

Africa's Evolving Food Systems

Drivers of change and the scope for influencing them

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This paper investigates the ‘megatrends’ shaping African economic, political and social landscapes and asks which ones depend endogenously on processes that are within the realm of policy influence and which ones are indeed exogenous. Based on this analysis, it sketches four plausible scenarios for African food systems and discusses how policy choices will influence which of these scenarios is manifested in the next decades. The authors hope to raise society’s awareness of the potential to shape future outcomes and argue that the state can play a major role to engage the public in determining what a ‘good society’ looks like.

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Summary

Recent evidence points to rapid economic transformation in Africa. Half of the world's ten fastest growing economies are in sub-Saharan Africa. Africa's dynamism has spawned efforts to identify the 'megatrends' driving the region's economic growth and anticipate the future opportunities and challenges associated with these trends. Among the most frequently cited trends are the rise of the African middle class, rapid urbanisation and consequent shifts in food demand and downstream modernisation of the food systems, a rapid shift in the labour force from farming to non-farm jobs, and rising competition over African farmland.

This article has two objectives. Our first is to clarify how 'megatrends' often considered to be shaping the region's economic, political and social landscapes, are actually quite dependent on other related processes that are either highly uncertain or within the capacity of governments to alter. Towards this end, we consider which of the commonly articulated trends and transformations are indeed exogenous from the standpoint of African policy makers over the next decade and which are endogenously dependent on other more fundamental processes that are within the realm of policy to influence. Remarkably different scenarios are plausible, with very different growth and distributional outcomes, contingent on the policy actions taken by African governments.

Our second objective is to contribute to a greater awareness of the potential to shape future outcomes through an inclusive political process. Rather than adopting analytical frameworks that reinforce perceptions of predetermined outcomes being driven by exogenous megatrends, we argue that a major role of the state is to engage the public in determining what a 'good society' would look like. The state then implements the policies and investments that will direct private capital towards achieving this vision, anticipating the impacts of trends that cannot or should not be altered and planning accordingly. This analysis may be of interest to civil society in assisting policymakers seeking guidance on how they may 'bend' certain trends in directions that may be considered socially desirable. It may also help public and private sector analysts seeking to interpret the meaning of 'foresighting' projections.

The take-away messages from this analysis are threefold. First, many 'megatrends' boldly identified

as drivers of change in African agricultural systems are arguably highly dependent on other underlying processes which may or may not occur. Two such variables of central importance in the context of predicting the future of African food systems are the direction of future world food prices and the rate and breadth of income growth in urban areas.

A second conclusion is that the pace and force of some commonly identified megatrends are highly dependent on future policy and public investment decisions. We highlight this point as a counterpoint to analyses couched in terms of inevitable transformations. The risk of conceiving of global food systems as irreversible exogenous shocks on developing countries is to neglect the role of proactive public policy to moderate and shape the way international forces affect local agricultural sectors. Our third conclusion is that some of the most important trends currently shaping African food systems may continue only for a limited duration. Some trends are part of a system that co-evolves with related processes that may assume new trajectories; other trends can be 'bent' by policy. Hence, we believe that 'foresighting' studies might be most usefully oriented to consider a range of plausible scenarios of the future in order to anticipate the various types of challenges that African leaders might face. Our analytical framework considers four general scenarios contingent on the direction of global food prices and the pace and breadth of income growth in Africa's rapidly growing urban areas, given both the uncertainties and endogeneity of both to other important economic processes. A conclusion that is likely to remain constant no matter which scenario unfolds is that the creation of new jobs in the non-farm economy is unlikely to grow fast enough to absorb the rapidly growing young labour force. Because of this, smallholder agriculture will remain a fundamental safety valve for absorbing much of the new labour force into gainful employment, at least as a several decades-long intermediate stage in the region's economic transformation. While only a fraction of smallholder farmers currently possess the requisite entrepreneurial ability and productive assets to thrive, this sector still plays a crucial role in successfully managing the transition to a modernised Africa. It must remain viable at least over the next several decades for two reasons.

Most African countries in 2014 are primarily inhabited by unskilled and semi-skilled rural people who are primarily engaged in farming. Under such conditions, much greater public investment directed towards making two-hectare farms productive may have high payoffs. The growth of non-farm sectors and employment opportunities will rely on effective demand. When a country's population is 60 per cent rural, it is difficult to generate effective demand for non-farm goods and services without at least some portion of the countryside having enough money to participate in the cash economy. The literature on growth linkages indicates that the first-round beneficiaries of agricultural growth generate important multiplier effects by increasing their expenditures on a range of local off-farm and non-farm activities that create second-round benefits for a wide range of other households in the rural economy. The extent and magnitude of these second-round effects depend on how broadly spread the first-round growth is. The distribution of land and other productive assets will clearly affect the size of these multipliers. If dynamic labour and services markets can be developed, then other employment opportunities should be easier to create in the very locations where the larger smallholders are investing and raising their output and productivity. Proactive public sector investment and policy support in developing these labour and service markets will be a key determinant of the magnitude of the growth linkages to be derived from agricultural growth. Education, which played a crucial role in Asia by allowing households to exit agriculture into more lucrative off-farm jobs, is relatively low in most areas of rural Africa by world standards. Investments in rural education and communications are likely to become increasingly important to facilitate structural transformation under any of the future scenarios envisioned.

So, what should governments do? Governments cannot wait for academics to conclusively agree on the priority list. Governments are acting today, and to be useful, academics must provide guidance based on the weight of the evidence. To these authors, the priority list would look something as follows. First, invest strongly in the education value chain – from higher universities to vocational schools to primary and secondary education – to upgrade the skill levels of young people entering the labour force. Second, implement policies to promote broad-based agricultural growth, including investments in R&D that are scale-neutral, agricultural extension programmes, and programmes designed to restore long-term soil fertility. Third, invest in physical infrastructure (roads, ports and electrification) to reduce the costs of production in both industry and agriculture and thereby promote competitiveness and job creation. Fourth, institute an industrial policy that promotes private investment and job growth in local non-farm sectors, which simultaneously acts as a stimulus to investment in local agrifood systems. And fifth, invest in urban planning (housing, sanitation, health facilities and green spaces) in anticipation of the near certainty that an increasing proportion of Africa's population will be living in urban areas in the decades to come.

These challenges are formidable but manageable. While private investment will largely determine the quality and pace of job creation in the region, it is the enabling environment and the underlying political process that determines the quality and pace of private investment. Hence the role of governance and institutions is decisive and will largely determine whether the region's economic transformation is a relatively smooth, robust and peaceful process or a painful and protracted one.

1

Introduction

After decades of lethargy, much of Africa is now experiencing rapid economic transformation. Half of the world's ten fastest growing economies are in sub-Saharan Africa (Kearney, 2014). Africa's dynamism has spawned efforts to identify the 'megatrends' driving the region's economic growth and anticipate the future opportunities and challenges associated with these trends. Among the most frequently cited trends are the rise of the African middle class (AfDB, 2012; Hattingh *et al.*, 2012; Deloitte and Touche, 2013), rapid urbanisation and consequent shifts in food demand and downstream modernisation of the food systems (Tschirley *et al.*, 2013), a rapid shift in the labour force from farming to non-farm jobs (Fine *et al.*, 2012), and rising global interest in African farmland (Deininger and Byerlee, 2011; Schoneveld, 2014).

This article argues that these projections about Africa's future are a good deal less certain than the new conventional wisdom might suggest. 'Foresighting' exercises are often based on tenuous evidence of key underlying trends and tenuous assumptions about the degree to which these trends are inevitable exogenous forces. Most current trends are neither irreversible nor inevitable. Just as the current trends and transformations being observed in African food systems are the outcomes of the policies and public investment patterns of prior decades, the future will be shaped and transformed by today's policy actions – either those taken proactively or those taken passively

as a result of no action (Seidman, 1973). This point is underappreciated by development thinkers who speak in terms of inevitable transformations.

The evolution of African economic systems ultimately reflects the investment decisions of millions of private sector actors. Yet the pace and composition of private investment is determined by the enabling environment set by governments (consider the difference between North and South Korea, for example).¹ For these reasons, our focus is on what the public sector can do in the first instance to generate the incentives for system-wide private investment in food systems that contribute to broad-based growth.

This article has two objectives. Our first is to clarify how 'megatrends', often considered to be shaping the region's economic, political and social landscapes, are actually quite dependent on other related processes that are either highly uncertain or within the capacity of governments to alter. Towards this end, we consider which of the commonly articulated trends and transformations are indeed exogenous from the standpoint of African policy makers over the next decade and which are endogenously dependent on other more fundamental processes that are within the realm of policy to influence. Remarkably different scenarios are plausible, with very different growth and distributional outcomes, contingent on the policy actions taken by African governments. Time scale matters: there is greater certainty in the near term. The farther forward

¹ By 'enabling environment', we mean the integrity and efficiency of public institutions affecting commerce and trade, the economic policies influencing the returns to investment in particular sectors and areas, the pattern of public expenditures in infrastructure, education, health, R&D, subsidies and taxation policies and the degree of stability and predictability in the political-economic system. Inevitable policy variability across countries poses additional problems for generalised predictions of Africa-wide trends and transformations. Clearly the main features of change in agrifood systems and overall economies will vary greatly across areas of the continent.

we project, the more scope for the future to reflect long-term policy choices – those taken either implicitly or explicitly.

This then leads to our second objective, which is to contribute to a greater societal awareness of the potential to shape future outcomes through engagement in the political process. Rather than adopting analytical frameworks that reinforce perceptions of predetermined outcomes being driven by exogenous megatrends, we argue that a major role of the state is to engage the public in determining what a 'good society' would look like. The state then implements the policies and investments that will direct private capital towards achieving this vision, anticipating the impacts of trends that cannot or should not be altered and planning accordingly.

Based on this analysis, we derive four plausible scenarios for future African food systems and discuss how policy choices will influence which of these four scenarios is manifested in the next several decades. This analysis may be of interest to civil society in assisting policymakers to exploit opportunities to promote public discussion of what a good society would look like. It may assist policymakers seeking guidance on how they may 'bend' certain trends in directions that may be considered socially desirable. It may also help public and private sector analysts involved in 'foresighting' projections.

2

Megatrends affecting Africa

The following six trends have been highlighted in various studies as being among the most important drivers of change in African agrifood systems.²

Trend 1: A secular rise in food and energy prices.

Food prices have risen sharply and become more volatile since the global food price surge of 2007/08. Factors often cited as driving a secular rise in food prices over time include

- Population growth
- Rising income growth and hence demand for food in areas of the world that were historically poor
- Rising global demand for livestock products (which raises the demand for grain used in feed rations)
- An apparent slowing of grain productivity growth in major grain breadbasket regions of the world (Grassini *et al.*, 2013; Cassman *et al.*, 2010), and
- Greater costs in bringing new land under cultivation (eg Chamberlin *et al.*, 2014).

Global food prices have become increasingly affected by energy prices. Current energy consumption is dependent on finite, non-renewable resources and a continuation of this situation is likely to put upward pressure on both energy and food prices over time. Few if any African governments have the ability to affect world food price levels and most have only limited ability to insulate their domestic food markets from secular changes in world market conditions, especially over a sustained period.

The probability that world food prices will continue to rise over the next several decades depends on the pace of new technologies for generating food and energy. Both of these are major unknowns and highly influenced by policy decisions in the major food and energy producing regions of the world. Projections differ greatly on the long-term direction of food prices; compare for example the *International Food Policy Research Institute's* projections (eg Rosegrant *et al.*, 2012) with those of Baldos and Hertel (2014). This particular trend is therefore largely exogenous from the standpoint of individual African governments, and one that is exceedingly difficult to confidently predict into the future given the wide range of factors involved in determining global food price conditions, most of which are also highly uncertain. For example, few food price projections have begun to incorporate the effects of apparent dwindling supplies of fresh water in the areas of the food-producing breadbaskets (Strzepek and Boehlert, 2010).

Trend 2: Rapid urbanisation and rising per capita incomes in urban areas of Africa, giving rise to an African middle class.

A recent proliferation of reports finds evidence of a rising middle class in Africa (for example AfDB, 2011; Kearney, 2014; Deloitte and Touche, 2013; Tschirley *et al.*, 2013). On this basis they project a rapid modernisation of Africa's food systems and diets, with major employment growth being envisioned in the downstream stages of the food systems. However, these conclusions are highly

² This article focuses on Africa south of the Sahara and uses the term 'Africa' as shorthand. These trends are often presented as overarching ones with a pan-African reach, though their relative importance will clearly vary somewhat across countries as will the responses of African governments to them.

sensitive to how 'middle class' is defined.³ Potts (2013) argues that urban income growth is quite narrow in most African countries for which data exist. Jedwab *et al.* (2013) and Gollin *et al.* (2013) indicate that GDP growth in many African countries is driven by narrow growth in natural resource sectors, which contribute woefully little to employment creation and raises the spectre of urbanisation without income growth or economic transformation. An otherwise bullish assessment by the McKinsey Global Institute (Fine *et al.*, 2012) indicates that the supply of wage jobs in manufacturing, services and government is not growing rapidly enough to absorb more than two thirds of the region's rapidly rising labour force. Other sources argue that urban income growth is robust and relatively broadly based (Young, 2012; Tschirley *et al.*, 2013; McMillan and Harttgen, 2014).

The view that Africa is rapidly urbanising is also highly contested. Prior to 2005, the United Nations concluded that Africa was the most rapidly urbanising region of the world (for example Cohen, 2004), owing in large part to rapid urban-to-rural migration. The UN later modified its projections based on more recent evidence that urbanisation is generally lower and considerably more variable across countries (Bocquier, 2005; Potts, 2012).⁴

The rates of migration and urbanisation are responsive to public sector actions that affect the relative returns to labour in agriculture, industry and the informal non-farm sectors (Harris and Todaro, 1970). Policies and investment patterns vary greatly across countries because of the heterodox political and historical conditions. For these reasons, and based on the empirical record to date, we conclude that some areas of Africa may experience broad-based income growth and urbanisation over the next several decades. But the pace and extent to which this occurs is likely to vary substantially across countries depending on the specific enabling environment and public investment patterns undertaken in each country.

Trend 3: Africa's unique demographic structure will rapidly increase the numbers of young people entering the labour force. Over 60 per cent of Africa's population is currently below the age of 25. Roughly 17 million people will enter the labour force each year over the next decade (Losch, 2012). Fine *et al.* (2012) estimate that given current rates of job growth, roughly half of these people will be absorbed into gainful wage jobs. Under the most favourable policy and growth scenarios the urban and non-farm sectors will be able

to absorb roughly two thirds of these people into wage employment. The viability of family farming is, therefore, likely to determine whether the remaining youth seeking jobs are productively engaged in agriculture and the informal sector (which is heavily dependent on agriculture as a source of demand), or whether they join the ranks of the unemployed. The latter scenario will bring major political risks. Fortunately, policy and public investments can rapidly improve the incentives and the profitability to engage in farming – a major opportunity for both the youth and for governments.

This trend is perhaps the one with the highest degree of certainty, and one that African governments can proactively anticipate and respond to. Instituting an enabling environment that rapidly promotes private investment and job creation in non-farm sectors and labour-intensive forms of agriculture would have high payoffs and raise the likelihood that a country's economic transformation will be relatively smooth rather than painful and protracted. Specific policies and investments, consistent with broad-based agricultural growth and poverty reduction, include

- Investments in physical infrastructure (such as roads, rail systems, ports and electrification)
- Policies favourable to family farming
- Agricultural R&D, and
- Farm extension programmes (Fan *et al.*, 2008; EIU, 2008).

Trend 4: Rapid concentration of farm structure and marketed surplus from agriculture: The demand for agricultural land in Africa has risen dramatically since the surge in global food prices starting in 2007. Agricultural subsidies and land policies in many countries have accelerated the demand for land. Recent evidence indicates that relatively wealthy people (both rural and urban) are investing in land at an unprecedented rate, leading to the rapid rise of medium-scale farmers in Africa. A study of three countries (Ghana, Kenya and Zambia) by Jayne *et al.* (2014a) indicates that medium-scale farms control more land than large-scale foreign investors in all three cases and control even more than small-scale farmers in two of the three cases. Evidence also suggests that existing land policies are leading to increased inequality of landholdings and in some cases may be making it more difficult for area expansion in densely-populated smallholder farming areas (Jayne *et al.*, 2014a; Woodhouse, 2003).

³The African Development Bank (AfDB) defined middle class as per capita daily consumption of US\$2–20 in 2005 purchasing power parity US dollars. Further it found that this group had risen from 27 per cent to 34 per cent of the population between 1990 and 2010. However, about 60 per cent of the middle class in 2010 were in the US\$2–4 per capita consumption group – barely out of the poor category and in constant threat of falling back into it (AfDB, 2011). If this group is excluded, the rise in Africa's middle class over the past two decades would have been quite modest. However, there is some evidence of rising incomes among a small segment at the top end of the income distribution.

⁴In some areas of Africa, rural-to-rural migration appears to be the most common type of migration (Bilsborrow, 2002).

Farm lobbies have also changed their complexion over time and are increasingly dominated by urban-based and politically influential medium-scale farmers (most being in the range of 20100 hectares). This group has progressively steered agricultural policies and public budgets in their favour through input subsidy programmes targeted to 'progressive' farmers and through commodity price support programmes and import tariffs that reward those with the greatest surpluses to sell.⁵ Ironically, most small-scale farms are net maize buyers and are adversely affected by the lobbying of national unions of farmers aimed at raising grain prices (Jayne, 2012).

However, these trends reflect the incentives embodied in land and agricultural policies over the past several decades. Future farm structure and income growth from agriculture are highly malleable to alternative land and agricultural policies. We are inclined to agree with Woodhouse (2003) that farm structure and farm commercialisation are likely to become more concentrated over time in most countries unless land and farm policies are put in place to actively reverse these trends.

Trend 5: Widespread soil degradation in densely-populated African farming systems. Land pressures in the densely-populated farming areas of Africa are causing a gradual shrinking of farm sizes over time (Headey and Jayne, 2014). Smallholder farmers respond by more continuously cropping their fields every year. Fallows have largely disappeared in densely-populated areas.⁶ Continuous cultivation of existing plots would not necessarily pose problems for sustainable intensification if soil quality were maintained or improved over time through sufficient use of fertilizers, soil amendment practices and other land-augmenting investments. However, a major body of evidence in Africa points to soil degradation arising from unsustainable cultivation practices in high-density areas of the continent (for example Stoorvogel and Smaling, 1990; Drechsel *et al.* 2001; Tittonell and Giller, 2012).⁷ Loss of micronutrients and soil organic matter pose special problems, both because they cannot be ameliorated by the application of conventional inorganic fertilizers and because they

tend to depress the efficiency of inorganic fertilizer in contributing to crop output (Shaxson and Barber, 2003; Marenja and Barrett, 2009; Vanlauwe *et al.*, 2011). Because of continuous cultivation and lack of crop rotations,⁸ soil organic carbon levels have reached very low levels in high-density Africa (Powlson *et al.*, 2011; Vanlauwe *et al.*, 2011). Giller *et al.* (2006) and Tittonell *et al.* (2007) conclude that smallholder farmers are largely unable to benefit from the current yield gains offered by plant genetic improvement due to their farming on depleted soils that are non-responsive to fertilizer application. The problem of soil mining has the classic elements of a 'social trap' (Platt, 1973), in which people adopt behaviours consistent with their short-term livelihood objectives, but which produce unsustainable and potentially disastrous long-term consequences. Rising rural population density and associated land pressures are important underlying drivers of these processes, yet they are clearly within the scope of policy to ameliorate. A more holistic approach to sustainable agricultural intensification can succeed in reversing these trends and creating the potential for productivity growth in high-density smallholder environments (Snapp *et al.*, 2010; Powlson *et al.*, 2011).

Trend 6: Greater climate variability. The precise impacts of climate change on African farming systems are likely to vary spatially, but two general predictions are greater variability in agricultural production and possibly a decline in crop productivity (Schlenker and Lobell, 2010). These effects are largely exogenous in the short run from the standpoint of African policymakers, but it is quite possible that future land policies affecting the rate at which forest and grass land are converted to farmland may influence the degree of climate variability experienced in some parts of the region. In this way, factors affecting the supply of and demand for farmland in Africa may affect the pace of this trend in the coming decades. Moreover, if global climate change induces greater volatility in world food prices, this may induce public and private investment responses at certain stages of the food system, for example local storage and a shift towards food self-sufficiency.

⁵ Similar processes of elite capture of public agricultural expenditures in Latin America are discussed by Lopéz and Valdés (2000).

⁶ Fuglie and Rada (2013) report that fallowed land as a proportion of total farmland in sub-Saharan Africa has declined from 40 per cent in 1960 to roughly 15 per cent in 2011. Jayne *et al.* (2014b) report that fallows have largely been eliminated in smallholder farming areas containing over 250 persons per km² of arable land.

⁷ Common forms of soil degradation include declining nutrient balances ('soil mining'), erosion and loss of topsoil, acidification and loss of organic matter. An important contrasting study by Tiffen *et al.* (1994) argues that population pressures between 1950 and 1980 in the Machakos District of Kenya induced households to make land-augmenting investments that contributed to sustainable intensification. However, in a more recent revisit to these same areas in 2014, Kyalo and Muyanga (2014) note that population densities during the period studied by Tiffen *et al.* were generally below 400 persons per km², about half the current densities in many areas of Machakos where widespread soil degradation and unsustainable forms of intensification are apparent.

⁸ On very small farms, households cannot afford to sacrifice a whole year by planting green manures or crops for which there is limited consumption value because they need to produce as much food as possible for the coming year.

3

Scenario analysis

Scenario planning is the framework used to analyse these trends and, in so doing, develop plausible future outcomes for the African food system. Scenario planning is a foresighting method used to predict possible outcomes given uncertainty about the future time paths of the underlying trends (Strauss and Meyer, 2010). It also provides a systematic approach for categorising what is exogenous from the standpoint of policy, and what can be influenced by policy. The resulting scenarios can be regarded as possible outcomes predicated on specified conditions arising in the future (Glen, 2006). This section assesses the possible implications of four scenarios for various stakeholder groups.

Classification of megatrends

To generate the scenarios, the six megatrends presented in Section 2 are ranked by the authors according to two dimensions – **the likelihood of arising** (in the absence of proactive policy actions to affect them) and the degree to which the direction or force of the trend can be **influenced through policy actions**, broadly defined. Figure 1 below illustrates this ranking.

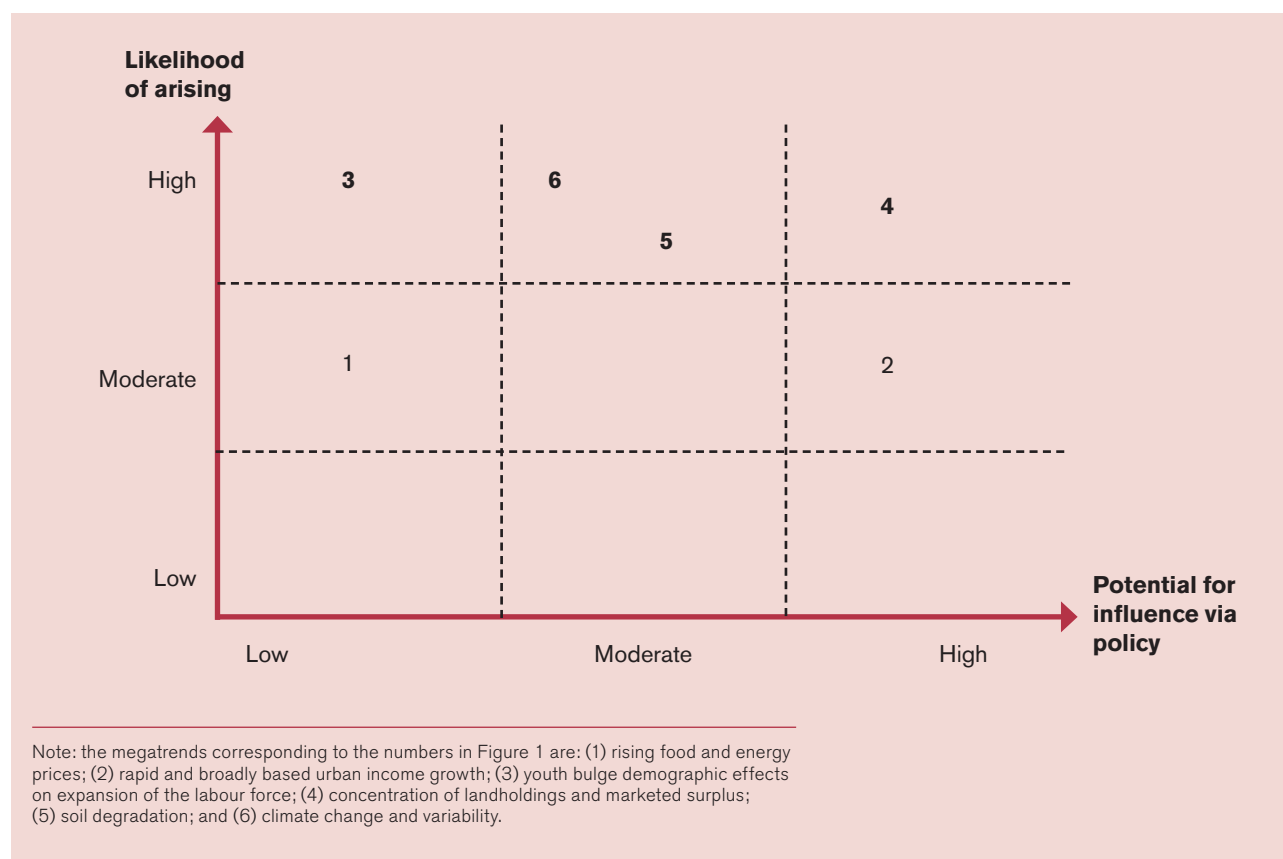
According to our subjective rankings, there is little scope for African policymakers to alter Trends 1, 3 and 6, at least in the next decade. In contrast, policy and public investment patterns can do much to ‘bend’ Trends 2, 4 and 5 in socially desirable directions. Taking Trend 2 for instance, major public investment in infrastructure and education, would be likely to stimulate private investment in industry and manufacturing and hence encourage the growth of wage employment in urban areas.

Two of these megatrends are of special importance because they are both highly uncertain and because they will determine the pace of other trends if they do materialise. These two megatrends are the direction of world food prices and the rate and breadth of urban income growth (Trends 1 and 2). From the standpoint of private and public sector stakeholders in the agricultural sector, the first trend is largely exogenous in the sense that they can do very little to influence the time path of global food prices. However, there is great scope – both through agricultural as well as industrial policy – to influence the pace and breadth of urban income growth. The extent to which urban income growth is broadly based will also depend in part on the nature of future agricultural growth. The contribution of agricultural growth to non-farm employment through growth multiplier effects are well established and are considered to be one of the central pathways leading to non-farm growth in green revolution Asia (for example Mellor, 1976; Lipton, 2006; Fan *et al.*, 2007).

Four possible trajectories of economic transformation

Given the fundamental importance of megatrends 1 and 2 (the rate of growth in world food prices relative to prices in the rest of the economy, and the pace and breadth of urban employment and income growth), four possible scenarios emerge (Figure 2). The projected impacts for each scenario are discussed from the perspective of five stakeholder/interest groups: (1) African governments; (2) traditional authorities; (3) rural communities, the majority of whom are small-scale farmers; (4) urban consumers; and (5) private sector firms and investors.

Figure 1. Classification of megatrends according to predictability and potential influence via policy



Scenario 1: The emergence of latifundia

Assuming that global food prices continue to rise over the next several decades and that urban income growth is quite skewed, with the top 20 per cent of urban households realising a rapid rise in income while the remainder experience little or no growth, we project the following broad outcomes:

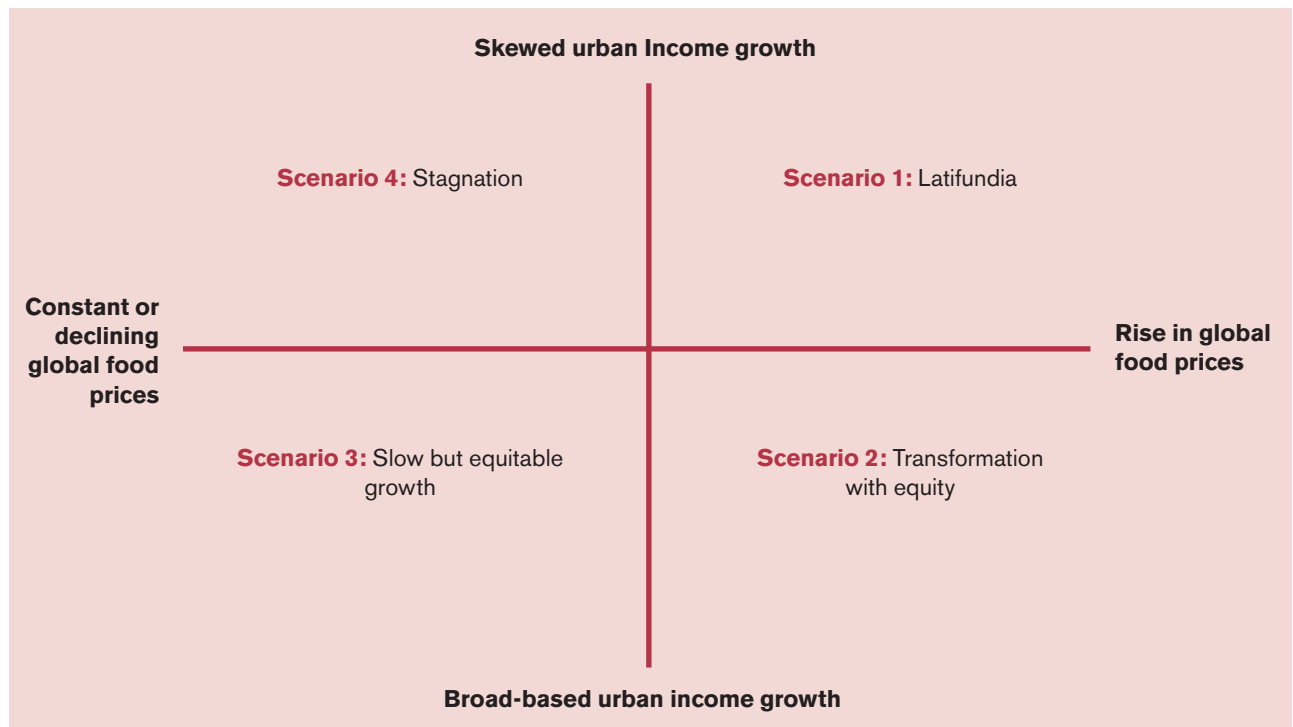
Rise of an urban elite: Even if only 10 to 20 per cent of urban Africa becomes 'middle class', the sheer size of Africa's cities will be sufficient to attract major foreign investment in food retailing and other upper- and middle-class consumer goods. Consumption patterns among wealthy consumers will slowly shift away from starchy staples and towards animal products, fresh fruits and vegetables, and more convenient processed foods. Rising food prices will attract increased private investment in local production to procure these products more cheaply than imports. However, whether

domestic production indeed becomes a cheaper source of meeting rising domestic demand depends decisively on government policies and public investment patterns. For example, state investment in rural electrification, roads and irrigation can provide cost advantages to local production and stimulate private investment. Farm lobbies representing the interests of commercialised sellers (many of whom are influential urbanites in government and/or the private sector) may become quite powerful under this scenario and effectively lobby for public funds to be used in support of domestic food self-sufficiency to protect the nation against the vagaries of a volatile world food market.⁹

Concentration of agricultural land: This scenario may accelerate the pace at which wealthy and influential people in both urban and rural areas acquire prime agricultural land. Farm lobbies are increasingly being represented by medium-scale farmers, many of whom are educated people with urban-based jobs and who are relatively new entrants into commercialised farming (Sitko and Jayne, 2014; Jayne *et al.*, 2014a). Such

⁹ Despite producing questionable income distributional effects, this line of argument in favour of farm price supports above world market prices has been successfully employed in the past throughout Africa, first by colonial settler farm lobbies and more recently by their African successors (for example Jayne and Jones, 1997; Jayne, 2012).

Figure 2. Four future scenarios of the African food system



circumstances appear to encourage efforts through the political process to convert large tracts of land from traditional tenure structures to statutory tenure systems where land can be privately owned through title deeds acquired through land markets. A skewed pattern of income growth confined to the top 20 percent of urban households would most likely increase their demand for land and accelerate pressures on the state to convert customary land to statutory tenure (where this process has not already been completed). Such changes in land tenure would accelerate already profound shifts in farm structure, featuring rising inequality in land distribution. The Gini coefficients of land distribution in African countries where data is available appear to be rising quite rapidly over time, are now much higher than those in green revolution Asia, and are in some cases approaching those of the latifundia agricultural systems of Latin and South America (Jayne *et al.* 2014a).¹⁰

The impacts on farm productivity are unclear. New technologies may provide efficiency advantages to medium and large-scale farms. While the evidence to date shows an inverse relationship between farm size and efficiency over the range of one to ten hectares (for example Larsen *et al.*, 2013; Carletto *et al.*, 2013), there is very little evidence on efficiency differences between small, medium (20 to 100 hectares) and

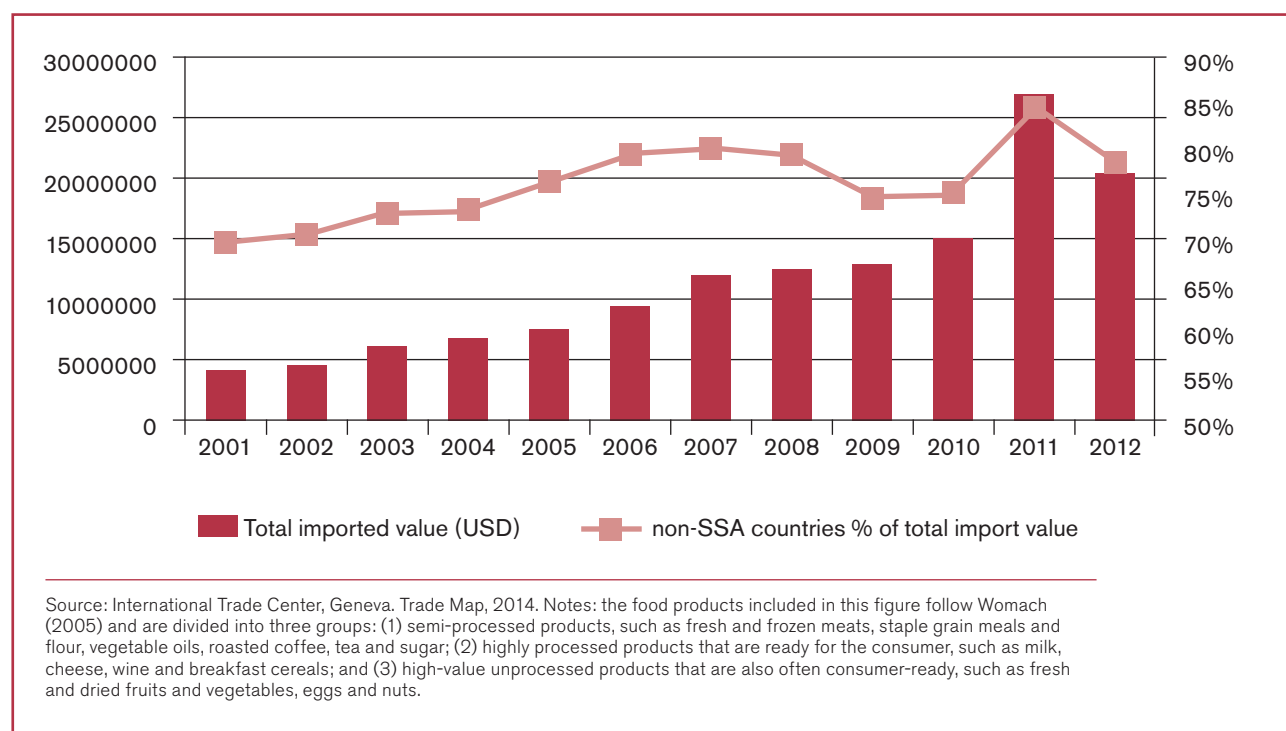
large-scale farms (over 100 hectares). In any case, the relationship between farm size and production efficiency is a reflection of prior policies and patterns of public investment (for example, water rights and irrigation investments having been made for the benefit of particular groups at the expense of others).

Greater income inequality: Greater concentration of both consumer demand and land ownership may restrict the breadth of economic growth in Africa, and retard the poverty-reducing benefits of whatever agricultural growth does occur (Ravallion and Datt, 2002). Most crucially, a form of income growth restricted to a narrow segment of society would diminish the income multiplier effects that otherwise might encourage more rapid and inclusive economic transformation. This is evident from examining the composition and source of sub-Saharan Africa's food imports. Between 2001 and 2012 a growing proportion of the region's food import demand for processed and high-valued food products was supplied by the international market (Figure 3).

The data in Figure 3 demonstrate that while urban demand for convenience foods (many of which are considered basic food staples) is rising rapidly in Africa, food import demand is increasingly being met by world markets. Projections by the Organisation for

¹⁰ For example, the Gini coefficients of landholdings have increased in Zambia from 0.42 in 2001 to 0.49 in 2012, and in Ghana from 0.54 in 1992 to 0.65 in 2005 (Jayne *et al.*, 2014a).

Figure 3. Imports by sub-Saharan African countries of high-value and processed food products and the share of imports originating from outside Africa



Economic Co-operation and Development-Food and Agricultural Organization of the United Nations (Figure 4) of Africa's consumption and production of high-valued commodities over the period 2011 to 2023 also indicate that an increasing share of the region's growing demand for high-value food products associated with rising consumer incomes will be met by imports. To the extent that rising consumption demand is met primarily by imports, it is not clear that urban income growth will stimulate rapid new investment in food value chains linking farms to consumers. Incentives for private investment and the transformation of value chains at the assembly, wholesaling and processing stages of the food system depend on the potential for domestic production growth to keep pace with consumption demand.

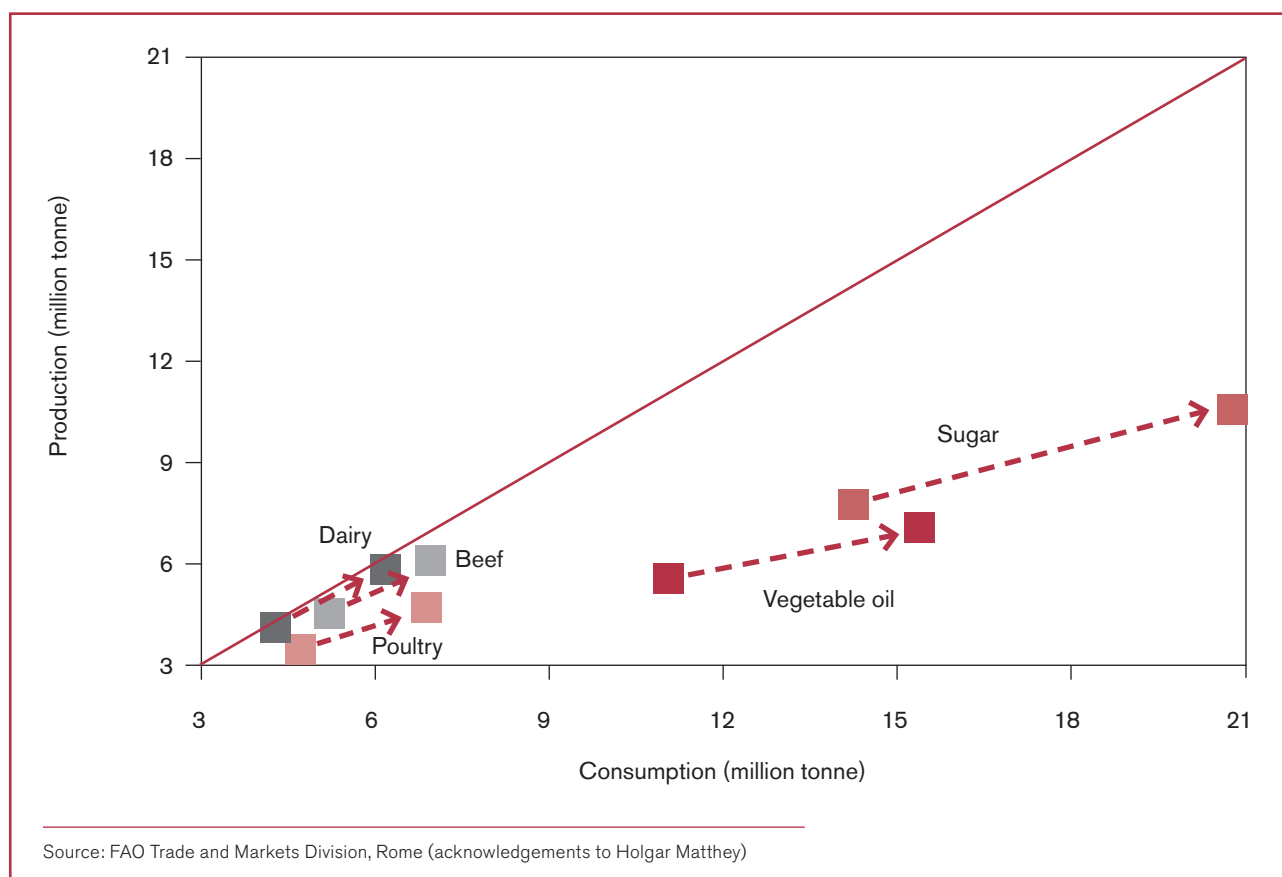
Private firms in the region repeatedly warn that while urban populations and hence demand are growing rapidly, there are major concerns over whether adequate supplies can be sourced through local production to meet this demand. Concerns over the scope for local production to respond to rising consumer demand are especially warranted in many countries where the potential for expansion of high-potential cropland is limited (Chamberlin *et al.*, 2014). Export-oriented private sector firms also acknowledge that Africa may be exporting food commodities, but that most of the processing and value added is carried out internationally. The pattern of trade shown in Figures

3 and 4 implies that local employment within agri-food systems may be lost somewhat to overseas suppliers. This employment could otherwise have accrued to local producers and the downstream marketing and processing stages of the food system if urban demand were more effectively met by local production. These trends caution us from assuming that urbanisation and urban income growth will necessarily ensure the modernisation and rapid growth of Africa's food systems.

Stubbornly high poverty rates: Greater concentration of land would be expected to contribute to landlessness and accelerate the rate of outmigration from rural areas experiencing land scarcity. Other things being equal, this would contribute to urbanisation. However, if the form of non-farm employment growth is not broadly based, it will be exceedingly difficult for the non-farm sector to absorb the 330 million young Africans who will be entering the labour force between now and 2025 (Losch, 2012). This could be a politically volatile scenario (Beehner, 2007).

Agribusiness firms and investors: A continued rise in global food prices would be expected to elicit continued strong interest in large-scale land acquisitions by agribusiness firms and speculators, as well as domestic investors, especially for commodities priced at import parity levels. We might also expect large investment firms to approach domestic landowners

Figure 4. Trends in production and consumption of high-valued food commodities in sub-Saharan Africa, 2011/13 to 2023



(many of whom appear to be speculators and not experienced farmers)¹¹ to engage in cooperative production schemes through land lease agreements, and so on. Such arrangements could promote major gains in agricultural production, though it is unclear whether this would be sufficient to keep pace with rising consumer demand without sustained public sector commitment and expenditures in support of farm productivity growth.

Rural communities/small-scale farmers: High food prices would provide incentives for small farmers to increase their productivity and expand their use of land. Intensified land pressures in densely-populated areas will make it difficult for many rural households to do either. A continuation of land allocations to medium- and large-scale investors will indirectly exacerbate land pressures in densely-populated rural areas by restricting the supply of unused land in other areas that would otherwise support voluntary rural-rural migration.

Continued rural population growth and land subdivision will intensify land constraints in the more densely populated smallholder areas and contribute to forms of unsustainable intensification featuring land degradation. These can be reversed by aggressive state actions to put in place holistic programmes of soil rehabilitation and sustainable land intensification (Drechsel *et al.*, 2001; Powlson *et al.*, 2012; Tiftonell and Giller, 2012).

Traditional authorities: High food prices coupled with a concentration of economic and political influence in urban areas would be anticipated to intensify pressures to convert land from customary to state titled land and hasten the demise of traditional governance systems in rural areas.

¹¹ See Sitko and Jayne (2014) for evidence in Zambia, and Schoneveld (2014) for Africa-wide evidence.

Scenario 2: Transformation with equity

Our second scenario assumes that per capita income growth will be relatively high and broadly based, and that global food prices will continue to rise over the next 10 years.

Urban elite: As with the latifundia scenario, we anticipate that rising incomes will hasten changes in food consumption patterns along the classic Engel curve. However, unlike Scenario 1, we anticipate that a growing proportion of this demand will be met by local industries as the more broadly based multiplier effects of broad-based income growth stimulate local investment at various stages of the food systems.

In terms of land acquisitions, increased disposable incomes and investment potential among urban households, combined with expectations of rising global food prices, are likely to increase the rate of new investment in land. Unmet demand for land will create pressures for conversion of land from customary to state titled land accessible through market purchases. However, unlike in the latifundia scenario, a broad-based pattern of urban income growth will generate growth multipliers that are both stronger and better distributed through the local economy. This would, in turn, allow rural household to remain in agriculture while gradually increasing the share of their livelihoods earned from rural non-farm employment, both through informal businesses and wage employment. Greater non-farm income-earning opportunities will also provide the capital to enable relatively productive smallholders to break through the barriers of subsistence agriculture into a more commercialised medium-scale stature. As a result, this scenario is likely to produce more equitable patterns of farmland use and more widely dispersed benefits to be derived from a high food price environment.

Urban poor: Broadly based growth in urban incomes will reduce the numbers of urban poor. Recent evidence indicates a long-term inverse correlation between food price levels and poverty, resulting from the multiplier effects associated with food production incentives (Headey, 2014). Urbanisation with income growth will result in more profound shifts in consumer demand patterns than in the latifundia scenario. In the latifundia case, demand expansion is driven mainly by population growth, meaning that more of the same commodities are demanded by more poor consumers. Major shifts in consumer preferences for quality, convenience and sanitary conditions for shopping occur only among a relatively small percentage of consumers who are experiencing significant income growth. In contrast, when urban income growth is broadly based, the composition of demand shifts as per Engel's Law in

addition to greater demand for the same goods driven by population growth. This growing urban demand will stimulate a greater supply response in local production and private investment in the food system, contributing to efficiency gains and employment generation. Such investments may help local food production keep pace with domestic demand growth and hence mitigate the trend towards increased food import dependence as shown in Figures 3 and 4. High food prices may also become less politically sensitive with broad-based urban income growth, thus enabling more of the public budget to be shifted from general consumer food subsidies into other areas with greater payoffs to long-run productivity.

Rural communities/small-scale farmers: Under this scenario we anticipate that a greater number of smallholder farmers will be well positioned to meet the growing urban demand for food through informal markets. Improved market access conditions and increased private investment in food value chains will enable many of these farmers to adopt productive farm technologies, acquire more land and move away from subsistence farming towards commercialisation. Over time, some farm consolidation will occur as non-farm employment opportunities pull the more marginal farmers out of agriculture and into more remunerative non-farm jobs.

Agribusiness firms and investors: The interest of foreign investors will remain high, driven by strong demand growth through the food systems. Because income growth reaches further down to the urban poor, there will be greater incentives for investment by African entrepreneurs in the informal markets that cater to the shopping habits of the poor, as well as in the more modern aspects of the food system that are preferred by high-income consumers. Broad-based income growth will also raise the incentives for local business investments along the food value chain as the demand for all categories of food boosts demand.

Traditional authorities: The relevance of traditional authorities derives largely from their control over a stock of land to allocate to minions, and the political power of those minions in the modern state (Herbst, 2000). In some countries, traditional authorities have been stripped of their authority to allocate land through the conversion of customary land to statutory land. If smallholder farming is viable for many households residing in areas of customary tenure, this may stave off the pace at which customary land is converted to state titled land. The viability of smallholder farming is most likely to be decisive; if the returns to labour in smallholder agriculture become too low, there will be little incentive to farm, which then creates greater political pressure to change the tenure structure to enable others to take control of it. Agricultural policies and public expenditure patterns will largely determine the future returns to labour in smallholder agriculture.

Scenario 3: Slow but equitable growth

Under the third scenario we assume a broadly based pattern of urban income growth (for example from investment and employment growth in industry and manufacturing) yet, unlike Scenario 2, global food prices remain relatively constant or decline.

Urban consumers: We would anticipate food demand patterns would shift in ways similar to those described for Scenario 2, with similar virtuous cycles and multiplier effects being created between income growth in towns and private incentives to invest at the various downstream stages of the food system. High-income household demand will be increasingly met by imported food as shown in Figure 3 because lower food prices may dampen the returns to investment in local production for crops without a clear competitive advantage vis-à-vis the world market. Low-income household demand will be met by local small-scale production and informal value chains, yet the returns to labour for those engaged in those sectors may be quite modest without significant public investment in support of infrastructure and agriculture (for example crop R&D, extension systems, soil health programmes, subsidisation of inputs needed to make inorganic fertilizer more profitable to use, etc).

Rural communities/small-scale farmers: The demand of international and domestic investors for agricultural land is expected to be lower under this scenario as a consequence of the relatively lower returns to agriculture in a low, world food price environment. Local informal/formal businesses may have less competition from international capital and the rate of investment and innovation in the food systems may be less dramatic than in Scenario 2, but still be favourable over the long run. These farm households will experience somewhat less competition from foreign investments in land. In other words, their access to land will not be as constrained as under Scenarios 1 and 2.

Foreign investors: The appetite for investment will decline as returns on investments fall. However, Africa will remain an attractive investment relative to the rest of the world owing to the rate of population growth and relatively broadly based income growth.

Traditional authorities: Lower world and domestic food prices are anticipated to reduce the competition for land from foreign investors and relatively wealthy urban people and slow down the dynamic changes in farm structure described in earlier scenarios. There will be less intense political pressure to convert customary land to state title land. Consequently, traditional authorities may retain their influence in rural areas for a longer duration.

Scenario 4: Stagnation

As with Scenario 1 we assume a skewed distribution of growth in urban incomes and a constant or declining trend in global food prices relative to the general price level. While government policy decisions and the composition of its public investments are important in all cases, this scenario in particular may require a progressive and committed 'development state' to manage the transformation to a thriving and relatively egalitarian society.

Urban consumers: Under this scenario, the natural resource industries, such as oil and mining, will continue to be the main engines of growth with relatively small growth multipliers emanating from agrifood systems and little potential for employment expansion in urban areas. Unlike Scenarios 1 and 2, the savings of the urban elite will be directed towards either non-agricultural growth sectors, such as mining, or to off-shore banking and the like.

Rural communities/small-scale farmers: As in Scenario 1, continued rural population growth and land subdivision will intensify land constraints in the more densely-populated smallholder areas, with median farm sizes decreasing over the next 10 years. However, low agricultural prices may depress incentives to invest in sustainable agricultural intensification without major public programmes to address soil fertility issues in a holistic manner.

Agribusiness firms and investors: We anticipate a slow rate of foreign direct investment in food systems except perhaps in retailing. The phenomenon observed in Figure 3, whereby a high share of consumer food imports come from international markets, may characterise this scenario as well owing to the concentration of disposable income among a relatively narrow segment of high-income consumers. Low world and domestic food prices would also reduce the competition for land from foreign investors and relatively wealthy urban people and retard the dynamic changes currently being seen in land markets and farm structure.

Traditional authorities: As in Scenario 3, low food prices would reduce the intensity of the pressure put on the political system to pass sweeping land acts that convert customary land to state titled land. Traditional authorities would be likely to retain their influence in rural areas for a longer duration.

4

Conclusions

The take-away messages from this analysis are threefold. First, many 'megatrends' boldly identified as drivers of change in African agricultural systems are arguably highly dependent on other underlying processes which may or may not occur. Our projections for the future are highly contingent on the predicted time paths of numerous variables. Two such variables of central importance in the context of predicting the future of African food systems are the direction of future world food prices and the rate and breadth of income growth in urban areas.

A second conclusion is that the pace and force of some commonly identified megatrends are highly dependent on future policy and public investment decisions, and are hence malleable. We highlight this point as a counterpoint to analyses couched in terms of inevitable transformations. The risk of conceiving of global food systems as irreversible exogenous shocks on developing countries is to neglect the role of proactive public policy to moderate and shape the way international forces affect local agricultural sectors. Therefore, achieving socially equitable outcomes in food systems does not stop at technical solutions for getting the prices right, or the markets right (as important as these are), but fundamentally getting the political institutions and political processes right (Rodrik *et al.*, 2004) since these processes determine the policies and, in turn, the market and pricing outcomes. In response to views that the widening social inequality of the United States might be an inevitable outgrowth of capitalist economies, Stiglitz (2014) remarked that, "Widening and deepening inequality is not driven by immutable economic laws, but by laws we have written ourselves." While the question of how to get the political process right is obviously complex, situation-dependent and beyond the scope of this analysis, major features of such a process are that it is transparent, participatory and one that can

be defended as reflecting the long-term interests of the majority.

Our third conclusion is that some of the most important trends currently shaping African food systems may continue only for a limited duration. This is both because they are part of a system that co-evolves with related processes that may assume new trajectories and because some can be bent by policy. Hence, we believe that 'foresighting' studies might be most useful if they would consider a range of plausible scenarios of the future in order to anticipate the various plausible challenges that African leaders might face. Our analytical framework considers four general scenarios contingent on the direction of global food prices and the pace and breadth of income growth in Africa's rapidly growing urban areas, given both the uncertainties and endogeneity of both to other important economic processes. A conclusion that is likely to remain constant no matter which scenario unfolds is that the creation of new jobs in the non-farm economy is unlikely to grow fast enough to absorb the rapidly growing young labour force. Because of this, smallholder agriculture will remain a fundamental safety valve for absorbing much of the new labour force into gainful employment (Losch, 2012) at least as a several decades-long intermediate stage in the region's economic transformation. While only a fraction of smallholder farmers currently possess the requisite entrepreneurial ability and productive assets to thrive, this sector still plays a crucial role in successfully managing the transition to a modernised Africa. It must remain viable at least over the next several decades for two reasons.

First, we must acknowledge that even in 2014, most African countries are primarily inhabited by unskilled and semi-skilled¹² rural people who are primarily engaged in farming. While most rural people might wish to put down their hoes and walk into white collar

¹² At least with respect to the types of job skills being demanded in the modern and globalised economy.

office jobs tomorrow, their levels of education and skills will prevent this from happening quickly. Under such conditions, much greater public investment directed towards making two-hectare farms productive may have high payoffs. Secondly, the growth of non-farm sectors and employment opportunities will rely on effective demand. When a country's population is 60 per cent rural, it is difficult to generate effective demand for non-farm goods and services without at least some portion of the countryside having enough money to participate in the cash economy. The literature on growth linkages indicates that the first-round beneficiaries of agricultural growth generate important multiplier effects by increasing their expenditures on a range of local off-farm and non-farm activities that create second-round benefits for a wide range of other households in the rural economy (Johnston and Mellor 1961; Mellor 1976). The extent and magnitude of these second-round effects depend on how broadly spread the first-round growth is. The distribution of land and other productive assets will clearly affect the size of these multipliers. If dynamic labour and services markets can be developed, then other employment opportunities should be easier to create in the very locations where the larger smallholders are investing and raising their output and productivity. Proactive public sector investment and policy support in developing these labour and service markets will be a key determinant of the magnitude of the growth linkages to be derived from agricultural growth. Education, which played a crucial role in Asia by allowing households to exit agriculture into more lucrative off-farm jobs, is relatively low in most areas of rural Africa by world standards. Investments in rural education and communications are likely to become increasingly important to facilitate structural transformation under any of the future scenarios envisioned.

So, what should governments do? While Dercon and Gollin (2014) rightly warn that the empirical evidence is often not strong enough to warrant confident prescriptions, governments cannot wait for academics to conclusively agree on the priority list. Governments are acting today, and to be useful, academics must provide guidance based on the weight of the evidence. To these authors, the priority list would look something as follows. First, invest strongly in the education value chain – from higher universities to vocational schools to primary and secondary education – to upgrade the skill levels of young people entering the labour force. Second, implement policies to promote broad-based agricultural growth, including investments in R&D that are scale-neutral, agricultural extension programmes, and programmes designed to restore long-term soil fertility. Third, invest in physical infrastructure (roads, ports and electrification) to reduce the costs of production in both industry and agriculture and thereby promote competitiveness and job creation. Fourth, institute an industrial policy that promotes private investment and job growth in local non-farm sectors, which simultaneously acts as a stimulus to investment in local agrifood systems (see Fan *et al*, 2008; EIU, 2008; and Fulgie and Rada, 2013 for evidence in support of these types of investments). And fifth, invest in urban planning (housing, sanitation, health facilities and green spaces) in anticipation of the near certainty that an increasing proportion of Africa's population will be living in urban areas in the decades to come.

These challenges are formidable but manageable. While private investment will largely determine the quality and pace of job creation in the region, it is the enabling environment and the underlying political process that determines the quality and pace of private investment. Hence the role of governance and institutions is decisive and will largely determine whether the region's economic transformation is a relatively smooth, robust and peaceful process or a painful and protracted one.

References

- African Development Bank (AfDB) (2011) The middle of the pyramid: dynamics of the middle class in Africa. Market brief. <http://www.afdb.org>
- Baldos, U.L.C. and Hertel, T.W (2014) Bursting the Bubble: A Long Run Perspective on Crop Commodity Prices. GTAP Working Paper No. 80. https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=4574
- Beehner, L (2007) The effects of 'youth bulge' on civil conflicts. Background paper. Council on Foreign Relations, Washington, DC. <http://www.cfr.org/world/effects-youth-bulge-civil-conflicts/p13093>.
- Bilsborrow, R.E (2002) Migration, population change, and the rural environment. Environmental change and security project report 8 6994. http://www.wilsoncenter.org/sites/default/files/Report_8_Bllsborrow_article.pdf
- Bocquier, P (2005) World urbanization prospects: an alternative to the UN model of projection compatible with urban transition theory. Demographic Research 12 197236.
- Carletto, G. *et al.* 2013. Fact or artefact: the impact of measurement errors on the farm size–productivity relationship. Journal of Development Economics 103 254261.
- Cassman, K. *et al.* (2010) Crop yield potential, yield trends, and global food security in a changing climate. In: Rosenzweig, C. and Hillel, D. (eds). Handbook of Climate Change and Agroecosystems. London, Imperial College Press.
- Chamberlin, J. *et al.* (2014) Scarcity amid abundance? Reassessing the potential for cropland expansion in Africa. Food Policy 48 5165.
- Cohen, B (2004) Urban growth in developing countries: a review of current trends and a caution regarding existing forecasts. World Development 32(1) 23–51.
- Deininger, K. and Byerlee, D (2011) Rising global interest in farmland: can it yield sustainable and equitable benefits? World Bank Publications, Washington, DC.
- Deloitte and Touche 2013. The rise and rise of the African middle class. http://www2.deloitte.com/content/dam/Deloitte/za/Documents/rise_and_rise.pdf.
- Dercon, S. and Gollin, D (2014) Agriculture in African development: a review of theories and strategies. Working paper WPS/2014-22. Centre for the Study of African Economies, University of Oxford, Oxford.
- Drechsel, P. *et al.* (2001) Population density, soil nutrient depletion, and economic growth in sub-Saharan Africa. Ecological Economics 38 251–258.
- Economist Intelligence Unit (EIU) (2008) Lifting African and Asian farmers out of poverty: assessing the investment needs. Research report for the Bill and Melinda Gates Foundation.
- Fan, S. *et al.* (2008) Investment, subsidies, and pro-poor growth in rural India. Agricultural Economics 39(2) 163–170.
- Fine, D. *et al.* (2012) Africa at work: job creation and inclusive growth. McKinsey Global Institute, Boston.
- Fuglie, K. and Rada, N (2013) Resources, policies, and agricultural productivity in sub-Saharan Africa. Economic research report 145, US Department of Agriculture Economic Research Service, Washington, DC.
- Giller, K.E. *et al.* (2006) Resource use dynamics and interactions in the tropics: scaling up in space and time. Agricultural Systems 88 827
- Glen, J.C (2006) Global scenarios and implications for constructing future livestock scenarios. A report to the International Livestock Research Institute and the Food and Agricultural Organization. ILRI and FAO, Nairobi and Rome.
- Gollin, D. *et al.* (2013) Urbanization with and without Industrialization. Working papers 2013-290-26. Department of Economics, University of Houston. <http://www.uh.edu/econpapers/RePEc/hou/wpaper/2013-290-26.pdf>
- Grassini, P. *et al.* (2013) Distinguishing between yield advances and yield plateaus in historical crop production trends. Nature Communications 1-11. DOI: 10.1038/ncomms3918
- Harris, J.R. and Todaro, M.P (1970) Migration, unemployment, and development: a two-sector analysis. American Economic Review 60(1) 12642.

- Hattingh, D. *et al.* (2012) The rise of the African consumer. McKinsey's Africa Consumer Insights Center, McKinsey Global Institute, Washington, DC. http://www.mckinsey.com/global_locations/africa/south_africa/en/rise_of_the_african_consumer.
- Headey, D (2014) Food prices and poverty reduction in the *long run*. Discussion paper 01313. International Food Policy Research Institute, Washington, DC.
- Headey, D. and Jayne, T.S 2014. Adaptation to land constraints: is Africa different? *Food Policy* 48 1833.
- Herbst, J (2000) States and power in Africa. Princeton University Press, Princeton.
- Jayne, T.S 2012. Managing food price instability in East and Southern Africa. *Global Food Security* 1(2) 143–149. <http://www.sciencedirect.com/science/article/pii/S221191241200017X>
- Jayne, T.S. and Jones, S (1997) Food marketing and pricing policy in Eastern and Southern Africa: a survey. *World Development* 25(9) 15051527.
- Jayne, T.S. *et al.* (2014a) Is the scramble for land in Africa foreclosing a smallholder agricultural expansion strategy? *Journal of International Affairs* 3553.
- Jayne, T.S. *et al.* (2014b) Land pressures, the evolution of farming systems, and development strategies in Africa: a synthesis. *Food Policy* 48 117.
- Jedwab, R (2013) Urbanization without structural transformation: evidence from consumption cities in Africa. http://home.gwu.edu/~jedwab/JEDWAB_AfricanUrban_Feb2013.pdf
- Johnston, B. and Mellor, J (1961) The role of agriculture in economic development. *American Economic Review* 51(4) 566-593.
- Kyalo, D. and Muyanga, M (2014). Community response to population pressure in Kisii and Machakos counties: farmers' perspectives. International development working paper. Michigan State University, East Lansing.
- Kearney, A.T 2013. Seizing Africa's retail opportunities: the 2014 retail African development index. <http://www.atkearney.com/consumer-products-retail/african-retail-development-index>,
- Larson, D. *et al.* (2013) Should African rural development strategies depend on smallholder farms? An exploration of the inverse-productivity hypothesis. *Agricultural Economic*, 45 1–13.
- Lipton, M (2005). Crop science, poverty, and the family farm in a globalising world. 2020 IFPRI discussion paper No. 40. International Food Policy Research Institute, Washington, DC.
- Lopéz, R. and Valdés, A (2000) Rural poverty in Latin America. Macmillan Press, London.
- Losch, B (2012) Agriculture: the key to the employment challenge, Perspective #19. CIRAD, Montpellier.
- Marenya, P. and Barrett, C (2009) State-conditional fertilizer yield response on western Kenyan farms. *American Journal of Agricultural Economics* 91(4) 9911006.
- McMillan, M. and Harttgen, K (2014) What is driving the 'African growth miracle'? National Bureau of Economic Research working paper 20077. National Bureau of Economic Research, Cambridge, MA. <http://www.nber.org/papers/w20077>
- Mellor, J.W (1976) The new economics of growth. Cornell University Press, Ithaca.
- Platt, J (1973) Social traps. *American Psychologist* 28(8) 641–651.
- Potts, D (2012) Whatever happened to Africa's rapid urbanisation? *World Economics* 13(2) 1729.
- Potts, D (2013) Urban economies, urban livelihoods and natural resource-based economic growth in sub-Saharan Africa: the constraints of a liberalized world economy. *Local Economy* 28(2) 170187.
- Powlson, D. *et al.* (2011) Soil management in relation to sustainable agriculture and ecosystem services. *Food Policy* 36 S72S87.
- Ravallion, M. and Datt, G (2002) Why has economic growth been more pro-poor in some states of India than others? *Journal of Development Economics* 68(2) 381–400.
- Rodrik, D. *et al.* (2004) Institutions rule: the primacy of institutions over geography and integration in economic development. *Journal of Economic Growth* 9(2) 131165.
- Rosegrant, M. *et al.* (2012) The new normal? A tighter global agricultural supply and demand relation and its implications for food security. *American Journal of Agricultural Economics* 95(2) 303309.
- Schlenker, D. and Lobell, D 2010. Robust negative impacts of climate change on African agriculture. *Environmental Research Letters* 5(1) 014010.
- Schoneveld, G (2014) The geographic and sectoral patterns of large-scale farmland investments in sub-Saharan Africa.. *Food Policy* 48 3460.
- Seidman, R (1973) Contract law, the free market, and state intervention: a jurisprudential perspective. *Journal of Economic Issues* 7 553575.
- Shaxson, F. and Barber, R 2003. Optimizing soil moisture for plant production: the significance of soil porosity. *Soils Bulletin* 79. Food and Agriculture Organization of the United Nations, Rome.

- Sitko, N. and Jayne, T.S. (2014) The rising class of emergent farmers: an effective model for achieving agricultural growth and poverty reduction in Africa? *Food Policy* 48 194202.
- Snapp, S. *et al.* (2010) Biodiversity can support a greener revolution in Africa. *Proceedings of the National Academy of Sciences* 107, 2084020845. Doi: 10.1073/pnas.1007199107.
- Stiglitz, J.E (27 June 2014) Inequality is not inevitable. *The New York Times*.
- Stoorvogel, J.J. and Smaling, E (1990) Assessment of soil nutrient depletion in sub-Saharan Africa: 1983–2000. Nutrient balances per crop and per land use system. Report No. 28, vol. 2. Winand Staring Center, Wageningen.
- Strauss P.G. and Meyer, F.H (2010) Combining stochastic modelling techniques with scenario thinking for strategic and policy decisions in agriculture. *Journal of International Agricultural Trade and Development* 6(1) 6182.
- Strzepek, K. and Boehlert, B (2010) Competition for water for the food system. *Philosophical Transactions of the Royal Society. B*(365) 29272940.
- Tiffen, M. *et al.* (1994) More people less erosion: environmental recovery in Kenya. John Wiley, London.
- Tittonell, P. and Giller, K (2012) When yield gaps are poverty traps: the paradigm of ecological intensification in African smallholder agriculture. *Field Crops Research* 143(1) 76–90.
- Tittonell, P. *et al.* (2007) Nutrient use efficiencies and crop responses to N, P, and manure applications in Zimbabwean soils: exploring management strategies across soil fertility gradients. *Field Crop Research* 100 348368
- Tschirley, D. *et al.* (2013) Megatrend two: rapid urbanization and food system transformation, Global Center for Food Systems Innovation, Michigan State University, East Lansing.
- United Nations (2013) World urbanization prospects: the 2013 revision. Department of Economic and Social Affairs.
- United Nations (2014). Millennium Development Goals: Background. <http://www.un.org/millenniumgoals/bkgd.shtml>.
- Vanlauwe, B. *et al.* (2011) Agronomic use efficiency of N fertilizer in maize-based systems in sub-Saharan Africa within the context of integrated soil fertility management. *Plant Soil* 339 3550.
- Woodhouse, P (2003) African enclosures: a default model of development. *World Development* 31(10) 17051720.
- Womach, J (2005) Report for Congress: Agriculture: a glossary of terms, programs, and laws. 2005 Edition. Congressional Research Service, Washington, DC.
- Young, A (2012) The African growth miracle. *Journal of Political Economy* 120(4) 696739.

This paper investigates the 'megatrends' shaping African economic, political and social landscapes and asks which ones depend endogenously on processes that are within the realm of policy influence and which ones are indeed exogenous. Based on this analysis, it sketches four plausible scenarios for African food systems and discusses how policy choices will influence which of these scenarios is manifested in the next decades. The authors hope to raise society's awareness of the potential to shape future outcomes and argue that the state can play a major role to engage the public in determining what a 'good society' looks like.

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