

## The Emerging 'Quiet Revolution' in African Agrifood Systems

T. Reardon<sup>a</sup>, D. Tschirley<sup>a</sup>, B. Minten<sup>b</sup>, S. Haggblade<sup>a</sup>, C.P. Timmer<sup>c</sup>, S. Liverpool-Tasie<sup>a</sup>

<sup>a</sup>, Michigan State University, <sup>b</sup>, IFPRI, <sup>c</sup>, Harvard

**Brief for "Harnessing Innovation for African Agriculture and Food Systems: Meeting Challenges and Designing for the 21<sup>st</sup> Century"; November 25-26, 2013, African Union Conference Center, Addis Ababa, Ethiopia**

1. **Introduction: the central need to leverage urbanization and diet diversification to promote rural-urban supply chains and rural growth as solutions to rural poverty**
  - a) The well-known problems. It is common knowledge for decades that rural Africa faces formidable problems of poverty and malnutrition, inadequate farm yields, low use of fertilizers, certified seed, and irrigation, and often poor roads and other infrastructure. We acknowledge those problems.
  - b) The emerging opportunity. Broad-based rural economic growth offers Africa's best opportunity for overcoming the problems of rural poverty. To do that rural suppliers need to sell to sources of dynamic, growing demand: typically rural purchasing power is too limited to propel a rural area out of poverty by rural suppliers just producing for themselves and their local market alone. This brief focuses on the new opportunity of farmers, via rural-urban food supply chains, to link to the massive and growing and diversifying urban food market in Africa. Those supply chains are two way super-highways – bringing food and fiber one way, and an avalanche of money the other way, back to the producers at every step in the chain – to the farmers, truckers and wholesalers, warehouse and cold store operators, and processors. This avalanche of income fuels – and will fuel far more as time goes on – grass-roots investments (much of it in rural areas or rural towns) by these millions of small and medium producers in the midstream and downstream segments of the rural-urban supply chains, in farming, and in the input supply chains. This can lead to rural growth that spreads out in ripples to the poorest of those in the dynamic areas and also over time to the hinterlands. African policymakers have a major new opportunity in leveraging and encouraging this enormous development.
  - c) The process: African agrifood systems are transforming as part of "five interlinked transformations":
    1. urbanization,
    2. diet diversification,
    3. food supply chain transformation,
    4. factor market change, and
    5. emerging intensification of farming.We treat these in turn.
2. **Urbanization in (Sub-Saharan) Africa has caught up with the average urban share in population of all developing countries – and urbanization in Africa is growing faster than in the rest of the developing world.** Of course sub-regions differ; Eastern and Southern Africa's (ESA) urbanization is only at South Asia's rate in the 1980s, Central Africa and West Africa's is at Southeast Asia's today. This rapid urbanization took place before in a context of stagnant economies, but since around 1998, it has been paired with robust economic growth. The combination of these two dynamics is a game-changer for African development.
3. **Surprisingly and very importantly for agriculture, viewed from the perspective of total marketed-food markets, African urban areas are already the majority of the African overall food**

**economy:** in West Africa, the urban share in overall population is about 50%; we calculated that urban share in all food consumption (purchased/marketed and home-consumption/production) is about 60%, and urban share in purchased/marketed food is roughly 70%, - like Southeast Asia currently. In ESA, the respective shares are 30% (population), 40% (total food), and 50% (marketed food), roughly. For overall Africa then it appears to be roughly 40%-50%-60% - similar to developing countries in Asia. That is, African farmers face a majority-urban market when selling food! This means that the rural-urban food supply chain went from an interesting but marginal story in the 1980s to a major fundamental food security theme in the 2010's. It is also surprising to think about how important the local and African regional urban market is compared with the global export market: the global export market is roughly 5% or at most 10% of marketed food supply, compared to the 60% that is the urban share. That is a signal for policymakers to see the urban market as at least as much an opportunity as the export market, and more accessible to small farms and local food processing firms.

4. **The first piece of good news about the nature of African urbanization is that while large-cities (above one million population) are proliferating, their share in total urban population in Africa is declining – with secondary cities and rural towns making up most of the difference.** This is good news because it is closer to the Taiwan urbanization path of “de-centralized urbanization” that can more effectively “spread the wealth” around to surrounding rural areas that find smaller cities and towns more accessible markets than large cities, with more spin-off effects to surrounding rural areas for rural nonfarm employment generation and growing markets for fruit and vegetables as well as meat, fish and dairy.
5. **The second piece of good news about the nature of African urbanization is that it is accompanied by rapid growth in urban incomes and the middle class itself, and by urban (and to a lesser extent rural) diet diversification. These trends are similar to those found in Asia, with Asia just somewhat ahead in the same trends below.**
  - a) On one hand is diet diversification beyond basic grains. Of course Africa is no newcomer to diet diversification. Maize, cassava, yams, potatoes, bananas, tomatoes, and chilies are all non-African in origin, non-traditional, brought relatively recently to Africa from South America and Asia; only teff, millet, sorghum, watermelons, okra, palm oil are big “originally African” items. But the new wave in the past several decades of diversification is a major thrust beyond grains as incomes grow – into yams and potatoes, into fruits and vegetables, into poultry and beef and mutton and fish, into dairy and eggs, and into edible oils. This diet diversification means new and more sources of caloric energy, but also micronutrients. On the supply side, it means major income gains for farmers, as producing and selling to towns and cities their meat or dairy or fruit earns a farmer 5 to 10 times more per hectare than grains. This is a major source of income for rural development.
  - b) On the other hand is diet diversification, with African consumers buying processed foods in a substantial way, and shopping at supermarkets in an emerging way. As in other developing regions, this shift is led by urban consumers. It is driven by the quest for convenience as women enter the labor force, adding thus to family incomes but also reducing their time for preparation and shopping, and men work away from home. The challenge of this trend is that without care for methods and nutritional quality of ingredients, the shift to processed foods (and more meat) can and already is leading to problems of obesity and related health concerns, as in the rest of the world. The opportunity of this trend is that the value-added income from processing is an important boost to agrifood economy incomes. We find that technology improvements in processing also bring more efficiency and lower food prices, and opportunity for some firms to

expand from backyard/backroom enterprises to medium and small enterprises that become a backbone to supply chains as we discuss next.

**6. The third piece of good news is that rural-urban food supply chains are developing rapidly to meet urban demand.**

- a) The post farmgate segments of the supply chain – the midstream segment (processing and wholesale/transport) and downstream (retail and food stalls) - together form 50-70% of food costs to urban Africans. That means that these actors are as important as farmers for national food security.
- b) Where this post farmgate supply chain has failed or been constrained, this has blocked the success of well-designed rural and crop development efforts, such as a famous case where cowpea production in Senegal was promoted by government, NGO, and donor efforts, but the cowpeas rotted on the side of the road for lack of a link to market.
- c) By contrast, we have found that – seemingly largely “under the radar” of the development debates - there is emerging a “Quiet Revolution” in supply chains, with 10’s of 1000s of small and medium scale enterprises (SMEs) in trucking, wholesale, warehousing, cold storage, first and second stage processing, local fast food, and retail, making major investments in recent years! We have been surprised to see how similar this is – and similarly not yet central in the national debates – to what we recently observed in Asia (often occurring just in the past 5-7 years), which is somewhat ahead of Africa, but going in the same direction of grass-roots revolution supply chains. Exciting examples have been cited to illustrate explosive growth in only 5-10 years:
  - Teff in Ethiopia: An explosion of growth has occurred in only the past 5-10 years in the teff value chain to Addis Ababa, with the proliferation of SME mills-cum-retailers in Addis and rapid transformation all along the teff supply chain leading to: (i) increasing adoption of modern inputs (chemical fertilizer, improved varieties, and herbicides) by farmers, especially by those living close to urban centers; (ii) rising quality demands and important shifts from the cheap red varieties to the more expensive white ones; (iii) increasing willingness-to-pay by consumers for convenience in urban areas, with rapid emergence of one-stop retail shops that provide sales, cleaning, milling, and transport services, as well as by a sizable foodservice industry; (iv) the share of rural–urban marketing, urban distribution, and milling margins in final retail prices is declining, indicating improved marketing efficiency over time.<sup>1</sup>
  - Wheat and maize flour mills, and wholesale markets and transport SMEs, in Ethiopia: (1) In the past decade there has been an explosion of growth in private commercial flour mills in Ethiopia. Until the early 1990s, all commercial flour mills were owned by the government and there were no private sector-owned flour mills; private mills started to emerge in the early 2000s. By 2008, there were 65 large commercial flour mills, together milling about 30% of marketed grain; a third of these mills are in Addis.<sup>2</sup> (2) The government built a new modern wholesale market outside the city (the Ashwa Meda market). It is estimated that a significant part of the cereal trade has been diversified to this wholesale market. Existing markets have also often expanded. In a study on dynamics of cereal wholesale markets in Ethiopia over the

---

<sup>1</sup> Bart Minten, Seneshaw Tamru, Ermias Engida and Tadesse Kuma. 2013. “Ethiopia’s Value Chains on the Move: The Case of Teff.” Ethiopia Strategy Support Program II Working Paper 52, April 2013, International Food Policy Research Institute, Ethiopia.

<sup>2</sup> Shahidur Rashid and Asfaw Negassa. 2011. “Policies and Performance of Ethiopian Cereal Markets.” Ethiopia Strategy Support Program II, Working Paper 21, May 2011, International Food Policy Research Institute, Ethiopia.

last decade, focus groups reported that the number of the trucks increased over the ten year period by 67 percent and 79 percent in the peak period and lean period, respectively. The number of traders and brokers that operate on these markets also increased significantly. They were reported to have increased by respectively more than 100 and 200 percent over that period, possibly suggesting increased trade as well as greater competition and lower turnover per trader and broker compared to ten years ago.<sup>3</sup>

- SME maize processors in Kenya, Zambia, and Zimbabwe: over the past two decades there has been the emergence of thousands of SMEs, driving down maize processing margins.<sup>4</sup>
- Fertilizer SMEs in Kenya: Fertilizer market liberalization in the early 1990s initiated the rapid emergence of SMEs in the fertilizer supply chain – with 500 fertilizer private wholesalers and 7000 fertilizer private retailers by 2008, inducing a 50% fall in fertilizer marketing margins and 60% decrease in distance from farms to fertilizer retail points over the 1990s and early 2000s.<sup>5</sup>
- Millet value chains in Senegal: There has been a rapid transformation in the millet supply chain in Senegal with the rise in the past 5 years of branded packaged millet and millet-cum-dairy products for the Dakar market (importantly in supermarkets as drivers of demand for this) and even into export markets.<sup>6</sup>
- Chicken supply chains in Nigeria and Mozambique: There has been a rapid transformation of the chicken supply chain into urban Nigeria with the rise of companies like Zartech who in turn link to small farmers,<sup>7</sup> and into urban Mozambique with a wide range of local and regional poultry companies.<sup>8</sup>
- Sorghum beer brewing SMEs in Southern Africa: There has been a rapid rise and transformation of the sorghum beer market with backyard brewers transforming into wide-ranging small and medium companies in several countries in Africa. Note that government investment in food technology research was important to this transformation – with South Africa’s Council for Scientific and Industrial Research CSIR) playing a key role in study of sorghum malting and brewing, enabling factory brewers to scale up production to industrial scale.<sup>9</sup>
- Dairy related SMEs in Kenyan and Zambia: There has been a rapid rise of dairy input and processing companies, linked to small farmers, in Kenya and Zambia in the past decade. SMEs have emerged to supply improved feeds, artificial insemination and veterinary services, and processing and packaging facilities and in raw milk distribution systems.
- SMEs processing cassava in Nigeria and Ghana: There has been a rapid rise of gari/cassava and

---

<sup>3</sup> Bart Minten, David Stifel, and Seneshaw Tamru. 2012. “Structural transformation in Ethiopia: Evidence from cereal markets.” Ethiopia Strategy Support Program II, Working Paper 39, May 2012, International Food Policy Research Institute, Ethiopia.

<sup>4</sup> Thomas S. Jayne, et al. 2010. “Patterns and Trends in Food Staples Markets in Eastern and Southern Africa: Toward the Identification of Priority Investments and Strategies for Developing Markets and Promoting Smallholder Productivity Growth.” International Development Working Paper 104, Michigan State University, East Lansing.

<sup>5</sup> Joshua Ariga and Thomas Jayne. 2009. “Private sector responses to public investments and policy reforms: The case of fertilizer and maize market development in Kenya.” IFPRI Discussion Paper. International Food Policy Research Institute, Washington, D.C.

<sup>6</sup> Ousmane Badiane, IFPRI, personal communication, 2013.

<sup>7</sup> Saweda Liverpool-Tasie, Michigan State University, personal communication, 2013.

<sup>8</sup> David Tschirley, Michigan State University, personal communication, 2013.

<sup>9</sup> Steven Haggblade. 2011. “Modernizing African agribusiness: reflections for the future,” *Journal of Agribusiness in Developing and Emerging Economies* 1(1): 10-30.

palm oil small and medium companies in Ghana and Nigeria; today, SME's (traders, artisans, food processors) sales of gari (pre-cooked convenience food from cassava) constitute half of cassava output in West Africa; in turn, cassava is the largest single source of calories in West Africa; during the 2000s, as hand peeling has become an increasing bottleneck to growth, private cassava processors have adapted continuous-flow abrasion systems used in European potato starch-processing equipment to automate and scale up cassava processing to 5 tons per hour. Moreover, there is new initiative by the Nigerian government to support small/medium second stage processors of cassava.<sup>10</sup>

- Horticultural product processing SMEs in Rwanda: There has been an explosion of SMEs in fruit and vegetables processing and trading in Rwanda in the past decade, for the local and the regional market.<sup>11</sup>

- d) We think these rapidly emerging agrifood SMEs are often neglected (the “ignored middle”) in the African food debate. They have long thought by researchers and policymakers to be a negligible group, too small a force to count; this perception has gone along with laments from governments and donors of the lack of African grass-roots investments. This widespread view was largely responsible, we think, for turning attention to seeking investment from either parastatals or to multinationals, rather than rely on grass-roots local firms to invest.
- e) But, we find (as in the 10 cases above) that there is a surge in African grass-roots companies investing in wholesale, trucking, processing, and storage, and in the medium-long run we think that as in Asia, these will form the backbone of the Quiet Revolution in food systems in Africa. A number of the emerging and already established small and medium food firms will also develop into Africa's Lions in the global food arena, large private companies that will be region-wide and eventually important globally. They will be key to African competitiveness.
- f) However, in the words of Ousmane Badiane,<sup>12</sup> these rapidly emerging supply chain actors are only “flying at 20% of their potential altitude”. They urgently need major attention to resolve hard and soft infrastructural bottlenecks they face, such as rural wholesale markets, industrial-strength electricity grids, surfaced roads; and regulation and policy reforms to improve their “business climate.”

## **7. The final piece of good news – but still a very mixed story because of continued challenges – is that farmers are making, in the aggregate, massive, investments in using inputs and irrigation.**

- a) We have found that where farmers are linked to growing urban and regional markets (such as teff in Ethiopia, vegetables in Mali and Senegal, potatoes in Rwanda, dairy in Kenya), they are making investments in soil conservation, building organic matter in their soils, using productivity enhancing improved seeds and breeds and fertilizer, and even investing in irrigation and sometimes machines. We find the farmers growing for subsistence or for just local rural markets often having much less capacity to make these investments. We also find that asset-poor farmers are less able to make the investments needed to keep up for the market; it is probably about the top tier

---

<sup>10</sup> Akin Adesina, Minister, Nigerian Federal Ministry of Agriculture, personal communication. 2013. Felix Nweke, Steven Haggblade, and Ballard Zulu, 2004, “Building on Successes in African Agriculture, Recent Growth in African Cassava.” Focus 12, Brief 3 of 10, April 2004. International Food Policy Research Institute, Washington, D.C.

<sup>11</sup> Ellen Verhofstad and Miet Maertens. 2013. “Processes of modernization in horticulture food value chains in Rwanda.” Outlook on Agriculture, Volume 42, Number 4, December 2013, pp. 273-283(11).

<sup>12</sup> Ousmane Badiane, IFPRI, personal communication, 2013.

of smallholder farmers that are making such investments.

- b) We found that rural nonfarm employment (about 40%-50% of rural incomes within Africa) is a major purveyor of funds for farm investments. Promotion of this employment will be a major means of helping farmers to fund productivity investments. In fact, this source of cash far exceeds what credit markets purvey.
- c) The continuing challenge is to develop rural factor markets for irrigation, fertilizer, seed, pesticides and herbicides, credit, land preparation services, spraying services, and others. These input supply chains are obviously of extreme importance for the farm supply base of urban supply chains to be vibrant and inclusive.

## 8. Overall Implications

- a) Urban markets now form roughly 60% of the purchased and marketed food market in Africa. That means they are major financiers of rural development as this is a river of funds back to rural areas. Rural-urban supply chain actors form 50-70% of food prices in urban markets. So rural-urban food supply chains have become central to food security of African countries. Investment in these chains is as important as investment in farming for food security.
- b) Urbanization combined with income increases and diet diversification provides major opportunities as “motors of growth” for rural areas of Africa. In Asia this major trend has been leveraged to meet the growth and poverty alleviation targets in rural areas.
- c) The small and medium enterprises involved in the distribution and processing segments of the supply chains – are in the midst of launching a “Quiet Revolution” in food supply chains in Africa. They have been the “missing middle” in the food debate and now deserve major attention and help. A lesson from Asia is that they greatly reduced or eliminated the role of large parastatals and instead created a great enabling environment for the private sector food firms to emerge and develop quickly; and it has been especially the small and medium firms in Asia who have been the heroes in the agrifood “Quiet Revolution.”
- d) International agribusinesses – from Brazil, Asia, Europe and America – have taken note of Africa’s rapidly growing domestic food markets. Africa’s growing imports of cereals, soybeans, milk powder and poultry reflect the increasing competitiveness of agricultural imports into Africa. In order to compete successfully with imports in their own growing domestic and regional agribusiness markets, African farmers and agribusinesses will need to improve value chain efficiency at all levels.
- e) It is important to note that the local domestic food economy and the intra-regional market are at present the main opportunities. About 95% of the African food market (in value terms) is domestic (local and regional); exports and imports constitute the rest. Inter-country and inter-region “corridors” and networks, to expand the opportunities for regional trade by SMEs in processing and services, are crucial. But over time the global export market will also grow as an opportunity.
- f) Of course these transformations and developments are very uneven, over countries, over zones of dynamic areas near to towns and cities versus hinterlands, over asset poor and asset adequate farmers. There needs to be differentiated strategies for these different segments for overall inclusive transition to the urbanized African food economy.
- g) It will be important to help a broader set of farmers access inputs and rural services and extension information to take advantage of this growing market. At first this will be an issue of volume and cost, and increasingly over time of quality differentiation and food safety.
- h) There will be need for a number of kinds of coordination – cooperatives of farmers to achieve scale, clusters of small and medium food supply chain firms with training and market-linking assistance

to maximize efficiency and innovation, and coordination over agriculture ministries, energy ministry, commerce ministry, infrastructure ministries, to bring about integrated solutions to bottlenecks holding up this emerging dynamic transformation.