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Institutional Innovations for Smallholder Agricultural Production Systems in Kenya: A Case of Smallholder Tea Subsector

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Abstract
The smallholder tea sub-sector which is part of the larger Kenyan tea industry has enjoyed considerable success since its inception in the early 1960s. The planted area under the smallholder system, expanded from 2,522 hectares in 1962 to over 100,000 hectares in 2015; while annual production rose from 1.3 million kgs of green leaf to over 1 billion kgs of green leaf over the same period. Other industrial crops such as coffee, sisal and cotton that previously thrived have struggled to survive under diminished government direct investment in the agricultural sector. The smallholder tea subsector has conversely, managed to endure systemic constraints and challenges to remain competitive. This paper shows that while the relative success of the subsector can be explained by the adoption of modern technologies, there are other relevant factors including policy and institutional that KTDA has embraced to remain competitive. Evidence from the study suggests that innovative institutional arrangements and support systems which have been associated with enhanced farmers earnings. In addition, the participatory governance framework put in place post 2000, innovative approaches to the provision of advisory services and information sharing systems have provided an incentive for smallholder farmers to produce high quality teas that directly translated into better earnings. The presence of participatory governance, innovative and efficient systems that reduce costs and enhance farmers earnings are critical success factors for any smallholder agricultural value chain.

Key Words: Institutional innovations, smallholder farmers, farmer organisations, KTDA, Kenya

1. Introduction

Tea growing in Kenya has expanded rapidly since its introduction from India in 1903. Currently, Kenya is among the four leading tea producers; alongside China, India and Sri Lanka who collectively account for over 75% of the global tea production (TBK, 2010). According to the international tea statistics, Kenya is the leading exporter of black tea in the world and accounts for 25% and 8% of world tea exports and world tea production respectively (ITC, 2013).

The tea industry which is part of a larger agricultural sector in Kenya is currently one of the county's leading foreign exchange earners, with industry earning accounting for about 21% of the total export earnings. The industry also contributes about 4% of the country's gross domestic product (GDP) and offers an all-year-round employment to about 700,000 growers in the rural areas. In addition, the industry directly and indirectly supports over 3 million families (about 10% of Kenya's total population) making it one of the leading sources of livelihood in the country (Mwaura, et. al., 2008; Kagira et. al., 2012).

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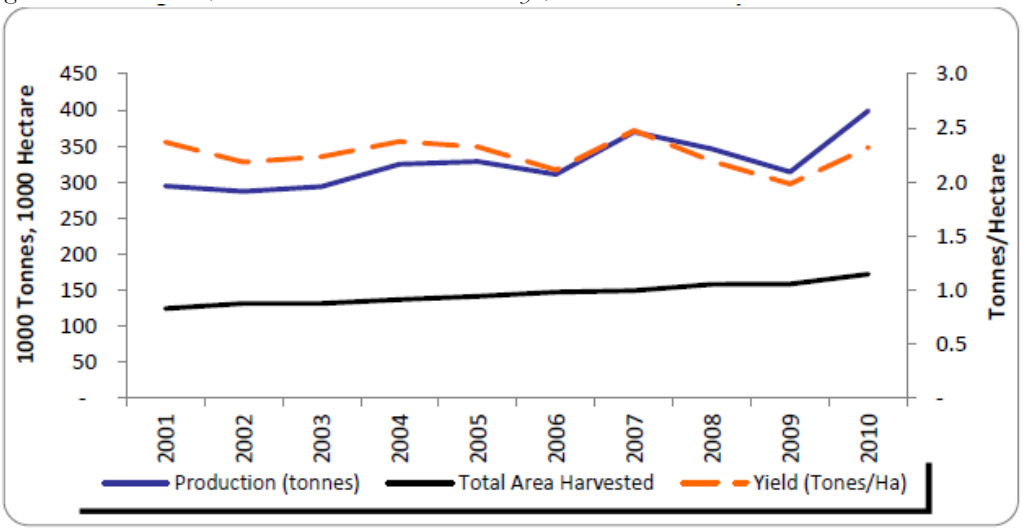
The Kenyan tea industry structure is characterized by a dual production system; comprising the large scale tea estates and the smallholder tea subsector. The management of the smallholder sub-sector is currently under KTDA Limited, a private limited liability company which is the successor to the Kenya Tea Development Authority, a state corporation which was privatized in the year 2000.The subsector has enjoyed considerable success since its inception in early 1960s as evidenced by the expansion in production and planted area.The planted area under the smallholder system, expanded from 2,522 hectares in 1962 to over 100,000 hectares in 2015. Currently, the tea sub sector produces about 66% of the industry production and is arguably one of the most successful smallholder schemes in the world (Monroy et al. 2012).

These marked successes, appear to overshadow myriad systemic challenges that the Kenya agricultural sector has endured over the years. Generally, the Kenya agricultural sector has undergone tumultuous periods that have seen a number of previously thriving subsectors collapse or left barely hanging on. This could in part, be explained by the diminished investment in the agricultural sector and generally near neglect of some enterprises in the aftermath of the structural adjustment programmes (SAPs) since the late 1990s(FAO, 2011; Heumesser and Schmid, 2012).In Kenya, various industries that were once thriving such as coffee, pyrethrum sisal and cotton have struggled to survive in the post liberalization era (van der Wal, 2008).While the smallholder tea subsector was not spared and was exposed to extensive market failures, following the withdrawal in levels of government investment and funding ((Dorward et al, 2004), the subsector has comparatively done well in managing its systemic constraints and challenges to remain competitive.This is evidenced by the notable increase in number of factories (60%) during post liberalization period, sustained productivity (figure 1) and the increase in the returns to the farmers from 60 per cent of gross tea sales in 2000 to an average of 75 percent in 2014.

Figure 1: Tea Production, Area Harvested and Yield in Kenya, 2001-2010.



Source: FAOSTAT

In this paper we argue that while the relative success of subsector can be explained by the adoption of modern technologies, there are other relevant factors including policy and institutional contexts that have not been understood sufficiently to inform how KTDA has managed the systemic constraints and challenges to remain competitive. The sub-sector is serviced by among others the Kenya Tea research foundation (TRF) that develops important technologies which have largely been accepted by the farmers. This paper to provides an understanding of the institutional innovations and contexts on how smallholder tea farmers in Kenya have managed the systemic constraints and challenges to remain competitive. Specifically, the paper seeks to address three separate but interrelated research questions. First, what institutional innovations have been implemented to address the constraints and challenges in the tea subsector and how? Second, what factors have supported or facilitated the institutional innovations in the tea sub-sector. Third, what are the effects of the institutional innovations on farmers' welfare and the tea sub sector in general?

2. The case for institutional innovations in Sub-Saharan Africa's agricultural sector

The growth of the agricultural sector in Sub-Saharan Africa (SSA) in the past decades has not been fast enough to adequately address poverty and malnutrition, which would lead to sustained GDP growth on the continent (Dessy et al., 2006; World Bank, 2008). Many empirical studies have attributed the slow growth to the dominance of smallholder farmers in the sector who are mainly challenged with low productivity. Smallholder production systems have often been associated with market failures, such as inefficiencies in input and output markets, flawed land tenure systems, imperfect labour, and credit markets and low technology adoption. (Feder et al., 1985; Staalet al., 2002). Furthermore, according to Kimaru and Jama (2005), the gains inincreased agricultural productivity risk being lost through land degradation, especially through soil erosion. This therefore resonates with the argument that improving agricultural outcomes in Africa would more or less exclusively require the application of 'Green Revolution' technologies that are based on improved crop varieties in combination with ample supplies of inorganic fertilizers and pesticides. In the tea subsector, for example, such technologies would perhaps include development of improved high quality clones, cost-effective methods of vegetative propagation of tea cuttings, innovative field management practices such as methods of bringing tea into bearing, plant protection, and effective fertilizer use (Monroy et al., 2012).Others include adoption of appropriate plucking and pruning technologies, and processing of high quality black tea at reduced costs.

However, recent research shows that smallholders have few opportunities that could be captured by technological innovation alone. Moreover, the impact of technological research and Development (R&D) on African farming has been disappointing (Thirtle, et al., 2003;Adjei-Nsiahet al. 2013:859; Sinzogan et al. 2007;Kudadjie et al. 2007). It is apparent that significant improvements in agriculture are unlikely to be achieved in the continent through adoption of green revolution technologies alone. Instead, there is a growing consensus that agricultural development "is a function of institutions that help societies to reap potential gains from interactions among independent actors" (Hoff and

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Stiglitz, 2001).Therefore, working to improve the performance of the institutions that determine smallholders' opportunities would probably have much wider impact.
A number of empirical studies have shown that lack of supportive institutions in SSA explained most of the variance in the quantity and quality of the output of SSA agriculture. In Kenya, despite significant adoption of high yielding clonal varieties in tea, smallholder productivity has in some cases been negatively affected by a governance regime that is characterized by inappropriate distribution of benefits (Kinyili, 2000; Republic of Kenya 2007; Mbeche and Dorward, 2014). In Ethiopia, a study by Dercon and Zeitlin (2009) found that while technology adoption and expanding land holdings of individual smallholders led to productivity gains, institutional constraints like inappropriate agricultural policies related to land distribution, collectivization and rigid price regulation hindered investment in agriculture. Salami et al (2010), report that in Uganda, despite the adoption of the Plan for Modernization of Agriculture in 2002 the smallholder farmers still received a disproportionately small amount of developmental resources.
Other studies such as Adjei-Nsiah et al. (2013) have identified "a pervasive bias against the small holders" in explaining increased food insecurity in the Sub-Saharan Africa. The "pervasive bias" herein refers to the lacking in the provision of "enabling conditions" in support of the small holders (Djurfeldtetal.2005:4;Adjei-Nsiah et al. 2013: 858-9). In their argument, Adjei-Nsiah et al. (2013), hold that small holders are systematically disadvantaged in form of poor remunerative prices, regulatory frameworks, uneven playing field and other factors such as corruption that tend to favour large commercial farmers who influence government agencies to their advantage.
In their study of the Cotton Industry in Benin, Sinzogan et al. (2007) found that integrated pest management strategy in cotton proved impossible because input sellers refused to provide the less profitable ingredients. In Ghana, Adjei-Nsiah et al. (2007) report of researchers who helped their farmers produce a surplus of maize only to encounter abuse when the farmers could not market it. While Saıdou et al. (2007) documents how immigrant tenants were engaged in non-sustainable land use, not because they did not understand soil fertility but because of insecure tenancy conditions that made them wary of investing in more sustainable land options. In Northern Ghana, Kudadjie et al. (2007), found that adoption of a new variety of sorghum developed by research depended on local breweries creating a market for it.
These experiences suggest that institutional change is not only important for smallholder development, but also that it is possible to create opportunities without having to adopt new methods that would be expensive and unsustainable in specific conditions. Smallholder opportunity or benefits can be enhanced as a result of negotiated agreement among key actors along a given value chain.

3. Analytical framework

In this paper, we employ the institutions and agricultural innovation framework following on Adjei-Nsiah et al., (2008).The authors view institutional innovations in agriculture as "enabling conditions", that include remunerative prices, the absence of corruption, regulatory frameworks that ensure a level playing field, strong farmer

organisations that have countervailing power over exploitative practices, etc (Adjei-Nsiah et al., 2008: 858-9).We use this framework to study the underlying constraints to innovation in the tea subsector in Kenya (see figure 2 below). This type of analysis involves evaluating the elements of a system that do not appear to perform well and therefore the outcomes are said to have "systemic problems or failures". This framework has been widely applied to study agricultural innovations and technical change in both developed (e.g. Bergek et al., 2008 in the Netherlands), and developing countries (e.g. Kabebe et al., 2013 in Ethiopia).

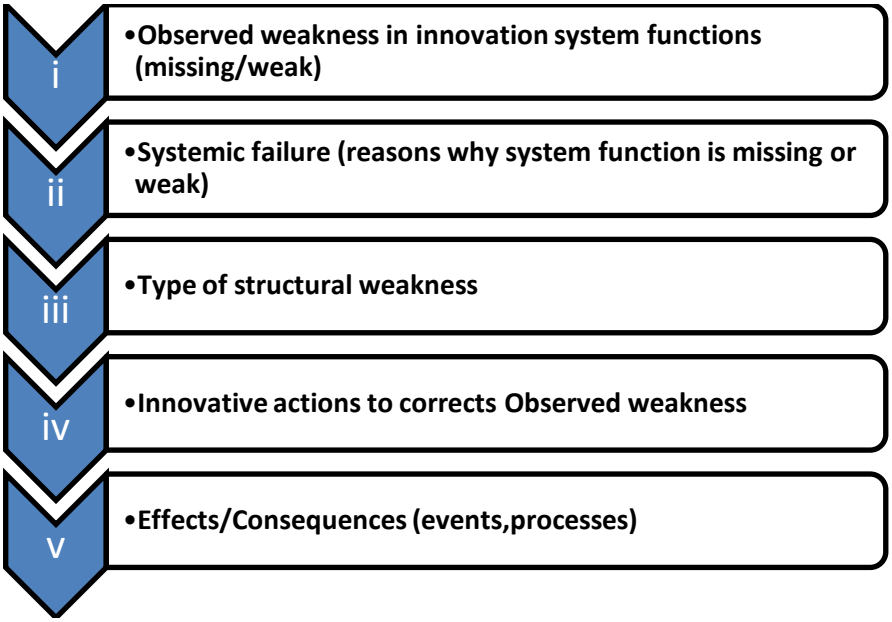

Figure 2: Analytical framework.

4. Methodology

This study was conducted in four counties (2 counties in the former Nyanza province (Kisii and Nyamira) and 2 counties in the former Rift valley province (Kericho and Bomet) located in the southern western part of Kenya.These counties represent the western highlands of tea growing areas with the highest concentration of small holders tea farmers in Kenya. A total of 42 smallholder tea farmers, KTDA staff, Directors and other stakeholders were interviewed. A further 25 participated in five focus group discussions that involved the use of participatory techniques such as, livelihood maps, innovation histories and effects maps. The study was conducted from April to October 2013. In addition document analysis organization internal routine reports, organizations strategic plans, management meeting minutes, standard operating procedures and annual reports were analyzed. After preliminary analysis, two follow-up stakeholder workshops were conducted with farmer representatives and another with various actors to validate and deepen understanding of emergent findings.

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5. Results

The article reports on eight institutional innovations that have been experimented in the smallholder tea sub-sector since 2000. Following on Adjei-Nsiah et al. (2013) analytical framework (Figure 2 above), we analyzed the constraints that faced smallholder farmers, the institutional responses experimented and the consequences of these actions on the farmers' welfare in particular and on the sub-sector in general. The innovations include those that enhanced access to local governance and political capital (e.g. decentralized governance, benefit sharing innovations), strengthened small producers' negotiating power, improved access to information and knowledge and enhanced market access (extension, tea collection and other ICT related innovations). Detailed discussions of these innovations are presented in subsequent sub-sections.

5.1 Decentralized governance of the smallholder tea sub-sector

Our analysis of the governance structures of the management agent of smallholder tea farmers, the Kenya Tea Development Agency (KTDA) highlighted an organization that has significantly evolved both in management approaches and the role of the key actors. The Kenya Tea Development Authority, the precursor organization, was a highly centralized with most operational decisions being made from its headquarters in Nairobi. The key informants indicated that by 1990s, it had become highly inefficient to facilitate delivery of services to end users. For example, focus group discussants pointed out that it was characterized by bureaucratic decision making, leading to poor leaf collection, high cost of operations resulting in diminished farmers earnings. The creation of Kenya Tea Development Agency, henceforth KTDA, ushered in a new era in the year 2000.The new outfit was formed with the intention of increasing efficiency and performance, increasing farmer participation in its governance and delivering accountability to its stakeholders (Republic of Kenya, 1999). This change involved transfer of assets from the state to a private company owned by farmers. Consequently, the centralized governance practiced by the parastatal was replaced with decentralized arrangements characterized with increased farmer participation in decision making.

The emerging decentralized governance arrangement meant that each factory was constituted as an 'autonomous' company in their own right. As a result farmers play a bigger role in decision making in the management of the company. FGDs and interviews alike indicated that farmers were able to sanction or reward directors through elections based on their performance. Additionally, according to key informants, procurement of goods and services at factory level ensured that goods and services were procured in time based on priority. However, in some cases, centralized bulk procurement is done in order to take advantage of the economies of scale. This arrangement significantly differs from an earlier arrangement where the head office procured for the factories without their input.

The effect of these innovations has been associated with quicker decision making and accessibility of the farmers to the factory companies that serve them. Similarly, managers reported that the new structure has improved coordination and information sharing between departments hence the factory companies are operating more efficiently. In

addition, net incomes have increased from 60 per cent of tea sales in 2000 to an average of 75 percent in 2014 that would in part be attributed to the improved governance (KTDA, 2014).

5.2 Innovations around grower registration

Grower registration is an important activity undertaken at the production stage that brings a farmer into contract of supplying green tea leaves to a KTDA factory. Previously, grower application for registration was sent to the agriculture department at the head office for consideration. Focus group discussants pointed out that on average it took between three months and one year for a new grower to be registered. In part, this was because of the cumbersome due diligence process that required growers to have more than 850 bushes to be registered. These restrictions forced the unregistered growers to sell their tea through their relatives or neighbors. Most of focus group discussants pointed out that a number of these unregistered growers were robbed their money by the proxies. These meant a number of bottom end smallholders tea farmers were excluded from the KTDA system. In addition, FGDs revealed that the system locked out many women – due to lack of identity documents – the effect of which was inappropriate distribution of benefits in favour of male gender (see also section 5.4).

The innovative grower registration process introduced by KTDA allows transfers; leases and farm sub division to be handled at the field level.Our field visits and interviews with farmers found that new grower registration took from one day to two weeks. This has therefore seen many smallholder farmers sign contracts to deliver tea through the KTDA system. The study found out that an estimated 200,000 additional growers have been registered countrywide since 2010. Additionally, a number of growers that did not meet the minimum of 850 tea bushes have been registered. As one interviewee noted, they did not want to "deny the 'small' growers the benefits of tea growing". These 'small' growers are therefore registered out of compassion of officials but are required over time to fill up to the required standard.

While the objective of the decentralizing grower registration was to improve service delivery and make the process more effective, some anomalies, challenges and irregularities have been noted over time. The study found that with the new arrangements one key challenge was that it allowed a number of dishonest growers to gain registration. They would then conspire with clerks to falsify[1] records of green leaf deliveries. This falsification practice apparently led to a surge in the number of 'growers' registered who were not genuine tea grow. Focus group discussants attributed to reduce farmers earnings across the country to the corrupt practice.

Based on interviews with managers, KTDA have since 2009, reviewed the entire grower registration process and introduced new controls and grower registration procedures including transfers, de-activation and suspension of growers, migration and leasing among others. In addition, stringent grower registration systems have been put in place. Additionally, KTDA introduced electronic weighing system as a strategy to curb falsification. This innovation is discussed in detail later in section 5.6 below.

[1]Falsification of records is a practice where clerks record lower weights for tea delivered than the actual weights the difference is corruptly given to another farmer who then pays off a 'small fee'.

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5.3 Extension service innovations towards tea enterprise sustainability

Following the change of ownership of KTDA from the government to smallholder farmers in 2000, KTDA established a private extension service. This service was based on negotiated Key Performance Indicators (KPIs) with its extension officers that included among others a set number of farm visits, farmer meetings, demonstrations, field days etc. This private extension service which was based on training and visit (T&V) had challenges in meeting farmers' expectations. For example, it was reported in FGDs that farmers were dissatisfied with the training methods used by extension officers. As one participant observed, "they taught us like school kids". In addition, farmers' specific needs were not addressed.

In response to this observed constraint,KTDA in partnership with Unilever initiated a participatory extension program for sustainable agriculture. At the core of this program was training of farmers on sustainable practices through the Farmer Field School (FFS) approach and subsequently receiving certification for sustainability through the Rainforest Alliance. The FFS are units where small-scale tea farmers are trained on sustainable agricultural practices in order to boost tea production but also achieve quality teas. The initiative adopts best practices in tea plucking, digging composite pits, pesticide use and protection, bio-diversity, soil management and fertility. The FFS which uses participatory approach includes the demonstration of best sustainable practices in the farms and farmers learn by doing. Farmers trained in sustainable agricultural practices are expected to train others to achieve the required international standards.

Key informants indicated that the new extension approach has been fully embraced in almost all the factories. Sustainability of the smallholder tea business became the focus of KTDA's strategy in the wake of uncertainties in the global tea market, unstable tea prices, fluctuating exchange rates and domestic socio-economic and political challenges. Through certification of the farms, there has been improvement in yields, enhanced environmental conservation and increased benefits to the farmers.

5.4 Intra household benefit sharing innovations

The production and distribution of benefits from tea farming just like other cash crops is embedded in the Kenya's patriarchial social cultural context. Our data showed that although most registered growers were men, labour in tea production, plucking and delivery to the collection centre is often provided by women and children. Despite doing most of the tea activities, women received disproportionately low benefits from the tea enterprise. For example, one woman, interviewee observed, *"I do all the work and sometimes I get other women to come and help in the farm but when it comes to the end of the month, he goes to earn. The only thing we see after he has earned is some little shopping…and that is it until the following end month".*The situation represented by the above observation was reported to be even worse during final/bonus[2] payment when some men disappear from their homes for weeks or even months until they have spent all the money.The women's frustrations were reported to have led to reduced effort and motivation in their individuals' actions,

[2]Bonus is an end of year payment which is the difference between the net income from tea sales and the monthly payments per Kilogram (which stands at Ksh. 14/kg in 2016)

such as maintaining high quality standards in their farms. This reduced effort affects the overall quality of tea from the factory and subsequently prices that can be achieved.

As a response to this challenge, KTDA introduced a system of partial registration. This involves authorizing the registered grower (often male) to sub-register part of the farm to the spouse. However, the main registered grower retains the ownership of the farm while the spouse/beneficiaries will have plucking rights. This system allowed the spouse who previously did not enjoy proportional benefits to start receiving them. Tea extension assistants interviewed confirmed an increase in the number of women seeking partial registration. While this institutional innovation provided a way of distributing benefits, FGDs discussants raised other unintended consequences. For example, some women farmers' poorly maintained sections of the farm that were registered to their spouses which escalated to domestic conflicts. Furthermore, some farmers applied for partial registration to avoid burdensome loan repayments.

5.5 Electronic weighing and information management

In order to enhance the efficiency of its operations, KTDA launched a modernization program that involved the computerization of the key field operations and factory production processes. One of the most revolutionary changes was the introduction, in 2009, of electronic weighing system (EWS) in the green leaf buying chain. The system combines a digital weigh scale, portable mini-computer, portable printer and a GPRS/GSM component that allows real time transmission of data from the field to the factories. This innovation was adopted to enhance data and information integrity and particularly in response green leaf falsification described in section 5.3 above which was rampant across a number of tea buying centers. EWS system provided guaranteed back up and security of data by ensuring that information was only availed to authorized use/user. Implementation of the system provided enhanced accuracy of weights (up to 100 grams) using a lesser amount of labour thus saving farmers on costs.It also drastically reduced grower complaints of falsification of records at the buying center levels thus passing on the benefits to the growers. Despite the gains achieved through EWS, some FGD participants reported an emerging trend of tampering with the electronic weighing scales.

To leverage on these gains, other technological solutions have been adopted including payments through mobile phone platforms e.g. Mpesa; use of smartcard to replace the print-out receipts that also allows the growers to access credit and other financial services from microfinance institutions. As part of the computerization program, KTDA has networked all its factories, warehouses and the head office through a wide and diverse network.Increasingly, farmers as key stakeholders in the tea value chain are able to receive regular information on tea quality, prices, market expectations, future or forecasted earnings. We found that the enhanced information had among other things enhanced level of trust for the managing agent (KTDA); motivatedfarmers to put extra effort to improve production and maintain higher quality tea; allowed farmers to use information in critical decision making. For example, tea brokers conveyed market information to all factories every Tuesday which was subsequently passed on to farmers. This information helps them make improvements on their production decisions including pruning and plucking times.

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5.6 Innovations in tea collections

In the tea value chain, collection of tea leaves from the farms, buying centres and ultimately to the factory is a critical activity. Previously, delays in leaf collection posed a big challenge leading to widespread post harvest losses. In response to this challenge, KTDA first introduced a bus stop system that involved scheduled collection and definite routes followed by the leaf collection trucks. Secondly, the fleet modernization policy that phased out older tracks that were more than 5 years was introduced in 2007. According to the FGD discussants, the changes had resulted in improved leaf collections and reduction in costs at farm and factory levels. Thirdly, was a change that sought to improve access through reduction of distances to buying centres. Some smallholder farmers operated from up to three kilometers to the tea collection centres and the time they took from their farms to the centre was often associated with reduced tea quality. The challenge with long distances was that far less time was spent in plucking of tea as they had to deliver their leaves to the buying centres within a small window of opportunity based on prearranged schedules. To respond to this challenge, KTDA opened up temporal collection centres that would operate during dry weather season. These centres were affiliated to main centres and during the wet season when the access roads were impassable the temporal centres remained closed and deliveries made to the permanent centres.

5.7 Innovative models of expanding tea processing capacity

Inadequate processing capacity across the country had for a long time challenged KTDA. This was reflected in regular protests by farmers over uncollected tea for processing. Previously,expansion of factories was done through expanding the processing capacities of existing factories. During this period, the government would guarantee for the loans used to construct new factories but the farmers serviced the loans themselves. Construction of new factories became burdensome to farmers because of huge overhead and management costs. Although this model addressed the problem of inadequate capacity, it failed to address the logistical challenges related to collection of tea from remote and far flung areas resulting in huge post harvest losses.

To respond to these challenges, KTDA initiated a new model of expanding capacities through satellite factories. A satellite factory is a subsidiary of an existing tea factory company which means the two factories have a shared board of directors. The satellite factory model had a number of benefits to smallholder farmers. For example, while their remote locations reduced the logistical challenges of collecting tea from such places, it was also possible to expand processing capacity without necessarily introducing additional administrative costs through a shared management structure. In addition, the satellite innovation allowed setting up of new processing facility with more farmers who shared loan repayment burden and the repayment period hence reduced costs. Through this expansion scheme KTDA has dramatically boosted its processing capacity from 665,000kgs of green leaf in 1999 to 1.41 million kgs of green leaf in 2014 and growth of the number of factories from just 45 in 2000 to 66 in 2014.

6. Discussions

The growth of the agricultural sector in Sub-Saharan Africa (SSA) in the past decades has not been fast enough to adequately address poverty and malnutrition, and lead to sustained GDP growth on the continent (Dessy et al., 2006; World Bank, 2008). While the focus has for the last few decades been on technology adoption, recent research has shown that the impact of technological research and Development (R&D) on African farming has been disappointing (Thirtle, et al., 2003;Adjei-Nsiah et al., 2013). Therefore, there is a renewed focus on working to improve performance of institutions that determine smallholders' opportunities. This discussion focuses on the three research questions posed at the outset of the paper. First, what institutional innovations have been implemented to address the constrains and challenges in the tea subsector and how? Second, we discuss factors that have supported or facilitated the institutional innovations in the tea sub-sector and third, what are the effects of the institutional innovations on farmers' welfare and the tea sub sector in general.

This paper has shown that new forms of institutional innovations have emerged over the last decade in response to the challenges facing the smallholder tea subsector in Kenya. As argued by Chhetri, et al (2011:7), "no single or "best" institution can solve all small-scale producers' problems. The innovations implemented range from those that enhanced access to local governance and political capital (e.g. decentralized governance, benefit sharing innovations) strengthening small producers' negotiating power, improving access to information and knowledge to enhancing market access (extension, tea collection and other ICT related innovations).

Perhaps the most critical of the institutional innovations developed was to transform the smallholder farmer organisation from the centralized state agency – which had limited involvement of farmers (Kinyili 2003) – to a decentralized organisation, owned and controlled by smallholder farmers. This innovation not only served to increase farmers' political power – through increased decision making – but also enhanced the sense of ownership by farmers who were previously excluded. Our study reveals that the perception of ownership has had a positive effect on collective action. In the smallholder tea enterprise, benefits to individuals i.e. tea price and therefore income,are dependent on co-operation and actions by all stakeholders (Mbeche and Dorward, 2014). Similarly, a group's capacity to act collectively by collaborating in pursuit of a common goal is a critical element of the organizational development process. When successful, this in turn builds the self-confidence of small producers and helps ensure that they control or "own" innovations (Herbel et al, 2012: 73).These institutional innovations, have also enabled a number of smallholder farmers access to formal financial services such as savings and credit products and other financial services that have enabled them expand their opportunities and investments.

The change in institutional arrangements associated with transfer of ownership and decentralization of the smallholder tea organization appear to have provided an incentive for other institutional innovations. Similarly, other studies point out that "If those who farm lack secure rights of ownership, they have less incentive to exert effort to use land productively and sustainably or to carry out investments" (World Bank 2008:138).In our case, the following reasons, explain the effectiveness of the incentives. First, smallholder

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farmers acquired power to reward or sanction company directors based on how responsive they were to their needs. This appeared to provide an incentive for innovativeness. Secondly, due to proximity of decision making units, farmers had access to their directors which meant that they could share ideas on improvements in service delivery. Third, the new decentralized system gave the directors both financial and political power to make quick and responsive decisions as long as their companies would be able to afford them. Consequently, there were improvements in grower registration, tea collection, extension service etc.

Findings also reveal the importance of the innovation system – a network of organisations; individuals and actors that support /facilitate innovations (Spielman, 2005). For example, when KTDA was state owned, it was a closed organisation with very little involvement of farmers and private organizations (Nyangito and Kimura, 1999).However, following the transformation of KTDA, an innovation system has emerged. For example, in funding new factories or expanding existing ones, smallholders make an equity contribution and their agent works with international financiers to source for the balance. Similarly, in order to enhance sustainability of the tea business, KTDA works with stakeholders such as Unilever, smallholder farmers and research organisations. Research of innovation systems acknowledges that the sources of an innovation could be farmers, innovative research practitioners, research minded administrators, NGOs, private corporations, and extension agents (Spielman, 2005).

The effect of implementing these innovations has been increased responsiveness to farmer's needs, improved service delivery and better incomes for farmers. For example, the shift from the conventional top-down (training and visit) extension methods to a more participatory, Farmer Field School (FFS) has empowered small producers by helping them build their capacity to formulate and express their needs and concerns within their organizations, particularly, KTDA. As argued by Herbel et al (2012:51), "conventional top-down approaches, by which the results of agricultural research are disseminated through extension services to small-scale producers, can stifle the active involvement and responsibility of rural small producers to think, decide, choose, agree and innovate themselves. All they need do is follow. The top-down approach tends to remove small producers' sense of responsibility". Chhetri, et al (2011) also report of a similar transformation of the national agricultural research extension system in Nepal with significant positive results to farmers at the grassroots. In addition, innovative ways of providing information through ICTs have been associated with improved tea quality.

Conclusions

This paper has analysed institutional innovations in Kenya´s smallholder tea subsector which is considered a successful smallholders´ organization, receiving considerably higher prices than those of tea farmers from other countries. In this paper we have carefully selected a few of the institutional innovations that KTDA have been able to implement in order to address the constraints and challenges that the tea subsector has faced in the past few decades. These innovations include enhanced access to local governance and political capital (e.g. decentralized governance, benefit sharing innovations), the improvement in access to information and knowledge (extension, tea

collection and other ICT related innovations), to enhancing market access (grower registration, intra household benefit sharing and tea collection improvements) The innovations were as a result of observed constraints such as a highly centralized organizational structure that was not only inefficient but unresponsive to growers' needs;cumbersome grower registration process and general weakness in the performance of its functions.

The changes implemented have resulted in several positive outcomes. For example,the change in ownership and decentralization of services has led to among others improved service delivery and better incomes as exemplified in the increase in the returns to the farmers from 60 per cent of gross tea sales in 2000 to an average of 75 percent in 2014. In addition, the implementation of a bottom up and participatory extension Farmer Field Schools approach (FFS) that enabled small-scale tea farmers to be trained on sustainable agricultural practices whose effect was production of better quality teas that fetched higher prices at the international market. Partial registration of tea farms has enabled women to start accessing benefits from the tea enterprise that they did not previously enjoy.

However, it notable that while the Kenyan smallholders are better organized under the KTDA, accessing international market still remains challenging. It has a highly integrated supply and value chain, structure that is controlled by a very few multinational enterprises limiting possible benefits.

The various constrains and challenges that faced smallholders in the tea subsector coupled with transformation of the organization to one which is more participatory, facilitated most of the described institutional innovations in the tea sub-sector. A number of these innovations did not emanate from R& D recommendations and were not necessarily technical innovations. They involved reorganization and changes in the functioning of the various value chain actors that included farmers, transporters, input suppliers, processors, regulating agencies and markets. Secondly, the innovations that appeared successful were as result of continual improvement of given innovations implying the need to put in place within the organization a process that allows it to learn and implement the learned lessons in the future. Thirdly, collective action and organizational culture that allows open communication on the constraints and challenges are critical ingredients that will help identify, practices, rules and policies that will eventually improve farmers' welfare. Overall, several benefits can be potentially gained by harnessing historical, political and institutional dimensions of a system to create incentives and opportunities for small holder farmers.

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