Research Application Summary

Emerging trends and scenarios for agribusiness development in Africa

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Background

Agricultural development in Africa is back on the development agenda - at levels not seen since the 1960s and1970s. In September 2009 the G20 recognised agricultural development as a central activity for African development and echoed calls of the World Development Report (World Bank, 2008), the "Our Common Interest" Report (Commission for Africa, 2005) and also by recent statements of African Heads of State on Africa's development strategy at their 2009 meeting. All had emphasised the notion that agriculture was a key driver of economic development and growth, poverty alleviation and food security on the African continent. The strategic importance of African agricultural performance is also illustrated by its direct and indirect relationship to and impacts on all eight the United Nations Millennium Development Goals (MDGs) (United Nations, 2009).

These general agreements on the importance of the sector provide an exceptional opportunity for the design and implementation of strategies and initiatives to support agricultural development in Africa and, thus, contextualise this recent "rediscovery" of the critical role of agriculture.

These new realities call into question the continued application of conventional agricultural development approaches and policies, and in particular the highly influential structural transformation paradigm identified by Johnston and Mellor (1961). This paradigm underscored the role of agricultural productivity in rural poverty reduction, demographic change and economic development and generally directed agricultural development policy and strategy advices by development agencies and also (donor) funding. The role of small scale farming was viewed as a central tenant of this paradigm. Is a changed paradigm required to guide today's agricultural development? If not, what changes will be needed to enable agriculture to contribute its full potential in the sub-Saharan Africa of today and the next decades?

This paper will:

- Review the roles of agriculture, as defined by the "classic" Johnston-Mellor paradigm, in context of the renewed emphasis on African agriculture and the changed environment in which it functions and conclude on the need for and nature of adjustments i.e. whether a paradigm shift is required;
- Identify drivers and trends that will shape agricultures' roles in the African region. These will include meeting the growing demand for food at global, regional and household levels; activating Africa's untapped agricultural production potential and production and price scenarios; evolving agri-food business systems; investment and scale issues in African agriculture; and economic management and governance;
- Illustrate the impact of such drivers by calling evidence from recent developments in African agriculture; and
- Consider a strategic framework - functions, thrusts and actions - and derive scenarios for African agribusiness development for the next decades.

Three scenarios were developed:

"Hit &Run": Agricultural development will be driven by short run market linkages and exploitative social and environmental run relationships. Governance will be driven by short run "hit and run" practices accompanied by corruptive deals to gain access to the natural resource potential. Development investment will be segmented, only focused on the short term needs of an initiative. Civil unrest and activistic actions will increasingly jeopardise a sustainable development future;

"Sustained & Equitable Growth (SEG)": This scenario establishes the environment and building blocks – market linkages; good governance and economic management; social and environmental codes/protocols; and human capital development to empower the African society to participate and benefit in the "creation of their own future"; and

"Stop &Go": This future will fall between a "Hit & Run" and an "SEG" development path, with opportunistic, uneven and inconsistent investments and business practices and systems. It may experience some vibrant and sustainable initiatives, but will fail to achieve a sustained and equitable growth path.

A Renewed Emphasis on African Agriculture in

In the Johnston – Mellor (J-M) paradigm of the 1960s and 1970s, agricultural growth was considered the key pillar for economic development with farm production promoting value-adding and

rapid industrialisation. It was agreed that agricultural development would initiate productivity gains and the structural transformation of the economy (Johnston and Mellor, 1961; Hayami and Ruttan, 1985; Timmer, 1986; Eicher and Staats, 1998; Mellor, 1998). In the J-M paradigm the roles of agriculture in development are to:

- produce agricultural surpluses in the form of increased food supplies and exports of food and fibre products;
- enhance demand through large and significant income multipliers for a range of products and services, obtained through market development in rural and urban environments;
- release/shed farm labour for more productive employment elsewhere in the growing economy and in agri-food value-adding industries i.e. labour linkages; and to
- mobilise capital and investment in a range of activities related to agricultural production and rural development.

Although the J-M paradigm was widely advocated by development agencies and funding institutions such as the World Bank and also credited with the success of the Green Revolution, in particular in Asian countries (Hayami and Ruttan, 1971, 1985; Streeten, 1987; Lipton, 1989), and to some degree in a country such as Zimbabwe in the 1980-90 period, its effective implementation was also subverted and derailed in the 1980s (De Janvry, 2009). Economic development policies in this period was increasingly directed away from agricultural development to favour industrial activities directed towards import substitution that often had strong anti-agricultural biases – for example the local production of high costing agricultural inputs and machinery that could have been imported at lower cost (Krueger *et al.,* 1991).

This neglect of agriculture was also worsened by ineffective public support systems in agricultural extension, research, funding and market support and inefficient state-led bureaucratic approaches. In addition, and particularly in the Africa environment, support to smallholder agriculture proved problematic due to factors such as political tensions, weak infrastructure - transportation and communication networks, many "missing and under developed" markets (for land, finances, inputs, agricultural produce, etc.) and restricted agribusiness initiatives (Dumont, 1962; Haggblade *et al.*, 1988; Eicher and Staatz, 1998; Delgardo, 1998; Cheru, 2002, 2005; Kirsten *et al.,* 2009). The agricultural growth that was

necessary to activate the J-M paradigm was thus constrained or too weak to be effective. The implementation of stabilisation and structural adjustment policies of the 1980's under the "Washington Consensus", direct cash transfers to the poor and job-creating public work programmes also effectively contradicted the classic agriculture-led development paradigm, compromising the role of agriculture in economic development and effectively undermining the contributions of agribusiness and the private sector (Byerlee *et al.,* 2009).

The above economic policy scenario however changed dramatically over recent years. A number of economic, financial, social and environmental crises emerged in the late 1990's and early 2000's, related to issues such as rising food insecurity and hunger, stagnation in per capita value-added in sub-Saharan agriculture, increased rural poverty, and increasing urban-rural disparities and tensions, as well as issues of serious environmental degradation, misuse of scarce agricultural resources, loss of biodiversity and lack of environmental services (Cheru, 2002; Binswanger, 2006 Ravallion *et al.,* 2007; World Bank, 2009). This all attracted renewed attention to agriculture - as both a contributor to these crisis situations but also as a potential instrument for solutions (World Bank, 2005, 2007, 2008; FAO, 2009; Byerlee *et al*, 2009; Badiane, 2009). In other words, agriculture is back on the development agenda (as in the 1960-70 period) due to a combination of crises and opportunities.

One interesting point must be noted here. Despite all the negative influences that constrained development in sub-Saharan African agriculture, agriculture somehow did manage to show resilience and did respond positively to the limited support it was granted. It recorded steady production increases, especially from the mid-1980s onwards, growing from around 570 kg agricultural produce per capita to around 740 kg per capita in 2006 (Badiane, 2009; Adesina, 2009; Vink, 2010). Farming operations, particularly large-scale operations, and agribusiness also showed positive growth and upward development trajectories. This must be accepted as a good indication that agriculture in Africa does have much more to offer if it is prioritised and positioned as a key development sector and also supported appropriately.

But is a new paradigm required for the future development of African agriculture? A question now to be asked by policy makers and development funding agencies concerns whether

this renewed interest in agriculture is sufficiently guided by a strategic framework. Is the J-M paradigm still valid or is a new paradigm required to (re) direct policy, strategy, investment and action in the African agricultural environment?

In the Elmhirst Lecture at the 2009 Conference of the International Association of Agricultural Economists in Beijing, China, Alain De Janvry, a leading development economist, timeously argued for a newly designed development paradigm of agriculture in the developing world i.e. to move away from the J-M view of agriculture as the main driver of economic development. According to De Janvry (2009) three fundamental sets of changes affecting the environment in which developing agriculture currently operates should be accommodated:

- a widening of agricultural development objectives and scope – instead of focusing on growth and industrialisation through farm production *per se*, development is opening to a multi-functional and -dimensional, holistic agenda with economic, human, social, ethical and environmental considerations that has good decision-making and governance mechanisms as its central components;
- changes in the structural context in which agricultural growth and development occur needs new institutions related to the rapidly globalising food system, the emergence of integrated agri-food value chains and rapid technological changes; and
- increasing resource scarcity and climate changes put demands on agriculture to operate in an environmentally sustainable manner and, where possible, serve as custodian of the environment.

New roles for African agriculture. In this new setting agriculture cannot be viewed any more as the leading sector for production to bring about industrialisation, as was the case in 1960-70; neither as a series of sporadic events, driven only by market forces and profit motives that result in fluctuating production supplies and unstable rural environments, as was the case in the 1980-1990 period. Instead, agriculture development in the new millennium should contribute to several dimensions of development (De Janvry, 2009) viz:

- accelerating the growth of gross domestic product (GDP) through increased farm production and added value activities;
- providing surpluses to meet the growing demand for food and fibre, both locally and globally through exports;

- reducing rural poverty and food security vulnerability of poor households;
- narrowing the rural-urban income gap;
- supporting environmental sustainability;
- contribute to employment creation in the wider economy; and
- support economic development through domestic economic specialisation, structured urbanisation and rural growth, and regional and global integration and trade.

Although most of these contributions still correspond to the classic J-M paradigm (Timmer, 2010), the scope and focus has been widened. Agriculture clearly constitutes more than production expansion and yield increases at farm level, value adding and trade; it now has social, political, cultural and environmental impacts and roles and must be positioned in context of the global trade for food and fiber, i.e., sector must now be positioned to support multiple development objectives related to economic, social, political and environmental concerns; and its contributions will be multifunctional of nature, anchored in a set of sustained production activities and focusing on producing for local and global markets (Cheru and Bradfort, 2005; IAASTD, 2008; De Janvry, 2009). Whereas food production will remain the major function, agricultural production will also be directed to energy, health and medicine and recreation/tourism activities (wine routes, eco-adventures, etc.). Fantu Cheru (2000) in "African renaissance: roadmaps to the challenge of globalisation" argue for a "middle of the road" position that will go beyond state-led vs. market-led scenarios to link Africa's economic development to the evolving global processes.

Re-interpretation. In addition to the changing roles of agriculture, re-interpretation of "how to" will also be required to (re)direct decision making and institutional innovation in the more complex, integrated and globalised environment within which agriculture now functions. This will include (De Janvry, 2009) the:

- re-conceptualization of complementarities and trade-offs among the multiple objectives for agricultural development;
- redefining the roles of the state, civil society and the private sector including farmers and agribusiness in support and setting priorities among the many conflicting economic, social, political and environmental objectives;

- redesigning development institutions so they can provide the necessary innovation, establish new governance structures, and experiment with new approaches to stabilise and sustain agriculture - agricultural education and training (AET) is a point in case; and
- obtaining the necessary commitments from all involved that they will support agriculture in the long-term as a contribution to achieving the stated development objectives.

From this analysis it can be concluded that, while the classic J-M paradigm still has some value to the current situation, adjustments are needed, i.e., a paradigm shift to direct the renewed attention to African agriculture effectively. This new paradigm, although still emphasising the J-M roles of agriculture, also needs to re-interpret these roles in context of the expanded dimensions of development and to accommodate the complex and globalised environment impacting on agricultural systems – from business, social and environmental contexts; and to translate all this into a "new" strategic framework for agricultural business development in Africa.

Setting a Strategic Framework

The setting of a strategic framework for agriculture in Africa to accommodate the above contributions and roles, will require (a) to identify and interpret the major future political/policy influences and drivers of agricultural development in Africa; (b) to clarify the required economic management processes and policies to direct these drivers; and (c) to define core actions and thrusts that will give effect to the growth and development of African agriculture over the next decades.

Drivers of Development and Change in African Agribusiness

African agriculture has a unique set of circumstances and features that make it very different from other regions. For example, the Asian Green Revolution in the 1960s and 1970s had an immediate and highly positive impact in terms of economic development and growth, economic structure, governance, human capital development and the political development paths followed. Yet, any effort to repeat these results in Africa must recognize differences between the two regions and also recently noted negative consequences and controversies around the Asian Green Revolution – these are mostly related to imbalances between output prices, low yields and high input costs, i.e., the "price-cost squeeze". Due to global impacts and internal dynamics, the future facing African agriculture is also expected to be significantly different from its past.

What are the expected occurrences that will drive opportunity and challenges in African agriculture over the next decades?

The emerging consensus amongst development institutions and agencies, referred to in the introductory paragraphs, must be appreciated as a primary set of forces driving to re-structure agricultural development in Africa. The universally accepted Millennium Declaration, noting that agriculture plays a prominent role in all eight of the Millennium Goals, together with the referred to declarations by African leaders on the future role of agriculture, clearly situates African agriculture's roles and contributions within the broader economic-political context of both global and local realities impacting on Africa..

This, however, is in its early stages and still falls short of wide-scale implementation and it continues to show under- and mis-investment by many governments and international donors (De Janvry, 2009). Recent statements by influential groups and financial commitments in this context are encouraging. Among those expressing support to African agriculture are the World Bank and the 2008 World Development Report, the Food and Agriculture Organization of the United Nations (FAO) and high profile international donor foundations – notably the Bill & Melinda Gates Foundation, Rockefeller Foundation, Ford Foundation and Kellogg Foundation. The launch of programmes such as the Comprehensive African Agriculture Development Programme (CAADP) of New Partnerships for Africa's Development (NEPAD), and the Alliance for a Green Revolution in Africa (AGRA) must also be noted. These have paved the way for new funding and investment instruments in African agriculture – globally and also by local African business entities, such as the Sanlam/Kellogg AgriVie Fund, the FutureGrowth Fund from Old Mutual, and funding from The Standard Bank to support AGRA.

Driver 1: Future global market growth concentrations. By 2050, the major growth in demand for food and fibre products is expected to come from the markets of North America, Western Europe and China, and these trends will drive commercial food business systems (Swinnen, 2007; McCoullough, Pingali and Stamoulis, 2008, ABSA, 2009). Demand will be influenced by population growth, per capita income trends, lifestyle aspirations and related consumer preferences. Consumer demand in these environments has become and will continue to be more exacting, fragmented and

geared to convenience, food safety and quality. Consumers will also seek attributes of fun, surprise and taste sensations in their food experience and be sensitive to environmental, ethical and social considerations (Hughes, 2007; Vermeulen *et al.*, 2008). These trends are expected to have profound effects on the business systems sourcing food products - production, processing, wholesaling and retailing. This means the agri- food value chain will increasingly be subjected to considerations and values originating in these markets, and the related food safety, environmental and ethical valuations/certifications, and traceability and monitoring systems.

In addition, the dramatic urbanisation trends in Africa, combined with expected increases in per capita food consumption patterns on the continent (FAO, 2009; Vink, 2012), will directly expand local demand and provide opportunities for localised (short) value chains, linking farming areas to growing urban concentrates on the continent.

The evolving trade pattern confirms these trends with growing export and import trends; imports particularly for high value food products. African agriculture is increasingly linked in to global food trade patterns and will continue to be integrated in this world of contracts, value chain specifications and business opportunities.

Household food security in urban and rural environments. Food security is defined in terms of food supply, access, distribution and nutrition (DBSA, 2009). Under this definition, a positive food self-sufficiency index (SSI), which means the ability to produce sufficient food for the nation or region, does not necessarily lead to food security at the household level. Hunger, food vulnerability and malnutrition are serious in many African countries (Global Food Security Index, Economic Intelligence Unit, 2012) and it is often still observed in economies with positive SSIs. South Africa is a case in point (Vink and van Rooyen, 2009; De Haese *et al.*, 2010).

Food supply can generally be secured through trade combined with local farm-level food production and, thus, should not be approached from only a national agricultural production perspective. A broader, holistic view is needed that focuses on farm production at national and household levels, on trade and distribution, and on aspects of food safety, household-level access, vulnerability and nutrition education (DBSA, 2009).

Food security at household level is generally attained through access to income i.e. income security or the ability to purchase food stuffs as required. However, in poor environments, food security is vulnerable and highly sensitive to household income levels and food price fluctuations. Thus, access to food in poor societies should focus on strategies to enhance household level income generation and also create resilient food production capacities in both rural and urban environments by, for example, supporting food gardens. The views of the "International Assessment of Agricultural Science and Technology for Development" that "achieving food security and sustainable livelihoods for people in chronic poverty depends on ensuring access to and control of resources by small-scale farmers" (IAASTD, 2008), and the emphasis placed on small-scale farming by international development institutions such as the Bill & Melinda Gates Foundation, the Kellogg Foundation and FAO, must be supported in the quest to eliminate food vulnerability.

Driver 2: Africa's untapped agricultural potential. Africa and South America constitutes the largest untapped agricultural resources on the planet, while other continents will find it increasingly complicated to expand the use of agricultural production resources (Fig. 1).

Region	1980-2004 (%)	To 2050 (%)
World	21	15
South America	16	40
Asia	46	12
Central and North America	-2	2
Europe	114	-2
Africa (Absa-Agribusiness)	18	60*

Figure 1. Arable land resources potential utilisation (1980-2050).

Table 1 illustrate the current status of global land potential for food grain production. This clearly show that Africa, the region with the most abundant land resources, provides by far the greatest scope to supply food and fibre through land expanding activities to meet the growing global demand.

Sources of agricultural production growth. Agricultural production in Africa is often viewed to be stagnant. However, the production increase recorded by African agriculture since

Table 1. Food grain production growth potential: actual 1980-2004; projected 2005-2050.

Change	1980-2004 (%)	2050 (%)
South America	80	60
Asia	64	47
Central and North America	40	21
Europe	80	44
Africa	75	150

Source: FAO, 2009; ABSA/BARCLAYS BANK, 2009 as quoted by Van Rooyen, 2009.

1984 – from below 200 kg production per capita in 1984 to almost 600 kg per capita in 2006, and from 300 million tonnes in 1984 to almost 750 million tonnes in 2006 – tells another story; one that is encouraging. These increases were largely achieved through a combination of expanding arable land, increased yields and higher cropping intensity- multiple cropping, etc. (refer to Table 2). The scope to expand agricultural production through these three main sources of growth creates exceptional opportunities for African agriculture.

Climate change, variation and instability, such as variable rainfall during peak production periods, are seriously constraining factors to farm production and must be attended to through R&D and insurance support schemes to sustain food security and reduce food vulnerability in the region.

Climate change is expected to cause certain shifts in production space and locations over time major. However no major changes in the potential for food grain production is projected for the Sub Saharan Region (BFAP, 2009). The impact of climate change however will have to be assessed carefully; in particular its spatial effects on populations and smallholder food producers.

Driver 3: Agri-food value chain networks. Over the past two decades the driving forces of income growth, demographic shifts, globalisation and technical change have led to a reorganisation of the agri-food system with supply chains and support networks, becoming dominant features linking "farm to plate". The agri-food industry has restructured fundamentally to meet the ever expanding global demand for food and fibre and changing consumer preferences, and also to comply with the worldwide deregulation of agricultural business and trade and to adopt technological innovation (Zuurbier, 1999; Hughes,

Table 2. Sources of growth (%) in African agriculture: Recorded for 1961–1999; projected for 2000-2030.

	Arable land expansion		Increased yield through yield increasing technology and production management		Cropping intensity increases through multiple cropping, etc.	
	1961-1999	2000-2030	1961-1999	2000-2030	1961-1999	2000-2030
Developing countries	23	21	71	67	6	12
Sub-Saharan Africa	35	27	34	61	31	12
East Asia	26	5	79	81	-5	14
South Asia	6	6	80	81	14	13
Latin America	46	33	55	46	-1	21

Source: FAO, 2009; ABSA/BARCLAYS BANK, 2009 as quoted by van Rooyen, 2009.

2007; Vorley *et al*., 2007; Swinnen, 2008; McCoullough *et al*., 2008; Reardon *et al*., 2009; Webber and Labaste, 2009; Swinnen, 2010). These changes have introduced shifts from:

- spot-market-based transactions, which are largely opportunistic in nature, to supply or value chain management and coordination, which are governed by trust, long-term contracts and relationship management;
- the local sourcing of farm products to global sourcing in wider regional and international markets; and from
- Public- or government-based standardization and certification processes- food and quality assurance, fair labour practise, etc. to private sector driven norms and standards in food safety and ethically and environmentally based considerations (FairTrade, supermarket certifications, etc.).

This has meant that sourcing of produce from farmers is being directed through contracts or long-term arrangements, and being subjected to certification and monitoring procedures to conform to standards required by markets. Farm producers have effectively become members of "corporate food business networks", operating in an integrated and coordinated manner with, input suppliers, service providers, funding agencies, processors, retailers and supermarkets – agri-food value chain networks (Jaffee, 1993, 1995; Reardon and Timmer, 2005). Trust and relationship management within a particular agri- food chain network have become important drivers of sustainable agribusiness (Zuurbier, 1999; Doyer and van Rooyen, 2001; Masuku, 2009). This all is promoting a range of commercially directed farming models and governance systems directed to enhance the business performance of a particular value chain network vis-à-vis other competitive agri-food chain networks.

The location of future production sites. Africa and to a lesser extent Latin America, because of the vast potential of their unused natural resources and land availability, will become important future locations for the farm level production and sourcing of raw materials to satisfy the rapidly growing demand for food and fibre(Byerlee, 2009; OECD,2010). This will see the emergence of global agri-food chains and networks that will source raw materials from African producers, with cost effectiveness and innovation, traceability, food safety and quality checks, all driving the different processes in the chain . Localised agri-food chains that link farm production to rapidly growing urban areas in Africa will also feature in the food business

system of the future. Clearly, the evolving agri-food business system and agri-food value chains will impact directly and dramatically on African agricultural and farming prospects and typologies (Shepherd, 2008; Reardon *et al*., 2009; Poulton and Lyne, 2009; Webber and Labaste, 2009).

Changing investment patterns. The restructuring of the agri-food business system is changing the nature of agribusiness investments. For example, in order to consolidate value chain actions and allow for scale economics, investment in wholesale market infrastructure, with the singular purpose of providing access to farm producers to the next level in the value chain, will now shift to an emphasis on the development of infrastructure and support systems to facilitate the functioning of all levels of operation in the total agri-value chain. Investments focused on agribusiness mentoring, coaching and extension for producers participating in the value chain, and on processing and retail functions and their supporting mechanisms, will become the new drivers of business opportunities in the food system (Reardon *et al*., 2009; Swinnen, 2010).

A recent OECD report on "Private financial sector investment in farmland and agricultural infrastructure" (OECD, 2010), highlights the expectation that investment in agriculture world-wide will grow, "double, even triple in the medium to long-term" (the estimated current investment by the private sector amounts to USD 10-25 billion). The geographic focus of such investment activity is shifting noticeably toward a South America (led by Brazil) and also increasingly Africa - both the areas of land resource abundance (refer to section above). One major advantage for Africa is the lower land acquisition cost for large scale farming operations in southern and central Africa. In Brazil these costs range from USD 1 500-3 000 per hectare compared with USD 300-500 per hectare in Africa. There are also transportation cost advantages on the east coast of Africa relative to the Western Hemisphere with respect to exports to India and the rest of Asia (OECD, 2010).

The emerging investments patterns in Africa, where capital markets are still in the early stage of development and land titles and concessions are however complex. It typically constitutes a tiered corporative holding structure with subsidiaries overseeing farm production processes, often in different countries. A range of benefits from such large scale farmland developments were reported. These included sustained

and higher income earning wage opportunities and better working conditions and employment benefits, local capacity and skills development, improved agronomic and business practices for neighbouring farmers and increased farm productivity and access to markets. Where outright ownership of land is not possible, long-term concessions are generally negotiated with governments, which often include commitments by investors to provide support for social projects, which could include schooling, health, feeding, and skills development in the project environment. These large scale farming operations were also often the biggest and most compliant tax contributors, expanding the tax base for local communities. Governments were generally favourably disposed to such private capital developing and transforming farmland and investing in agricultural and related rural infrastructure (OECD, 2010).

As to environmental sustainability in such farmland development, the OECD report indicates that many investors in large scale agriculture cultivate close working relationships with multilateral organisations such as the World Bank, the International Finance Corporation (IFC) and the FAO on sustainable farming practises.

Another feature of the changing investment pattern will focus on the improvement of logistic infrastructure. The World Bank Logistics Performance Index (World Bank, 2012) rate most African countries low, with eight of the ten lowest LPI countries in Africa. In many respects the key to the "unlocking" of Africa's agricultural potential will be driven by investment in logistical infrastructure.

Smallholder agriculture and the agri-food business transformation. All farm producers who are directly linked to agri-food value chains are generally better off due to price and quality considerations, and because they have assured markets and can aspire to long-term prospects to share in value-adding opportunities (Zuurbier, 1999; Swinnen, 2007; Vorley *et al*., 2007; Shepherd, 2008; Webber and Labaste, 2009).

Food companies and supermarkets generally prefer to source from larger scale farm operations, rather than from large numbers of smallholders, in order to avoid high transactions costs and problems with consistent volumes, quality and delivery. Larger farms are also better equipped to benefit from this

emerging value chain-driven food business system (Kirsten *et al.*, 2009).

Does a "commercial value chain dominated" agri-food system work against against smallholder agriculture or can smallholders access such business systems? The underlying hypothesis to this question is "that the transforming agri-food business system will effectively exclude smallholder agriculture from future business opportunities" In general, it must be noted that various studies on the position of smallholder agriculture in agri-food value chain-driven business systems (Swinnen, 2007; Shepherd, 2008; Kirsten *et al*., 2009; Reardon *et al*., 2009; Webber and Labaste, 2009; van Rooyen *et al*., 2010) do not necessarily support this view. Various cases can be quoted where raw products were sourced from smallholders, – "not as an act of charity" or corporate social responsibility" but because their inclusion was found to be profitable, even when large producers operated in the same sector. Sugar, vegetables, milk, fruit and meat provide such evidence (Nestle, 2009; Shoprite/Checkers, 2009).

These studies found that where smallholders dominate the agrarian structure, as in many African situations, food companies tend to source from those smallholders operating in localities where production infrastructure and assets, such as irrigation systems, farm equipment, farm equity, collective action organisations such as farmers' associations and producer cooperatives, and access to transport and communication systems are in place and functioning effectively. Partnerships with government agencies are also sought to enable such situations and supporting government policies and systems are generally found to enhance the successful inclusion of smallholders in the value chain. Resource and input supply contracts between smallholders and operators serving the particular agri-value chain are also important to deal with constraints faced by smallholders, such as the lack of credit, production inputs, technology transfer and extension.

The introduction of **partnership business models** such as outgrower schemes, contracts, cooperatives or business trusts, accommodation the above features will furthermore enable smallholders to participate in future business prospects and to move on a development trajectory towards higher levels of commercial farming (Karaan, 2009; Van Rooyen, 2009; Mabaya *et al.*, 2011).

The linking smallholders to commercial business systems should thus be considered as a continued major future focus for agricultural policy, strategy and project support in situations dominated by the presence of, or with imperatives to develop smallholder agriculture. Policy directives, government support to business-focused strategies, programme interventions and projects, financial support instruments, public-private sector partnerships and appropriate governance systems, including long term transactions and contracts should be designed and introduced to support African smallholder participation in the evolving agri-food system.

Driver 4: Large scale farm production. Most African agricultural production is still done on smallholder farming types; however production within this system is largely stagnant and commercialization, linking farm producers to commercial markets is generally complex and difficult (Agra, 2009; Kirsten *et al.*, 2009).

Larger scale farming in countries such as South Africa, Zimbabwe, Zambia, and Tanzania and recent large/mega scale farmland development initiatives through corporate farm production systems- farms ranging from 100 000ha to 1 000 000ha in the grain, livestock, sugar and fruit industries - in sub-Saharan Africa (Standard Bank, 2009; Agri Vie, 2009; Byerlee, 2010; Emergent Asset Management, Citadel Capital and Dominium Farms, cases quoted by the OECD, 2010; and O'Connolly *et al*., 2011), have proven to be successful, in particular with technical innovation, yield increasing practises and market responses and also social community support. These business-driven systems have contributed significantly to the production increases noted in African agriculture (refer to section above). They produce large volumes cost effectively for growing markets, consistently providing food grains, vegetables and fruit for local consumption and for export.

What is underlying this trend? Apart from a range of scale economic advantages in the farm production process, large-scale farming generally lowers the transaction costs of delivering to agri-food value chains, while also providing consistency in production volumes and quality. Input-provision and food-processing companies therefore generally prefer to source from large-scale over smallholder agriculture. Large-scale farming also competes more effectively with non-agricultural business activities for investment, financial reward and remuneration

(Kirsten *et al.,* 2009; Reardon *et al.,* 2009). Byerlee (2010) also observes the trend towards large-scale corporative farms in developing countries with land-abundant resources.

The future of smallholder farming. Do these economic advantages and business preferences for large scale agriculture effectively leave African smallholder farming out in the cold?

Firstly, there is growing evidence that smallholder systems increase farm production through yield-increasing technologies and improved access to agricultural support services, where these are supplied to such smallholders and where they are linked in to agri-value chains (refer to the previous section).

Secondly, the "poor but efficient" hypothesis (Schultz, 1984) also provide evidence that although smallholder farmers generally operate at higher economic efficiency levels than large scale agriculture, they remain poor because of the low income producing potential due to small scale. Technological innovation may enable smallholders to increase their income levels, although this generally also requires increased capital investment and higher management applications and technical know-how i.e. to operate on a "higher production function". These, however, are scarce factors in smallholder agriculture, constraining its application, and generally confirming the "poor but efficient" hypothesis.

Thirdly, in addition to the large scale and smallholder farming typologies observed in African agriculture, a "mixed-mode" farming typology is observed to be emerging. In this mode large-scale and smallholder agriculture co-exist through coordinated, synergistic and collaborative activities, based on commercialisation and economies of scale advantages. This typology is increasingly observed in labour intensive farm production activities such as vegetables, fruit, sugar and dairy that link to value-adding processing and trade; also in grain production with scale economic advantages in off-farm storage and processing activities; and in livestock farming which provides animal products to large scale abattoirs and value-adding meat processing. This mixed-mode farm typology support opportunities of smallholders to depart (rather escape?) from low income smallholder agriculture to be accommodated in the higher income earning opportunities of agri-food value chains and distribution networks (Reardon *et al.*, 2009; Webber and Labaste, 2009; Swinnen, 2010).

The expanding mixed-mode farming scenario in African agriculture will introduce institutional innovations to activate scale economic advantages in production, logistical and financial support systems and risk mitigation. Agribusiness systems will institute the required collective actions and support systems directed at ensuring production output consistency, quality maintenance and food safety among suppliers, including smallholders. This will often also require the mobilisation of community participation for the implementation of viable project interventions on "common resources" situations i.e. where community owned resources such as arable land, grazing and water is concerned. This will require institutions such as cooperatives, farmer organisations, leadership and mentorship development programmes and also skills and capacity building and effective and fair contracting systems (Kirsten and Sartorius, 2002; Vorley *et al.*, 2007; Masuku, 2009; Reardon *et al.*, 2009; van Rooyen *et al.*, 2010).

Smallholder farming will remain an important feature of Africa's agriculture, contributing to secure a livelihood albeit a meagre one, to large numbers of poor households. Socially this typology will also remain important because it provides a "fall back" too many that loose their employment in the non-farming environment. Uma Lele (1984) referred to this as a "residual" function of smallholder agriculture, and this provide at least a degree of household food security to members and a refuge to the old aged and children.

The dealing with smallholder farming will require particular support mechanisms, public sector support and where possible the integration of such systems into supply chain driven agri-food systems. As for the case of smallholder farming in general, any agricultural development framework clearly would have to recognise the notion of empowering African women and youth in particular

Driver 5: Towards a bio-based economy. The idea of a bio-based economy encapsulates a vision of a future no longer wholly dependent on fossil fuels for energy and industrial raw materials (CGIAR, 2009). "The bio-based economy could be to the 21st century what the fossil-based economy was to the 20th century" (Hardy, 2002). Agriculture will be a core of the bio-based economy, providing source materials for agricultural processes - liquid fuels, chemicals and production inputs. At

the same time, agriculture will continue to provide food and feed that is environmental more sustainable, healthful and safe.

This bio-based economy will also require agriculture to expand well beyond its current core function of food production. Positioning agriculture as a supplier of energy could currently be controversial, because some view it as a threat to the food supply and food security and with the potential to increase food prices. However, it also offers exciting opportunities. Biomass production can provide the energy needed in production processes plus it is a renewable resource. Thus, African agriculture should explore the future possibilities of biomass with emphasis on the next generation of biofuels, and the production of bio products (CGIAR, 2009).

Pressures and trends. Consumers, private agencies in food retail and trade, and civil society organizations will continue to pressure the agri-food sector to focus on environmental integrity and sustainable production. Environmental certification, biotechnology and bio-based items, such as liquid fuels, agrichemicals and animal feed, will all be important features the evolving commercial agribusiness environment. The establishment of environmentally sustainable and energy-saving crop and livestock systems will thus be a priority focus area for African agri-food R&D systems. Livestock systems, the largest land-use activity on earth with their high energy/food ratios, will be particularly challenged in this context (Swanepoel *et al.*, 2008).

Research links and networks. The recent CGIAR initiatives to establish and link global research networks – promoting an agricultural system striving for a bio-based economy, while at the same time reducing water, land, nutrients and chemical use, in order to achieve the envisaged doubling of food production by 2050 – is encouraging and must be supported in the strategic framework for African agriculture. This linking could actively encourage and support African agriculture to move towards "green practices" and to provide the required incentives for this by establishing science policies and the necessary interdisciplinary collaboration among interested groups, including governments, scientists, civil society organisations, consumer groups, food producing businesses, farm agencies and farmers.

Economic Management and Governance

The above drivers of change in African agriculture will impact in to a complex social, political, economic and natural environment, dealing with complementarities and trade-offs, redefined roles and changing institutions and long term commitments. To achieve faster agricultural-based growth rates, favourable macro-economic and trade policies must be in place along with good governance, good infrastructure and access to credit, land and markets. These will give both small- and large-scale African farmer's incentives to adopt new and sustainable technologies and diversify production into higher-value crop systems. The reduction of trade barriers, especially for higher value-added products, would encourage agribusiness to explore lucrative opportunities in the regional and global environments.

If African agriculture is to progress in the context of the above opportunity set, expected drivers and considerations, future development policies, strategies and governance systems need to be managed to function directive and supportive. These complexities will need sound economic management systems through improved policies, partnerships and good governance practise.

Trade promotion that will encourage global and regional African agricultural exports will require a range of actions including reduction of domestic price support programmes and border protection by OECD countries; development of African production capacity to meet the exacting standards of importing global markets; the reduction of domestic/internal trade barriers that suppress the necessary competition required by African industry to gain sustainable advantages in evolving and lucrative global markets; and addressing impediments to efficient African rural-urban market linkages for food and fibre.

Public-private partnerships (PPPs) are an important strategy to increase financial, human, and social capital in agriculture and rural areas to meet the many challenges ahead of African agriculture. With PPSs, governments provide an appropriate enabling policy environment and support to aspects such as R&D, technology transfer and funding as the partner to private sector to develop and implement initiatives. Such partnerships could include collaboration in training, extension and skills development for farming and agribusiness activities; human capacity development through internships, mentorships and skills transfers; development of agricultural research and technology transfer; the development of information and communication

systems; expansion of rural infrastructure; the establishment of agro-industrial clusters and production schemes; technical support with land reform/transfer schemes; and the provision of access to financial resources and risk mitigation instruments geared to selected agricultural development activity.

Good governance practices and investment protocols. must be viewed as key components of the strategic framework to direct agricultural development in the context of the above discussion. Governance must be directed to ensure that economic and business management processes are implemented in an accountable, transparent, and responsible manner. This will require institutional innovation for good governance practice to deal with the complexities confronting the African agricultural environment and to deal with matters related to competition and value distribution along the agri-value chain (IFPRI, 2006; Swinnen, 2007; Gabre-Madhin, 2009; Karaan, 2009; Poultney and Lyne, 2009; Webber and Lambaste, 2009). Rural environments in particular, will require new and strong institutions and governance structures to, for example enable farmers and agribusiness groups to "bargain a fair deal" in an agri-food value chain dominated by super markets or branded manufacturers. New governance structures will also be required to provide a "voice to civil society" and in particular women in agriculture and the youth and to direct the sustainable use and exploitation of natural resources and conflicts between private and public, individual and community and business and social interests in such situations.

Good governance in African agriculture can be built through the development of social capital and collective action, where participation in such networks increases the availability of information, helps to enforce property rights regimes and reduces opportunistic behaviour concerning the use of common resources such as land, water, information (Ostrom, 2009). International donor agencies and private business should collaborate with public sector institutions in processes to establish and maintain the required good governance practice. The notion of "investment protocols" to direct the development pattern towards sustainable growth paths must be afforded priority. The current Broad Based Black Economic Empowerment (BBBEE) Codes and Score Cards can be viewed as a potential model in this context (Van Rooyen *et al.*, 2010).

The role of civil society, women and youth in African agriculture. According to the African Women in Agricultural Research and Development (AWARD) Program, women are the backbone of African agriculture (CGIAR, 2009). CGIAR finds that women produce process and market most of the food Africa depends on. Yet, women farmers receive only 5 percent of agricultural extension training and less than 10 percent of rural credit. CGIAR also documented that women represent less than a quarter of the agricultural researchers, and fewer than one in seven of the leadership. This reality needs to be addressed as a priority, if smallholder farm production is to be increased and commercialised. The CIGIAR view that "we cannot defeat hunger and poverty in Africa unless women have a strong voice" is echoed by most prominent institutions in efforts to support the renewal of African agriculture.

It is also generally observed that young people often want to escape from the rural farming life. This is not surprising, as smallholder farming render no or few incentives to remain in the family employ on such small holdings (refer to the "poor but efficient" statements discussed above).

The concept of a thriving and ever modernizing farming system, linked to technical innovation and business deals require intellectual capacity and skills, generally not available among the aging rural population and farm producers. Finding a way to mobilize the youth to take up farming as a scientific and business-driven career remains a big challenge.

Towards a Strategic Framework for African agricultural development

Core functions and strategic thrusts for agribusiness development. Future growth in African agriculture is expected to be achieved largely through the following set of activities:

- increasing farm-level production mechanisms through land expansion and increased yield effects;
- commercialising agriculture at smallholder and large scale farming levels;
- creating linkages to agri-food chains that will activate intensification and value-adding opportunities for African agriculture;
- applying good governance through institutions that can direct the design and management of complex, globalising agri-food systems.

Core functions. This calls for an integrated agricultural development strategy, designed to activate the following four core actions, viz to:

- Generate income, including foreign exchange, through the provision of food and fibre, at primary production and value-adding levels to supply growing and differentiating global markets;
- Create employment in the agri-value chain and in the wider economic environment;
- Establish household level food security through local supply and production; and through the
- Provision of environmentally sustainable products and services including bio-based energy and fuels.

Cross cutting strategic development thrusts. To focus these core actions five strategic thrusts for agricultural development in the sub-Saharan African environment, each cross-cutting to the four core actions, will be required:

- *Stimulation of market-pull opportunities*: support the exploitation of prospects and global and local opportunities opening up to African agriculture -large and small-scale- in order to gain access to the growing agri-food business system and to ensure their commercially sustained inclusion. The empowerment of women farmers and support to young farmers will be important in achieving this;
- *Consider social/livelihood and house hold level food security:* promote support to food security and deal with food vulnerability that is a concern of many African households in rural and urban environments;
- *Environmental stability:* design environmentally sustainable agricultural practices, *inter alia*, to support innovation towards the bio-based economy, and development appropriate systems as incentives for farming communities and agribusinesses to introduce and maintain such practices in their production systems;
- *Introduction of good economic management and governance:* improve economic management through instilling leadership qualities, supporting good governance practices and codes – accountability, transparency, predictability, and participation – and enabling agribusiness, farm producers and women-based groups to have voices in public affairs and in the designing and implementation of development plans; and

- *Human capacity development:* emphasize and support human capital development through an interactive and responsive agricultural educational and training (AET) system, providing the required human capacities, skills and agents required to drive African agricultural development

A scenario matrix for African agricultural development. This matrix, with four core activities and five cross-cutting development thrusts define the strategic framework. Three possible scenarios will likely emerge (Table 3).

Table 3. Development scenarios for African agriculture.

Strategic thrusts	Development scenarios		
	"Hit and Run"	"Stop and Go"	" SEG"
1. Market linkages	segmented	opportunistic	interactive
2. Social/livelihood	exploitative	uneven	equitable
3. Environmental	exploitative	opportunistic	sustainable
4. Governance	opportunistic	inconsistent	accountable
5. Human capital	exploitative	inconsistent	empowering

- **"Hit &Run":** Agricultural development will be driven by short run market linkages and exploitative social and environmental run relationships. Governance will be driven by short run "hit and run" practices accompanied by corruptive deals to gain access to the natural resource potential. Development investment will be segmented, only focused on the short term needs of an initiative. Civil unrest and activistic actions will increasingly jeopardise a sustainable development future;
- **"Sustained & Equitable Growth(SEG)":** This scenario establishes the environment and building blocks – market linkages; good governance and economic management; social and environmental codes/protocols; and human capital development to empower the African society to participate and benefit in the "creation of their own future".

  "Stop &Go": This future will fall between a "Hit & Run" and an "SEG" development path, with opportunistic, uneven and inconsistent investments and business practices and systems. It may experience some vibrant and sustainable initiatives, but will fail to achieve a sustained and equitable growth path.

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