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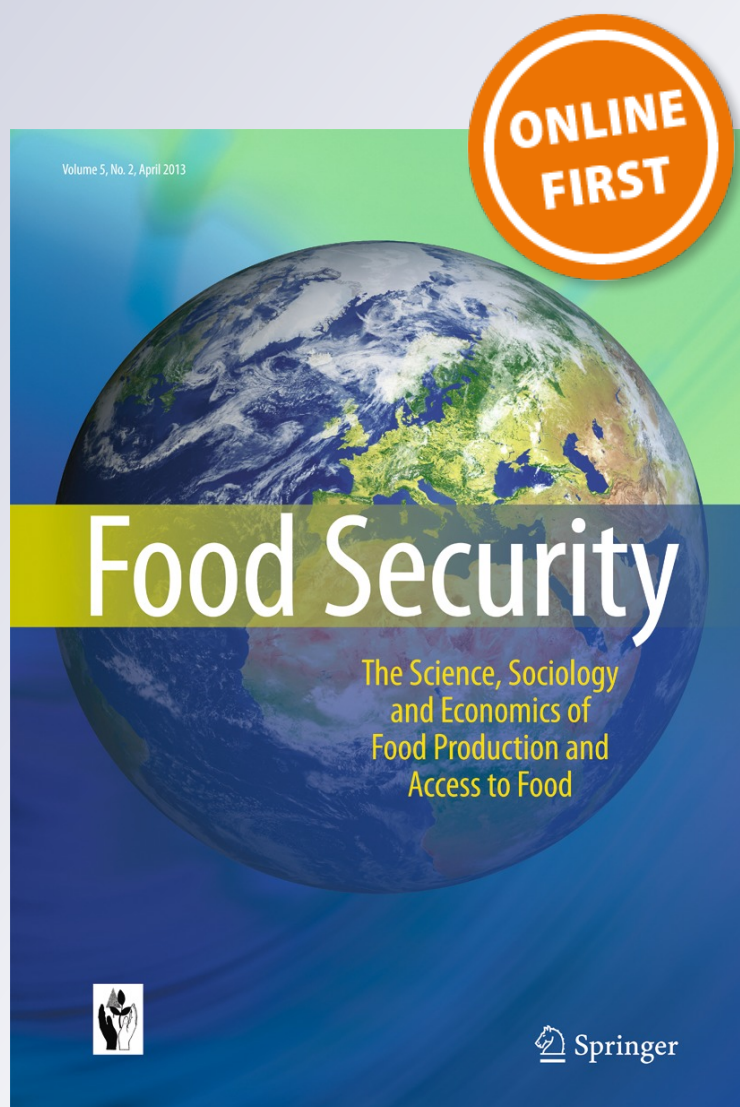
Food Security

The Science, Sociology and Economics
of Food Production and Access to Food

ISSN 1876-4517

Food Sec.

DOI 10.1007/s12571-013-0266-8



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The art of balancing food security: securing availability and affordability of food in Tanzania

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Received: 7 October 2012 / Accepted: 5 April 2013

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Abstract Monitoring of the UN Millennium Development Goals (MDGs) indicates that a large number of countries are not on track to reach the hunger targets set out in Goal 1 (MDG1, Eradicate Extreme Poverty and Hunger by 2015). The purpose of this paper is to assess the appropriateness of three underlying factors identified by the United Nations Development Programme (UNDP), misguided policies, failing markets and weak institutions, in explaining food insecurity in Tanzania. Our analysis basically supports UNDP's emphasis on the importance of policy, institutions and market access when seeking to improve food security and reach MDG1, but underlining the importance of empowering people to hold the Government accountable for failing to deliver on their policies and plans. The main finding is that the Tanzanian Government is struggling with the difficulty of addressing the twin goals of balancing national food availability with affordable food prices for urban and rural consumers.

Keywords Food security · Food availability and affordability · Food policy · Tanzania

Background

The actual number of food insecure people in the world has been more or less stable during the last 40 years but proportionally we have seen a decline from about one out of three

to one out of seven persons going hungry during this time span (Spielman and Pandya-Lorch 2009; FAO 2012). The establishment of the Millennium Development Goals (MDGs) has provided mechanisms to monitor the progress in relation to poverty and hunger in the world. MDG number 1 is about reducing poverty and hunger by half by 2015. Overall, the poverty part of MDG1 will most likely be met by 2015; so far poverty has been reduced from 43.2 % in 1990 to 22.2 % in 2008 (WB 2012a). But regarding hunger measured as *availability of food to meet people's basic energy needs*, only 40 out of 90 countries are on track to reach MDG1 and it seems impossible to fulfill the hunger part of this goal (WB 2012a:14).

The current situation of lack of progress in relation to reducing the actual number of food insecure people in the world, high food prices, climate change and uncertainties in relation to future food supply, has made national and international actors pay renewed attention to food security (UNDP 2012; WB 2012a, b). Food scarcity at the global level is so far not a cause of the food insecurity in the world. FAO, UNDP and the World Bank emphasize that there is no global food shortage but regional or local problems related to a whole range of factors such as moving food from surplus to deficit areas coupled with affordable prices for poor people to access food (FAO 2011; UNDP 2012; WB 2012a).

Sub-Saharan Africa is an area of the world that is particularly worrying regarding food insecurity and the only region where the average food supply measured in calories is below the average daily requirements for adults (EIU 2012). There are many explanations for why food insecurity continues to be such a serious problem in Africa such as drought, bad governance, conflicts, underinvestment in agricultural development and the food price crisis of 2008. High food prices are contributing towards food insecurity, but low food prices may also do so, especially in low-income agrarian economies (EIU 2012). Food prices – low, high or volatile – are one explanation of food insecurity in Africa. UNDP's Africa Human Development Report

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2012: *Towards a Food Secure Future*, highlights *misguided policies, failing markets and weak institutions* as the deeper causes of Sub-Saharan Africa's food insecurity (UNDP 2012:3). The purpose of this paper is to assess the significance of these three root causes at the country level in Africa, citing Tanzania as an example.

Objective and approach

Tanzania was selected for this study because of the importance of agriculture in the country, the economic growth that the country has experienced during the last decade, the high degree of food insecurity and because of a stable political situation. In the period 2000–2010, Tanzania had an annual economic growth of around 7 % (WB 2012a). However, the number of poor and malnourished people has not been reduced accordingly and the country is not performing well in relation to prospects of achieving MDG1 (URT 2010; URT/MFEA 2011a, b; URT/MAFSC 2011; WB 2012b). Tanzania is ranked number 18 out of 24 low income countries scoring only 26.8 of 100 in the Economist Intelligence Unit (EIU) global food security index which combines *food affordability, food availability and food quality and safety* (EIU 2012).

The objective of the paper is to assess the appropriateness of UNDP's (2012:3) three underlying factors, *misguided policies, failing markets and weak institutions* in explaining food insecurity in Tanzania and to discuss how to secure availability and affordability of food in the country.

The paper is based on a review of the literature including government documents, consultancy reports and newspaper articles in addition to some specifically selected key informant interviews and focus group discussions with farmers and traders undertaken during field work carried out in 2010 and 2011. The paper is also based on discussions, meetings, seminars and field visits that have taken place over more than 30 years of institutional collaboration between Sokoine University of Agriculture (SUA), Tanzania, and the Norwegian University of Life Sciences (UMB).

Agricultural development and food security in Tanzania

Tanzania endorsed the Millennium Development Goals in September 2000 and has integrated the MDG targets into the country's strategies and plans. The indicators for achieving MDG1 are the proportion of the population below the national poverty line and the proportion of children under 5 years old who are underweight and/or stunted (URT/MFEA 2011b). The monitoring of MDG1 in Tanzania has caused the Government to declare that MDG1 is not achievable (URT/MFEA 2011b). Hunger and poverty will not be halved by 2015. The proportion of the population

below the national poverty line has decreased from 39 % in 1990 to 33.6 % in 2007. Urban poverty reduction has been doing better than poverty reduction in rural areas. In terms of the national poverty line, rural poverty has decreased from 38.6 % in 2000 to 37.4 % in 2007 (WB 2012b). Almost 80 % of the population in Tanzania lives in rural areas (WB 2011).¹

Regarding national food availability, overall Tanzania is food self-sufficient (URT/MAFSC 2008; URT/MFEA 2011a). The Food self-sufficiency ratio (*ratio of gross domestic production to gross domestic food requirement*) was 102 in 2009/2010 and 112 in 2010/2011 (URT/MFEA 2011a). FAO's *food balance sheets* indicate that at the national level, there is in average of sufficient food energy to satisfy the required 2,056 kcal/capita/day (FAOStat 2012; Kinabo 2008). National food supply measured in energy, is estimated to be in the range 2,133 to 2,199 kcal/capita/day for the period 2004–2009 (FAOStat 2012).

In situations where neighboring countries have experienced famine and have been in need of food relief, Tanzania has been able to secure sufficient food at the national level and has avoided famine occurring in food-deficit and drought affected parts of the country. The policy has been to make sure that food is available in the country so that it can be distributed from food surplus to food-deficit areas. As of June 2011, the Strategic Grain Reserve had in stock 4 months of national food requirement (URT/MFEA 2011a). Food prices have been steadily increasing in Tanzania since 2005 with considerable seasonal and in-country geographic variation (Hella et al. 2011; GIEWS 2012). However, in general, prices on e.g., maize and rice have been higher in many of the neighboring countries in this period (EAC 2012).

In spite of sufficient food availability measured in energy at the national level, undernourishment is a serious problem in Tanzania. Food insecurity, measured as a proportion of the population whose food intake is insufficient to meet dietary energy requirements, is alarmingly high. According to the World Bank (2012a), 34 % are not able to meet their energy requirements. As for poverty, lack of sufficient food energy is higher in rural areas (44.5 %) than in urban areas (31.5 %) (URT/MFEA 2011b). Ecker et al. (2011:13) found that *food poverty rate measured as the percentage of people living in extreme poverty with an income level insufficient to meet basic food needs, is more than five times higher in rural than urban areas*. Relatively high economic growth in Tanzania (7 %) has not resulted in the reduction in poverty and hunger that could be expected. According to Pauw and Thurlow (2011) there is a weak relationship between economic growth and nutrition outcomes in Tanzania due to the

¹ It should be noted that there might be some shortcomings regarding the quality of the data on which the statistics are based (URT/MFEA 2011a; Pauw and Thurlow 2011)

structure of growth in agriculture. The agricultural sector has experienced growth, but not as high as the general 7 % growth. The agricultural growth rate averaged 4.4 % in the period 2000–2008 and 4.2 % in 2010 (URT/MFEA 2011a, b).

The agricultural sector in Tanzania constitutes a quarter of the national GDP and accounts for 75 % of rural households' incomes (WB 2011). However, the income farmers are getting from agriculture is declining, according to the 2007 Household Baseline Survey, from 60 % in 2000/01 to 50 % in 2007, suggesting that rural households are equally dependent upon off-farm as on-farm sources of income (URT/MFEA 2009: 24). The agricultural census from 2007/08 reported 1,006 large-scale farms in Tanzania according to a definition of large-scale farms having to be above 20 ha of land or 50 head of cattle (NBS 2007/08). In comparison, there were about six millions small scale agricultural households in the 2007/08 census (NBS 2007/08). In 2011, the number of small-scale farmers was estimated to be about 8 million (URT/MFEA 2011a). The total population was estimated to be 44.8 million in 2010 (WB 2013a). The World Bank data suggests that employment in farming has increased from 74.9 % in 2005 to 80.4 % in 2010 (WB 2013a, b).

Agricultural productivity is low and total cereal yields are below the levels in neighboring countries such as Zambia, Malawi and Kenya (WB 2013b). Total cereal yields measured as kilograms per hectare varied from 850 in 2003 to 1,113 in 2005; 1,366 in 2007; 1,110 in 2009 and 1,332 in 2010 (WB 2013b). Total production of the two important staple crops, maize and rice, has steadily increased over the last two decades (FAOStat 2012). Maize production increased from 3,219,000 t in 2005 to 4,733,000 t in 2010 while rice production more than doubled in the same period (URT/MFEA 2011a). It is difficult for farmers to get access to improved seed and fertilizers in a timely manner and at affordable prices (URT/MFEA 2011a). The use of fertilizers was about 8 kg per ha in 2010 which is below the levels in neighboring countries (FAOStat 2012). About 70 % of the farmers depend solely on hand-hoes for cultivating their crops (URT/MFEA 2011a).

The different performance and monitoring reports on MDGs, *National Strategy for Growth and Reduction of Poverty* (MKUKUTA I & II) and *Agricultural Sector Development Programme* (ASDP) give a wide range of reasons why agriculture is not performing according to targets and expectations, e.g. low productivity, lack of access to farm inputs and mechanization, ill-performing and low coverage of voucher schemes for seed and fertilizers, the need for more irrigation, limited access to extension services, high post-harvest losses, lack of storage facilities, lack of market access and price information, land conflicts, climate change and bad weather, environmental degradation, lack of

investment in agriculture compared with other sectors, poor rural infrastructure and lack of credit opportunities (URT/MFEA 2011a, b; URT/MAFSC 2011).

In Tanzania's new 5-year *Development Plan 2011/2012–2015/16*, agriculture is prioritized and emphasis is put on *access to land, taxation reform and change of mindset in favor of agriculture* (URT 2011: 65). At the operational level *irrigation, inputs, mechanization, research, extension, training, market access, agro-processing, value addition and climate-compatible agriculture* are highlighted (URT 2011: 66). Key targets for 2015 include an average agricultural annual growth of at least 6 %, an increase in food self-sufficiency for cereals and legumes from 104 % to 120 % in 2015/16 and doubling the average annual agriculture foreign exchange earnings from US\$ 700 million to 1,500 million by 2015/16 (URT 2011).

Is Tanzania's policy misguided?

UNDP (2012:4) suggests that misguided policy is one of three deeper causes of food insecurity in Sub-Saharan Africa. To what degree is this the case in Tanzania? In order to address this question, we will assess what the policy is, what problems the policy is aiming at solving, to what degree the policy is misguided and eventually misguided by whom.

What is "the policy"?

Over the past 50 years, the food and agricultural policy in Tanzania has varied from President Julius Nyerere's socialism in the form of state monopoly and cooperatives to structural adjustment with market liberalism and privatization. The years 1962 to 1967 were the *post-independence open market period*, then came the *Ujama period* with cooperatives and centralized crop authorities (1967–1985) followed by the more recent liberalization phases with market oriented economic policy reforms, including part liberalization of internal and external trade (1986–2010) (Bryceson 1993; Ibhawoh and Dibua 2003; Hella et al. 2011; URT/MFEA 2011a). What Cooksey (2011:59) calls *Tanzania's capitulation to structural adjustment* following disputes with the IMF and the World Bank in the early 1980s, is seen as the end of President Nyerere's socialist era and the beginning of the transition to a market economy. But a complete market economy has not been implemented, for example, in relation to restrictions on both in-country and cross-border trade (KI 2011; EAC 2012). An example of this is the periodical export bans on certain crops in order to secure food availability and national food security. Tanzania does not really have any explicit policy, act or guidelines on how to regulate domestic, regional or international trade, but has in recent years put in place periodical export

bans when the Government finds this is needed for national food security reasons (KI 2011). This makes the export situation for crop producers rather unpredictable as the rules of the game are not known in advance in relation to when and if there are going to be export restrictions. Periodically, Tanzania also imports food as a way of stabilizing food prices and keeping inflation down. For the first time in 5 years, Tanzania lifted the ban on rice import at the turn of the year 2012/13. Similar interventions have previously been criticized for outcompeting rice growers in regions such as Rukwa in southwestern Tanzania that produce surplus, but are constrained by high transport costs and lack of market opportunities (The EastAfrican 2013).

Tanzania has a national planning hierarchy for the agricultural sector, where the policy is operationalized in strategies and plans. These are the *Tanzania Five Year Development Plan: the Growth and Poverty Reduction Strategy* (MKUKUTA), the *Agricultural Sector Strategy* including the *Agricultural Sector Development Programme* (ASDP) and *Kilimo Kwanza* (Agriculture First) as well as the *National Tanzania Agricultural and Food Security Investment Plan* (TAFSIP) and the *Southern Agriculture Growth Corridor of Tanzania* (SAGCOT) (URT/MAFSC 2011). The Agricultural Sector Development Programme (ASDP) started its implementation in 2006/07 as a public-led agricultural sector programme aiming at increasing the income level of farmers, improving food security and reducing poverty, and establishing a sustained agricultural growth rate of at least 5 % (URT/MAFSC 2011). *Kilimo Kwanza* was launched by President Jakaya Kikwete in August 2009, initiated by the private sector through the *Tanzania National Business Council* (TNBC) and aiming at achieving a “Green Revolution in Agriculture” (TNBC 2009). According to President Kikwete, *Kilimo Kwanza* is a national resolve to accelerate agricultural transformation and comprises a holistic set of policy instruments and strategic interventions to modernize and commercialize agriculture in Tanzania (Kilimo Kwanza 2009). *Kilimo Kwanza* is built around ten pillars including mobilization of financial resources, institutional reorganization, better incentives for farmers to produce (removal of market barriers is mentioned), and improvements in infrastructure (Coulson 2010).

The new *Five Year Development Plan 2011/12–2015/16*, *MKUKUTA*, *TAFSIP*, *Kilimo Kwanza*, *SAGCOT*, *Agricultural Sector Development Programme* (ASDP), all put emphasis on modernization of the agricultural sector through better technology such as improved seed, supply of fertilizers, investment in irrigation and mechanization. But the governmental strategies and plans also include socio-economic elements such as small scale farmers’ access to land, markets and to price information; improvement of the public extension service; taxation reforms and value chain thinking. However, when it comes to implementation on the

ground, the agricultural policy appears to be translated into ASDP’s fertilizer subsidies and *Kilimo Kwanza*’s distribution of power tillers.

The agriculture and food security policy is based on the above initiatives, strategies, plans and programs for agricultural development in Tanzania. It is a mixture of market liberalism and state regulations. These aim to keep control of food prices, modernize the agricultural sector, increase productivity and improve people’s livelihoods by emphasizing both small-scale and large-scale farming.

What problems are the policy going to solve?

The challenges in Tanzania’s food and agriculture sector are many, such as low productivity, high rural poverty, low adoption of new technologies, limited infrastructure and high transportation costs, a lack of adequate market access and high rates of taxation and non-tariff trade barriers (IFPRI 2012). The Tanzanian MDG1 highlights prioritization of economic growth that will transform Tanzania into a middle-income country, and social development that will reduce poverty (URT/MFEA 2011a). As said by the Minister of Agriculture, Food Security and Cooperatives, Christopher Chiza: *The goal of the Government is to transform Tanzania into a middle-income country by 2025, fuelled, in a significant part, by growth in its agricultural sector*” (Africa Green Revolution Forum 2012:1). The agricultural sector has for several decades been regarded as a possible engine of growth in the country. The Minister asks in the MDG monitoring report (URT/MFEA 2011b: 4): *What has policy not gotten right after so many years of pronouncing agriculture as the back-bone of the economy?* There should be plenty of opportunities to gear up agriculture in a country like Tanzania with ample land and water resources suitable for agriculture (Binswanger & Gautam in Coulson 2010). However, agriculture in Tanzania has, according to Coulson (2010), always been uncertain.

Corta and Price (2009:4–5) illustrate how a different understanding of “the problem” leads to different policy choices. They suggest three different problem identifications that lead to three different policy recommendations (Corta and Price 2009:4–5):

- **Problem 1:** Over-regulation of crop markets; monopoly power concentrated in larger cooperatives/private firms; corruption; low farm gate prices; lack of incentives to produce for cash. **Solution:** Lift regulations; reduce cooperative power; liberalize markets to raise farm gate prices and incentives to produce; do away with corruption.
- **Problem 2:** Further liberalization will only enable traders to exploit farmers and keep farm gate prices low; resource poor farmers cannot afford inputs. **Solution:** Re-agrarianism through pro-poor farming support

via extension; smart subsidies; credit; more secure markets/equitable inclusion in value chains; social protection; enforcement of the minimum wages; secure women's land rights.

- **Problem 3:** Green revolution in Africa has not worked so far and will not work in the future. **Solution:** Labor mobility to urban areas – remittances to rural areas. Forget about agriculture, it will not work.

Maghimbi et al. (2011: 7) claim that ever since colonial times and regardless of socialism or market liberalism, *the government has pursued agricultural policies that have reproduced a stolid and almost homogeneous peasantry which has been easy to control politically and easy to exploit economically*. If the problem is lack of voice in society on behalf of men and women peasant farmers, a policy for empowerment would be what is needed to get agriculture going (cf. the well-known urban bias and Collier's (2008) notion that farmer's fields are not made for demonstrations while urban streets are). For the Tanzanian Government, the challenge is to make sure that food is available in the country when and where needed at affordable prices. Export bans have been used as a cheap measure to achieve national food security. It would have been more expensive for the Government to buy crops from its farmers and increase the food storage capacity to ensure food availability. Periodic export bans have been an effective tool in keeping food prices relatively low while prices in neighboring countries have been much higher (EAC 2012).

The food and agriculture policy is supposed to solve a diverse set of problems and several of these problems are partly outside the food and agricultural sector domain. The majority of the poor depends on agriculture for their livelihoods and since few alternative employment opportunities exist, it is difficult to imagine how to address poverty without paying renewed attention to agriculture (URT/MFEA 2011b). Food insecurity is basically a poverty problem that might require a whole range of measures such as social protection programs to be able to address the seriousness of malnutrition in the country. It is important to increase our understanding of the food insecurity problem; what is it exactly that is causing the high level of poverty and food insecurity at household and individual levels? This is a question that requires answering if appropriate policies are to be formulated.

To what degree is the policy misguided?

From the above review of policies, strategies and programs, we do not necessarily find that the food and agricultural policy is misguided. We find many well formulated and timely measures that could make a big difference if they were successfully implemented. However, we are not able to provide sufficient evidence to fully accept or reject UNDP's

hypothesis of misguided policy explaining food insecurity in Tanzania. What we do find are some weaknesses in relation to both actual policy and contextual issues that we believe are of importance when discussing the question of policy.

- **Establishing a conducive environment for farmers to produce and at the same time keeping food prices at an affordable level to promote food security:** Coulson (2010:6) states that *if the Tanzanian government intervenes to hold down food prices, it can easily discourage production and make the problem it is trying to solve even worse*. Also the government recognizes this challenge, underlining that if it is not worthwhile producing, farmers would go for self-sufficiency and seek cash income from other sources (URT/MFEA 2009). In our view, the state has an important role to play when it comes to facilitating agricultural development and food security. The question we are posing is whether the policy needs to be revisited in order to find a better mix of state control and market liberalism e.g., in relation to marketing, unofficial/official taxation and restrictions on moving crops around the country as well as regarding ad hoc export bans and import permits (KI 2011; EAC 2012; The EastAfrican 2013). If farmers perceive that it is their responsibility to pay the price of food insecurity in the country, overall production might suffer. Other interventions such as social protection programs might be alternative ways of promoting food security.
- **Creating a predictable environment for food and agriculture:** Frequent shifts in food and agriculture policy have created unpredictability in relation to input supply, subsidies, marketing, farm gate prices, export opportunities and taxes (Hella et al. 2011; KI 2011). Improved predictability regarding these factors could provide a more conducive environment for investing in both small and large scale agriculture in Tanzania. Also, other measures to reduce risk could be considered. The many different initiatives that have promised improvements for farmers without being able to deliver, have contributed towards a general lack of trust in those put in place by the Government (Hella et al. 2011). Rebuilding trust could be an important factor in relation to establishing successful policy interventions and programs.
- **Facilitating accountability:** Coulson (2010:9) states that *the challenge for Tanzania is to recognize that the agency for bringing about more production will not be the state. It will be farmers and primarily smallholder farmers*. Without farmers' empowerment to hold the State accountable for failing to deliver on agricultural development, any policy approach would have problems in succeeding (Maghimbi et al. 2011; URT/MAFSC

2011; Gabagambi 2011). When we asked farmer informants what they thought about *Kilimo Kwanza*, the response was that *Kilimo Kwanza* is politics and politics is just talk, while what is needed is action. Facilitating accountability could help with service delivery and obtaining results.

- **Tailoring policies to local conditions:** Tanzania is a very diverse country with both high potential and marginal lands. There are a few large-scale farms but mostly farming is done on a small-scale by men and women. There are also pastoralists and fisher folk. The food and agricultural policy has to take on board these diverse conditions and tailor policies to them. In the semi-arid areas, which are mostly the food deficit areas where about 40 % of the population lives, modernization of agriculture in the form of fertilizers might not be an appropriate solution (SIPA 2010; Hella et al. 2011). Addressing the poverty challenge in low potential areas might be sought outside of agriculture or in different ways than in the better-off areas. Regarding food insecurity, tailoring should take place according to a disaggregated analysis of *who* are the food insecure e.g., by location, occupation and gender and *what* are the reasons for this unfortunate situation.

If misguided, misguided by whom?

As UNDP (2012) suggests, misguided policies could be one of the root causes of food insecurity in Tanzania. Further evidence will be needed to support such a proposition. However, a topical question is, if misguided, misguided by whom; local, district, national governments, NGOs or private sector; or international actors such as multilateral and bilateral donors or other international actors? The food and agriculture policy in Tanzania has been heavily influenced by donors who have pushed different ideas and planning exercises from structural adjustment to development of poverty reduction strategies, and from public sector development programmes to value chain thinking, private sector emphasis and development of growth corridors. This rather frequent shift in donor ideas about agricultural development and the funding that follows have had an effect on the Government's ability to create a coherent, long-term food and agricultural policy (Gabagambi 2011). Also at the international level, we might talk about misguided policy that has had a negative impact on development of agriculture in low-income countries in Africa. For example, dumping and export of cheap subsidized food from the North to Sub-Saharan Africa, out-competing African farmers in their home markets and at the same time discouraging investment in and aid to agricultural development in Africa (Haug 2011). Hence, the *misguided by whom* question does not only include the Government of Tanzania but a wider range

of actors that influence the food and agriculture policy in Tanzania and the environment in which the Government has to formulate policy.

Are markets failing Tanzania?

UNDP (2012:4) suggests that market failure is another of three deeper causes of food insecurity in Sub-Saharan Africa. To what degree is that the case in Tanzania? In order to address this question, we will assess what markets are failing—local, national, regional and global, and what the main factors are that constrain farmers from accessing markets.

What markets and why not access?

Local markets are important for small-scale farmers, but may provide limited opportunities for sale at profitable prices. Access to domestic markets is often constrained by a whole range of factors that have to do with poor roads, long transport distances and transport limitations during rainy seasons as well as how marketing is organized. Farmers are not coordinated to jointly market small volumes of products, there are limited public marketing services or availability of price information, and private traders might not want to pick up crops in remote areas because it is not worth the effort (Hella et al. 2010; URT/MFEA 2011b). In addition, taxation policy and numerous road blocks hamper crops from being transported within the country (Coulson 2010; KI 2011). Key informant interviews revealed that when transporting maize from *Chitego* in *Dodoma* region through *Kibaigwa* maize market to Dar es Salaam (about 500 km), trucks had to pass through 10–15 check points ranging from tax collection to traffic checks and weigh bridges. At all these checks both official and unofficial cash payments were made.

Storage facilities are also lacking, allowing crops to rot. It is estimated that about 30 % of the agricultural cereal production in Tanzania is damaged by post-harvest problems (URT/MAFSC 2011). Farmers close to main roads have much better market access and market opportunities, e.g., rice has a high and growing domestic demand and also other crops, but poor roads are preventing market access. Coulson (2010) in particular underlines the importance of improving local roads.

Regarding regional and global market access, the Tanzanian Government has imposed periodic export bans as a way of ensuring availability of food in the country at affordable prices (Coulson 2010; KI 2011). The export ban on maize that came into force in July 2011 for the period 1 July–31 December 2011 caused Tanzanian newspapers to criticize the Government heavily for working against the farmers. The Tanzanian paper *Daily News* (28.07.11) reported that

lawmakers in the country argued that the *export ban keeps struggling smallholder farmers poor because it denies them opportunities to sell their commodities at optimum prices*. The newspaper also cited Members of Parliament not supporting the ban. *The Guardian* (27.07.11) used language such as *to prohibit farmers from selling their food produce in neighboring countries is tantamount to killing them*. When the ban was implemented in July 2011, a 100 kg bag of maize in the Rukwa region went down from 30,000 Tshs to between 12,000 and 15,000 Tshs (The Guardian, 27.07.11). The East African Community (EAC 2012) estimated that maize prices dropped from 45,000 Tshs to 30,000 Tshs for a 100 kg bag because of the July 2011 ban. The Minister of Agriculture, Food Security and Cooperatives at that time, *Professor Maghembe*, promised that the Government would buy a bag of maize for 35,000 Tshs to make sure the farmers would not lose out because of the ban (The Guardian, 27.07.11).

However, results from focus group discussions with farmers, middle men and traders in Mbeya and Rukwa regions revealed that farmers did lose out. In *Mlowo* and *Tunduma* (Mbeya region) and *Matai* villages (Rukwa region), the NFSA fixed price was TShs 35,000/100 kg bag² in 2011. Traders who sold to NFSA sale point, had to include all costs involved in moving maize from the farm gate to the sale centers plus a reasonable profit margin for themselves. At *Mlowo* market, middle men bought from farmers at TShs 20,000/per bag of maize, and sold to traders at TShs 25,000/per bag. Transportation cost was TShs 5,000/bag, loading and unloading was TShs 1,000/bag, local government levy was TShs 1,000/bag, storage and security were TShs 1,000, and profit for the trader was TShs 2,000/bag. In the Rukwa region, focus group discussions showed that the situation were similar. Before the export ban, prices were higher. For example farm gate prices were TShs 35,000 to TShs 38,000 per bag of maize but following the export ban, the price fell to TShs 20,000 per bag at the farm gate. According to the participants in the focus group discussion in *Matai* village, imposing the export ban in Rukwa region did not guarantee food security as the cost of transport from the surplus Rukwa region to food deficit urban areas such as Dodoma and Dar es Salaam is currently too high.

Despite the low farm gate prices, the public money to purchase maize in 2011 was not enough. Member of Parliament (MP) *Deusdedit Mipata* (from the ruling party) claimed: *Money allocated to buy maize is only capable of buying 200,000 t of maize while Rukwa region has an excess of half a million tons* (Daily News, 27.07.11). The National Food Security Agency (NFSA) under MAFSC, is the institution that has the authority to issue import and export permits for crops as well as purchasing crops on behalf of

the Government (KI 2011). Unfortunately, the grain purchase through NFSA has not been successful in preventing negative effects of the export ban on the price that farmers get for their produce (KI 2011; URT/MAFSC 2011). Accordingly, Z. Emanuel, Tanzania Warehouse Licensing Board, expressed the impact of the export ban as follows: *The ban had caused many crops in rural areas to rot and farmers to lose their income, discouraging farmers and some of them may not work hard next season, farmers put their energy and efforts throughout the farming season, they deserve to benefit from their agricultural produce by fetching better prices in neighboring countries* (dailynews.co.tz/home/?n=26846&cat=home). One suspected way of getting around export bans is smuggling crops across borders to neighboring countries such as Malawi, Zambia, Kenya and further afield to Sudan, Somalia and Ethiopia (KI 2011; Hella et al. 2011; The EastAfrican 2013). Another way of adapting to low domestic farm gate prices for maize, has been to change to other crops. Sunflower production, for instance, is increasing in traditional maize growing areas as a result of falling maize prices (Hella et al. 2011). In Njombe region, key informants said that farmers were turning from maize to pine tree production, leaving only a small area for household production. Crop diversification is a positive development, but if it is at the expense of maize production, it will diminish the country's food supply as maize is such an important staple in Tanzania.

Is market failure one of the deeper causes of food insecurity in Tanzania?

Although there is considerable variation, in general the market is failing Tanzanian farmers for the reasons given above. Lack of adequate market access, insufficient price information and low farm gate prices are identified as factors constraining agricultural development and impacting negatively on farmers income (Coulson 2010; URT/MFEA 2011a, b; URT/MAFSC 2011; IFPRI 2012). Market failure provides fewer incentives for farmers to produce beyond self-sufficiency or to invest in agriculture. Farmers need means of accessing markets and obtaining reasonable and transparent prices as a fair return for their efforts and an incentive to increase their production (Gabre-Madhin 2012). Before the liberalization of the grain market, the National Milling Corporation was a monopoly grain purchaser although a parallel private grain trade also existed (Cooksey 2011). Neither the State Authority in the past nor current private trading has had much success in picking up maize in remote areas. The recent years' export bans have made it less profitable for traders to move around the country to pick up maize, resulting in low farm gate prices. Farmers are not organized to collectively transport their produce to possible pick up centers. Lack of adequate market access and low farm gate prices, have a negative impact on farmers' income

² 1 TSh = 0.000625 US\$

and overall on income opportunities in rural areas that come through agriculture. Income opportunities in rural areas are important for rural food security as so many households in the rural areas are net food consumers (EIU 2012).

Are Tanzania's public institutions weak?

UNDP (2012:4) suggests that weak institutions are another of three deeper causes of food insecurity in Sub-Saharan Africa. What role might weak institutions play in relation to food insecurity in Tanzania and what are weak institutions? Public institutions can be evaluated in different ways using criteria related to human resources; capacity to develop strategies and to implement policy; the ability to report on activities; and the capability to obtain results according to set goals and existing plans. The level of corruption and patronage can also be part of the assessment criteria. Andrews et al. (2012) underline the importance of looking at what institutions actually *do*, how they perform, and to what degree they have fallen into "capability traps" implying stagnation or deterioration. The performance of institutions regarding results is also closely linked to budget allocation and availability of funds.

Institutional performance in Tanzania

In this paper, we are not able to undertake performance evaluations of the many public Tanzanian institutions with relevance to food and agriculture. However, we will try to look closer at a few of these. The Agricultural Sector Development Programme (ASDP) under the Ministry of Agriculture (MAFSC) was evaluated in 2011 and this evaluation gives some indications of what the food and agriculture public institutions do and what results they get. ASDP started implementation in 2006/07 supported by donor basket funds and included five priority areas: *Institutional development at different levels; commercial activities; delivery of support service; marketing of inputs and outputs; and mainstreaming agriculture into other sectors* (URT/MAFSC 2011). The evaluation concludes that although the quality of services has been improved, overall ASDP has not delivered as expected due to several shortcomings such as late funding and time lag in input delivery. The evaluation also focuses on a possible confusion around the different approaches to agricultural development and how they link with each other (URT/MAFSC 2011). Donors are wondering where to put their agricultural support; if the best place is the public agricultural sector development programme run by MAFSC or if it is better to go for alternatives such as private sector development e.g. in relation to the growth corridor (SAGCOT). As ASDP is not delivering as expected and donors want fast results, MAFSC is blamed for not having the necessary institutional capability

to succeed in implementing the programme. Implementation is taking place at the district level and what different district authorities do will be important for performance and the results of ASDP. Apparently, many district level institutions often do not have a good reputation regarding "working for their people" (Gabagambi 2011; KI 2011). Abuse of the voucher system including leakages in relation to distribution of subsidized seed and fertilizer through ASDP has been identified as a problem (URT/MFEA 2011b). Corruption is a general problem in Tanzania that has caused donors to withhold funds and requested grants to be returned to the donor (Ibhawoh and Dibua 2003; Brockington 2008; Jansen 2009). Tanzania scores rather low on the *corruption perceptions index*; 35 on a scale from one to 100 where 100 is best (Transparency International 2012). Gabagambi (2011) recommends that detailed budget allocation at the local government authority level as well as the national level should be publicly available for stakeholders interested in budget tracking. The evaluation of ASDP also recommends that the next phase of ASDP should give priority to farmer empowerment to ensure that the Government can be held accountable for the development of agriculture (URT/MAFSC 2011).

Performance of NFSA is another example of weak institutional performance in the agricultural sector. Following the export ban in 2011, the Ministry of Agriculture through NFSA was tasked to purchase maize in maize producing areas located in Mbeya, Rukwa and Ruvuma. According to focus group discussions in these regions, NFSA had limited money to pay farmers/traders, had limited numbers of sacks to put maize in, too few weighing machines and limited warehouse capacity. In Ruvuma region for example, several tons of maize was spoiled by rain. The whole purchasing process in 2011 was slow and expensive with big losses for the actors involved.

On the other hand, the institution responsible for licensing warehouses appears, according to key informants, to be doing rather well. Warehouse receipts systems were developed in the 1990s as a way of providing both a place for farmers to store their crops and at the same time meet their need for credit (Lacroix and Varangis 1996). The Tanzania Warehouse Licensing Board started licensing warehouses in 2005 based on the Warehouse Receipt Act no 10 of 2005 (ESAANet 2012). By 2010, 42 warehouses had been licensed and 100 more were in the process of being licensed (F.J. Temu, Warehouse Regulation Manager, personal communication July 2010). Farmers and private companies deposit their crop in the warehouses and receive warehouse receipts, which prove that they have deposited their crop and can then use the receipts as collateral for loans. The idea behind the warehouse receipt system is both to improve farmers' access to credit as well as to increase the negotiation power of the producers via the traders. Storing also provides the opportunity to sell the crops when prices are

favorable. Tanzanian farmers often sell their crops at a price that is very low compared with what they could get if they delayed their sale (van Campenhout et al. 2011). Prices vary considerably from place to place and with the season (Hella et al. 2011). Although the warehouse receipt system is facing challenges such as far too few warehouses; security problems; difficulties in taking small amounts and still giving farmers good prices; mixed quality of smallholders' crops; overhead costs to cover running costs as well as both biological and man-made shrinkage, the responsible institution appears to be doing well in managing this system.

There is little doubt that the quality of public Tanzanian institutions varies from one institution to the other and from district to district. We are not able to draw broad conclusions on institutional performance although it appears from key informant interviews and review of the literature that institutions are doing better regarding human resources, capacity to develop strategies and ability to report on activities than when it comes to factors such as budgetary limitations, capability to obtain results, and ability to prevent corruption.

Securing availability and affordability of food in Tanzania

Food insecurity, measured as access to energy, is a serious problem in Tanzania in particular in rural areas where almost 45 % of the population lacks sufficient food energy (WB 2012a, b). In the above, what UNDP (2012:4) identifies as the deeper causes of food insecurity in Africa, *misguided policy, market failure and weak institutions* have been discussed in the Tanzanian context. From our analysis, it appears that these three factors are of importance in the country. Taking into account policy, market and institutional factors, what should the Tanzanian Government do to get on track regarding the MDG1's targets? UNDP (2012) recommendations on how to improve food security in Sub-Saharan Africa include *raising agricultural productivity* (fertilizer, seeds, water, credit, insurance, infrastructure, science, technology, extension, innovations); *focus on nutrition* (delay pregnancy, training, health care, school feeding, cash transfers, behavioral change, gender equality); *building resilience* (food aid, input subsidies, inputs for work, input trade fairs, weather insurance, cash transfers, grain reserves, market information, employment guarantee schemes, health insurance, school feeding, vaccination, therapeutic feeding); and *encourage empowerment, social justice and gender equity*. UNDP (2012) recommendations do not necessarily directly address how to overcome the three deeper causes of food insecurity that they themselves identify, but instead list a whole range of activities that in the Tanzanian case already are more or less included in existing strategies and plans. For example, UNDP's timely recommendation of raising agricultural productivity in Africa may not be easy to achieve if the three root causes are not tackled.

If misguided policy is a deeper problem hindering food security in Africa, how can policy be changed for the better? The Tanzanian Government is confronted with the challenge of creating incentives conducive to boosting agricultural production in the country and at the same time making sure food is available at affordable prices both in the short and long run. In Tanzania, more than 60 % of rural households and the majority of urban households buy most of their food from the market (KI 2011). Tanzanian farmers need incentives to produce to ensure that long term food security is not at risk, unless there is to be a greater reliance on imports of food. Both Binswanger-Mkhize (2010) and Coulson (2010) warn that if the Tanzanian government intervene to hold food prices low, this can easily discourages production and makes the problem they are trying to solve worse. With the high number of net food consumers in Tanzania, both in urban and rural areas, affordable food is of crucial importance for food security in the country. To what degree high food prices are good or bad for Tanzania's food security is a question of short and long term in which economic activity tied to farming should be considered. EIU (2012) points out that low food prices can be harmful to food security especially in agrarian based countries. One view is that net buyers of food are negatively affected by high food prices while net sellers are positively affected. However, Aksoy and Isik-Dikmelick (2008) found that in rural areas, both net sellers and net buyers were negatively affected by low food prices because low income for farmers meant low income for everybody as most economic activities were closely tied to farming. EIU (2012) emphasizes that low food prices depress smallholders' income and make it difficult for them to buy food as well as providing a disincentive for next year's production. Low maize prices have a negative impact on people's livelihoods in Tanzania as 85 % of the population depends on maize as an income generating commodity (EAC 2012).

In the long run, it is necessary for Tanzania to find ways of ensuring national food security without leaving farmers with the perception that they are paying the price for securing food availability and affordability in the country. The challenge for the Government is to make realistic and predictable policy and plans for both food production and food security. In surplus years with low prices, a more efficient system for purchasing for strategic reserves should be established whilst in years with insufficient supply the Government should sell from the strategic reserves to avoid peak prices that will negatively affect both net rural and urban consumers. In 2011, when the export ban was imposed, Tanzania had a surplus of 1.1 M tons of maize (EAC 2012). Social safety nets targeted towards vulnerable groups may be needed to reduce possible negative impacts of rising food prices. UNDP's (2012) food security recommendations in relation to focusing on nutrition, resilience building and encouragement of empowerment, social justice and gender

equity might be worthwhile considering regarding improving performance in relation to MDG1.

The agrarian question in Tanzania is a complex issue involving many dimensions. Maghimbi et al. (2011) underline lack of political power among farmers as one important factor preventing agricultural development. While policy in rich countries tends to be rurally biased, policy in poor countries tends to be urban biased (Paarlberg 2010). President Kikwete has launched the *Kilimo Kwanza* (Agriculture First) initiative, but is apparently not really able to gain farmers' trust that agriculture *is* actually coming first according to key informants that we have interviewed. Bryceson (1993) pointed out the negative impact of market liberalization on investment and activity in the agricultural sector in Tanzania underlining that insufficient attention had been paid to the links between national policy changes and microeconomic behavior. There are several countries that Tanzania can learn from in getting both small and large scale agriculture going. Regarding improving the domestic market, the Ethiopia Commodity Exchange (ECX) that was established in 2007, has transformed the Ethiopian crop market and changed the way farmers and traders behave in the market to the advantage of the farmers (Gabre-Madhin 2012). Malawi has turned a situation of frequent famines around by distributing subsidized fertilizer and seed to needy farmers and having a parastatal (ADMARC) picking up maize at guaranteed prices in areas where private traders are not willing to go (Holden and Lunduka 2010). China and Vietnam have invested successfully in small scale farming and both countries are basically self-sufficient in food and Vietnam is also an important crop exporter (Fan 2010; EIU 2012). The agricultural sector is important for food security, but so are jobs. FAO (2012) states that in addition to increased food production and productivity, the way to food security for all is through creating decent jobs, paying better wages, giving access to productive assets and distributing income in a more equitable way. A solution to Tanzania's food security problem has to be sought both within and outside the agricultural sector.

Conclusion

Food insecurity, measured as access to energy at the individual level, is a serious problem in Tanzania in particular in rural areas where almost 45 % of the population lacks sufficient food energy (WB 2012a). In this paper, we assess the appropriateness of the three underlying factors identified by UNDP (2012:3), *misguided policies, failing markets and weak institutions* in explaining food insecurity in Tanzania and discuss how to secure availability and affordability of food in the country. Our analysis basically supports UNDP's emphasis on the importance of policy, institutions and

market access when seeking to improve food security and reach MDG1. However, regarding agricultural development, any agricultural policy approach would have problems succeeding without farmers' empowerment to hold the Government accountable for failing to deliver on their policies and plans. The Tanzanian Government is struggling with the difficulty of addressing the twin goals of balancing national food availability with affordable food prices for urban and rural consumers. The main challenge is to ensure conducive and enabling environments for farmers to produce and at the same time keep food prices at an affordable level to improve food security at the individual level in the country.

Conflicts of interest We declare that we have no conflict of interest in relation to this paper.

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