Agrarian Change and Inclusive Rural Development : Gaps & Challenges[1]

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Introduction

Rural development is largely driven by changes in farming systems and livelihoods embedded in agri-food value chains. These changes result in shifting food and welfare outcomes. Since hunger and malnutrition are still rising in rural areas, rural development remains far from inclusive (Gillespie & v.d. Bold, 2017; Garnett & Godfray, 2012).

On order to identify feasible strategies for agrarian change and inclusive rural development, we need to understand how major transitions in production, demography (population), household expenditures (consumption), household assets (wealth), and markets (agrologistics) may generate improved food systems outcomes (Ericksen et al., 2010). We will therefore rely on a nested food systems framework for linking production, trade and consumption (see Figure 1) and focus on (business) innovations and financial and policy incentives that support safe and healthy diets that originate from resilient and sustainable rural production systems (Fresco et al., 2017).

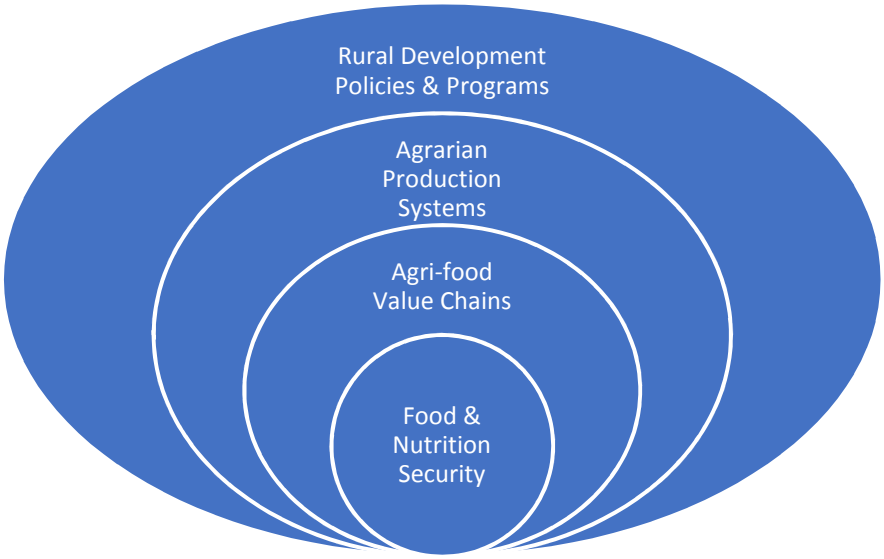

Figure 1 – Nested Framework for Food System Analysis (Ruben et al., 2019).

The remainder of this paper is structured as follows. First we will outline major structural trends in population, agrarian production and rural organization that lead to shifts in incomes and employment. Hereafter we discuss implications thereof for food & nutrition security, employment and market development. Finally, we identify some rural development pathways that could offer impactful alternatives for overcoming hunger and poverty, and we outline public policy and private investments strategies that may accelerate these pathways.

[1] Keynote presentation UN-DESA Expert Group Meeting on Eradicating Rural Poverty to Implement the 2030 Agenda for Sustainable Development''. UN ECA, Addis Ababa, 27 February – 1 March 2019.

Agrarian Change

Agricultural production systems and agri-food value chains in low- and middle income countries experience rapid changes due to major shifts in food demand (consumer preferences), rural organization and agri-support structures. Growing imbalances between these food systems components give rise to stagnation in hunger reduction and to increasing nutrition insecurity.

Food demand: urban growth and diet transition

Food consumption patterns and diets are changing rapidly due to gradually rising incomes, steep population growth in combination with rapid urbanization and modernization of the food environment. The size of commercial food and beverages market in Africa is expected to grow from US$ 313 billion to more than US$ 1 trillion of sales in 2030 (AfDB, 2018). The share of households that are net buyers of food has almost tripled during the last two decades, particularly in (peri-)urban settings. Simultaneously, under- and malnutrition are rising again (from 191 million in 2010 to 243 million in 2017) and 27.4% of Africa's population is classified as severely food insecure, whereas the prevalence of adults overweight has increased to 20-25% and obesity amongst children is close to 9% (FAO, 2018). Hence, African food production is not able to keep up with ever increasing demand for food.

More than 10% of food market purchases in Africa are currently covered by imports (worth US$ 35 billion), and these are expected to increase dramatically to US$ 100 billion in 2025 (AfDB, 2018). Food imports mainly consist of processed foods, sugar and oils, animal-based and staple food (rice, maize wheat). Despite its vast agricultural potential, the African continent has become a **net importer of food** (Rakotoarisoa et al., 2011). Moreover, key agricultural inputs, such as fertilizers, seeds, machinery and equipment are also largely imported. Meanwhile, the share of agricultural bulk exports (cocoa, coffee, tea and cotton) declined from 60 to 42% between 1988 and 2014, whereas the share of high-value agricultural goods (vegetables, flowers) rose to 35 percent (Fukase & Martin, 2017). Africa's participation in world trade is only 2.4 % (with a 15% share of agricultural products) and intra-African exports represent 18% of total exports.

Traditionally, in terms of nutrition quality, Sub-Saharan Africa diets—particularly those in West Africa—rank favourable compared to diets in many wealthier regions (Imamura at al., 2015). However, major shifts in consumption patterns sharply **decrease dietary diversity** and **reduce nutrition quality**. The reduction of nutrition quality is due to two main reasons. First, among the growing middle class, shopping and eating patterns are changing towards purchase of processed food from modern retail outlets and convenience sales by food service providers (Das Nair & Chisoro, 2016). Second, especially in ever-expanding (peri) urban areas, fresh nutritious foods are usually far more expensive and thus less affordable (Masters et al., 2018; Bachewe et al, 2017).

These changes in food demand and diets have large repercussions for the structure of local sourcing of food and for the prospects of integration of national and regional food markets. The rise of local food markets – both for home consumption and using food services by urban middle class segments – provides interesting opportunities for commercially-oriented food producers and processing industries. The 'Feed Africa' initiative of the African Development Bank Group (AfDB) focuses on increasing fertilizer use and reducing market barriers as key incentives for enhancing agricultural productivity and rural investments. For reaching cereal self-sufficiency, a complete closure of current yield gaps would be required, combined with further intensification of cropping systems and expansion of irrigation infrastructure (van Ittersum et al., 2016).

Policy strategies for enhancing food security and reducing nutrition gaps tend to focus mostly on supply-side measures for improving primary production (through import substitution & regional trade). Far less attention is given to opportunities for supporting immanent changes in diets and food preferences from the demand side. In addition to supporting agricultural value chains, interventions on the demand-side may deliver substantial savings in health costs and lead to better health outcomes. Promising instruments are cash transfers, school feeding and personalized nutrition programs.

Bifurcation of the agrarian structure

Commercial agrarian production in sub-Saharan Africa is increasingly based on **medium-scale** farms that are under the management of urban investors. Jayne et al. (2016) find that in most countries the share of land on small-scale holdings under five hectares has sharply declined. Smallholder farmers and rural wage labourers still represent the bulk of rural population and most of them are poor and **net buyers of food;** some 30% of these suffer from chronical hunger and 35% of rural children is stunted (FAO, 2018). On the other hand, medium-scale farms (farm holdings between 5 and 100 hectares) account for a rising share of total farmland, especially in the 10–100 hectare range the number of these farms is growing rapidly, from 20% of total farmland in Kenya to over 50% in Zambia (Jayne et al., 2016). These farms propel innovation and commercialization of African agriculture. In several countries, medium-sized farms now account for roughly 50 percent of the value of national marketed agricultural production (except in land-constrained countries such as Kenya and Rwanda).

This 'bifurcation' of the agrarian structure, into medium-scale (high-potential) farms and smallholder (low-potential) farms, leads to important changes in farming and employment. First, rural **off-farm work** and **non-farm employment** opportunities (in agro-processing and rural service provision) show a substantial increase due to agricultural intensification processes. For example, smart combinations of mechanization, irrigation and improved seeds enable farmers multiple growing seasons per year and reduction of post-harvest losses (MaMo, 2018; Jayne et al., 2019). Consequently, returns to rural labour are increasing slowly, guaranteeing farmers a decent living income. Simultaneously, rural to urban migration is gradually increasing as people search for better social and economic

opportunities. Consequently, urban populations in Africa will triple as two-thirds of its natural population growth is expected to occur in (peri-)urban areas.

Second, where medium-size farms represent the major source of growth and rural investment, smallholder farmers can increasingly benefit from local market development, outsourcing of services and engagement in **contract-farming** arrangements. The subcontracting of production for tropical commodities (tea, sugar, cotton, tabaco), for dairy, and for fruits and vegetables, offers interesting opportunities for smallholder engagement in commercial production at lower risk, thus increasing their income prospects (Ton et al., 2018). However, contract farming tends to remain limited to a small number of producers that are better able to engage in commercial production.

Even while important changes are observed, the so-called 'structural transformation' of agriculture is hardly taking off in sub-Sahara Africa (Barret et al., 2017a, b). Agricultural productivity and crop yields remain low, incentives for agricultural investments and improved input use are scarce, and value creation remains limited (with Ethiopia as a notable exception; see Bachewe et al, 2018). These challenges can only be addressed if supportive institutional, technological and socio-economic policy conditions are in place.

Missing middle of agri-support services

Public support for development of the agricultural sector remains limited in low- and middle income countries. While African governments are committed to devote 10% of public expenditures to agriculture (2014 Malabo Declaration), in practice the public budget share is less than half and even declining (Goyal & Nash, 2017). Consequently, there is a large demand for SMEs and civic intermediaries that could contribute to market integration in the areas of knowledge (extension), finance (credit) and trade (contracts).

In practice, however, there are several gaps in rural service provision for agricultural development that give rise to a so-called 'missing middle'. First, many smallholder farmers face the **finance gap** since most formal financial intermediaries still consider agricultural investments as too risky and with too low returns. Moreover, transaction costs and risks for rural finance tend to be high, collateral requirement may become prohibitive and lending conditions are highly demanding (due to high interest rates). Some successes are reported of mid-tier financing for business innovations and aggregation that work through networks of local traders or processors (Milder, 2008).

A second 'missing middle' is found in the structure of production and trade that is characterized by growing distance between production and consumption of food that may result in large externalities for the environment and for public health (Veldhuizen et al., 2017). Reardon (2015) labelled this segment as the 'hidden middle', or the **thin midstream** segment in the agri-food value chain (i.e. processing, storage, transport and retail). The midstream segment includes multiple actors and is generating 30-40% of value added in

food value chains in developing countries. Limited infrastructure (roads, electricity) and scarce coordination lead to oligopoly profits as well as to unequal distribution of gains that hinder innovation and upscaling, and reduce resilience and possibilities to adapt to climate change.

Third, the missing middle is also reported with respect to **weak farmer organizations** that play a minor role in bargaining and scaling. At the bottom of the pyramid, it is always hard to engage people into organizations. Moreover, smallholder farmers tend to be reluctant to engage into joint activities, often due to risk aversion or low trust levels. Moreover, quality compliance and reliable supplier performance represent major constraints for stakeholder cooperation (Royer et al., 2016).

Inclusive Rural Development

Structural changes in food demand, agrarian production and value chains have profound implications for the opportunities to reach nutrition security, foster agricultural productivity and create value added. Prospects for eradicating poverty and enhancing rural employment depend mostly on growth patterns and development pathways that prevail.

Food systems innovation for dietary diversification

Reducing poverty and eradicating (rural) hunger and malnutrition implies that key attention should be given to strategies that improve access to food and enhance dietary diversity. Food system innovations encompass both supply side (food environment) and demand side (food choices) interventions and require commitments from both public and private sector stakeholders.

At the supply side, it is critical to guarantee the availability of healthier foods (fruits, vegetables, pulses, animal-based food) at affordable prices. Reducing malnutrition requires increasing dietary diversity (i.e., less staples and starchy crops; more nutrient-rich foods) combined with better drinking water and sanitation facilities. Public investment in improved **agrologistics** networks are of fundamental importance to support market-oriented food production. In addition, private investments are required to enhance factor productivity (IAP, 2018) and to reinforce preferential access to healthy foods (e.g. home delivery; discounts). Dietary diversity can be guaranteed through sufficient cash resources, agro-biodiversity, heterogeneous landscapes, and livelihood diversity, while other structural variables affecting dietary choices are household size, age and gender (Powell et al., 2017).

At the demand side, the creation of rural purchasing power and the building of household assets is considered vital for enhancing food security. Experiences with (un)**conditional cash transfers** for asset creation and greater resilience tend to be rather positive (Tiwari et al., 2016). Poverty outcomes depend on targeting procedures and payment frequency. But cash transfers alone have little impact on dietary outcomes. Long-lasting effects require an integrated approach that includes nutrition education and nutrition-sensitive social

protection measures (Burchi et al., 2016). In this respect, attention should also be given to controlling the intake of energy-dense (ultra)processed foods that are introduced into the diets of poor people and are contributing to strongly rising rates of overweight and obesity.

Intensification of agri-food production

Much of the growth of agricultural production in developing countries is still based on area expansion, whereas reliance on improved inputs for supporting higher yields remains limited. Yield gaps are particularly large and pervasive in African smallholder agriculture for almost all crops. Poor soil fertility and nutrient availability are the major biophysical limitations to agricultural production. Due to extensive degradation many soils cannot respond any more to improved inputs (fertilizers, seeds). Consequently, yield gaps tend to become poverty traps (Tittonell & Giller, 2013).

Most of the growth in total agricultural **productivity** in sub-Sahara Africa is generated by technical change, whereas recently some efficiency gains are recorded. In addition, growth rate in returns to land are stagnating, whereas labour productivity can still rise substantially (Benin, 2016). Agricultural productivity growth is stagnating in Asia and converging in Latin America, mainly due to resource degradation, whereas climatic variability induces significant reductions in productivity. This implies that substantial investment in soil conservation and climate-smart agriculture are required to enhance agricultural productivity.

There are still wide margins for further **sustainable intensification** (SI) of agricultural production systems. This mainly aims at increasing food production from existing farmland while minimising pressure on the environment. Whereas the SI concept does not articulate or privilege any particular vision or method of agricultural production, there appears to be a clear preference to support regenerative production systems based on local nutrient balances and circular systems. Recently attention is shifting to optimizing resource use at landscapes level (e.g., Vanlauwe et al., 2014).

The intensification of commercially-oriented agro-food production meets binding constraints for **mobilizing investments** for the production and trade of perishable commodities with relatively high capital and energy requirements (e.g. for cool chains). In a similar vein, climate change asks for substantial investments and improved adaptation and mitigation practices that enhance land conservation, reduce emission and renovate tree crops. Therefore, policy incentives should be in place that mitigate risks and support market-based payoffs of agricultural investments through improved resource use efficiency.

Supply chain integration for value added generation

Linking agri-food production to more distant (peri)urban markets is the major rural development challenge. Such value chain integration asks for substantial midstream investments for reducing post-harvest losses, improving stakeholder coordination and supply chain governance, and upgrading of production processes and product quality.

Improving the performance of agri-food supply chains becomes a key challenge, particularly since transactions of perishable commodities are steeply increasing. Technical options to reduce **post-harvest losses** are widely available, bur incentives for their adoption are still weak (van Gogh et al., 2017). Post-harvest management (PHM) can contribute to improved food and nutrition security through three different pathways: (1) increasing the availability of food, (2) reducing the price of food, and (3) improving the nutritional quality or shelf life. Nutrient-sensitive value chains focus on maintenance of vitamin contents and micronutrient availability in fresh food, mostly through temperature management after harvest and storage. Improved **trust and reliability** in agri-food value chains and networks is considered as a key aspect for enhancing quality compliance (Fafchamps, 2004). However, effective PHM may also increase total market supply and eventually leads to lower farm-gate prices. This perverse effect can only be handled when increased product quality and/or nutritional value stimulates local consumption and induces an upward shift in market demand and willingness to pay (Verma et al., 2019).

Other options for enhancing supply chain performance focus on risk management and/or credence attributes. This includes the promotion of **standards** for supporting product safety and integrity (i.e., high freshness and low additives), and the use of product **certification** to support fair and sustainable production practices and healthier product attributes. Public (safety) standards and nontariff measures may reduce the export possibilities for Southern producers, but strict standards can also stimulate investments in upgrading (Maertens & Swinnen, 2009). Voluntary certification, on the other hand, generates rather limited local income and employment effects and is gradually losing its transformative potential (Ruben, 2017). New efforts focussing on 'fair chain' deserve attention.

Finally, there are still large opportunities for improving value chain performance by increasing **value added**. This concerns both the upgrading of products as well as the redistribution of value added shares between value chain stakeholders. Generally, in agro-food chains the primary production stage exhibits the lowest level of value addition (usually no more than 10% of market price), whereas downstream input providers and upstream manufacturing and retail capture considerably larger shares (Cucagna & Goldsmith, 2017). Options for value chain upgrading should therefore focus attention on investment in improved local packaging, more efficient transport and storage, and better pre-finance facilities. Moreover, local processing and packaging of tradeable commodities (coffee, tea, cocoa, vegetables, fruit) can generate considerable gains in value added and employment.

Knowledge Gaps & Policy Challenges

Any in-depth discussion on prospects and challenges for supporting inclusive rural development is severely hindered by the **lack of accurate data** on population, production, yields, trade and prices. Consequently, sweeping statements such as ''a 60% of population depends on agriculture'' (FAO, 2014) and ''post-harvest losses up to 55%'' are repeated again and again, but have never been verified and are probably far besides the truth. In

addition, current measurements of cultivated areas and yield contain many errors, and agricultural sales are valued at different prices throughout the cycle.

Another important knowledge gap refers to the limited understanding of **drivers of change** for improving human diets or increasing agricultural yields. Whereas a large number of studies is conducted to identify key individual conditions for changing farming practices (like education, gender, wealth), far less is known about the effectiveness of specific types of incentives (like prices, information or social norms) that could enhance technology adoption by producers, speed up the diffusion of improved practices (Kuehne et al., 2017) or support healthier dietary choices by consumers. Usually, market incentives and institutional norms should be in place to enable producers or consumers to adjust their behaviour.

Policy challenges

Sustainable and lasting agrarian change needs a supportive institutional environment. We have identified a number of areas in which change needs to take place for the rural sector to develop—without, however, inadvertedly deepening existing inequality. Although there are clear avenues for innovation, the structural transformation of the food production system in most of the sub-Sahara African countryside is not taking off. Overall, improvements in yields, progress in technology adoption, and upgrades in value creation remain low. For inclusive development to take off, supportive institutional, technological and socio-economic policy conditions must all be in place.

Most innovation and commercialisation in the agro-sector is propelled by medium-size farms. However, to allow for lasting change, **agro-logistics** need to be organised well. This includes both 'hardware', including all-weather roads and telecommunication, as well as 'software' and 'orgware' : knowledge and organisation of interactions within the value chain. Timely access to inputs is critically important, and after harvest the produce should be collected in time to limit post-harvest losses–both in terms of price and quality. In addition, demand—local or regional—must meet supply. meaning that supply should be responsive to shifting consumer preferences. An integrated value chain, where all actors are well-connected and able to respond to shifts within the food environment, supported by enabling infrastructure, is thus a critical condition for inclusive development within the food system.

In addition to proper infrastructure and access to information, **access to finance** is of key importance for innovation to take-off. Access to finance is conducive for change among medium-scale farmers (investing in new technologies, upscaling activities), non-farm entrepreneurs (value addition, e.g. in local processing industries) as well as among smallholder farmers (investing in education and in pathways out of farming towards non-farm jobs). However, finance is currently often beyond reach for smallholder farmers as well as for many medium-scale farmers. Governments therefore might support accessible finance modalities for farmers and smallscale agro-entrepreneurs who lack a collateral. Insurance schemes are conducive for mitigating risks, and assist farmers to invest even though risk aversion is high. Access to finance as well as insurance schemes could allow innovations and

value addition in food value chains to take off, creating substantial new employment opportunities for farmers aspiring non-farm jobs.

Policies should also increasingly target the **demand side** of food value chains. Due to ongoing population growth, combined with rapid urbanisation and rising incomes, consumer preferences—particularly in (peri-)urban areas—are quickly shifting towards unhealthy diets. Obesity is an increasing problem among the growing urban poor and middle-class. Even more than on the production side, consumption behaviour needs to be influenced and modified using non-price incentives (nudging). Public health campaigns, using role models, may increase awareness about nutritious diets, similar to programs addressing school children. Since nutritious diets contribute to better health outcomes, public food policy will eventually pay off in terms of lower health costs.

In the context of many sub-Sahara African countries, **linking** production and consumption of green leafy vegetables (micronutrients) as well as fish (protein) is critically important and creates both opportunities for improving incomes through commercialisation and employment opportunities as well as contributes to healthier diets. However, to be able to produce and market vegetables and fish at larger (regional) scale, entrepreneurs must look into better ways to store, pack and preserve the produce, without risks for health or loss of quality and controlling the rising energy costs. Both cool chain strategies as well as drying opportunities could therefore be developed to enhance efficient rural-urban linkages.

Even if agro-logistics and financial requisites are in place, and people are increasingly aware about commercialisation pathways, non-farm employment opportunities and requirements for healthy diets, individuals may still be reluctant to change, or changing behaviour may not be sustainable. **Social norms** are persistent, and have a large impact on individual food and allocative choices. Changing behaviour only supports inclusive agrarian and rural transition if the new situation also becomes a new norm. This requires both changes at scale as well as changes based on intrinsic motivations, in such a way that individuals can relate to and contribute to newly accepted social norms.

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