Right of Occupancy, a group certificate of customary land of ownership and certificate of village land). By January 2009, only 10,397 villages had been registered, 8,700 villages had undergone a preliminary survey, 753 had obtained a village land certificate, 14,017 had received CCROs, and 30 villages had registered land (Kironde, 2009). However, there have been some programs to support the land tenure system, including: (1) the Land Tenure Support Program (LTSP) (2016-2019), expected to tackle weaknesses in the land administration system to ensure good land tenure regulations—including planning, surveying, and issuing titles on village land; and (2) Feed

¹³ The figure reports scores from scaled data.

¹⁴ Appendix 3 reports raw data.

the Future Tanzania Land Tenure Assistance (LTA) (2015-2019) aiming at developing a low-cost, participatory land registration process. In addition, the 1999 Land Act and 1999 Village Act are under review, and a new constitution to allow women equal land ownership as men is also under process. Therefore, more efforts are still needed to ensure proper strategies, programs, and policies are in place to allow the country to achieve SDG2.

Figure 12. Rural investment climate

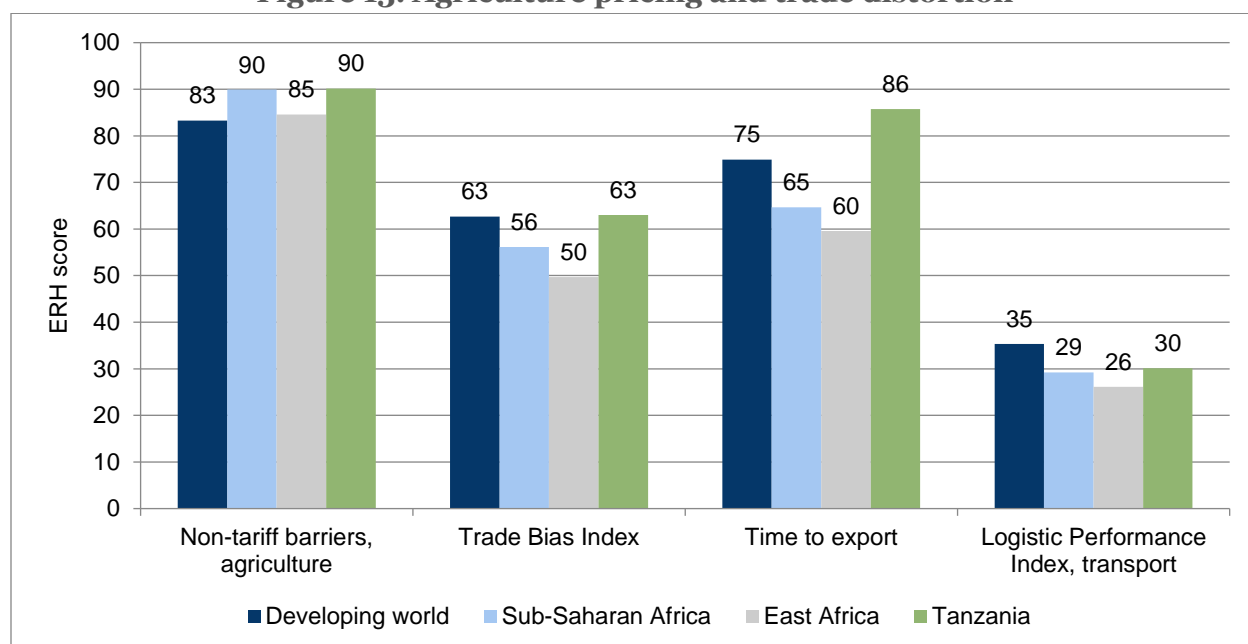


Note: Higher scores = stronger policies.
 Source: ERH data, 2016.

IV.1.2. Agriculture pricing and trade distortion

Generally, the country is performing fairly well on agricultural crop pricing and trade protection. In particular, it scores very high in terms of the domestic-to-border-price ratio; the ratio of protection on agricultural tradable in comparison to non-agricultural tradable; the number of non-tariff barriers on agricultural products; and time to export. Tanzania’s higher scores relative to East Africa, sub-Saharan Africa, and the developing world imply that policies related to agricultural pricing and trade openness are fairly good (Figure 13). These trends encourage investment in agriculture, which will eventually increase production, leading to fewer food crises within the country and around the region. However, Tanzania has a very low score on logistic performance, which is important for doing business/trade and food distribution. For example, Tanzania is food self-sufficient at the national level (food supply ranges between 2,133-2199 kcal/capita/day), but has localized food deficiencies at the district, village, and individual level, mostly attributed to poor logistic performance (as demonstrated in Figure 13).

Figure 13. Agriculture pricing and trade distortion



Note: Higher scores = stronger policies.

Source: ERH data, 2016.

IV.2. Political prioritization of agriculture and nutrition

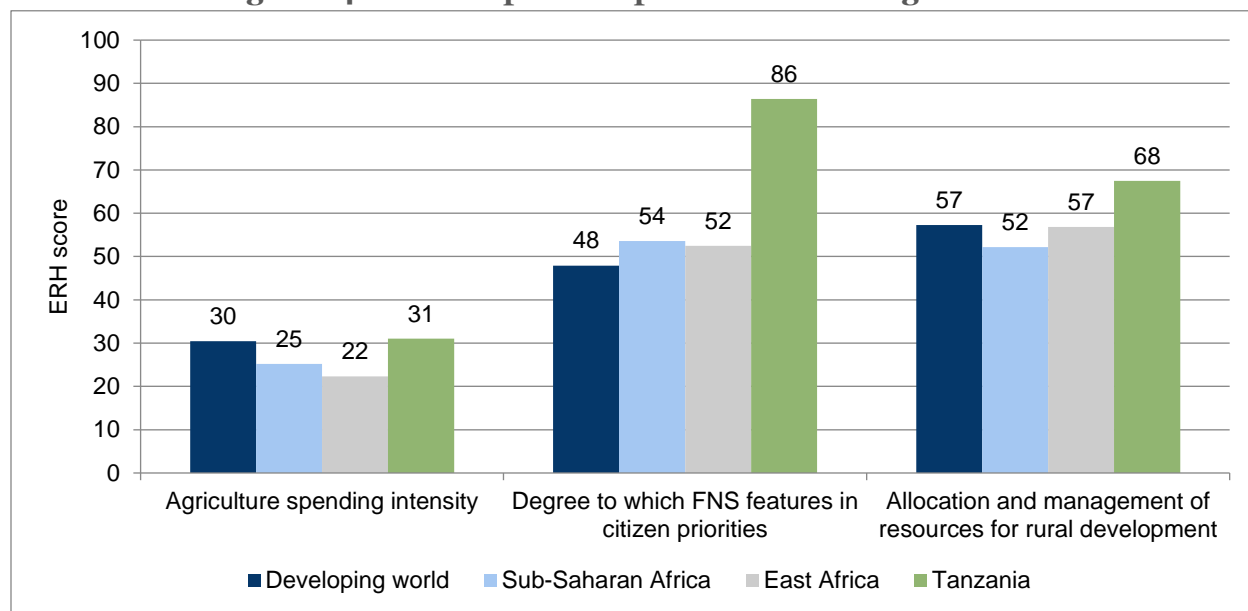
IV.2.1. Political prioritization in agriculture

Prioritization and resource allocation are considered important aspects in achieving SDG2 (see Appendix 3). Tanzania’s prioritization of agriculture is uneven, as seen in Figure 14. For example, ERH data indicate that Tanzania scores low in terms of its spending in agriculture as a percent of its agricultural GDP—it spends less than 8 percent of its agricultural GDP on national agriculture. However, the country scores high (68) when it comes to allocating and managing resources for rural development. The two indicators contradict each other, suggesting that the government has plans and strategies setting high priorities on agriculture and rural development, but, on the ground, little funding is committed for agriculture and rural development. Such low expenditure in agriculture results in poor performance in agriculture production and productivity, hence a lack of growth and development in the rural areas.

According to the ERH database, Tanzanians list affordable and nutritious food as 1 out of 6 of their listed priorities (Figure 14), showing that affordable and nutritious foods are a priority for more than 50 percent of the Tanzanians—a higher result than the African average. However, these findings do not translate into what is happening on the ground. Stakeholders have pointed out poor knowledge of a balanced diet as one of the biggest constraints to nutrition security in Tanzania: A majority of the population cannot differentiate food from nutrition (interviews with

stakeholders on the ground-Feed the Future; DFID; WB consultant). In addition, the literature, the NPS, and the ERH needs assessment show that access to food, protein supply, dietary diversity, and malnutrition is still a problem for a majority of the population.

Figure 14. Score of political prioritization in agriculture



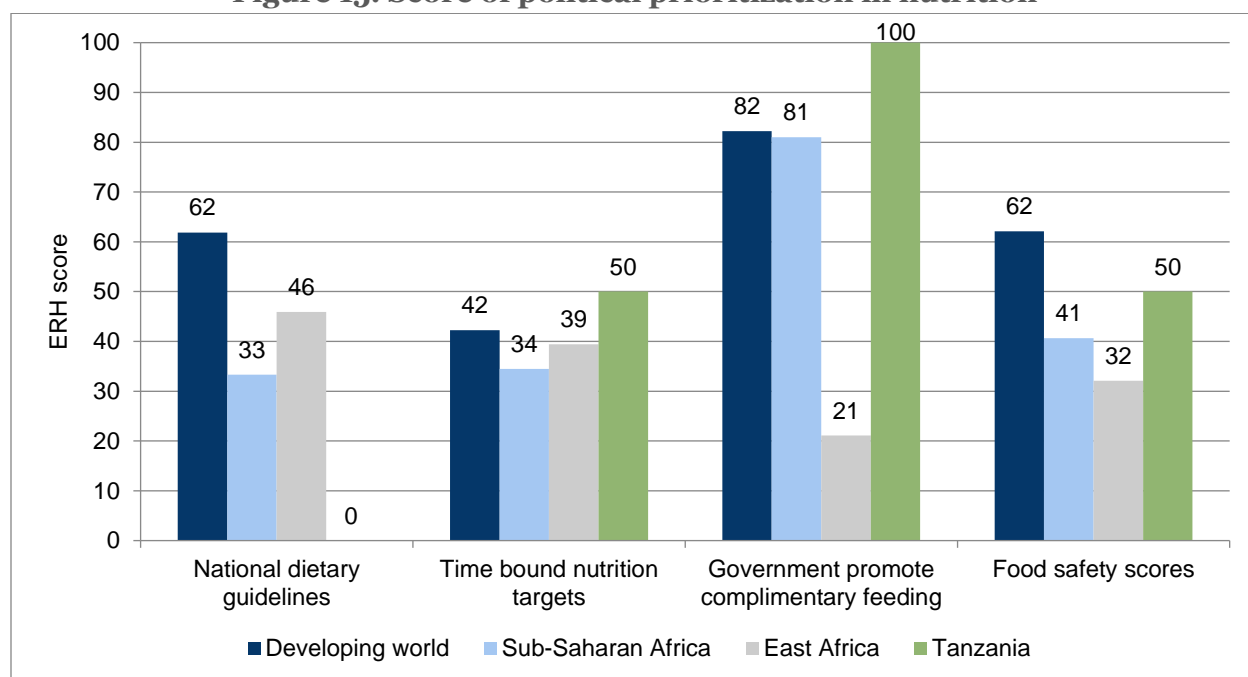
Note: Higher scores = stronger policies.

Source: ERH data, 2016.

IV.2.2. Political prioritization on nutrition

Tanzania is performing relatively better than the rest of the world in terms of its nutrition policies and priorities. Tanzania scores very high in its priorities on promoting complementary feeding practices for children aged between 6-9 months and in promoting and educating mothers on continued breastfeeding for children aged between 12-23 months. However, in Tanzania, infants starting solid foods still lack adequate food in terms of energy, protein, vitamin A, and iron (Muhimbula and Issa Zacharia, 2010), compounding to the problem of malnutrition (FAOSTAT 2014).

Figure 15. Score of political prioritization in nutrition



Note: Higher scores = stronger policies.

Source: ERH data, 2016.

IV.2.3. Political prioritization on rural social assistance

Tanzania performs well in terms of its *coverage* of social safety net programs; however, it performs poorly on the *adequacy*¹⁵ of the programs (Figure 16). For example, during the 2008-2009 round of the NPS survey, the 2010-2011 round and the 2012-2013 round, 2.2 percent of the households in Tanzania were consistently poor, 18.5 percent were poor one round, 8.1 percent were poor in two rounds, while 7 percent were consistently food vulnerable during the three round waves (NBS, 2014).

Since 2016, the Tanzania Social Action Fund (TASAF) increased its handouts from \$5/month to \$10/month and mainstreamed nutrition in its training packages that train the beneficiaries on selecting a cost-effective, nutritious diet. The social safety net program is, in addition, putting in more effort by working with DFID to determine an adequate threshold amount that can be used to completely lift a poor person out of poverty after the beneficiary graduates from cash transfer to livelihood enhancement stage.¹⁶ Furthermore, the government, through the local government

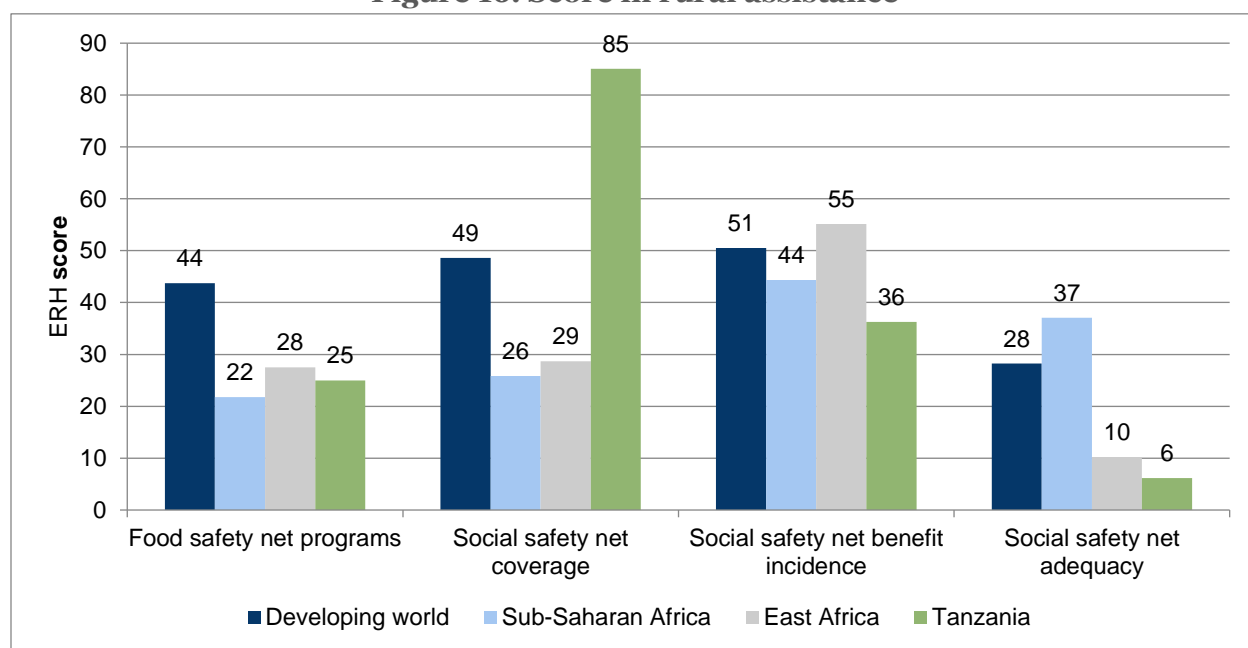
¹⁵ Social safety net adequacy measures the percentage of the total transfer amount received by all beneficiaries in poorest quintile (rural) as a share of the total welfare of beneficiaries in that quintile, for social assistance.

¹⁶ Interview with DFID representative.

authority (LGA), also increased its budget allocation for health services to children under five from \$0.25/year to \$0.5/year per capita in the 2015/16 budget allocation (stakeholders, MoH).

According to the ERH database, Tanzania scores low on prioritizing food safety net programs, probably because Tanzania does not have a set program for feeding schoolchildren and providing food vouchers. However, through the National Food Reserve Agency, the government redistributes food from food surplus areas to food deficit areas. However, the effectiveness of this program remains unknown.

Figure 16. Score in rural assistance



Note: Higher scores = stronger policies.

Source: ERH data, 2016.

IV.3. Do the country's policies address its needs?

The National Development Vision 2025, which is the main national development strategy in Tanzania, places considerable emphasis on addressing the needs listed in the SDG2.

To achieve this goal and simplify implementation, the country has broken down the Vision into three five-year development plans. The country is facing the problem of raising resources to finance the programs, so it hopes that breaking down the program into different sections will increase the best use of available resources. As agriculture is the focal sector for addressing SDG2 targets, different programs are underway:

1. The Agricultural Sector Development Programs (ASDP I & II (2006-2012; 2013-2020)) are sector-wide investment programs designed to implement the Agricultural Sector Development Strategy (ASDS). The programs are government-guiding tools for implementing the country's agricultural development initiatives (ESRF, 2010). ASDP aims at increasing productivity, profitability, and farm incomes through: (1) facilitation of farmers' access to agricultural knowledge, technology, marketing systems, and infrastructure and (2) improved regulation and policy environment that promote private sector investment in agriculture. Projects under ASDP I included:

- Strengthening the role of the National Food Reserve Agency (NFRA), NFRA purchases food crops from farmers and warehouses in surplus areas at a minimum support price, then distributes the food at a subsidized price in food deficient areas; during 2007-13, NFRA distributed grains at a subsidized price (of 50Tshs/kg against a market price of 350Tshs/kgs) to an average of around 1.2 million people in food deficit areas (FAOSTAT 2014).
- Reintroducing the input subsidies programs (called the National Input Voucher Scheme (NAIVS)), which provided access to fertilizer and seeds through subsidized input package for maize and rice. Although the program was design to reach 2.5 million eligible beneficiaries across 21 regions in Tanzania; only 1.5 million households were reached in 2009/10 and 2 million in 2010/11. This subsidy program helped small-holder farmers harvest more than 2.5 million tons of additional maize and rice grain. On average, farmers increased maize yield by an average of 433 kg/acre and paddy by an average of 263 kg/acre. The NAIVS program also aimed at aiding participants in graduating from the subsidized program to purchasing commercial inputs. Forty-seven percent of the graduates who had never tried improved inputs prior to NAIVS continued to purchase seeds, while 19 percent continued to purchase fertilizer; on the other hand, two-thirds of those who had experienced improved inputs prior to the NAIVS program continued to purchase seeds while 44 percent continued to purchase fertilizer after graduating (World Bank, 2014).
- Introducing the Warehouse Receipt System¹⁷ under the Warehouse Receipt Act of 2005. Since 2001, the WRS has been active for coffee and cotton, but in 2007 the

¹⁷ The system gives agricultural producers access to credit by allowing them to borrow against receipts for goods stores in independently managed warehouses (Wehling and Garthwaite, 2015).

government used farmers' organizations or SACCOs to increase coverage for cashew nuts, rice, and maize (FAOSTAT, 2014).

2. ASDP II is under way once the ASDP I review is finalized. ASDP II's main objective is to transform the agricultural sector towards higher productivity, reach commercialization level, and improve small-holder farmer income for better livelihoods, food security, and nutrition. The ASDP II has four components that aim to enhance:

- Sustainable water and land use management;
- Agricultural productivity and profitability;
- Commercialization and value addition; and
- Sector enablers, coordination, and monitoring and evaluation.

3. The Southern Agricultural Growth Corridor of Tanzania (SAGCOT) is a public-private partnership (the government, the private sector, and international donors) that aims at mobilizing \$3.5 billion of investments in agriculture; transforming 350,000 hectares of arable land into profitable production; lifting 10,000 small-scale farmers into commercial farming; creating 420,000 new job opportunities; and generating \$1.2 billion in annual revenue by 2030. Through coordinated multi-stakeholder efforts, the partnership aims to transform agriculture in the Southern Highlands; promote sustainable resource management; leverage public and private investments to spur growth; and promote small-holder engagement models that enable inclusivity. SAGCOT focuses on:

- A value chain approach to allow for scale—the SAGCOT center has started working with the potato, rice, chicken, milk, soya, tea, and tomato value chains.
- Forging strategic partnerships to create synergies, e.g., the center works with big-input companies like Silver Lands (which sells day old chicks); ASAS (which is in the milk-processing industry); the Netherlands (which sells potato seeds); and YARA (which is a Norwegian fertilizer company). The big input businesses provide extension services to farmers at no cost and in return get business/market for their inputs;
- Addressing enabling environment constraints, by undertaking reforms, i.e., amend various regulations to enhance their effectiveness in supporting agricultural development. SAGCOT acts as a broker between the government (policymakers),

big business, and farmers. For example, SAGCOT has been involved in changing the Seed Regulation Act to favor commercialization of the potato value chain and facilitated the government's signing of a memorandum of understanding for \$380,000 with the Netherlands to increase potato production in Tanzania and develop the local potato industry. SAGCOT is also involved in strengthening the agricultural joint sector review and fostering policy dialogue and support activities for the Policy Analysis Group in Tanzania; and

- Leveraging infrastructure investment by promoting infrastructure development that supports agribusiness and small-holder farmers in the Southern Highlands.

SAGCOT already has reported some success: Through use of new potato seedlings distributed by SAGCOT, farmers in Njombe have increased their production from 20 to 25 sacks per acre, to 60 to 80 sacks per acre (*The Guardian*, January 2017). In addition, according to *The Guardian*, the mindsets of farmers working with SAGCOT have changed from traditional to commercial farming and many have tripled their production.

Other country policies and strategies that are put in place and try to address the needs include:

- The establishment of Tanzania Agricultural Development Bank (TADB) that aims to ensure agricultural loans are obtained at lowest interest rates possible; hence ensure food self-sufficiency and transformation of agriculture from subsistence to commercial farming.
- The establishment of the Land Bank Parcel (LBPs), which is a database of titled land parcels maintained by the government through the Tanzania Investment Center (TIC) to facilitate investment in agriculture.
- NMNAP, which includes both the national and global goals and has now a new Action Plan to be launched and discussed in September 2017. The Action Plan includes the implementation of SDG1 and SDG2.

IV.4. A disconnect between policy and practice

Despite the apparent policy commitment to transform the agriculture sector in Tanzania, agricultural productivity and food supply still do not match the needs. The majority of people employed in the sector are poor with high food and nutrition insecurity (see NBS, 2012; ICF, 2011; TFNC, 2012). The ERH database also show that a large number of people lack enough money to buy food, suffer high rates of malnutrition, have low productivity, and are vulnerable to

environmental shocks. From this evidence, we can clearly see that Tanzania is yet to achieve the much-needed structural transformation for increasing agricultural production, income, as well as food and nutrition security.

On the other hand, when looking at all the national and international strategies and policies put in place to combat hunger, poverty, and FNS, one cannot help but wonder what could be going wrong. It seems like the policies and strategies formulated to support agriculture in a more systematic way are not driving the sector toward making FNS targets a reality by 2030.

But according to comments received from interviews with stakeholders, policies and strategies are not the problem. Interviewees pointed out other challenges, including:

1. The pace of policy reforms. The shifts in policies have not been up to speed with changes in issues like demographic changes (the youth bulge), climate change, urbanization, and the emerging middle-income class. Policies need to be reviewed, updated, and refined to reflect the evolution of Tanzania's agricultural sector.
2. A mismatch between policy formulation and actual implementation (poor implementation plans).
3. Infrastructure gaps (roads, irrigation systems, electricity).
4. Poor access to markets (local processing industries, regional and international markets).
5. Low-quality human resources (work ethic, skilled labor, and technical know-how).
6. Unclear coordination and complementarity among related ministries, donors, and NGOs, but acknowledging the NMNAP as a first step towards a coordinated goal.

Further, other stakeholders felt that the government needed to operate like the private sector (i.e., be profit-oriented), allow the private sector to lead in public-private partnerships, and, if possible, allow the private sector to drive agriculture. However, others believe that Tanzania still does not have a good business environment for agriculture—that there are multiple taxes and a complicated taxing system for both agro-processed foods and raw agricultural products. Similarly, there are multiple bodies regulating the same quality attributes. These multiple regulations increase production costs, making the produce too expensive for many poor households.

V. Resources

In Tanzania, the misallocation of resources has historically been a problem. Since its independence in 1961 through 2000, Tanzania strived to eradicate poverty through a roadmap within the first Long-Term Perspective Plan (1964-1980) and the second Long-Term Perspective Plan (1981-2000). However, repeated global economic crises and the country's poor capacity to manage such shocks forced the country to settle for using short-term planning horizons of 1-3 years to guide the economy, hence compromising its long-term goals.

According to the ERH database, most sub-Saharan African countries, apart from Zambia and Mozambique, poorly allocate resources to food and agriculture. Tanzania ranks 91 out of 116¹⁸ countries in terms of overall needs; 64 out of 116 in terms of the overall policies related to food and nutrition; and 92 out of 116 in terms of amount of resources allocated. Clearly, Tanzania has high FNS needs, which are, among other things, linked largely to inadequate resources for implementing policies/plans/programs to close the gaps. As most stakeholders argued, a country may have fairly good policies and adequate allocated resources but still fail to close the food and nutrition gap. For example, Zambia has fairly good policies and resource allocation, but has a bigger FNS gap than Tanzania. From in-depth interviews with various stakeholders involved in closing the food and nutrition gap, all stakeholders reported a lack of resources and heavy dependence on donors as the number-one reason for the big gaps.

¹⁸ According to the ERH report-ERH Index Score:0-100

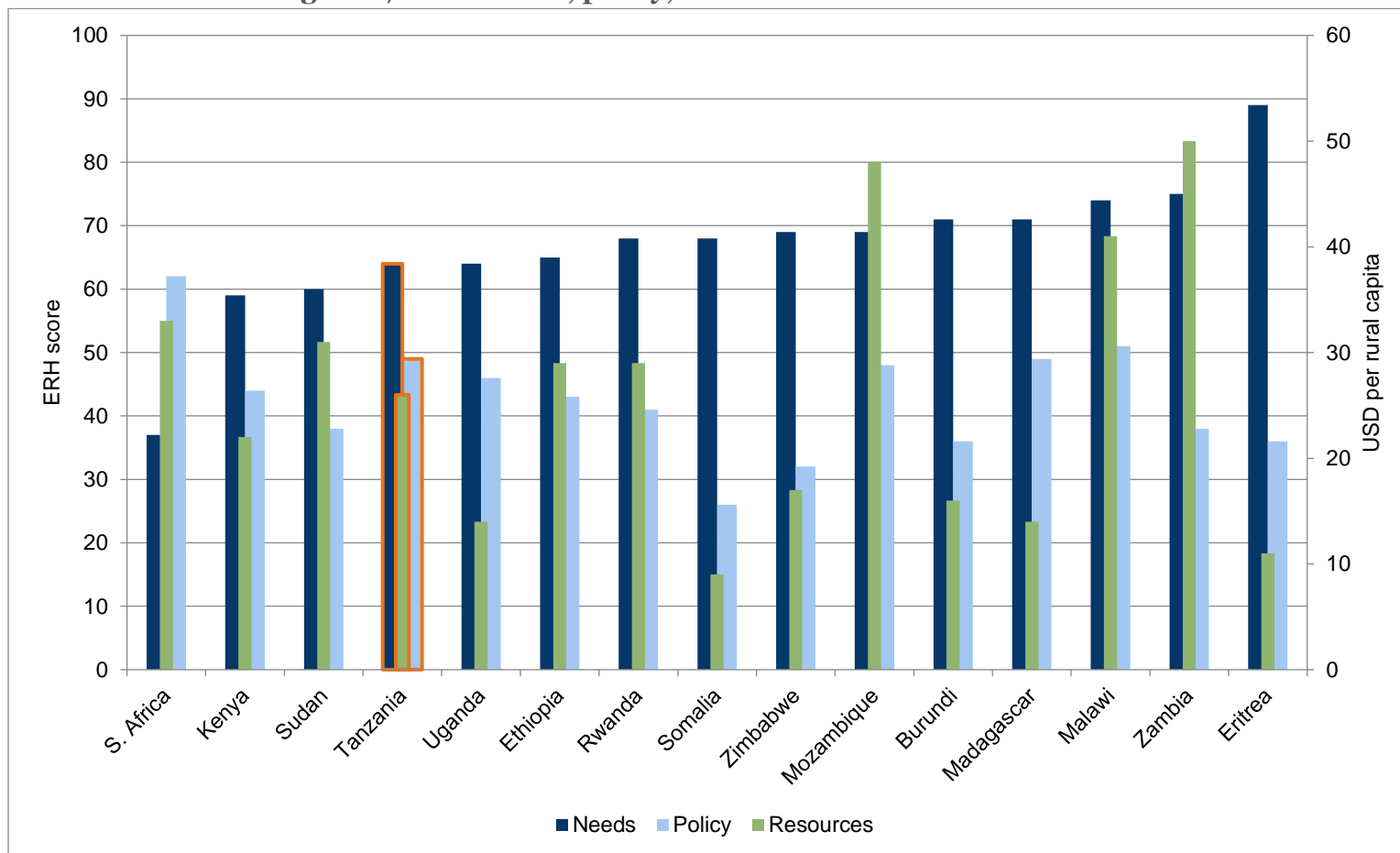
Needs:-Higher scores=Greater Needs; Ranked from Lowest to Greatest Needs

Policy: Higher scores=stronger policies Ranked from strongest to weakest policies

Resources:-is reported in terms of USD per rural capita; Ranked from most to fewest resources allocated

*Note: in the ERH-database, data on private resource allocation and most public resource allocation are missing for Tanzania

Figure 17. ERH needs, policy, and resource scores in select African countries



Note: Needs and policies are reported using the ERH Index scores: 0-100.

Needs: Higher scores = greater needs.

Policy: Higher scores = stronger policies.

Resources: Resources are reported in terms of USD per rural capita; allocates \$33/rural capita.

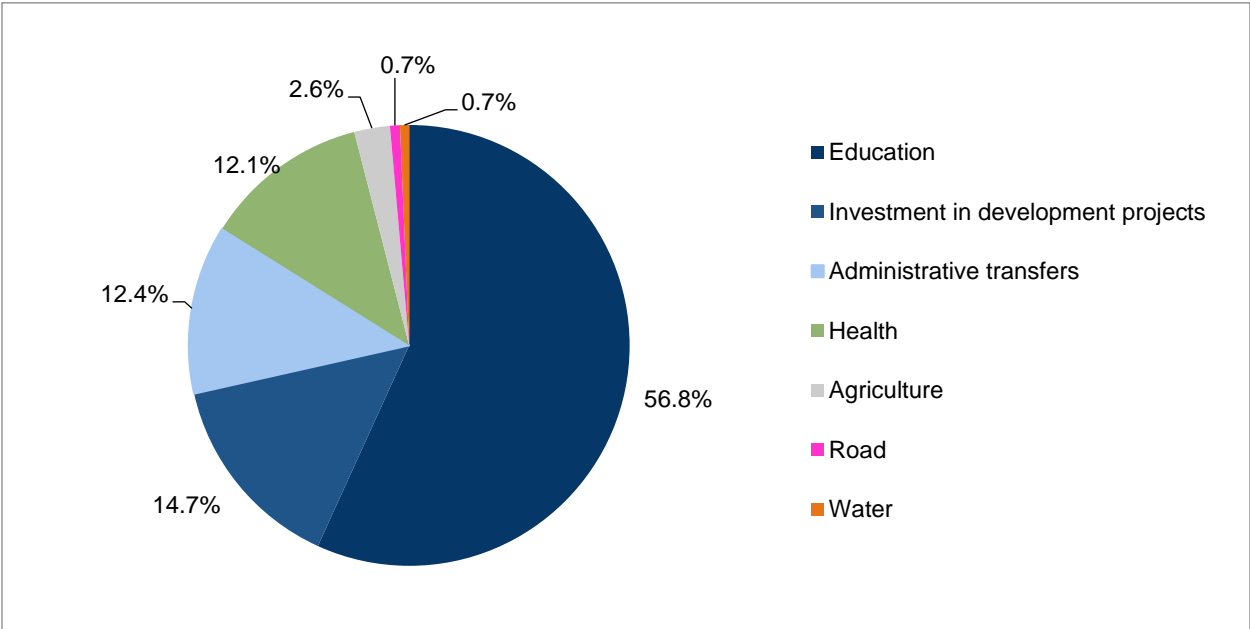
Source: ERH data, 2016.

A lack of resources allocated to the agricultural sector and related sectors are evident in Tanzania’s failure to adequately fund needs related to poverty, food, and nutritional security in its budgets. For example, in the 2015/2016 budget, the government listed four priority areas:

1. Complete the ongoing strategic projects, which mostly include; food, nutrition and agriculture (the FYDPI, MDGs, SAGCOT, CAADP);
2. Invest in human resources;
3. Invest in electricity and water supply projects in rural areas; and
4. The general elections.

But out of the total budget of \$10.7 billion,¹⁹ \$2.8 billion (26 percent) was spent on development projects, while the rest was spent on operational expenses. Money that was allocated to the local government authority (which serves more than 70 percent of the population living in rural areas) came partly from the budget for operations and the budget for development projects (that is part of \$2.8 billion). Under the local government budget, 14.7 percent was allocated to development,²⁰ 0.7 percent was allocated to water, 0.7 percent to roads, and 2.6 percent to agriculture (Figure 18).

Figure 18. Budget allocation for the local government authority (FY 2015/2016)

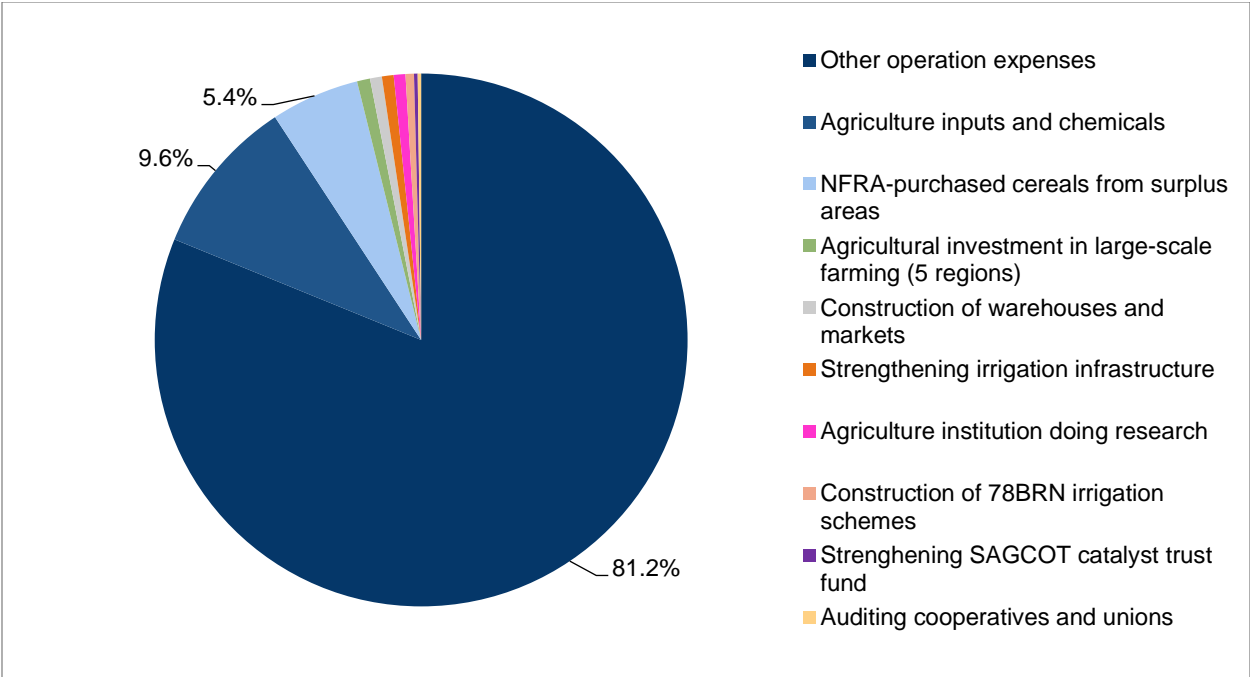


Source: Government budget for financial year 2015/16 - citizens’ budget edition, based on author’s calculations.

¹⁹ Exchange rate at \$1≈2100 Tsh.
²⁰ Development Expenditure is money set aside for financing projects, including construction of roads, schools, hospitals, water infrastructure and acquisition of new assets. While Recurrent Expenditure is needed to support day-to-day operations such as paying salaries and wages, rent, materials and supplies, transport expenses, simple repairs and maintenance of equipment.

The mismatch between the policies/strategies and implementation plans, and poor resource allocation to activities related to FNS is also evident in the 2015/16 budget, where only \$0.5 billion (4.5 percent of the total budget) was allocated to the agriculture sector. The funds were used to facilitate agricultural investments, strengthen research, and construct warehouses and markets. The funds also went to the construction and rehabilitation of irrigation infrastructure (Figure 19).

Figure 19. Priorities within the agriculture sector



Source: Government budget for financial year 2015/16- citizens' budget edition, based on author's calculations.

Similar resource allocation patterns are observed when looking at other important related sectors, like water. The 2015/16 budget allocated \$273 million (2.5 percent of the total budget) to water transfer, where only 16 percent of the budget in this sector was allocated to activities related to agriculture, such as borehole drilling, dam construction, rural water projects, and rehabilitation of rural water supply infrastructure. This outcome is despite the National Irrigation Act of 2013 and the introduction of a waiver of the value-added tax on irrigation equipment (FAOSTAT, Tanzania policy, 2013).

Similarly, in the 2015/16 budget, the transport sector was allocated only \$1.2 billion, of which 11.1 percent went to construction of roads to the level of tarmac and gravel and 35.7 percent to the road board (known as TANBOARD) for maintenance and management of different road projects. This distribution is despite evidence of poor roads as bottlenecks to food distribution and market inefficiency (URT, 2011). In the industrial sector, \$1.8 million (which is 0.02 percent of the total

budget) was allocated to the Big Results Now (BRN) programs. The allocated resources were for the purpose of increasing the value of agricultural produce through the introduction of commodity exchange markets and strengthening the warehouses receipt system. One hundred and eighty million dollars (1.7 percent) went to rural energy, which indirectly links to strengthening agro-processing in rural areas (URT-Budget summary, 2015/2016).

The lack of adherence to the CAADP agreement (Maputo and Malabo Declarations, 2003 and 2014) is another good example showing how resources are not adequately allocated to priority areas. CAADP in Tanzania was taken as reinforcement to transform agriculture and ensure sustained economic growth (CAADP agreement, July 2010). The agreement included, among other provisions, a government commitment to allocating 10 percent of the national budget to agriculture and rural development. However, the allocation of Tanzania’s budget to agriculture since the signing of the agreement in 2010 has been unstable, decreasing, and not reaching the agreed-upon 10 percent (Table 2).

Table 2. General budget allocation in millions TZS (USD)

Budget item	2009/10 Planned	2010/11 Planned	2011/12 Planned	2012/13 Planned	2013/14 Planned
Total budget allocated to agriculture sector	722,000 (343.8)	903,800 (430.4)	926,200 (441)	1,103,612 (525.5)	908,080 (432.4)
Total government budget	9,500,000 (4523.8)	11,609,557 (5528.4)	13,530,000 (6442.9)	15,000,000 (7142.9)	18,248,983 (8690)
Percent of total government budget to agriculture sector	7.6	7.8	6.8	7.4	5

Source: MAFC, MoF, and TAMISEMI budget estimates for 2009/10 to 2014/15 financial years.

The budget allocated to the agriculture sector and priorities within the sector speak volumes about the 4.3 percent growth stagnation in the sector, and the poor translation of the 7 percent economic growth into people’s lives (URT, 2012; WB, 2012). A significant part of the 2015/16 budget was allocated to activities with short-term effects (51 percent of the budget directly related to agriculture—not operations—was allocated to subsidies on agriculture inputs and chemicals, and 29 percent to the NFRA), while less than 7 percent of the total agricultural budget (going directly to development) was allocated to long-term goals, in areas such as irrigation infrastructure, research, markets, and agricultural commercialization.

However, for the 2017/18 budget provision there is new hope; under the new government, whose motto is “HAPA KAZI TUU” which roughly translates to “Strictly Business” or “Actions Only,” there

seems to be some resource commitment for the strategies put in place. For example, under the new government, in the 2016/17 and 2017/18 budgets, the government allocated more than 40 percent of the total budget to development expenditure, compared to 25 percent in previous years. That is, for 2016/17, the national budget set aside \$5.6 billion for development expenditure and left only \$8.4 billion for recurrent expenditure. The 2016/17 and 2017/18 budgets focus on the FYDP II, SDGs, TAFSIP, and the 2015-2020 CCM (Chama Cha Mapinduzi) manifesto. But as for what was highlighted before, there are still gaps between what is said and what is implemented.

So far, there is still high dependence on donor funding and little commitment on the plans set. For example, up until May 4, 2017, only 3.31 percent of the funds allocated to the Ministry of Agriculture's budget for development projects were disbursed. Moreover, out of 74 percent of the money that was to come from development partners, only 13 percent was received. In addition, out of 26 percent of the money that was to come from the government, only 12 percent was paid out.

V.1. Donors versus country priorities

The country has its own priorities/strategies towards achieving its 2025 vision of transforming Tanzania into a diversified, semi-industrialized, and middle-income country (TDV, 2025). Donors finance these strategies/priorities through three channels: (1) general budget support, which is becoming unpopular to donors—from 44 percent in 2004/05 to 14 percent in 2014/15; (2) a direct project fund; (3) a common basket fund, which allows a bundle of activities to be financed by a range of donors through pooled funding aiming towards a strategic plan (baskets related to agriculture include the ASDP and SAGCOT led by the World Bank, and BEST led by the Danish Development Agency (DANIDA). The government of Tanzania negotiates directly with development partners to agree on the areas that need assistance; however, the project modality in many cases remains off-budget and outside the government system. The project modality is becoming popular to donors as they have more impact on the ground (DPG website).

Donors and international agencies' goals towards eradicating poverty, ensuring food and nutritional security, ensuring an inclusive sustainable growth, and accelerating agricultural growth align with and support Tanzania's goals towards achieving its 2025 Development Vision, the CAADP goals, and the Sustainable Development Goals.

Due to global trends, many goals set by donors and international agencies are similar to the government's main goals, with a few differences. In such situations, the country can be forced to

align with donor priorities. For example, under the auspices of HIPC (Heavily indebted poor countries) to qualify for the debt relief initiative, Tanzania had to abandon its own five-year plan strategies to embark on a far-reaching policy and institutional reform. This forced the country to use the National Strategy for Growth and Reduction of Poverty under the MDGs (2005-2010) in place of its Five Year Development Plan.

However, when it comes to implementation there is low complementarity between the government and donors and among donors themselves. Between the government and donors is such that donor's interest is given higher priority than the government interest, while among donors themselves, country of origin interest is given higher priority than another country's interest. Therefore, a lot more needs to be done on both coordination and complementarity. For best results, as many interviewees agreed, all activities should be coordinated through the leading permanent secretary, where programs/projects are registered and sent to appropriate ministries.

VI. Conclusion and recommendations

The aim of this report was to investigate the current state of FNS in Tanzania and the efforts put in place to achieve the zero hunger, food security, improving nutrition, and promoting sustainable agriculture targets of SDG2 by 2030. Tanzania does not have a specific plan towards achieving SDG2, but a number of related strategies and policies are in place. If resources are available and correctly implemented, the strategies/plans will allow the country to reach the SDG2 targets. Based on results from ERH and stakeholders interviews, the study has identified four areas that need to be focused on at national level:

1. Increasing access to food and nutrition security through increased productivity; improving rural roads and infrastructure; improving access to financial services in rural areas; and promoting the adoption of balanced nutrition;
2. Reducing vulnerability to environmental shocks in rural areas by increasing the capacity of small-holder farmers to exploit the vast irrigation potentials available in the country through public and public-private investment in large-scale irrigation schemes;
3. Building the productive capacity of the agriculture sector to sustainably address and maintain long-term food security; and
4. Increasing the budget allocated to the agriculture sector as a way of ensuring continuity of the initiated development programs such as SAGCOT and ASDP.
5. Enhancing the capacity to exploit the country's irrigation potential.

The country policies and development strategies clearly outline the government's plans to address FNS needs, in line with the Malabo Declaration and SDG2 objectives, yet the strategies need external support. External resources together with internal sources must be mobilized and consolidated to carry out the plans. As noted, the national budget is too small to cover country-wide needs, resulting to low investments agricultural. Therefore external support to the national budget can play a role in research and development, infrastructure development, and knowledge dissemination (both agricultural production technology, and food and nutrition knowledge). For this to be efficient and effective, on-the-ground international stakeholders working on FNS needs need to avoid duplication of efforts/projects and reach as many people as possible, and the government should coordinate all the activities being carried out by development partners.

References

- Agrawala, S., A. Möhner., A. Hemp., van Aalst M., Hitz, S., Smith, J., Meena, H., Mwakifwamba, S. M., Hyera, T., Mwaipopo, O.U. (2003): "Development and Climate Change in Tanzania: Focus on Mount Kilimanjaro." Unpublished, Organization for Economic Cooperation and Development, Paris, France
- Ahmed, S., Diffenbaugh, N., Hertel, T. and Martin, J. (2012), Agriculture and Trade Opportunities for Tanzania: Past Volatility and Future Climate Change, *Review of Development Economics*, 16 (3), 429-447.
- Alderman, H., H. Hoogeveen, and M. Rossi. (2006). "Reducing Child Malnutrition in Tanzania: Combined Effects of Income Growth and Program Interventions." *Economics and Human Biology* 4 (1): 1–23.
- Barrios, S., Bertinelli, L., and Strobl, E. (2010). Trends in rainfall and economic growth in africa: A neglected cause of the african growth tragedy. *The Review of Economics and Statistics*, 92(2):350–366.
- Barrios, S., Ouattara, B., and Strobl, E. (2008). The impact of climatic change on agricultural production: Is it different for africa? *Food Policy*, 33(4):287 – 298.
- Brückner, M. and Ciccone, A. (2011). Rain and the democratic window of opportunity. *Econometrica*, 79(3):923–947.
- Budget Speech, The estimates of government revenues and expenditure for fiscal year 2015/2016, The ministry of finance
- Budget Speech, The estimates of the ministry of Agriculture, Livestock, and Fisheries revenue and expenditure for fiscal year 2017/18
- Care International, (2015). Budget analysis and smart investments (basins) for global water initiative (GWI) East Africa on water for agriculture: a case of Same district, Kilimanjaro region, and national budget in Tanzania.
- Dell, M., Jones, B. F., and Olken, B. A. (2012). Temperature shocks and economic growth: Evidence from the last half century. *American Economic Journal: Macroeconomics*, 4(3):66–95.
- Development Partners Group Tanzania. www.tzdp.org.tz
- The East African* (2013). <http://www.theeastafrican.co.ke/news/Darforced-to-import-rice-to-stabilise-price-of-local-harvest/-/2558/1658328/-/euv83z/-/index.html>, accessed 6.01.13.

- East African Community (EAC) (2012). http://www.pma.go.ug/docs/Analysis_percent20for_percent20Tanzania_percent20Maize_percent20Export_percent20Ban_percent20January_percent202012, accessed 15.07.2012.
- Ecker, O., and M. Qaim. (2011). "Analyzing Nutritional Impacts of Policies: An Empirical Study for Malawi." *World Development* 39 (3): 412–428.
- Ecker, O., Mabiso, A., Kennedy, A., and Diao, X. (2011). Making agriculture pro-nutrition. Opportunities in Tanzania. IFPRI Discussion Paper 01124, Washington DC: International Food policy Research Institute (IFPRI).
- Ecker, O., Mabiso, A., Kennedy, A., Diao, X. (2011). *Making agriculture pro-nutrition. Opportunities in Tanzania*. IFPRI Discussion Paper 01124, Washington DC: International Food policy Research Institute (IFPRI).
- Economist Intelligence Unit. (2012). Global Food Security Index 2012. An assessment of food affordability, availability and quality. A report from the Economist Intelligence Unit. New York/ San Francisco/London: The Economist.
- ESRF, (2012). The Role of Financial Sector in Agriculture Development and Industrialization. Policy Brief. (<http://esrf.or.tz/docs/Financial-Sector.pdf>)
- FAO, (2008). Tanzania Nutrition Profile-Nutrition and Consumer Protection Division. <http://ftp.fao.org/ag/agn/nutrition/ncp/tza.pdf>
- FAO (2012). Towards the future we want. End hunger and make the transition to sustainable agricultural and food systems. FAO at Rio+20, Rome: Food and Agricultural Organization of the United Nations (FAO).
- FAO, (2016). Welfare impacts of climate shocks: evidence from Tanzania, by Aslihan Arslan, Federico Belotti, Solomon Asfaw, Panagiotis Karfakis and Leslie Lipper. ESA Working Paper No. 16-04. Rome, FAO.
- FAO. (2011). The State of Food Insecurity in the World. How does international price volatility affect domestic economies and food security? Rome: Food and Agricultural Organization of the United Nations (FAO).
- FAOStat (2012). <http://faostat3.fao.org/home/index.html#DOWNLOAD>, accessed 12.09.2016.
- The Guardian* (2017). SAGCOT wins over potato growers in Njombe. ippmedia.com
- Haug, R., and Hella, J.P. (2013). The art of balancing food security: securing availability and affordability of food in Tanzania. *Food Security*. (2013) 5:415-426
- Hsiang, S. M. (2010). Temperatures and cyclones strongly associated with economic production in the Caribbean and Central America. *Proceedings of the National Academy of Sciences*, 107(35):15367–15372.

- IFPRI (2011): The supply of inorganic fertilizers to smallholder farmers in Tanzania: Evidence for fertilizer policy development
- IFPRI (2012). The Supply of Inorganic Fertilizers to Smallholder Farmers in Tanzania - Evidence for Fertilizer Policy Development, IFPRI Discussion Paper 01230. Washington DC
- Kinabo, J. (2008). Nutrition country profile Tanzania. Rome: FAO.
- Kinabo, J. (2004). "Impact of globalization on food consumption, health and nutrition in urban areas: a case study of Dares Salaam, United Republic of Tanzania." *Globalization of food systems in developing countries: Impact on food security and nutrition* 135-154.
- Kironde, L. J. M (2009). Improving Land Sector Governance in Africa: The Case of Tanzania. Paper prepared for the "Workshop on "Land Governance in support of the MDGs: Responding to New Challenges" Washington DC March 9-10 2009. (worldbank.org/INTIE/Resources/L_Kironde.doc)
- Leyaro, V., Morrissey, O., and Boulay, B. (2014) .Food crop production in Tanzania: Evidence from the 2008/09 National Panel Survey. Research report to IGC Tanzania. F-40110-TZA-1.
- MAFAP (2013). Review of food and agricultural policies in the United Republic of Tanzania. MAFAP Country Report Series, FAO, Rome, Italy.
- Ministry of Health & Social Welfare (MHSW). 2011. National Nutrition Strategy - July 2011/12 – June 2015/16.
- Muhimbula, H.S., and Abdulsudi I.Z. (2010). "Persistent child malnutrition in Tanzania: Risks associated with traditional complementary foods (A review)." *African Journal of Food Science* 4.11 (2010): 679-692.
- Muhimbula, Happiness S., and Abdulsudi Issa-Zacharia. "Persistent child malnutrition in Tanzania: Risks associated with traditional complementary foods (A review)." *African Journal of Food Science* 4.11 (2010): 679-692.
- NBS, (2014). National Panel Survey Wave 3, 2012-2013 Report, Ministry of finance. (http://www.nbs.go.tz/nbs/takwimu/Statistical_Methods_and_Standards/NPS_Wave_3%20_Final%20_Report.pdf).
- Patt, A. G. and Winkler, J. (2007). Applying climate information in africa: An assessment of current knowledge. Technical report, Prepared for the U.S. National Oceanic and Atmospheric Administration.
- Pauw, K., and Thurlow, J. (2011). Agricultural growth, poverty and nutrition in Tanzania. *Food Policy*, 36, 795–804.

- Sanga, G.J., Moshi, A. B., and Hella, J. P. (2013). Small Scale Farmers' Adaptation to Climate Change Effects in Pangani River Basin and Pemba: Challenges and Opportunities. International Journal of Modern Social Sciences, vol. 2(1):20-33.
- Tanzania National Bureau of Statistics (2012). National panel survey report. Wave 2 - 2010/11, Tanzania National Bureau of Statistics.
- UNDP. (2012). Africa human development report. Towards a food secure future. New York: United Nations Development Programme (UNDP).
- UNDP. (2012). Africa human development report. Towards a food secure future. New York: United Nations Development Programme (UNDP).
- United Republic of Tanzania (2014), The National Panel Survey Wave 3, 2012-2013 report. The National Bureau of Statistics
- United Republic of Tanzania (URT) (2011). Tanzania Agriculture and Food Security Investment Plan, Summary report, 2011
- United Republic of Tanzania (URT) Ministry of Agriculture, Food Security & Cooperatives (MAFSC) (2011). Evaluation of the performance and achievements of the agricultural sector development programme (ADSDP). Final draft. June 12th, 2011.
- United Republic of Tanzania (URT) Ministry of Finance and Economic Affairs (MFEA) (2011a). MKUKUTA annual implementation report 2010/11. Delivering on Commitments and Implementation. November 2011.
- United Republic of Tanzania (URT) Ministry of Finance and Economic Affairs (MFEA) (2011b). Tanzania country report on the millennium development goals 2010. 26th September 2011. Dar es Salaam. www.povertymonitoring.go.tz, accessed: July 2012.
- United Republic of Tanzania (URT)//Ministry of Agriculture, Food Security and Cooperatives (MAFSC). (2008). Agricultural sector review and public expenditure review 2008/09. Dar es Salaam: United Republic of Tanzania.
- United Republic of Tanzania, (2013). Key Findings:2011/12 house budget survey Tanzania Mainland. National Bureau of Statistics. Ministry of Finance, Dar es Salaam.
- United Republic of Tanzania (URT), (2013). *National Agriculture Policy*. Ministry of Agriculture Food Security and Cooperatives. DSM.
- United Republic of Tanzania: Ministry of Agriculture, Food Security & Cooperatives (2011). Evaluation of the performance and achievements of the agricultural sector development programme (ADSDP). Final draft. June 12th, 2011.
- United Republic of Tanzania, 2013, Key findings: 2011/12 house budget survey Tanzania Mainland. National Bureau of Statistics. Ministry of Finance, Dar es Salam.

- Wehling, P., & Garthwaite, B. (2015). Designing warehouse receipt legislation: Regulatory options and recent trends. Rome: Food and Agriculture Organization of the United Nations.
- World Bank (2013b). <http://data.worldbank.org/indicator/AG.YLD.CREL.KG/countries/1W-TZ?display=graph>, accessed 12.01.13.
- World Bank, 2011, Tanzania: poverty, growth, and public transfers' options for a national productive safety net program". Washington, DC.
- World Bank. (2012a). Food prices, nutrition, and the millennium development goals. Global Monitoring Report 2012. Washington: The World Bank.
- World Bank. (2012b). World development report 2012, gender equality and development. Washington: World Bank.
- World Bank. (2013a). Jobs. World development report 2013. Washington: World Bank.
- World Bank. (2013) Doing Business-Smarter Regulations for Small and Medium-Size Enterprises, Comparing Business Regulations for Domestic Firms in 185 Economies, 10th Edition
- World Bank. 2014. Public Expenditure Review: National Agricultural Input Voucher Scheme (NAIVS). (www.worldbank.org/afr/agperprogram).
- World Bank. (2017) Doing Business-Equal Opportunity for All, Economic Profile Tanzania, 14th Edition.
- Ziervogel, G., Cartwright, A., Tas, A., Adejuwon, J., Zermoglio, F., Shale, M., and Snith, B. (2008). Climate change and adaptation in african agriculture. Technical report, Prepared for Rockefeller Foundation by Stockholm Environment Institute.

Appendices

Appendix 1: ERH rank of selected African countries on food and nutrition security

Table A1: A comparison of ERH rankings of African countries on select nutrition and poverty indicators worldwide and within East Africa

Rank scores worldwide for select East and Southern African countries					
Country	Lack of enough money to buy food	Undernourishment	Average dietary energy	Rural multidimensional poverty head count	Rural poverty rate
Burundi	104	n/a	n/a	74	76
Ethiopia	58	90	100	81	48
Kenya	87	71	94	47	58
Madagascar	99	85	100	63	76
Malawi	93	66	70	60	75
Mozambique	69	82	78	72	67
Rwanda	60	89	91	62	73
Somalia	47	n/a	n/a	81	n/a
South Africa	78	1	23	31	35
Tanzania	75	86	87	65	62
Uganda	85	77	76	68	51
Zambia	100	95	100	64	76
Zimbabwe	80	87	100	39	n/a
Rank of scores among East African countries					
Country	Lack of enough money to buy food	Undernourishment	Average dietary energy	Rural multidimensional poverty head count	Rural poverty rate
Burundi	7	n/a	n/a	5	6
Eritrea	n/a	n/a	n/a	n/a	n/a
Ethiopia	2	5	5	6	1
Kenya	6	1	4	1	3
Rwanda	3	4	3	2	5
Somalia	1	n/a	n/a	7	n/a
Tanzania	4	3	2	3	4
Uganda	5	2	1	4	2

Note: The statistics represents a five-year average for the period 2009-2013. More detailed information on each specific indicator used to construct the index can be found in the methodology notes available at www.endingruralhunger.org.

Source: ERH data, 2016.

Table A2: A comparison of ERH rankings of African countries on select malnutrition indicators worldwide and within East Africa

Rank scores worldwide for select East and Southern African countries						
Country	Food consumption score (FCS)	Average protein supply	Percent of calories from staples	Under-5 wasting	Under-5 stunting	Anemia in children
Burundi	18	n/a	n/a	61	106	72
Eritrea	n/a	n/a	n/a	104	106	89
Ethiopia	20	72	102	90	98	74
Kenya	7	72	58	69	80	70
Madagascar	28	102	102	103	105	75
Malawi	15	69	96	34	104	96
Mozambique	22	102	102	61	95	95
Rwanda	12	96	41	35	99	54
Somalia	n/a	n/a	n/a	107	64	81
South Africa	n/a	28	51	76	74	60
Sudan	n/a	48	32	n/a	n/a	n/a
Tanzania	9	89	60	49	86	91
Uganda	n/a	101	26	50	76	84
Zambia	n/a	99	97	63	106	82
Zimbabwe	n/a	96	70	40	76	83
Rank of scores among East African countries						
Country	Food consumption score (FCS)	Average protein supply	Percent of calories from staples	Under-5 wasting	Under-5 stunting	Anemia in children
Burundi	4	n/a	n/a	4	7	3
Eritrea	n/a	n/a	n/a	7	8	7
Ethiopia	5	2	5	6	5	4
Kenya	1	1	3	5	3	2
Rwanda	3	4	2	2	6	1
Somalia	n/a	n/a	n/a	8	1	5
Tanzania	2	3	4	3	4	8
Uganda	n/a	5	1	1	2	6

Note: The statistics represents a five-year average for the period 2009-2013.

Source: ERH database.

Appendix 2: Donor commitment related to agriculture and food and nutritional security

Table A3: Donor commitment related to agriculture and food and nutritional security

Donor	Goals	Main projects	Commitment and time span
USAID	<p>Inclusive broad-based economic growth sustained</p> <ol style="list-style-type: none"> 1. Binding constraints to private sector investment reduced 2. Agricultural productivity and profitability increased in target value chains 	<ul style="list-style-type: none"> • Feed the Future • SAGCOT 	
U.K.	<p>Wealth creation</p> <ul style="list-style-type: none"> - Increase income of rural poor - Improve rural infrastructure - Increase access to finance - Increase energy provision - Improve resilience to climate change - Reduce the cost of doing business - Reduce trade and transport costs that reduce competitiveness within the region 		<p>GBP 208,200,000 for all three objectives, wealth creation being one of them</p> <p>2011/12-2014/15</p> <p>DFID's budget is GBP 200 million/year for all activities in Tanzania</p>
Norway	<ul style="list-style-type: none"> - Improve food security and improve family income of smallholder farmers - Increase agriculture market driven productivity - Trade development and climate change adaptation - Transform the agriculture sector by building inclusive agribusiness - Increase access to electricity and renewable energy in rural areas - Improve access to agricultural inputs 	<ul style="list-style-type: none"> - Inclusive green growth of smallholder agriculture sector in SAGCOT - SAGCOT center (2014-2017) Rural Energy Fund program ACT-Agricultural council of Tanzania (Tanzania agricultural partnership phase II-TAP) 	<p>9,000,000 NOK</p> <p>9,000,000 NOK to SAGCOT center</p> <p>300,000,000 NOK rural energy fund (2013-2016)</p> <p>70,000,000 NOK-ACT</p> <p>Between 2013-2016 Norway gave a total of NOK700,000,000</p>
Denmark	<ul style="list-style-type: none"> - Reduce poverty and inequality; and ensure equal access to quality social services - Promote inclusive green growth and employment 	<p>BEST</p> <p>ASDP</p>	

Finland	<ul style="list-style-type: none"> - Eradicate extreme poverty - Reduce poverty and inequality - Promotion of inclusive, sustainable and employment enhancing growth - Sustainable management of natural resource and access to land - towards the SDGs 		18,410,000 EUR (2014- 2017) for promotion of inclusive and sustainable development employment
Sweden	<ul style="list-style-type: none"> - Help Tanzania gradually reduce its dependence on aid - More jobs and development of agricultural markets - Improved education and increased entrepreneurship 		5.5 billion SEK (2013-2019) for 9 items
Ireland	<ul style="list-style-type: none"> - towards the poor and the vulnerable especially women and children - Eradicate poverty and hunger - Improve livelihood for smallholder farmers and pastoralist - Improve nutrition - Improve health 		25% in improving livelihoods 51% improving food and nutritional security
Japan	<ul style="list-style-type: none"> - Increase rice production - Improve live hood of small scale farmers and poverty reduction - Agricultural and industrial development 	<ul style="list-style-type: none"> -Irrigation Development Fund (new irrigation schemes and rehabilitation of existing ones) -Business environment for Jobs project 	34.43 million YEN loan, district irrigation development fund
Canada	<ul style="list-style-type: none"> - Poverty reduction by focusing on improving lives of children and youth - Increasing sustainable economic growth 	Creating business environment for sustainable Economic Growth	
EU Commission	<ul style="list-style-type: none"> - Pro poor growth - Inclusive and sustainable growth - Food and nutrition security - Sustainable agriculture and agricultural productivity - Increasing access to energy 	<ul style="list-style-type: none"> through linking farmers to markets and value chains (EUR 90M) - Improved access, availability and use of food (EUR 12M) 	2014-2020

		- Natural resource management and ecosystem for sustainable agriculture and climate change adaptation (EUR 38M)	
World Bank	<ul style="list-style-type: none"> - Boost economic growth - Reduce poverty - Improve poor people's lives 	<ul style="list-style-type: none"> -Transport sector - Private sector competitiveness - SAGCOT - Expanding rice production - Renewable energy - Agriculture sector development 	\$5,068,272,174 total amount given for agricultural, food and nutrition between 2016-2021

Appendix 3: Enabling policy environment for agricultural productivity

Table A4: Ending Rural Hunger policy environment indicators and definitions

Indicators	Tanzania	African average	Unit of measurement/score definition
Access to land	4.2	3.5	A score (1-6, 6 being best). 4 = A majority of rural poor households, including women, indigenous populations and other vulnerable groups, have access to land
Access to water for agriculture	4.8	3.7	A score (1-6, 6 being best). 4 = Government has a water resources management strategy that provides an integrated framework for equitable water resources allocation
Access to agricultural input markets	3.6	3.8	A score (from 1-6, 6 being best). 4 = Significant government efforts to liberalize markets and reduce rural market distorting policies.
Access to agricultural extension services	5	3.8	Discrete 1-6. 5: Government encourages the development of complementary pluralistic research and extension services.
Average dietary energy supply adequacy	103.8	114.5	Percent. This indicator expresses the dietary energy supply (the national average energy supply, calories/capita/day) as a percentage of the average dietary energy requirement (a reference for adequate nutrition in the population, calories/capita/ day).
Degree to which FNS features in citizen priorities	53	42	Percent. This indicator measures the share of a country's total responses that listed priority 109 = "Affordable and nutritious food" as one of the six priorities in the MyWorld survey for a given year.
Allocation and management of resources for rural development	4.4	3.7	Discrete 1-6. 5: The national development plan (or PRSP) and budget document emphasize the important role that the agricultural and rural development sector must play in poverty reduction and economic growth; sector policy/policies are consistent with that analysis and advocate an appropriate approach for reducing rural poverty and promoting broad-based growth. 4: The national development plan (or PRSP) and budget document emphasizes the important role that the agricultural and rural development sector must play in poverty reduction and economic growth. 3: The national development plan (or PRSP) and budget document give some emphasis to agriculture and rural development; but the sectoral policy/policies do not provide a strong basis for reducing rural poverty and promoting broad-based growth.

Agriculture spending intensity	7.85	8.83	Percent. This indicator is government national agriculture expenditure as a percentage of agricultural GDP.
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Source: Own calculation based on ERH database. For further information on each of these scores, please refer to the list of indicators for developing countries available at: <https://endingruralhunger.org/methodology/>.

Appendix 4: Methodological note on the definition and interpretation of Tanzania's scores for its indicators (needs and enabling policy environment indicators)

All of the indicators analyzed from the ERH database were either quantitative or qualitative; averaged over the study period (2009-2013) to provide a general picture of the country and region's performance over this period. To be able to compare data across indicators, raw data from the ERH database for the different indicators assessing needs and policy were transformed to a common 0-1 scale, through a "distance to frontier" methodology. The distance to the frontier methodology computes how far Tanzania's indicated value is relative to global best value.ⁱⁱ In essence, this indexing methodology involves transforming each indicator onto a common 0-1 scale by identifying each country's best score across the sample years (2009-2013) to create a frontier sample. From this sample, the best "frontier" and the "worst" scores are identified. To avoid undue influence of outliers, the positive and negative extremes are computed as the 95th and 5th percentile scores of the frontier sample, respectively.ⁱⁱⁱ Then each country score, X, is transformed by the formula $(\text{worst} - X) / (\text{worst} - \text{frontier})$ to generate a score between 0 and 1, which is then multiplied by 100.

For further information on each of these scores, please refer to the list of indicators for developing countries available at: <https://endingruralhunger.org/methodology/>.

ⁱ The methodological note.

ⁱⁱ This methodology follows the new approach used by the World Bank in its Doing Business indicator work; see World Bank, "Distance to Frontier and Ease of Doing Business Ranking," Doing Business 2015, (Washington, DC: World Bank, 2015). Several alternatives were considered, including the methods for aggregating different indices in the World Governance Indicators, and principal component analysis, but this method appeared best suited to dealing with missing observations, ease of communication, and interpretability of composite variables.

ⁱⁱⁱ For a small set of our indicators we adopt alternative methods of setting the frontier, for when there is a discrete indicator which therefore has a natural frontier for values, the discrete end points are used as the frontier) or when an indicator is already a score computed using the distance to the frontier methodology, we do not provide further transformation.