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Institutional Demand and Smallholder Farmers Transformation in Africa

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FARA serves as the technical arm of the African Union Commission (AUC) on matters concerning agricultural science, technology and innovation. FARA has provided a continental forum for stakeholders in AR4D to shape the vision and agenda for the sub-sector and to mobilize themselves to respond to key continent-wide development frameworks, notably the Comprehensive Africa Agriculture Development Program (CAADP).
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Abstract

The serious development gaps in Sub-Saharan Africa that generate the internal and external pressures for smallholder transformation are highlighted. In the light of that, this paper aimed to identify the fundamental drivers through which institutional demand influences actions to stimulate smallholder transformation. Building on a comprehensive review of existing literature and research, the paper found that the unique character of the smallholder sector and the myriad technical and institutional constraints and barriers afford opportunities to introduce meaningful change that will be beneficial to the system in the direction of the desired change. The paper therefore proposes a framework for implementing these actions and recommends the strengthening of national agricultural systems to drive smallholder transformation.

Introduction

The notion of institutional demand speaks to the fundamental drivers through which institutions influence and mediate change in a system. The FAO and the UNDP's International Policy Centre for Inclusive Growth (IPC-IG) look at it as a feature of social protection by which farmers are linked to local markets as one instrument for stimulating local agricultural production to fight rural hunger (FAO, 2015). This paper starts from the premise that several factors endogenous to the Sub-Saharan Africa Agriculture setting make it unhelpful to expect a social protection feature to transform both the farm and the farmer in a sustainable manner. According to FAO (2015), social protection alone cannot deliver sustainable smallholder transformation since it actually addresses the "basic consumption needs of the poor and hungry…and the *gradual* improvements in the livelihoods of the poor". These are definitely not enough in the face of the rapidly increasing global population, expected to hit 9.5 billion by 2050 and for whom production must increase by as much as 60% just to maintain consumption at current levels. And definitely not at a time when climate change and continuing regional and country-level conflicts have worsened production capacities that were precarious even in the best of times. As Pingali (2012) suggested, the current global context calls for a green revolution with "more integrative environment and social impact combined with agricultural and economic development". It is the view of this paper that institutional demand can do much more than merely assisting farmers to recycle meagre produce just to appear to be doing something. Much more is possible, and a broader view of institutional demand allows such an analysis to be conducted as will be done briefly in this paper.

Institutions as the "rules of the game" that are "humanly-devised" to "shape incentives", have long been recognized as a major determinant of economic performance that facilitates understanding of the substantial differences in prosperity from one country to the other (North, 1990; Acemoglu and Robinson, 2013, among others). To Meyer and Rowan (1977), institution represents "social processes, obligations, or actualities that come to take on a rule-like status in social thought or action". Following on that, Scott and Meyer (1994) define institutions as "symbolic and behavioural systems containing representational, constitutional, and normative rules. Together with regulatory mechanisms that define a common meaning system and give rise to distinctive actors and action routines".

But the mechanisms through which institutions act and the conditions that make them necessary have not always been considered in-depth or analyzed rigorously. Attempts by Acemoglu and Robinson (2013) to "unbundle" institutions only provided a disaggregation of the concept into political and economic institutions which were further broken down to its different components such as property rights and contracting elements. That analysis does not explain the fundamental mechanisms by which institutions play their roles or, even, and more importantly, what causes those institutions to emerge in the first instance. In simple terms, institutional demand depicts the pressures and developments that are precursors for institutions and therefore also determine how they act and on whom and what.

From the point of view of the urgent need to position smallholder agriculture for a more productive role in the present century and beyond, such knowledge is crucial. This focus is

particularly germane in the light of what "smallholder transformation" represents. According to Tsakok (2011), smallholder agriculture must be productive and profitable in the developing countries if it is to contribute to the fight against poverty that is the daily experience of millions of people there. This entails a transformation of the sector which Stamoulis, Pingali and McCullough (2008) define as comprising two related processes, one involving the declining share of agriculture in the national wealth while its market-orientation, profitability and overall organization of the system increases. It is clarified in that view that the only way agriculture can serve the needs of the present generation, given its peculiar circumstances and sophistication, including handicaps, is for it to transform. A key argument to address is that, if institutions are needed to facilitate smallholder transformation, and if different countries have attained different degrees of smallholder transformation, then the institutional environment must be an important consideration. This means that knowledge about what conditions are necessary for such institutions to emerge and how their role can be enhanced must be equally important. A focus on institutional demand is therefore justified. Since much of the existing information confirm that asset constraints are at the root of the problems faced by smallholders, the consideration of institutional demand will ideally be in the context of resource limitations as key institutional issues whose interactions define the constraints to and opportunities for smallholder transformation. In this regard, the key questions of land access, capacity development in terms of farmers' awareness, perceptions, knowledge and skills for which education and vocational training can have sizeable value-added in farming. If it is accepted that enhanced access to markets is vital, then it must be necessary to put in place supportive policies that strengthen local production to withstand potential competition from seemingly higher quality produce of better capitalized and heavily subsidized offshore producers.

The rest of this paper will examine the context for smallholder transformation particularly in relation to the broader macroeconomic setting of the majority of the countries in sub-Saharan Africa. Following that, the paper presents a review of the current state of knowledge on the problems faced by the smallholder agriculture and the factors that influence current and prospective efforts to transform the sector. The crucial element of the nature of institutional demand and its various dimensions are then reviewed. The paper concludes from these on the strategies for achieving sustainable transformation in the farming system with a focus on smallholder agriculture.

The context

The enigmatic situation of unresponsive smallholder agriculture in sub-Saharan Africa despite significant levels of investment in many countries continues to be deeply worrisome. A number of landmark events can be cited. With the end of the Apartheid regime in South Africa in 1994, investments to support smallholder agriculture began in earnest and constituted a significant proportion of the national budget. Other countries have made similar commitments of resources to build up their smallholder sectors as a response to the strong belief that agriculture will drive much of the economic growth on the African continent over the medium to long-term (Eicher, 1999; NEPAD, 2003). In 2003, African

Heads of State and Governments made the landmark declaration in Maputo to increase agricultural budgets to 10% of the national budgets and actively pursue measures across the continent to boost food security through support for smallholder development. In their meeting in Malabo, Equatorial Guinea in June 2014, the Heads of State and Governments of the African Union made a firm commitment to fast-track the programmes that grew out of the Maputo Declaration largely within the framework of the Comprehensive African Agricultural Development Programme (CAADP) (FARA, 2015). African governments are now a long way from the day's when they suffered what Eicher (1999) described as "industrial fundamentalism" of the immediate post-Independence era. A second generation African leader was quoted as saying that "…Africa will be for many generations, primarily a producer of agricultural and other primary products" (Eicher, 1999). The governments on the continent are now turning attention to how to achieve the all-important transformation, including fostering the political will to drive the process (AGRA, 2018).

But these commitments have yielded close to nothing in effectively transforming the sector. Evidence from at least three countries, South Africa (in respect to the black areas formerly designated independent homelands), Malawi, and Rwanda, confirm the unimpressive performance of the sector in terms of contributing to improvements in livelihoods and food security, among others. Two of these countries, Rwanda and Malawi, are landlocked countries while South Africa is directly accessible by sea, land and air. For South Africa, the recent national census (StatsSA, 2011), and sectoral surveys (StatsSA, 2013), have revealed that rural poverty was becoming more pronounced, as the country remains the most unequal society in the world (World Bank, 2018). A widely acclaimed and generously funded land reform programme has produced no visible change in farm sizes in more than 20 years of implementation, and, for most, welfare indices have deteriorated. In 2015, Oxfam suggested that South Africa could have the highest official unemployment rate in the world, at 25%, and, with a Gini Coefficient of 0.69 in 2015 (Oxfam, 2015), improving only slightly to 0.62 in 2018 (Beaubien, 2018 and World Bank, 2018).

In the case of Malawi, poverty rates have remained shockingly high despite visible signs of progress at the macro-economic levels (UNDP, 2013). The most recent (2019) estimates put poverty rates at about 50.7%, with 2019 per capita income at US$412 per annum (World Bank, 2019). Exceptionally, the state of the farm sector is a source of deep concern for the government and the international community. Following some relatively stable years in the early 2000s, the country has known several successive years of poor harvests. In 2012, the country experienced serious economic crisis which culminated in the contraction of the real GDP (AfDB, OECD and UNDP, 2015). In 2014, things began to look up and real GDP growth was estimated at 5.7% with agriculture expected to be the main driver. But late rains in 2015 caused a downward revision of the growth forecasts to 5.5% which could have picked up in 2016 had the weather remained favourable. But on 12 April 2016, the president declared a state of national disaster in the face of persistent maize deficits following months without rain that resulted in "scorching and permanent wilting of crops" (Polity, 2016). Food aid therefore remains a key part of development programming in the country which had to provide for over 2.8 million food insecure Malawians in 2015. In 2016, out of a total maize requirement of 3.2 million metric tons, the country can only afford 2.4 million tons from its

farms while as much as 1.07 million tons must be imported (Polity, 2016). Ironically, the country has been generously supported by the international development community, with foreign aid contributing substantially to the country's development budget.

For Rwanda, the smallholder agricultural sector is still featuring low levels of production and productivity which have been attributed to a wide range of challenges, namely small household landholdings, limited availability of recommended varieties and quality seed, non-availability of regional specific technologies and capacity constraints of the extension system as well as high illiteracy of small scale farmers (Mugabo et al. 2014). Although recent surveys indicate a noticeable reduction in the proportion of the population living in poverty, from 77% in 2001 to 39.1% in 2014, representing a 5.8% decline (National Institute of Statistics of Rwanda, 2015), poverty is still a serious problem and stood at 60% in 2019 (Review of African Political Economy, 2019). Agriculture was expected to make the major contribution towards the reduction of Rwandan's poverty rates. But there are concerns that this may not materialize as quickly as is desired due to the fact that Rwanda's economy is increasingly becoming dependent on the service sector relative to agriculture (UNDP, 2015). Covid-19 will no doubt have put things on hold.

All in all, Africa remains the continent with the second largest number of hungry people, after Asia and the Pacific, although when size differences between the continents are considered, Sub-Saharan Africa actually has the largest proportion of its population undernourished (World Bank, 2015). In 2010, the FAO estimates showed that as many as 30 percent of the population of Sub-Saharan Africa were under-nourished, compared to 16 percent in Asia and the Pacific (FAO 2010). In 2018, with 22.8% of the population undernourished, Sub-Saharan Africa was the worst performing in the world (FAO, 2018).

It is one thing to have such dreary figures and understand the severity of the conditions that have kept African agriculture back in the race for sustainable development. But that does not fully answer the question as to why we need to transform the smallholder food systems on the continent and by what mechanisms such a transformation can be achieved. The other even more crucial question is what the internal and external pressures are that make it imperative for smallholder transformation to be placed on top of the agenda. This paper will attempt to address these questions and in so doing identify the institutional demand for the desired change.

The Smallholder Agriculture in Sub-Saharan Africa

Existing knowledge is overwhelming on the nature of smallholder agriculture and the constraints and opportunities that exist within its environment and some of the key arguments for transforming the sector. After looking at the dominant typology employed, the specific problems faced by the sector are highlighted, drawing attention to the set of identified institutional barriers and key limitations that make the strong case for transformation of smallholder agriculture. How this transformation can be achieved is the subject of the next section.

The importance of smallholders for national development

From the foregoing, it is clear that smallholders occupy a special place in the social and economic life of the society. The evidence that agricultural growth contributes to overall economic development is hardly contestable. There are actually very few cases available where national budgets do not depend heavily on the state of the agricultural sector. Stamoulis, Pingali and McCullough (2008) have in fact examined this phenomenon and concluded that perhaps only the very small states and the oil rich countries in the Gulf can claim to have little or nothing to do with agriculture. For the very poor people who constitute the bulk of the population of rural areas, the only feasible occupation is agriculture. Given that, for developing countries, the majority of the population lives in villages and rural areas, agricultural development cannot be divorced from national development. So, the development of the sector will have an enormously important impact. A UNDP policy brief (UNDP, 2017) on inclusive development outlined some of the reasons for focusing on smallholders. Five points made by the brief can be summarized as:

a. Technologies developed since the end of the Second World War emphasize modernization, urbanization and industrialization as part of the goal of expanding per capita income which assumed that trickle down would take care of the rural areas. But, as trickle down did not materialize, rural areas and smallholders were marginalized.

b. Accelerating modernization and changes in occupational patterns and locations led to narrowing and specialization of commodity chains, driven by the highly structured procurement practices of supermarkets for instance, and further sidelined smallholders.

c. As is well-known, most poor people in the world live in rural areas and consider agriculture as their primary source of livelihoods.

d. While individually deprived and impoverished, these smallholders account for as much as 70% of the world's food production.

e. A distinguishing character of smallholder agriculture is the fact that its production is based on crop diversity and local/regional specificity to accommodate cultural and climatic differences.

It has been recognized that smallholder agriculture will be the key driver of growth for not only the sector but for the rest of the economy.

Typology of smallholder agriculture

One of the commonest studies conducted by beginners is trying to develop typologies, but they are not necessarily basic. On the contrary, very important policy work in which Agricultural Economists are involved start with an initial descriptive procedure that entails profiling the farming system in order to derive a classification system that helps in diagnosis and proper targeting of interventions. Our work has involved a large amount of such studies.

For South Africa where the central goal has been that of integrating the small-scale farmers, who are mostly black people, into the nation's agricultural economy as part of the on-going agricultural restructuring and agricultural democratization programmes, the interest to more precisely define the smallholder is understandable. For one thing, a clearer definition is essential for purposes of targeting interventions. Exactly who is a smallholder and who is a smallholder irrigator has therefore been an issue and a number of studies, especially those funded by the Water Research Commission (WRC), have attempted to throw light on the subject. A starting point of such studies is generally a comprehensive literature review, followed by statistical and econometric analysis.

On the basis of these reviews, we have obtained some insights into the nature of smallholder agriculture in Sub-Saharan Africa. In general, it is shown that Sub-Saharan African agriculture has a number of distinguishing characteristics that probably explain its performance and the situation of those who derive their livelihoods largely from agriculture. The scale of production is the basis for its characterization. With the majority of the units being generally small in size, the sub-sector is aptly referred to as "small-scale agriculture" (Gilimane, 2006; Obi and Seleka, 2011). Gilimane (2006) defines small-scale agriculture as the sector of developing economies that presents the most difficult development problems. Ellis (1988) sees smallholder farmers as those farm households whose limited access to the means of livelihoods and production resources means that they must rely primarily on family labour for farm production to produce mostly for subsistence. But, according to Fanadzo *et al.* (2010), there are several other terms that are used to describe smallholder farmers, notably, "small-scale farmers", "resource-poor farmers", "peasant farmers", "food-deficit farmers", "household food security farmers", "land-reform beneficiaries" and "emerging farmers". It is therefore clear that a diverse array of criteria have been employed to classify farmers, including land size, purpose of production (subsistence or commercial), income level (whether poor or rich), and, in South Africa, racial group (whether one is black or white and, thus, historically disadvantaged or advantaged, respectively).

In the past two decades or so, a growing number of South African studies in the field of Agricultural Economics have focused on smallholder agriculture in response to the equally growing official interest in the sub-sector. Writing at the dawn of democracy in the country, Van Zyl *et al.* (1996) devoted considerable attention to clarifying the concepts of "small-scale agriculture", "small-scale farming", "smallholder agriculture", and "smallholder development". Invariably, these terms have generally connoted small farm sizes, traditional practices (sometimes referred to as "backwardness"), and poverty on account of the low returns associated with insufficient market participation (Van Zyl *et al.,* 1996). This notion of smallholder and small-scale agriculture is consistent with broader views held elsewhere on the continent about this category. For instance, Chamberlin (2007) characterized those farmers in the context of Ghana in West Africa who are constrained by "limited land availability" as "smallholder". According to Chamberlin (2007), the smallholders are generally "resource-poor", being those with limited capital, fragmented plots, and insufficient access to inputs for farming. But strict definitions based on quantitative measures have proved difficult to standardize since the key themes of holding size, wealth, market orientation and degrees of vulnerability to risk are subject to considerable variability

(von Braun, 2005; Ekboir *et al*., 2002; and Chamberlin, 2007). With particular reference to East and Southern Africa, Jayne *et al.* (2003) identified a class of farmers whose plot sizes fall below 1 ha to be more easily characterized as small-scale/smallholder, although there is no geographical specificity to that notion.

In that regard, in the context of South Africa, a recent study attempted to identify the different typologies of smallholders that already exist and relate them to those based on research and policy needs (De Lange, et al., 2014). In respect to those already existing, typologies based on size of operation and market orientation are frequently encountered, yielding such types as "subsistence" and "commercial" farmers, as well as "small-scale" and "large-scale" farmers. Studies conducted by Makhura et al. (1998), Van Averbeke (2008), and Niewoudt (2003) are cited. In respect to those that are based on specific research or policy needs, types such as "smallholder farmer", and "emerging farmer" are the commonest. Scoones *et al.* ((2010) came up with some interesting typologies for new resettlement farmers in Zimbabwe on the basis of livelihood categories as follows:

- Dropping-Out
- Hanging-In
- Stepping-Out
- Stepping-Up

It may be preferable to stick to typologies which are universal and understood by all parties concerned.

There has also been a typology based on participation in irrigation schemes. Smallholder irrigation schemes are designed in South Africa's former homelands as multi-farmer irrigation enterprises that are not larger than 5ha in size that were either established in resource-poor areas by black people or agencies assisting their development. These smallholder irrigation schemes consist of a number of smallholder irrigators who come together to form a multi-farmer project. These schemes were basically run and managed on behalf of the small farmers by the government through its relevant organs. In the case of Kenya, smallholder community irrigation schemes are being developed in different land tenure systems, and vary in terms of irrigated area from 20 to 200 ha. In most cases the development takes place on private land where farmers hold individual titles to the land.

Problems of smallholder agriculture

Among the numerous problems of traditional agriculture, the prevalence of low-level technology ranks very high. Much of the research conducted begin with attempts to profile the sector and develop typologies of smallholder farming as part of larger studies to explain the performance of the sector and identify its key constraints. According to Spencer (1994), farmers on the continent failed to widely adopt the Green Revolution technologies that brought phenomenal improvements in yield in Latin America and Asia. So, Africa's

agriculture is striving to overcome the failures of its past (FARA, 2013). Some of the old challenges confronting the sector are:

- Low and declining production and productivity
- Rural poverty
- Environmental degradation
- Poor access to land and production resources
- Poor physical and institutional infrastructure
- Poor policy support
- Lack of access to finance
- Poor market access
- Climate change
- Natural resource management constraints.

The main emphasis for researchers at this stage was to describe the farming system which invariably meant profiling the smallholder and understanding the key characteristics that distinguish them from other categories of farmers. In terms of methodology, descriptive analysis was used to present an inventory of the key features. In addition, the studies employed accessible parametric estimations to compliment the non-parametric analysis to the extent that they helped to elucidate the situation. A study conducted in Stutterheim of the Eastern Cape Province of South Africa was a first real attempt to quantify and illustrate inequality in a former homeland area of the country. Income distribution implies the level of dispersion of the gross community income from a given source, assessing whether it is equally distributed or unequally distributed (Schwarze, 2004). Provide (2006) found that unequal pattern in the distribution of income received by rural households' leads to high levels of income inequality and this produces unfavourable environment for economic growth and development.

Various income distribution or inequality measures exist in the literature. One approach to measuring inequality employs the Lorenz curves. It plots cumulative total income from each source against cumulative share of households, where households are ranked according to share of total income. A 45-degree line is used as a reference, and this is known as the line of perfect equality (Schwarze, 2004; Provide, 2006). The further a Lorenz curve is below the 45-degree line, the greater the inequality. Provide (2006) reported that the Eastern Cape Province's Lorenz curve runs along the same 'path' as the South African Lorenz curve; though marginally above in the initial stages, it crosses at the 90^{th} percentile. In this study, modified Lorenz curves are used to illustrate income distribution by source in the two communities. The figure below shows the distribution of five sources of income (own agriculture income, own business income, wage labour, remittances and pensions and grants) in both communities combined. Modified Lorenz curves for all the noted sources of income are presented in the figure.

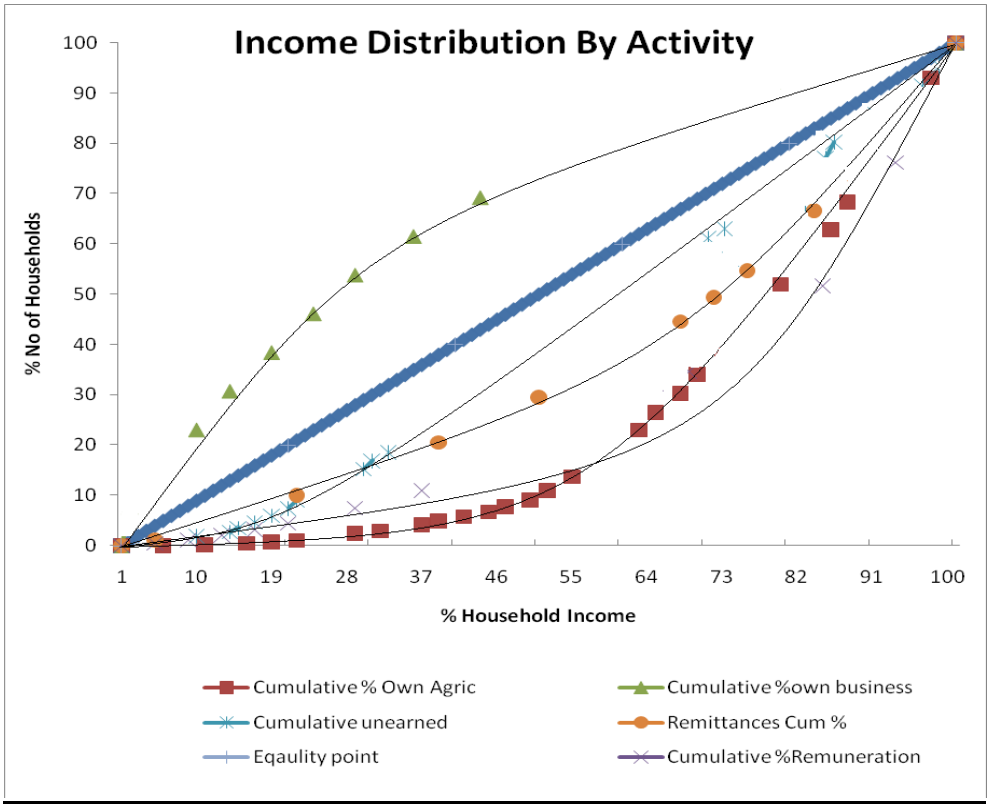


Figure 1: Measure of rural income inequality in the Eastern Cape Province

Given the multiplicity of problems confronting the sector, policy work has focused on attempts to resolve the situation and find solutions to the problem. Research has expectedly been directed at assisting policymakers find the solutions they seek.

Elements of institutional demand

In trying to determine why the smallholder food system must change and transform, the context is worth examining in all its ramifications. The first task in this regard is to analyse the institutional demand which starts with identifying its elements and undertaking a survey of how they exert their influence to create the need for institutional change. As indicated previously, this demand is an amalgam of the pressures, limitations, conflicts and total environment of the system to which a response might be the relevant institutional arrangement. A brief review of these issues will be helpful.

The key limitations to system performance

The United Nations Environment Programme (UNEP) in collaboration with several international organizations, has recently documented the context more concisely and graphically. Figure 1 draws from Norton *et al.* (2006) and Obi (2011) to show the complex relationships that define the smallholder farming systems. The indisputable fact is that humanity needs to eat regardless of their circumstances. The principal argument advanced today is the population explosion that is now more real than ever before. At present, the world population stands at around 7.8 billion people (UN Population Division, 2020) and by 2050 it is expected that at least 2 billion more people will be added to bring the global

population to above 9 billion, possibly as high as 11 billion (Fróna et al., 2019). The question being asked is: "will the food system be able to sustain this expanded population to maintain food intake at the same level or even better?". Researchers have identified 4 key limitations which pose serious barriers to the system and may make it difficult to realize the goals of feeding the world.

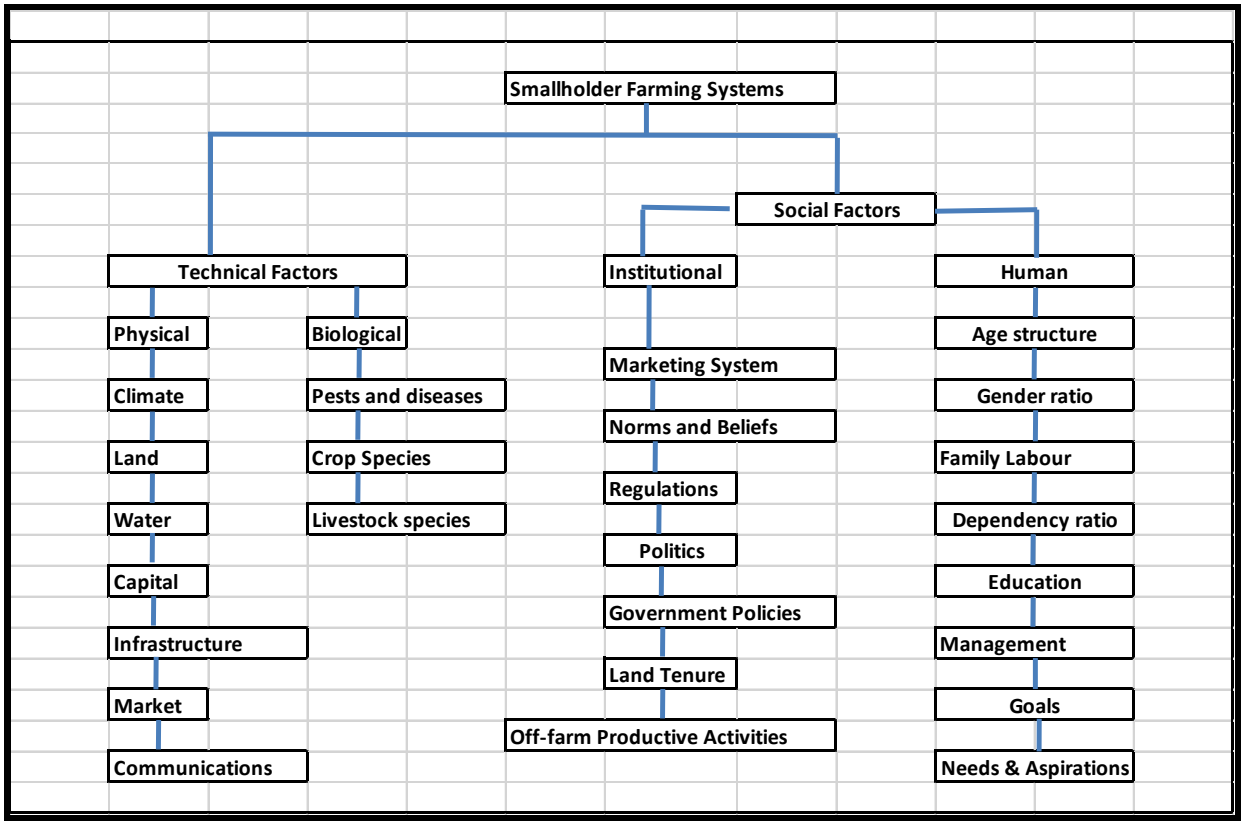


Figure 2: Relationships between smallholder farming systems and institutional issues
Source: Obi, A (ed). 2011. Institutional constraints to smallholder development in Southern Africa, Wageningen, Wageningen Academic Publishers, p.23

These limitations are:

a. The very high level of malnutrition that confronts many countries especially those in sub-Saharan Africa. It is estimated that one out of 3 people suffer from malnutrition, and about 794 million of these people suffer from hunger (FAO/IFAD/WFP, 2015). It is also known that 2 billion people do not have sufficient access to essential nutrients such as vitamins and minerals. On top of that, about 1.9 billion people are known to eat more than is needed for a healthy living and up to 600 million of these are clearly obese. As a consequence of this, health impairment is frequent and these persons suffer from numerous diseases, especially Type II diabetes.

b. The available foods are very rich in food components that are likely to have negative implications for health and the environment, and include fats, sugar, salt and meat. The result is that many cases of heart diseases are reported and these of course affect ability to do productive work. There is also the problem of greenhouse gas emissions which is exacerbated by intensive meat production. In addition, the food

that is eaten by humans is less diverse than would be expected, with about 75% of the foods coming from only 12 plants and 5 animal species.

c. The other limitation is that much of the food available for mankind's consumption is wasted and thrown away.

d. The natural resources are under a great deal of pressure. For instance, the fresh water is running dry and existing water resources are becoming more polluted than previously. It is estimated that about 33% of soils are degraded (FAO, 2015; UNEP, 2015; IFAD, 2015), a situation that Lal (2015) recognizes as one of the most serious threats to human existence over the medium to long-term. At the same time, the global biodiversity is severely threatened as tropical forests disappear and several plants and animals are endangered (Raintree, 1996 and Taylor 2013). These situations are worsened by climate change.

A review carried out by Fróna *et al.* (2019) identified growing population, changing dietary habits, climate change, water use efficiency, and erratic changes in the food prices, as key factors that pose threats to achievement of food security globally. While highlighting the extreme difficulties these factors pose, the review holds out hope that scientific and technological innovations will continue to provide the basis for proving Malthus wrong again (Fróna *et al.,* 2019).

Barriers to smallholder development

Knowledge about the key technical and institutional constraints confronting the sector and accounting for the slow pace of transformation is now widespread and the large number of international research centers and development institutions working on African agriculture have amassed considerable information to inform official policy. In an analysis a few years ago, Fatunbi (2016) has presented a rather disturbing picture of the agricultural scene of sub-Saharan Africa featuring all the "usual suspects" which have sadly and stubbornly remained unchanged. Fatunbi (2016) identified 10 core barriers to the development of smallholder agriculture in sub-Saharan Africa, and whose incidence is symptomatic of varying degrees of institutional failures. The barriers in that list include land tenure constraints, insufficient access to credit, poor access to information, non-availability of right quantity and quality of seeds, poor access to productive inputs including fertilizers, insufficient market access to sell produce and purchase inputs, restrictive trade policies, non-progressive regulatory environment, weak and deteriorating infrastructure, among others:

- Land tenure
- Access to credit
- Access to information
- Availability of seeds
- Access to inputs
- Availability of fertilizer
- Market access
- Trade policies

- Product regulations
- Infrastructure etc.

Table 1 contrasts the foregoing gory picture with a vision of where the continent wants to be in terms of agricultural development and transformation. In few parts of the continent are these issues more visible than in sub-Saharan Africa. Particularly in the Southern Africa region which has experienced considerable socioeconomic disruptions for many years, a number of studies have shown that the hardships faced by the agricultural sector have remained unrelenting. From the early 2000 to 2002, the region experienced devastating droughts and floods which abated somewhat before giving way to more serious problems, including erratic governance mechanisms and political crises. The region's agricultural sector has also suffered from low rates of adoption of improved technologies and efficient farming practices due to rigid socio-cultural systems in the face of weak agricultural extension administrative systems. Poorly managed reform programmes have also contributed to the region's problems as exemplified by Zimbabwe's land reform programme from which South Africa does not seem to have drawn sufficient lessons. The problems have manifested in a number of cases as disappearing supplies, missing markets and hyper-inflation (Obi, 2011).

Table 1: Comparing the current and desired statuses of smallholder agriculture

Current status	Desired change
Crude implements	Competitive (price/quality)
Low productivity	Good science
Poor returns	Profitable
Peasant/subsistence	Medium to large scale
Low labour advantage	More jobs processing and marketing
Poor natural resource management	Professionalizing farming
Mechanisation is difficult	Attractive livelihoods
Unprofitable	Mechanized
Land fragmentation	Benefit of scale
Unsustainable livelihood	Smart marketing
Poor market access	Sustainable intensification
Poor access to technology	Science-based, precision farming

Source: Based on Fatunbi (2016) and other FARA Studies

Without question, land tenure is easily the most binding constraint since very little can be expected to change with respect to the primacy of land as far as conventional agriculture is concerned. Although large-scale hydroponics agriculture are now feasible in many

industrialized countries, the resource constraints faced by many African countries may mean that reliance on land may remain for a long time. However, land availability is a serious issue today and this is worsened by the phenomenon of land grabbing, apart from urbanization and industrialization that are pre-existing phenomena. The same situations of scarcity are present in respect to the other factors mentioned above. Access to credit is clearly a major consideration, regardless of the circumstances of the farm and the farmer. When credit is not available, the access to virtually all the other assets might be impaired. Information is about production relationships and markets; are inputs available, where and at what prices? What quality is available and what is the added value? Which markets are more profitable? Without certain crucial pieces of information, the farmer will be virtually groping in the dark and incapable of making informed choices. As Zewde (2010) puts it, "the major problem facing the African people today is reasonable access to their own natural resources on equitable basis". Without a doubt, all the factors are veritable barriers which must be "tamed" in order for agriculture to be transformed sustainably (Fatunbi, 2016). As Fatunbi (2016) notes, very often "…untamed institutional issues will prevent socio-economic benefits from the best-bet technologies". This will be discussed further in the section under trade-offs and synergies in trying to understand how the interactions among resources for competing needs can be managed to achieve the socio-economic benefits that are desired.

Driving forces behind food systems changes

In addition to the factors that are endogenous to the smallholder system, there are other forces (largely external) which play a vital role, either positively or negatively. Stamoulis et al. (2008) have mentioned the following which are further elaborated below:

- Rising incomes
- Demographic shifts
- Technology
- Globalization

Rising Incomes

In many countries in the developing world, average incomes have been rising since the mid-2000s, despite the increase in the number of extremely poor people (The World Bank, 2014 and 2019). This has been attributed to the growth of the middle class in these countries. According to Kingombe (2014), the middle class in Africa has a "huge appetite" which translates in enormous quantities of foods of different types and qualities. It is estimated that between 2000 and 2014, the continent of Africa saw the elevation of 31 million households to the ranks of the middle class (AfDB, 2014). Consumer spending by the middle class has also been growing rapidly, with the African Development Bank estimating that total spending by the group in 2012 amounted to as much as a quarter of the continent's GDP of US$3,359 billion (AfDB, 2013). But latest data show that investment spending accounted for more than half of the continent's growth in 2019 (AfDB, 2020). Retail trade has expanded astronomically, with food retailing being particularly prominent as restaurant business has mushroomed to serve the affluent and highly mobile population that is constantly on the

move through airports, bus termini and train stations across the continent. These developments have been particularly phenomenal in the top 18 cities of the continent, but have definitely not bypassed the smaller towns and urban agglomerates.

Demographic Shifts

A parallel development has also been noticeable in the huge demographic shift that has taken place in the past two decades at least. As is now well-known, Africa's share of the global population in 2050 is projected to jump to 25% from its 2010 share of 15% (AfDB, 2020). There are estimates available on how much additional output of food is required for the sector to feed the extra mouths overall, and the larger urban population who do not contribute directly to food production as they did previously (before migration) (FAO, 2009). Africa will also experience the highest rate of urbanization, a situation that is already evident in many parts of the continent. This has meant that the rural agricultural environment has had to contend with diminishing labour resources as urban informal wage employment draws labour off the farm. Another effect is that more urban households have to buy food produced outside the country since the production capacity of smallholders within is diminished as a consequence of the labour migration. More and more rural dwellers have also to rely on purchased rather than home-produced food. While this has meant an expansion of the pool of net consumers which has put more pressure on rural production systems, it has also ignited a wave of urban agriculture which has changed the locational pattern of smallholder farming. Again, this has produced effects on food marketing similar to those arising from the growth of the middle class noted earlier.

Technology

Another development has been in the area of technology. With rising incomes and demographic shifts, technological development has inevitably experienced a resurgence (Wentworth, 2018). Much of this has been in the areas of transportation, management of value chains that have included technologies to facilitate the handling of foods, e.g. storage, distribution, refrigeration. The volume of produce that can be safely handled has also increased as the chain management technologies have evolved. The ICT revolution has also meant that many transactions are virtual, allowing marketing to be conducted without the limitations of physical separation of contracting parties. But, in much the same way that the Green Revolution technological developments marginalized poorer farmers, insufficient access to the technology means that only a few privileged farmers can take advantage of these developments while the majority are side-lined. Of course, these developments are much faster and sustained today than previously as a result of globalization as discussed below.

Globalization

Few events rival globalization in the extent to which it changed almost everything it touched. All aspects of society and national life have been affected, be it economic, technological, cultural, political, and military (UNDESA, 2011). In the past, other countries were collectively referred to by our analysis as "The Rest of the World" and seemed so remote and far from

our country of interest. However, with blurring of boundaries and the increased trans-boundary flows of resources and products, that sense of isolation has disappeared and rural producers and consumers are influenced much more strongly by what happens elsewhere. In many previously remote rural areas, illiterate farmers and food retailers explain higher food prices by retorting: “don’t you know that the dollar has gone up?” As strange as it might sound, these farmers actually know what is affecting their productive activities and socio-economic well-being. As the farmers have found it increasingly costly to transact, the long arms of globalization have reached even the remotest villages to buy up produce at the farm gate to the disadvantage of the farmer who is denied the opportunity to find alternative markets that might be more profitable.

Trade-offs, Synergies and Transactions Costs

In addition to examining the internal and external factors that explain the difficulties smallholders face, what they do and why they perform poorly, it is worthwhile looking into the system to find out how the different components interact. Trade-offs and synergies represent the system dynamics in the production and marketing environment that explain the realized outcomes. It is through this process that the responses that manifest as institutional demand can be better observed. The effect is generally felt in the transaction costs, which, in poor rural areas, can be exacerbated by the poor state of the infrastructure, including the policy framework, collectively identified by Kydd (2002) as “transactions infrastructure”. The problem is often that these trade-offs may not always be obvious, otherwise they would have been avoided wherever possible, or ameliorated through adjustments in the relative levels of input allocation to obtain given outputs. Similarly, if knowledge is perfect, the synergies would be known with precision and exploited to the maximum extent practicable because of their positive effect on transactions costs which will be lower. Efforts to improve a farming or livelihood system must start with an awareness of those trade-offs and synergies and enhance understanding of areas where the systems are flexible and can accommodate changes that will be beneficial to the stakeholders.

It is important to clarify at this stage what those “Trade-Offs” are that constrain production. Production is constrained by scarcity of vital resources/inputs, which raise transactions costs or reduce profitability. These trade-offs have been defined as “exchanges that occur as compromises and are ubiquitous when land is managed with multiple objectives” (Klapwijk, et al., 2014). Figure 2 illustrates these relationships and interactions. Two main conditions make trade-offs inevitable, namely when resource scarcity is severe and the goals of the stakeholders diverge. For agriculture, it is known that these trade-offs do occur at all conceivable hierarchical levels such as:

i. Crop, e.g. choice between grain and roots, or crop residues and the edible products
ii. Animals, e.g. choice between different animal products such as meat and milk/eggs
iii. The Farm, deciding between alternative crops, or between crops and livestock.
iv. Landscape – alternative uses for the land between agricultural production and recreation, for instance.

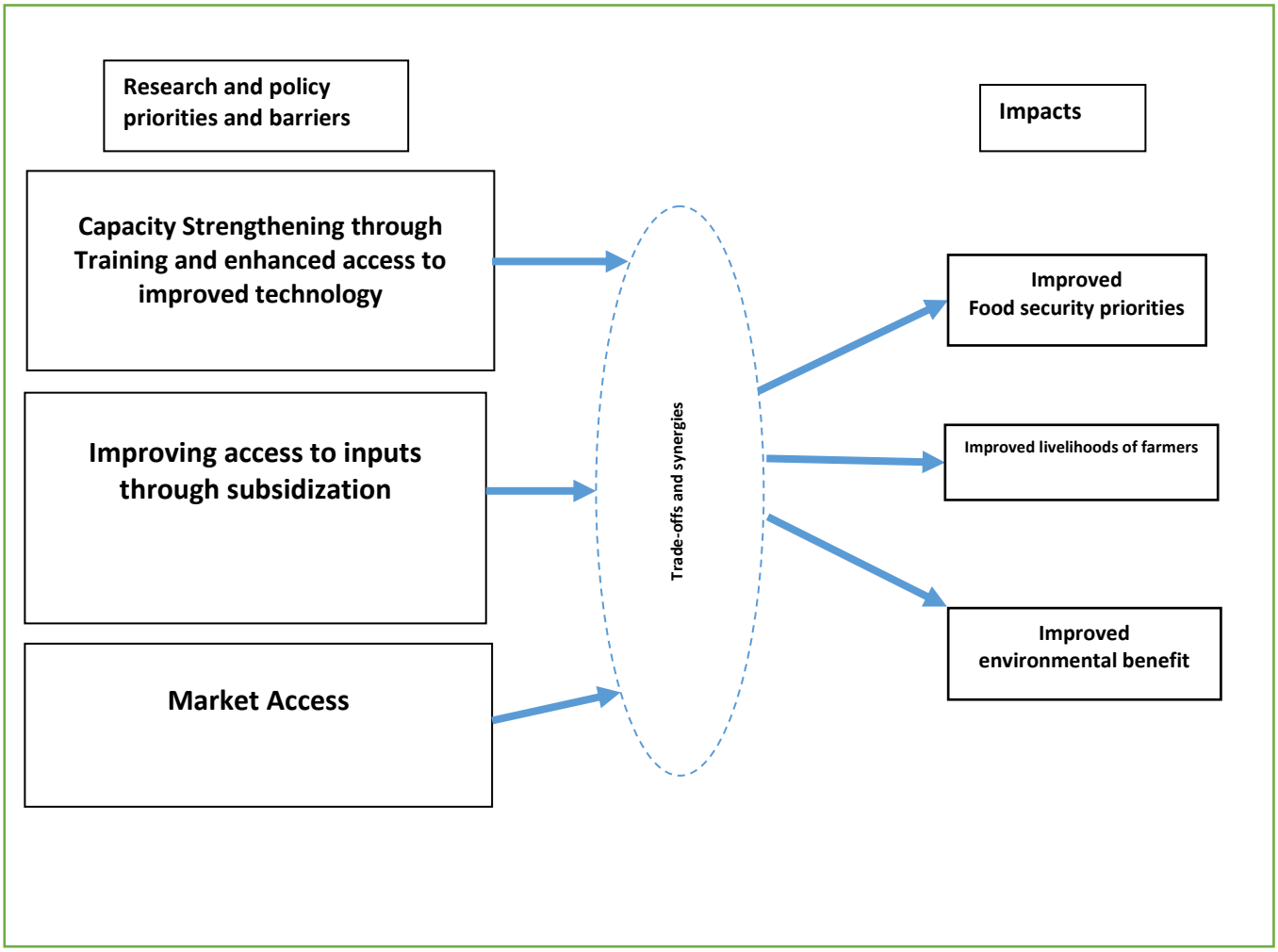


Figure 2: Trade-offs and synergies in the farming/livelihoods system (adapted from Lucy Holt, 2012)

The scarcities mentioned above are identified by researchers to be considerable (ActionAid, 2011). Farm work involves the allocation of resources in combinations to attain the different ends of production. Given the inherent scarcities in nature, the farm households always have to make difficult decisions on the use of these resources to produce given outputs. The questions are often what proportions of available land should be devoted to particular crops or livestock and how much of available capital assets, including financial capital assets, should be used for land preparation, for seeds, for fodder, etc.

Even if knowledge were perfect, it is often the case that the farmer does not have the flexibility to vary inputs or adjust the size of the farm in response to changing socio-economic environment. This is due to the phenomenon of asset fixity. As a result of asset fixity in the face of constrained resources, once resources are used in one situation, they are not available for use in another situation. By definition, assets are fixed when it does not pay to vary them; they are worth more in their present uses than any other entity will pay for them, but not worth enough in their present uses to warrant purchasing more of them (Johnson, 1988). Introductory economics makes the assumption that both acquisition and salvage prices are equalized, but this is rarely so, and leaves us with the situation where the salvage price is often much less and may in fact be negative. When we do not have enough of the assets and cannot even dispose of them if we had enough, a poverty trap results. The

Two-Sector Models of Neo-Classical Economics have thrown some light on how this problem manifests in the distribution of labour between farm and non-farm and between rural and urban settings. An explanation of this situation can be attempted by drawing on both the "Efficient but Poor Hypothesis" and the "Asset Fixity Theory". The "Efficient but Poor Hypothesis" suggests that the small farmer is already very efficient in what s/he does today and cannot (or need not) do better given existing endowment of resources and know-how. "The Asset Fixity Theory" explains that the small farmer is locked in this situation and cannot leave without incurring more costs than s/he already has. What then do we do?

Figure 3 provides a convenient framework for examining the interactions among the various institutional issues at the root of the barriers to smallholder development. Figure 3 arranges the barriers and policy/research priorities into three key categories that represent the broad themes in production, marketing, distribution and institutional support. As can be seen, Figure 3 illustrates the direction of action from the issues to where they interface and interact to the final outcomes, both desired and undesired and unpleasant. Taking an issue like land access to illustrate how these interactions work, it is known that the farmer faces the choice of what crop to grow on a piece of land and the decision will be made on the basis of the relative market values of the crops or any other objective or goal for which the household is producing. Now, whichever way the household decides, that decision will have serious implications for costs as well as returns because there are competing claims for the same scarce resources. Land has alternative uses within and outside agriculture and each line of action carries elements of risk arising from differences in transaction costs associated with each action. This is where the trade-offs originate from because a decision to do one thing precludes the doing of another and final outcome must be such that the household's welfare is not compromised in any way. If the decision is optimal, then the household can satisfy its goals by making the decision that it has made. In many cases, these decisions result in additional hardships because the prospects of the candidate enterprises have not been properly evaluated.

The processes involved are quite rigorous and complex. Identifying the precise nature of the needs for resources and the extent to which they are needed has to be done systematically. Similarly, it is important to identify the drivers of the anticipated change which will normally be technical, institutional, economic, psychological, and much more. Figure 3 has been adapted from the important work done by Ken Giller and others on competing claims for natural resources. The intricate processes of profiling, explaining, exploring, and designing involved in the negotiation processes to resolve the trade-offs and capitalize on the synergies are quite relevant in this anticipated process of "taming" the institutional barriers in order to deploy institutional demand for sustainable smallholder transformation.

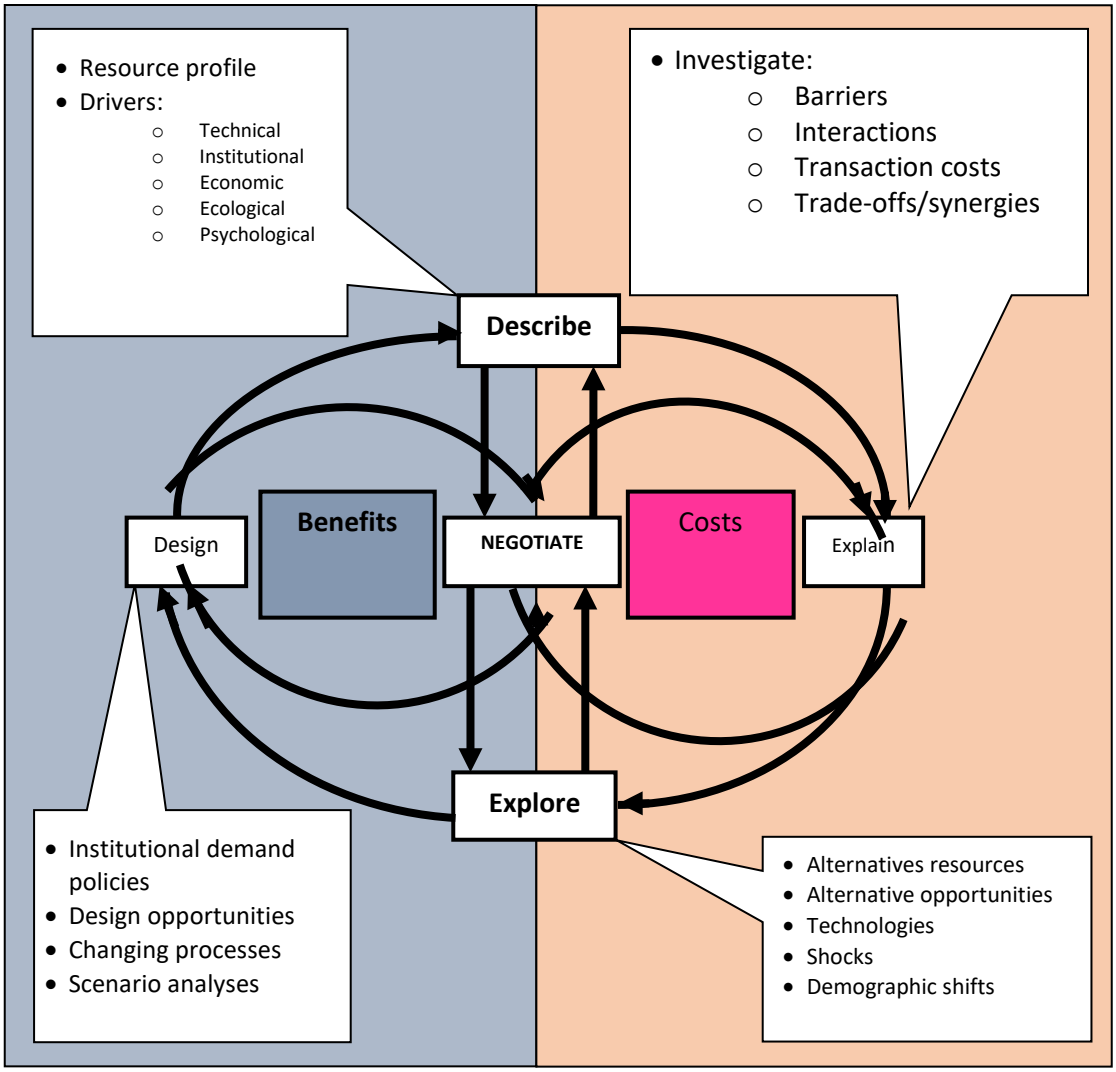


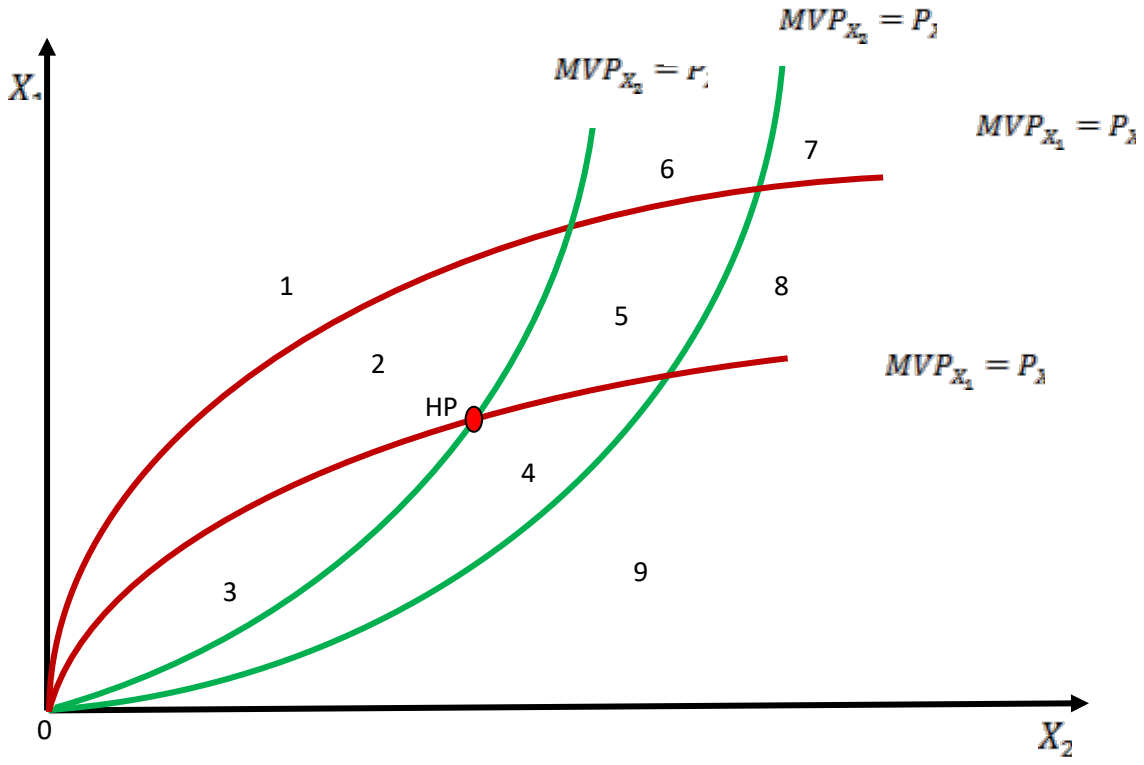
Figure 3: Resolving the trade-offs and exploiting the synergies for successful smallholder transformation (adapted with modification from Giller et al. 2008)

Since farmers have imperfect knowledge, they may not see far enough into the future to make a rational decision. When this is the case, it is said that the choice is sub-optimal and costs are incurred and these are not defrayed by the returns from the other enterprises. For this, help is needed to overcome the barrier of lack of information in order to realize the benefits of enhanced food security, livelihoods and other goals of the household. But how they happen is better explained with the help of the asset fixity framework as originally developed by Johnson (1958), formalized by Edward (1959) and popularized by Hathaway (1963). Figure 4 can be helpful in understanding the interactions described above and the transaction cost issues associated with them. The framework divides the production surface

into 9 different regions, numbered 1-9 and which represent different cost-returns relationships in respect to the scarce resources and the outcomes desired by the farming households.

The theory considers two main types of costs, namely the acquisition cost and the salvage value. The acquisition price is the amount paid at the time of procuring the resource for deployment into the farm while the salvage value is the value remaining in the resource at the end of the period of use and represents the price at which it can be sold. In general, the

Figure 4: Illustration of asset fixity and farmer's resource constraint



salvage value will be lower in real terms than the acquisition price. As long as the farmer remains in business, s/he will continue to invest in inputs. When the resource becomes exhausted, it is replaced and the farmer will hope to resale used resource at prices that allow the farm to procure the same resource from the proceeds. Those buying the resource should also find it useful even if it is cheaper. However, what often happens is that the resource loses value to the extent that its sale cannot fetch enough to replace it and it will be more expensive than any other entity is willing to pay for it. In such a situation, the farmer retains the resource despite its depleted value and productivity. To summarize, the following situations will prevail:

1. $MVP_{x1} = P_{x1acq.}$, which equates the contribution of factor X_1 to the price at which it is acquired (or bought). If farmers have perfect knowledge as we have assumed under perfect competition, then it will be possible for the farmer to foresee the returns achievable from the purchase of the farmland and move to equate marginal costs (represented by P_{x1acq}) to marginal revenue (represented by MVP_{x1});

2. $MVP_{x1} = P_{x1sal}$, which equates the contribution of factor X_1 to the re-sale price of the factor. The farmer's goal is to maximize profits and at the worst, break-even by equating marginal revenue to salvage value when at least there is no capital loss even if there is no capital gain.
3. $MVP_{x2} = P_{x2acq,}$ which equates the value added by factor X_2 to its acquisition price;
4. $MVP_{x2} = P_{x2sal,}$ which equates the value added by factor X_2 to its salvage value.

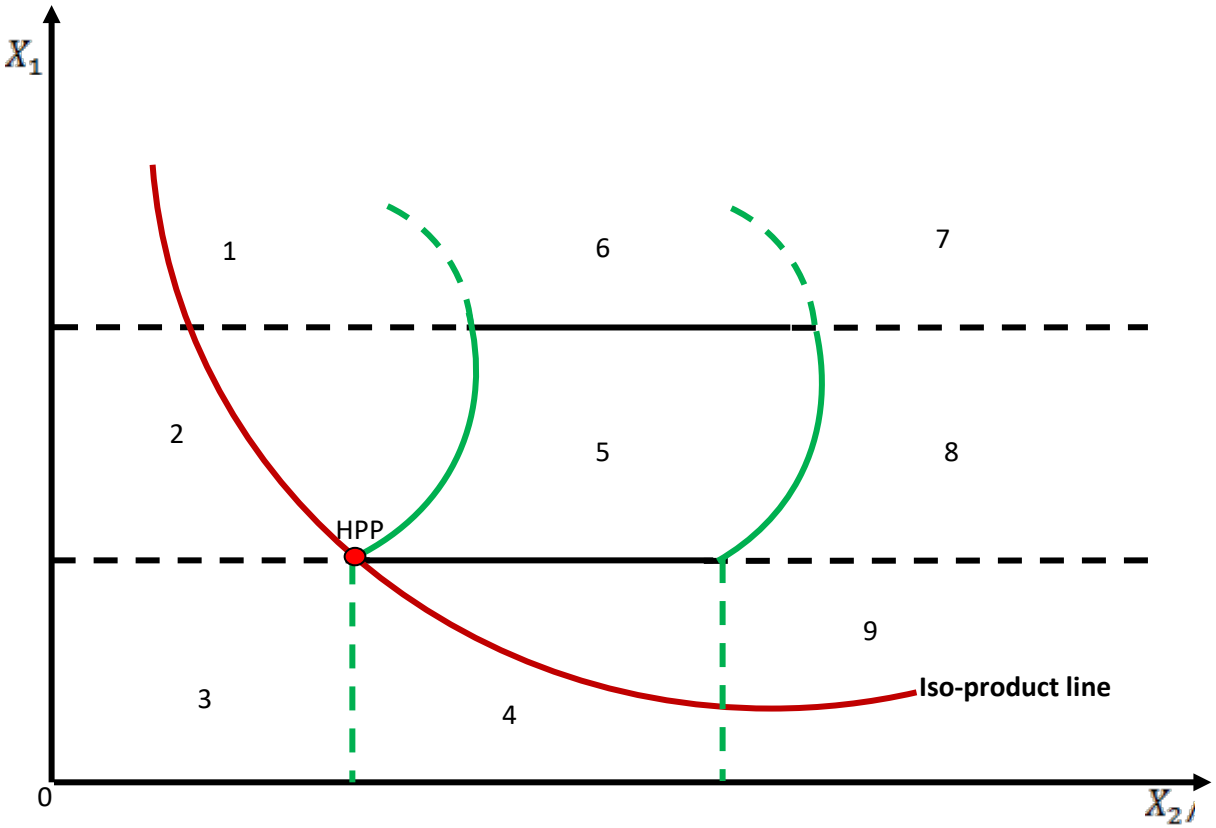


Figure 5: Illustration of resource utilization constraints based on asset fixity model

The fundamental principle of economics is that the buyer will buy more of the factor if the marginal value product (MVP) exceeds the acquisition price. It will pay to buy more of the factor that will yield more than it costs to acquire it in the first place. The same argument also assumes that the investor will sell some of the factor if the MVP is less than its salvage value. It is getting too costly to hold because it is not producing enough to finance its own replacement.

In order to permit the analysis of the decision process with a little bit more precision, the diagram is examined in terms of the nine (9) areas demarcated by the four iso-marginal value product lines as shown. These areas represent different levels of organization of the farm, which have implications for enterprise health and welfare. For the farm-firm, these levels of organization have implications for the realization or otherwise of capital gains upon disposal of the farmland in question. Area 5 represents the region of optimum welfare for

the enterprise. Any point on the outer surface of area 5, except the HPP, has an MVP for one of the inputs which is greater than the salvage value but less than the acquisition value (proceeds from sale will be insufficient to replace asset), while the MVP of the other input will be equal to either the salvage or acquisition value. In this area therefore, over-production can occur, mistakes will be made but are not likely to be corrected until stocks of both variable factors are exhausted. Capital losses occur with respect to the original acquisition costs of the committed stocks of the factors. This is why the farmer is locked in the low equilibrium trap from which s/he can only be freed by an appropriate institutional arrangement.

Principles for designing institutional demand policies

The unique circumstances of smallholder agriculture that make it necessary to intervene through systematic institutional arrangements have been outlined in the fore-going sections. These have been articulated as barriers to smallholder development and the desired changes have been identified. At the same time, it is clear from a comprehensive review that several recent developments in respect of rising incomes associated with a growing middle class, demographic shifts, technological innovations and globalization provide a fertile environment for food systems change although smallholders are actively bypassed due to their well-documented constraints and the barriers they face. There is no question that for a very long time to come, smallholder agriculture will be an important part of the development equation for Africa, because as Stamoulis et al. (2008) asked: *"For low income countries with a high share of rural populations, if not agriculture then what?"* On the basis of the analyses and discussions in the fore-going sections, it can be concluded that the smallholder is unable to productively deploy resources and make a comfortable livelihood for the following reasons:

- Difficulties experienced in procuring inputs, either because they are not available or they are expensive even when available.
- Difficulties experienced in selling what has been produced, both internally and internationally, due to high transactions costs to transport produce or participate in the market.
- Shocks such as price instability, natural disasters, macroeconomic policies, that hurt the small farmers disproportionately due to their weak resource base and high vulnerability.
- Lack of sufficient knowledge about alternative forms and preparations for the produce to enhance cultural and ecological acceptability.

In order to counteract the foregoing difficulties and position the smallholder to benefit from the immense opportunities on offer, special arrangements have been made by governments and organizations over the years. These arrangements have been described by the UNDP's International Policy Centre for Inclusive Growth (UNDP/IPC-IG), as "institutional demand policies". According to the UNDP/IPC-IG (2014), institutional demand policies promote development by introducing mechanisms that facilitate the procurement of the produce of smallholders and protecting vulnerable populations through coordinated markets to expand

food availability. Four key principles on which institutional demand policies are made are shown in Figure 6 as:

- Price Stability
- Income Generation
- Food Security
- Farmer Organization

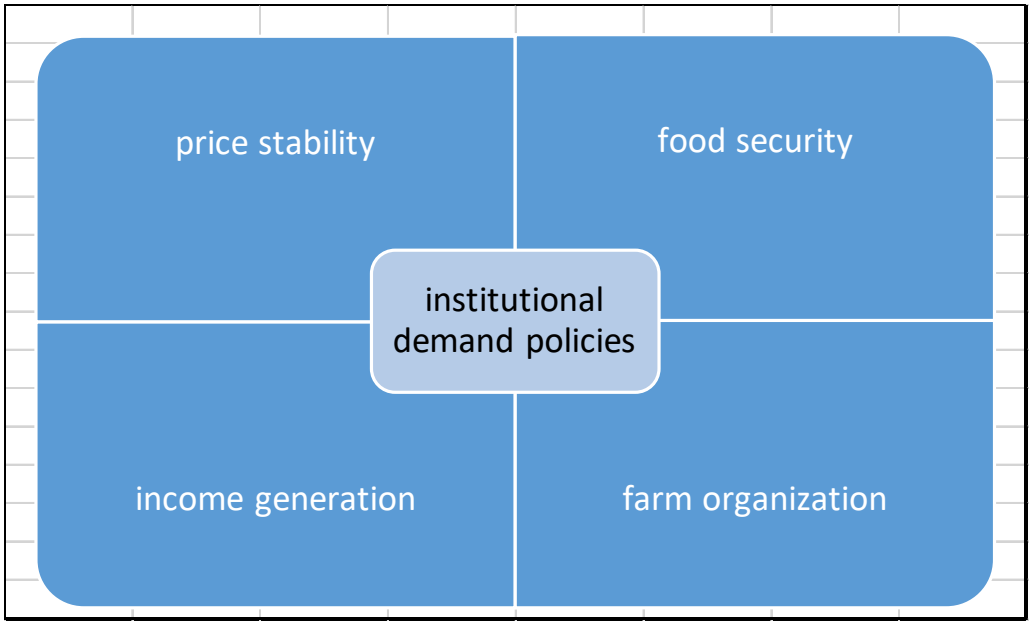


Figure 6: Principles for the design of institutional demand policies

Price Stability

Since many rural producers remain net food buyers because they can hardly produce sufficient volumes to last the entire year, they end up buying from the market to fill the demand gap. Thurow (2012) has discussed the oxymoronic concept of the "hungry farmer" which is a sad reality of the situation where production capacity is too weak to sustain the producers let alone generate surpluses for the market. This means that measures to reduce, if not eliminate, price volatility will be most welcome for the rural dwellers. Of course there are much broader implications for the national economy to minimize their vulnerability. As is well known, the one thing that is worse than high prices is their instability, and this goes for the individual as much as for the country. Producers desire to have a price benchmark as basis for budgeting and assistance to generate such information can come from regional price surveys that are regularly updated.

Income Generation

A crucial need for rural dwellers, be they farmers or consumers, is income to command resources and meet consumption needs. If producers are unable to avert financial risks, then there is no chance that they can be in a position to make productive investments. Income earned from productive activities remain the main source of investible resources since it is not always certain that capital can be secured on favourable terms from finance institutions outside the rural setting. The conditions that are necessary for farmers to make profitable investments are amenable to policy manipulation. For instance, identification of growth areas, market and price information, developing the relevant infrastructure, legislation on interest rates and qualification criteria to participate in certain areas of production and marketing and tax rates are some of the areas that can benefit from supportive policies.

Food Security

There are four key elements of Institutional Demand that facilitate the attainment of food security objectives, and these are: availability, access, utilization, and shocks. Actions that boost domestic demand for locally produced foods, such as higher incomes, feeding schemes for vulnerable school children and similar organized programmes, create incentives for local production to expand and generate more food than is needed to meet those primary demands. Such food in excess of institutional demand become available to meet needs within the community and thereby contribute to food security. In terms of access, this works well where the social protection dimension of institutional demand is activated such as in the operation of food banks, school and community feeding schemes and similar arrangements. More people thus have access to food than would have been the case and this benefits the vulnerable groups who are usually by-passed by schemes that are channeled through formal markets. Where local residents are involved in the administration of the institutional demand programme, the emphasis is usually on foods that are culturally and ecologically appropriate and this promotes food utilization which is a key element of food security. By strengthening the domestic and local food systems, institutional demand builds up the resilience of rural dwellers to enable them withstand current and prospective shocks in the system. When this happens, food supplies will be less susceptible to shocks and the residents will experience enhanced food security.

Farmer Organization

An important principle is the enabling local environment for implementing institutional demand policies. According to UNDP/IPC-IG (2015), “Institutional Demand and farmer organizations are mutually reinforcing”. Farmer organizations facilitate local procurements of foods and their effective delivery and distribution within the village. They are also highly effective mechanisms for collective action in boosting production and linking farmers to markets; often, individual farmers are unable to meet the costs of transporting meagre surpluses to profitable markets. By helping individual farmers to pool their produce, the farmer organizations help in reducing the unit costs of marketing. Individual farmers who would have been unable to access markets on their own are thus assisted by the group to achieve that goal. This also works well in field production of crops and livestock where the group is able to procure inputs more cheaply to use on individual members’ fields.

Procurement of equipment for tillage may be prohibitive to one resource poor farmer, but when group resources are mobilized to hire equipment that can be used on individual farms in rotation, each member's access to the resource is facilitated. Of course, other benefits of collective action include the opportunities it affords for shared learning about production and processing (UNDP/IPC-IG, 2015).

Framework for Implementing Institutional Demand Policy

The foregoing sections reviewed the principles for formulating effective institutional demand policies. It was established that existing configurations provide a basis for managing the farming system/rural economy with respect to income generation, price stability, food security and farmer organization in order to achieve enhanced welfare of producers and consumers. These actions also aim to strengthen smallholder agriculture to contribute to overall national development. The question then is what mechanisms are appropriate to generate the outcomes that are desired. A framework is proposed in Table 2 to answer this question and to guide in conducting institutional analysis that generates insights and knowledge for formulating institutional demand policies that promote agricultural development.

Table 2: Institutional demand policy interventions for agricultural development.

Institutional issue/factors	Implication/outcome	Interventions needed
1. Policy	Lack of operational policy and specific objectives	Balanced operational policy with realistic targets
2. Planning	Lack of decentralized/participatory agricultural planning	Establish participatory agricultural planning systems and procedures
3. Rural infrastructure	Poor water distribution, roads, communication, etc.	Planned piped water, schemes, roads, & other infrastructure investments.
4. Inputs/services	Lack of readily available inputs/services	Establish rural service centers in various districts of the country; agrodealerships in rural areas.
5. Marketing/prices	Lack of organized marketing and price incentives	Marketing and pricing policy for major products; cooperatives for collective marketing
6. Credit	Lack of credit facilities	Provide selective controlled credit
7. Research	Lack of local agricultural research	Develop suitable applied research structures.
8. Extension	Ineffective and inefficient extension	Reorganize in-time bound Training and Visit System. Then, balanced use of communication channels
9. Land tenure	Lack of security and negotiability of land rights. Uncontrolled communal grazing	Registration and negotiability of arable land rights. Cooperative grazing schedules
10.Development coordination	Uncoordinated rural development approach	Decentralized control and coordination policy at District & regional level
11. Regulations and standards	Lack of clarity; costly compliance requirements	Farmer education programmes. Extension services providing support to producers.
12. Cooperation and collection action	Absence of mechanisms for inter-household and inter-institutional cooperation	Civic education on value of cooperation and collective action; demonstration schemes

Evidence is strong that the majority of the issues that small farmers confront and that need to be addressed for smallholder transformation to get going requires that actions be taken at several levels, with the most important ones being those that are taken collectively. Overcoming resource constraints for resource-poor farmers facing credit shortage requires that action be taken collectively to pool resources to build a critical mass of investible resources. This situation calls for collective action that incorporates a vast array of dimensions to fill the gaps in access to resources, information, credit, and markets.

It is one thing to know what to do and a completely different thing to know how to do it. There has always been the debate as to what the appropriate mechanism is for the delivery of support services to achieve sustainable transformation. The difficulties associated with the top-down approaches that hardly incorporate the preferences and viewpoints of the beneficiaries have been well-documented. Zewde (2010) has drawn attention to the tendency of development assistance to naturally default to the top-down approach regardless of the clear realization that it does not work well in practice. For this reason, she prescribed an approach that emphasized participatory social learning, which happens to be the basis for the Innovation Platforms that have been promoted by the Forum for Agricultural Research in Africa (FARA) to implement the Integrated Agricultural Research for Development (IAR4D) under the sub-Saharan Africa Challenge Programme (SSA-CP).

FARA has confirmed through systematic in-country studies conducted within 36 Innovation Platforms in three different regions of the continent that the IAR4D is an effective mechanism for implementing agricultural research and development relevant to smallholder circumstances. It has also been proven that the IAR4D concept is a quick way to translate the available technologies towards achieving the socio-economic benefits and ensure that the envisaged second Green Revolution is realized. By guaranteeing access to resources and knowledge and skills as well as a link to the profitable markets, the Innovation Platforms have proved to be an indispensable mechanism for transformation of the smallholder farms in Africa. In addition, FARA further developed the Science Agenda for Africa Agriculture with its stakeholders having realised that the desired future of Africa agriculture is largely hinged on the quality of its science among other considerations.

Conclusions and Recommendations

This paper aimed to identify the fundamental drivers through which institutional demand influences actions to stimulate smallholder transformation. It was found that the unique character of the smallholder sector and the myriad technical and institutional constraints and barriers create immense opportunities to implement diverse institutional demand policies. However, the smallholder farming system faces many barriers that manifest in diverse ways, including poor equipment profile, insufficient access to resources, low productivity, inadequate market access, unprofitable operations, among others. The mechanisms and interrelationships such as asset fixity in agriculture that engender this situation are reviewed. Institutional demand policies that focus on price stability, income generation, food security and farmer organization are effective in overcoming these barriers. A framework for implementing these actions and remedy the situation to sustainably transform the smallholder sector is presented and discussed. On the basis of work done by

FARA in different countries on the continent, the efficacy of the Innovation Platforms in providing an environment conducive to the implementation of institutional demand policies has been demonstrated. By 2016, FARA had established 36 such Innovation Platforms which serve about 5% of the total population in about 1% of the land area of the continent. Given the severity of the problems facing the smallholder sector, there is need to expand coverage of these transformational mechanisms. Building the capacities of national governments to drive these processes is recommended.

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