

Supporting Tanzania's Cocoa Farmers

By A. Nyomora, Z. Kanyeka and A. Ndunguru



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Abbreviations

DALDO	-	District Agricultural and Livestock Development Office
DED	-	District Executive Officer
EPOPA	-	Export Promotion of Organic Products from Africa
GDP	-	Gross Domestic Product
HH	-	Household
IFOAM	-	International Federation for Organic Agriculture Movement
KYECU	-	Kyela Co-operative Union
IMR	-	Infant mortality rate
MMR	-	Maternal Mortality Ratio
MAFSC	-	Ministry of Agriculture, Food Security and Cooperatives
NARS	-	National Agricultural Research Systems
NHP	-	Net Household Product
REPOA	-	Research on Poverty Alleviation
TOAM	-	Tanzania Organic Agriculture Movement
TANCOCERT	-	Tanzania Organic Certification Association



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Executive Summary

Background to the study: Agriculture is the leading sector of the Tanzanian economy, and the most critical for inclusive pro-poor growth. Agriculture provides employment for more than three quarters of the population, accounts for 75% of the country's exports, and contributes almost 50% to Gross Domestic Product (GDP).

Cocoa was introduced into Tanzania in the 1950s, and was being grown commercially within a decade. Although it tends to be considered a relatively minor non-traditional cash crop, it is currently supports an estimated 25,000 farmers and their families (or around 100,000 people). At the moment, around 80% of the country's crop comes from a single district – Kyela in Mbeya region – where conditions for cocoa cultivation are near perfect. The majority of plants are grown there in organic conditions, by smallholders on plots well below a hectare, and sold directly from farms for export. The distinctive flavour of Tanzanian cocoa has recently been attracting the attention of the international cocoa world, but much is still needed for the country's crop to reach its full potential.

Research Objectives and Methodology: The main objective of this 2007/8 study was to learn more about cocoa production in Kyela. Specifically the study team sought to assess the impact of the crop on livelihoods and poverty reduction in the district, to identify constraints to cultivation, and to make recommendations for improving yields, quality, and revenues.

The study was conducted in two divisions of Kyela: Ntebela (to the east of the district) and Unyakyusa (to the west). The primary data for the survey came from a structured questionnaire that was filled out by 478 cocoa farmers living in 12 villages within these two divisions. This data was supplemented by observations, interviews and group discussions with other key stakeholders, including district officials and major cocoa buyers.

Study Findings: The study team found that cocoa was playing a major role in improving livelihoods and reducing poverty in the district, and was contributing more to household income than any other crop. Households in higher producing cocoa areas were demonstrably better off in comparison to households in lower producing areas as evidenced by better quality homes, increased food security, more possessions, and greater numbers of children in school. Cocoa was seen to have relieved farmers from dependency on rice, with the money from cocoa trickling in more regularly throughout the year, and thereby improving household food security. Cocoa was also having an effect on district income, and generated more than 2.1 billion Tanzanian shillings for Kyela's Local Government Authority between 2001 and 2010.

Summary of Survey Findings

The study team found that in 2007/8 in Kyela:

- > 5,000 tonnes of cocoa were produced in the district (80% of the national total).
- The amount of cocoa produced increased by 36% between 2000/1 and 2007/8, though the land given over to its cultivation did not increase. Better yields are most likely the result of improved agricultural practises.
- Cocoa was the third largest crop (in terms of volume) but the highest in terms of value.
- The 'average' cocoa farmer in Kyela was a married man, aged over 55, and educated to a primary school level but not beyond.
- The 'average' farmer assigned a third of his total available land (0.6 of 1.8 hectares) to cocoa, and intercropped his plants, mostly with bananas.
- The district has both high and low producing areas, with the former marked by annual flooding/heavy rains and the latter by highly weathered soils.
- Farmers in Ntebela produced significantly higher yields than those in Unyakyusa (250kg/ha and 158 kg/ha respectively). The latter are explained by differences in rain and soil quality.
- The average gross annual income of a Kyela farmer from a high producing cocoa area was over one million shillings.
- Almost half of the cocoa produced was sold to five major cocoa-buying companies. Middlemen took just over a quarter of the crop; and the rest was sold to individual traders and agents. Only 1% was sold through cooperatives.
- Farmers were not generally organised into cooperatives and therefore had little bargaining power. Prices were set by buyers, rather than growers.
- The majority of buyers (80%) visited the growers' orchards and bought directly from them. Although convenient, this deprived farmers of the advantages of more centralised and systematised market places.

Recommendations

Cocoa has become a substantial cash crop in Kyela district, but has not yet reached its full potential. In order to capitalise on emerging market opportunities, farmers need to improve productivity, quality, market visibility, and develop their reputation as reliable suppliers of distinctively flavoured top-quality cocoa.

A national cocoa policy could help support farmers in these goals, set the direction of future efforts, and improve the quantity and quality of the country's yields. Tanzania could also benefit from a marketing board to promote it overseas and increase its global visibility. At a

district level, the formation of cooperatives or growers' groups could empower farmers, help protect their interest and lobby for fairer trade prices and initiatives. Cooperatives could also be the channels through which farmers are reached with education, improved varieties, technological innovations, and other methods to increase their yields and revenues.

In addition, the following specific recommendations:

- **Intensify production and improve quality:** Acute land shortages in Kyela indicate that the future of cocoa lies in increasing yields and bean quality on existing smallholdings rather than expanding cocoa cultivation areas. It is suggested that production can be intensified through improved and modernised husbandry, crop management and technologies, and that bean quality can be improved by enhanced post-harvest processing.
- **Overcome exiting constraints:** Pests, inadequate extension services, poor husbandry, and old-fashioned technologies and cultivars were identified as key agricultural constraints. Mitigation measure would include improved agricultural practices, strengthening extension services, and feeding new research into farming practises.
- **Add value:** All growers should be encouraged to ferment and dry their beans in order to add value to their produce (currently, a minority do not). Other post-harvest processing techniques could help farmers add further value to their crop.
- **Support further research:** To date, there has been little research into cocoa. The study team identified a number of areas that require further research if cocoa is to reach its full potential in Tanzania (e.g. biotic and abiotic stresses; soil fertility; intercropping; pests and diseases etc.). They further recommended that the Kyela District Council Authority – together with the Uyoze Zonal Agricultural Research Institute in Mbeya – should facilitate a participatory cocoa research program to address some of the technical issues and constraints currently facing the sector.
- **Informed action by extension staff:** Research is the first step towards taking informed action. Lessons learnt from the above research should be formulated into practical strategies to improve husbandry and yields.
- **Promoting organic:** The majority of Tanzanian cocoa is already grown in a traditional manner (largely without pesticides). The basics of organic production are thus already in place. Small changes in farming practise could help farmers achieve organic certification and so add value to their crop. The Tanzania Organic Agriculture Movement (TOAM) can help support farmers to institute organic protocols and obtain certification.

Way Forward and Update since 2008

In mid 2009, the Q1 2009 programme, run by the NGO TechnoServe began to address some of the issues raised in this report, to teach improved farming practices, organise planters into business groups, and strengthen direct contact between growers and buyers so as to ensure a fairer trade. The two-year project has been a great success, surpassing many of its original objectives. Over 70 farmers' business groups have been formed in Mbeya (in the focus districts of Kyela and Rukwa), and over 5,000 farmers are now producing more and better quality cocoa and selling it for 54% more per kilo.¹ In addition, the project has helped support two historic firsts: with a gourmet chocolate company now producing a single-origin bar from Tanzania, and another buying directly from growers. The programme envisages raising incomes by 60% and generating \$ 2.2 million in revenue. The Q1 2009 project – funded by multiple donors – is fulfilling its objectives of raising the profile of Tanzanian cocoa, and can be an important channel to support the reform of the sector.

¹ An average kilo of cocoa sold for TSh 2,200 in 2009, TSh 3,000 in 2010 (from respondents) and was expected to reach TSh 3,400 in 2011. The prices will also increase by 54% per cent resulting from organic and quality premiums (Techno-serve); yields are expected to increase by at least 15 per cent after three harvest seasons.

Introduction & Background to the Study

Poverty in Tanzania

Despite encouraging socio-economic developments in the past decades, Tanzania still remains one of the poorest countries in the world, and ranked 152 out of the 187 countries and territories measured in the United Nation's 2011 Human Development Index.

The poverty dynamics in Tanzania are complex. Although GDP growth has been excellent over the past decade (averaging 7 per cent per annum) economic growth has not yet filtered down to reduce poverty at a household level, and over 67% of the population still lives in chronic poverty, surviving on the equivalent of less than \$1.25 per person per day.² More than one in three Tanzanians are undernourished³; one in 17 lives with HIV or AIDS⁴; one in 12 newborn babies will not live to their fifth birthday, and maternal deaths remain at some of the highest levels in the world.⁵ Other pressing poverty challenges include rapid population growth, domestic power supply issues, environmental degradation, and a fragile economy vulnerable to international shocks. Thus despite remarkable achievements in education, health and growth there is still much work ahead to achieve the Millennium Development Goals by 2015, and to ensure that the country's increasing wealth translates into a reduction in the number of households living in poverty.

Poverty in Tanzania is not uniformly distributed, and there are considerable disparities between those living in urban and rural areas, between age cohorts and sexes, and between those living in different geographical locations. Poverty remains an overwhelmingly rural phenomenon, and is highest among households who depend on agriculture.⁶

Poverty has been defined by scholars and researchers in many ways (see annex 1), but most agree that it is multi-dimensional and location specific. For the purposes of this study, poverty is defined as the state in which individuals or households are living an undesirable life as a result of key shortages (of income, shelter, food, land, livestock, clothing, education, health, water sanitation etc.).

Poverty in Kyela District

There are many causes and indicators of poverty in Kyela including high maternal mortality rate (1.6%), high malaria incidence (c. 50%), high childhood malnutrition rates manifested in stunting and wasting, high school drop-out rates (13%) and high orphaned children (19%) without both parents many made vulnerable as a result of HIV/AIDS.⁷

Many households in the district have insufficient income to meet their basic health, education and food needs. Agriculture is the main source of income in the district, but is frequently blighted by droughts floods and other climatic changes, and returns from cash crops tend to be low. In addition to farming, Kyela residents have sought to ameliorate

² World Bank estimates based on 2007 figures. Reductions in basic needs poverty over the last 2 decades have been minimal (declining from 41% to 38% between 1991 and 2007). With a population growth rate of almost 3% per annum, the actual number of people living in poverty increased in the past decade.

³ UNHDI report 2011, using 2008 data. Defined as the % of the population whose food intake is insufficient to meet their daily dietary energy requirements.

⁴ Tanzania HIV and Malaria Indicator Survey, 2007/8

⁵ Tanzania Demographic and Health Survey, 2010

⁶ NBS, 2002.

⁷ Figures provided from Kyela District Council, 2003.

poverty and diversify their livelihoods through petty trading, selling food and firewood, brewing alcohol, fishing, scavenging for scrap, and making bricks and pots.⁸

Agriculture in Tanzania

Agriculture is the backbone of the Tanzanian economy. It provides employment for more than three quarters of its population, accounts for 75% of its exports, and contributes almost 50% to the country Gross Domestic Product (GDP). Agriculture is thus not only the leading sector of the Tanzanian economy, but the most critical for inclusive pro-poor growth.

There are over 15 million smallholder farmers in the country, more than half of who are women. Most cultivate between one and three hectares, with limited access to modern machinery, inputs and improved technologies. For example, only 12% use chemical fertilisers, only 59% have access to extension services and 70% still use hand hoes for land preparation. In addition, only 2% of arable land is irrigated, leaving the rest dependent on erratic rainfall. Most farmers work on a subsistence basis and can be pushed easily into poverty by weather vagaries (floods and drought), biotic stresses (pests and diseases) including external shocks notably food price fluctuations. Other challenges include poor access to information, innovations, value-added initiatives, improved varieties and good quality seeds and markets. As a result of these limitations, the agricultural sector has stagnated in the last decade (growing at just 4% per year since 2006 against a Government target of 10%), and the country's harvest reaches only a fraction of its full potential.⁹

Despite these issues, Tanzania is still considered to be “one of Africa's Sleeping Agricultural Giants” because its abundant land, water resources and rich soils have the potential to provide food not only for the country but the wider region.

Cocoa in Tanzania

Cocoa was introduced into three regions of Tanzania (Tanga, Morogoro and Mbeya) in the 1950s and was being grown commercially within the decade.¹⁰ Although cocoa is generally considered a relatively minor and non-traditional cash crop – and does not therefore have systematic and organised marketing channels such as cooperatives and national marketing boards – it actually now supports an estimated 25,000 farmers and their families (or c.100,000 people).

Today, most of the country's cocoa crop (80%) comes from a single district (Kyela) within Mbeya, which has a near perfect terrain and climate for cocoa.¹¹ The majority of plants are grown there in organic conditions by smallholders on plots well below a hectare, intercropped with other plants and trees, dried and fermented, and sold directly from the farm for export. It is not consumed locally. Currently middlemen and private buyers are in a powerful position, and take a disproportionate share of the money to be made from cocoa.

⁸ Mwamkinga, 2006.

⁹ In fact, a recent survey indicated that rural households are producing 10% less food than they were a decade ago.

¹⁰ At the same time as other new cash crops such as cashew nuts, cardamom, turmeric, ginger and vanilla.

¹¹ In Mbeya Region, cocoa cultivation is concentrated in the southern parts of Rungwe district and the whole of Kyela District the two areas of which collectively constitute the Kyela Basin.

Since post-harvesting processing is also quite basic, farmers do not receive much of the possible value that could be added to their crop.

Tanzania has the potential to produce some of the finest cocoa in the world, and its unique flavour and largely organic production has recently been attracting the attention of the speciality chocolate market. Although the country currently only has an estimated 0.3% share of the global cocoa market, it commands a 10% share of the world's organic cocoa market. The escalating demand for chocolate – together with the decline of the crop in some of the world's largest producers – has created a great opportunity for Tanzania's cocoa farmers to more fully enter the global market.

Research Objectives and Methodology

Objectives and Outputs

The main objective of the 2008 study was to find out more about cocoa production in Kyela, and assess the impact of the crop on livelihoods and poverty reduction in the district. Specifically, the study sought to:

- Identify cocoa-producing areas and households;
- Assess cocoa's contribution to local livelihoods and household needs;
- Identify and understand technical constraints to cocoa cultivation;
- Identify constraints and challenges (marketing and sales etc.) to fair trade;
- Make recommendations for improving yields and revenues;
- Suggest areas for further research.

Selected Study Areas

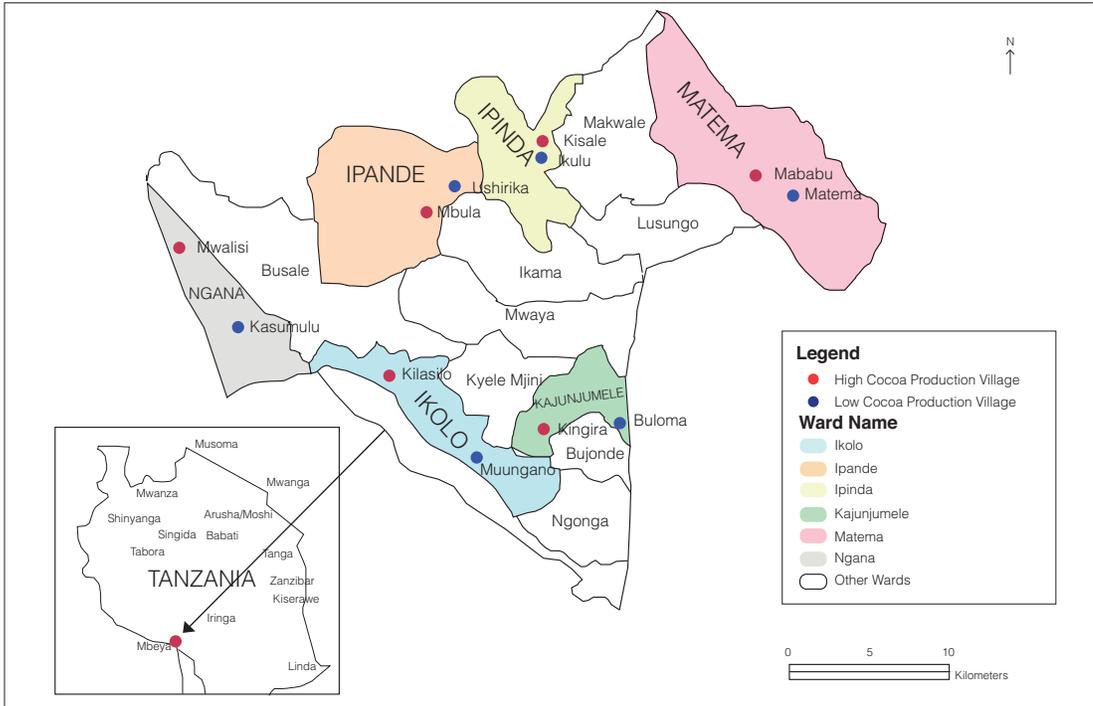
The study was conducted in two divisions of Kyela district: Ntebela and Unyakyusa. Temperatures of 23-27°C, high humidity, and regular rain in both divisions create near perfect climatic conditions for growing cocoa.¹² It is worth noting, that while cocoa was introduced into Ntebela in the late 1950's/early sixties, it was not planted until much later in Unyakyusa. Short profiles of the district, the divisions, and a map can be seen below.

Key Facts about Kyela District¹³	
Geographic Coordinates	9° 25' to 9° 40' South; 30° to 35° 41' East
Total land mass	13,422 km ²
Population (in 2002)	>174,470,; 47.7% males and 52.3 females
Number of households	26,000
Population density	Comparatively high for region and country at 356 per km ²
Average height above sea level	520 metres
Total arable land	500,000 hectares
Total wetlands (rivers, lakes etc)	450,000 hectares
Total forested area	63,000 hectares
Average temp and humidity	23°-27°C with 85% humidity.
Annual rainfall	2,000 – 3,000 mm.
Rain	Throughout most of the year except Sept and Oct.
Peak rainy seasons/floods	March & April
Major food crops	Bananas, maize, cassava, beans, pumpkins, groundnuts, sweet potatoes, bambara nuts and pigeon peas.
Major cash crops	Rice, oil palm, cocoa, fruits.
Main livelihoods	Farming, animal husbandry, pottery, fishing

¹² Cocoa requires temperatures of 18 to 30°, annual precipitation of between 1,500 and 2,000 mm (falling regularly throughout the year), and humidity of between 70 and 100%.

¹³ Data sources: population from TBS, 2002; district land statistics from 2009 District Profiles.

Map 1: Map of Kyela District showing Ward Boundaries and study sites.



Source: Institute of Research Assessment, UDSM

Short Profiles of the Two Divisions Studied

Ntebela	Unyakyusa
Situated in the east of Kyela 5 wards & 32 villages Fertile soils in the plains that are flooded annually	Situated in the west of Kyela 7 wards & 12 villages Large areas of highly-weathered poor soils Small fertile areas in the 3 southern wards (Ikolo, Kajunjumele & Bujonde) that are regularly flooded by local rivers.

Data Sources

Primary data: The main information for this study comes from a structured survey questionnaire, which was filled out by 478 cocoa farmers living in Kyela district (see annex 4). The latter were purposefully selected to come from two divisions, 6 wards and 12 villages (see table 1). Half those interviewed (239) came from Ntebela division and half (239) from Unyakyusa division. Around 40 people were interviewed in each village, with the number of men and women roughly the same. In each ward surveyed, one low producing and one high producing cocoa village was selected (see again table 1).

Low (or 'less intensive') cocoa producing areas were defined as those villages with relatively sparse cultivating areas, where farmers had less than 100 plants, limited cocoa growing around their homes, and where there was one or less selling depots in the village. High (or more intensive cocoa) producing villages were defined as those with dense and

thriving cocoa cultivating areas, where most farmers had more than 150 plants, were growing cocoa around their houses, and had access to three or more selling depots in the village. In the survey, farmers were interviewed about a number of key subjects including, for example, the amount of hectares dedicated to cocoa, the number of trees owned, income fluctuations, post-harvesting processes, and constraints and challenges to marketing, sales and production. Their wealth was also assessed in terms of the number of meals eaten per days, the number of bicycles owned, and their ability to buy basic services (health, education) as well as good building materials for homes.

Table 1: Surveyed Divisions, Wards and Villages within Kyela District

Division	Wards	Villages	
		Low cocoa producing villages*	High cocoa producing villages**
Ntebela	Ipinda	Ikulu	Kisale
	Matema	Matema	Mababu
	Ipande	Mbula	Muongano
Unyakyusa	Ikolo	Muongano	Kilasilo
	Ngana	Kasumulo	Mwalisi
	Kajunjumele	Kiingila	Buloma

Secondary data: The primary data from the questionnaire was supplemented by observations, interviews and group discussions with key stakeholders. The latter included cocoa buyers, agricultural extension staff, members of the Kyela Co-operative Union (KYEUCU), the District Executive Officer (DED) and staff from the District Agricultural and Livestock Development Office (DALDO). As well as obtaining verbal and written information from the sources above, the research team also reviewed literature collected from key sources. These include the Ministry of Agriculture, Food Security and Cooperatives (MAFSC), the major cocoa buyers (Mohamed Enterprises, Biolands, HAI, and OLAM), universities and research centres (including the University of Dar es Salaam, Sokaine University of Agriculture, the Uyole Agricultural Research Center, REPOA, and district documentary units). Data collected from these sources included the history of cocoa production in Kyela, statistics on the total area under cocoa cultivation, yields per hectare, prices, sales volumes etc.

Data Collection and Analysis

The field survey was conducted in August 2008 by fourteen team members including eleven people from the Kyela DALDO, two researchers from the University of Dar es Salaam, and one member of the Uyole Agricultural Zonal Research Institute.

The wards and villages were selected with the guidance of extension workers in DALDO and according to the criteria mentioned previously. Pre-testing of the questionnaire took place in Mpanda Village in Unyakyusa Division, after which slight modifications were made to the questionnaire. The latter included the deletion of questions considered to be non-essential.

The questionnaire data was collected, compiled, coded and analyzed using an SPSS statistical package. The survey team present the data gathered in terms of mean percentages, frequencies and graphs.



Study Findings and Analysis

3.1 Profiles of Cocoa Farmers – Demographical information

The study team sought to establish the sex, age, educational level, marital status, and household sizes of cocoa farmers in the district. They found that:

- **Sex:** Men were twice as likely to be cocoa farmers in the district as women (67% compared to 33%)¹⁴.
- **Marital status:** The majority of cocoa farmers (72%) were married, 22% were widowed and just 6% were single or divorced.
- **Education:** The majority had attended primary education (>58%). Around 32% had no education at all. Less than 10% of cocoa farmers had attended secondary school.
- **Age:** Over 81% of those interviewed were 35 or older, and 43% of those interviewed were over 55 years old.
- **Household size:** the average household had 5.3 members. Almost half the household members (2.5) were working full time in cocoa farming. School children and the elderly were also involved in lighter farming work (such as collecting the harvested fruits or drying beans), bringing the total involved in farming either full or part time to 2.8 person per household.

It is worth pointing out that the ‘average’ cocoa farmer in Kyela, therefore, is a married man, aged over 55, and educated to a primary school level but not beyond.

Table 2: Characteristics of Cocoa Growers by Division

	Unyakyusa	Ntebela	Mean Total
Sex			
Male	30.2	37.2	67.4
Female	15.4	17.2	32.6
Age			
15-24	2.3	2.8	5.1
25-34	5.3	7.2	12.5
35-44	7.4	11.5	18.9
45-54	9.0	12.0	21
Over 55	22.4	20.1	42.5
Marital Status			
Married	31.9	39.6	71.5
Single	1.6	2.9	4.5
Widow	11.9	10.6	22.5
Divorced	0.4	1.1	1.5
Level of Education			
No formal school	16.6	15.0	31.6
Primary education	25.3	33.4	58.7
Secondary education	2.3	6.5	8.8
Vocational Training	0.5	0.2	0.7
College education	0.2	0	0.2
Household Size	5.0	5.6	5.3
Full time in Farming	2.2	2.8	2.5
Part time in Farming	2.7	2.8	2.8

Source: Field Data, 2008

¹⁴ This is different from the gendered picture of agriculture in Tanzania as a whole where almost 50% of farmers are women. In Kyela, as in many other parts of Tanzania, men own most of the land. Legislative changes now permit women to own land, but cultural practices and norms have been slower to change.

Additional Observations

The survey team made the following additional observations about cocoa farming in Kyela in 2007/8:

- **Gender:** A high proportion of poorly kept cocoa orchards were identified as belonging to female-headed households. The latter were far less likely to add value to their crops by fermenting and drying their beans, and much more likely to sell cheaper unprocessed 'wet' cocoa to middlemen.
- **Education:** Almost a third (32%) of cocoa farmers in Kyela in 2008 had never attended school. The majority of the remainder had only basic education. These factors – and assumed high rates of illiteracy – will need to be taken into account in future capacity building work in the district.
- **Age:** The age of the average cocoa farmer, will also need to be considered, since older farmers (the majority) tend to be more traditional, less innovative and find it harder to adopt new techniques. Although no child farmers were interviewed for the study, children age 15 and below were seen to be helping in lighter cocoa tasks around Kyela, for example, scooping out beans, and transporting them to market.

3.2 Land and Plant Ownership according to Age of Farmers

There are noticeable land shortages in the district. Most of the agricultural land is owned and parcelled out by clan members. Since the population is increasing, land portions are getting smaller and have become increasingly fragmented. This has enormous implication for the future of cocoa expansion in the area, as will be discussed later in this report.

It is worth noting that while younger farmers (<35) tend to be allocated their land by the village, farmers aged between 35 and 45 tend to purchase additional plots, and from the age of 45 farmers add to their property with inherited orchards. Although the number of cocoa plots owned rises gradually and incrementally with age (see table 3 below), the number of plants remains relatively stable (at around 250). The exception to this is farmers below the age of 20 who own approximately one hundred fewer plants than those in other age cohorts.

Table 3: Age Disaggregated Ownership of Cocoa Plants

Grower age group	Number of cocoa plants owned	Number of cocoa Plots	Method Acquisition
Below 20	148	1.0	VA
25-34	243	1.2	VA
35-44	254	2.5	VA + PU
45-54	257	2.8	VA+PU+IN
Over 55	250	3.2	VA+PU+IN

VA = Village allocation, PU= Purchased, IN= Inheritance. Source: Field Data, 2008, 2011

Additional observations: The survey team observed that many young people, frustrated with small parcels of lands and low numbers of trees, have migrated to urban areas (both inside and outside Mbeya) in order to explore more lucrative livelihoods. Others remain on their family farms, expected to work for little reward. A palpable sense of rebellion and resentment towards their elders was seen in the latter group. Some of these young people have become *nchemke*, or middlemen, and are regarded by many in the district as being unscrupulous.

3.3 Current Status of Cocoa Production

Yields from Cocoa Compared to Other Crops

In Kyela in 2007/8, over 40,000 tonnes of paddy (unmilled rice) were harvested, over 7,000 tonnes of maize and over 5,000 tonnes of cocoa. In short, cocoa was the third biggest agricultural crop produced in the district that year. Much smaller quantities of the fourth and fifth biggest crop (palm oil and beans) were produced.

Cocoa production increased by 36% between 2000/1 and 2007/8 (from 3,780 to 5150 tonnes), and paddy by a comparable 35%. Maize production on the other hand declined by 5% over the same period.

As a result of acute land shortages in the district, the area under cocoa cultivation (c 4,200 hectares) remained relatively stable between 1998 and 2008. Increases in yields are therefore probably to be attributed to improved agronomic practises (perhaps as a result of improved extension services provided by the Government and private buyers).

Table 4: A comparison between cocoa yields and yields from other crops

Crop	Year							
	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Cocoa	3780	4620	4830	4896	4830	4335	5080	5150
Paddy	29700	24750	46250	34688	36250	43345	22050	40150
Maize	7800	8640	8712	7307	6180	5881	5687	7350
Palm oil	581	783	787	621	750	1280	1910	1920
Beans	380	496	473	472	460	280	373	280

Source: District Profiles 2008, 2009

Area under Cocoa Cultivation per Household

The average cocoa grower in Kyela owns 1.8 hectares of farmland, of which 1.6 hectares is cultivated. An average of 0.6 hectares – or one third of the total land available – is dedicated to cocoa cultivation. This is low compared to other African cocoa-growing countries where between one to two hectares would be more usual.¹⁵

Growers in Ntebela Division have a greater amount of agricultural land available and a larger area assigned for cocoa (0.68 hectares compared to 0.55 hectares in Unyakyusa). As can be seen in table 5, the average Ntebela farmer has 12.5% more *'shamba'* (farmland), and 24% more land more dedicated to cocoa cultivation.

¹⁵ For example, in Cameroon or Nigeria they cultivate 1 to 1.5 and 1.4 to 2 hectares respectively. Please see www.africanagricultureblog.com/search/label/cocoa for more information.

It was observed that while cocoa production in Ntebela was distributed across the district (though mainly focused in Matema, Ipande and Ipinda wards), most of the production in Unyakyusa came from the three southern wards (Ikolo, Kajunjumele & Bujonde) that are regularly flooded by local rivers.

It is worth noting that nearly 90% Tanzania cocoa is grown using traditional farming methods where the use of pesticides is minimal. The basics of organic production are thus already in place. Encouraging farmers to fully adopt organic techniques – as well as to be formally certified as producing organic beans – will help add value to their crop.

Overall, the relatively small areas under cocoa cultivation reflect the acute shortage of land in Kyela. Lack of land prevents the expansion of cocoa farms in the district. As a result, the main way to increase future cocoa yields and incomes in Kyela will probably be to intensify production (through improved husbandry, crop management and technologies), to improve bean quality (through enhanced post-harvest processing), and to support value-added initiatives.

The first attempt in this direction is a farmer focused program known as ‘Q1 2009’ implemented by the NGO TechnoServe to reform the cocoa sector in Kyela by improving yields and quality. Their work is detailed in section xxx.

Table 5: Overview of Cultivated Areas and Cropping Systems

	Divisions		
	Ntebela	Unyakyusa	Mean
Cultivated Area (in hectares)			
Total farm land	1.98	1.76	1.84
Area under cultivation	1.68	1.60	1.64
Area under cocoa cultivation	0.68	0.55	0.61

Source: Field Data, 2008, 2011

Intercropping

Over 90% of the farmers interviewed intercropped cocoa with other plants, most commonly bananas (>85%), oil palm (>44%) and agro-forestry trees (c.28%). Cocoa and rice cannot be intercropped because the former favours well-drained loam, while the latter need to be regularly flooded. The survey team observed that on most farms, mature cocoa trees had out-competed intercropped bananas, with the latter only thriving on the outskirts of cocoa grooves or very close to homesteads. This effect is well understood by Kyela farmers, one of whom told his interviewer: *“Cocoa is a wonder plant that saves many of our household needs, but it is killing most of the banana plants”*.



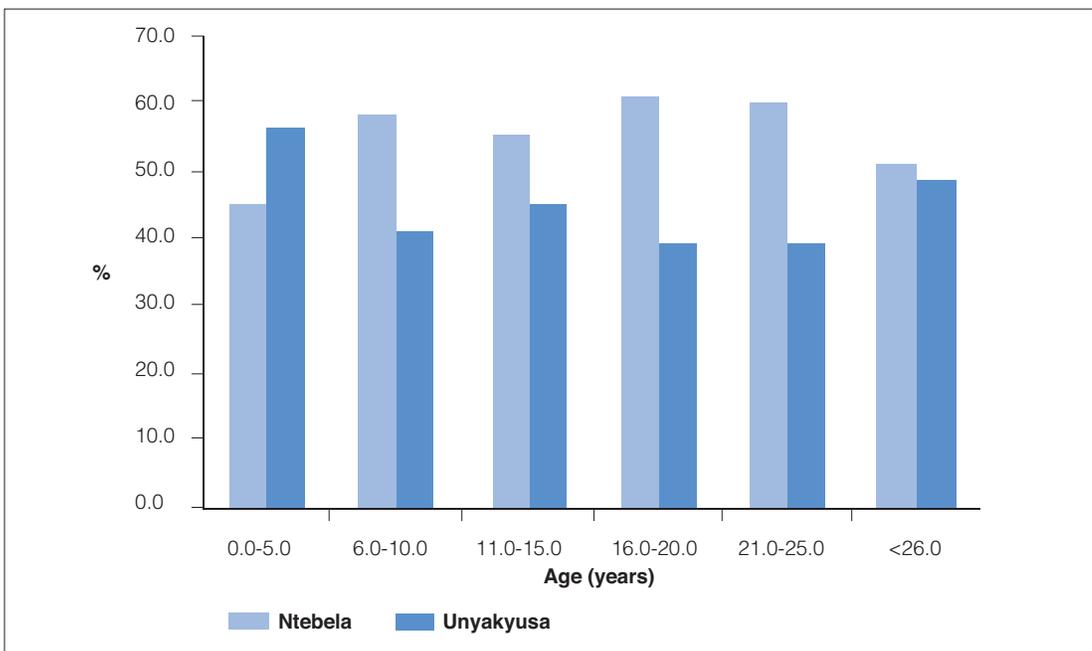
Intercropping of cocoa with banana, fruit and agro forestry trees; Cocoa can survive in the sort of dense shade that can kill many other species. More research in this area is needed to establish optimal intercropping population techniques.

Age of Cocoa Plants

Figure 1 summarises the age of cocoa trees found in Kyela District. As can be seen, the trees vary from between 0 to > 26 years old, with a very even spread between the age cohorts. Unyakyusa has a higher percentage of new trees (0 to 5 years) than Ntebela.

Around half the cocoa farmers in the two divisions own some trees that are over 26 years old, i.e. older than the prime productive age as per commonly accepted estimates. It is interesting to note, however, that most Kyela cocoa farmers believe their trees only start to substantially decline in productivity from around the age of 36 (see next section).

Figure 1: Current age of Cocoa Trees found in Kyela District



Life Cycles and Productivity

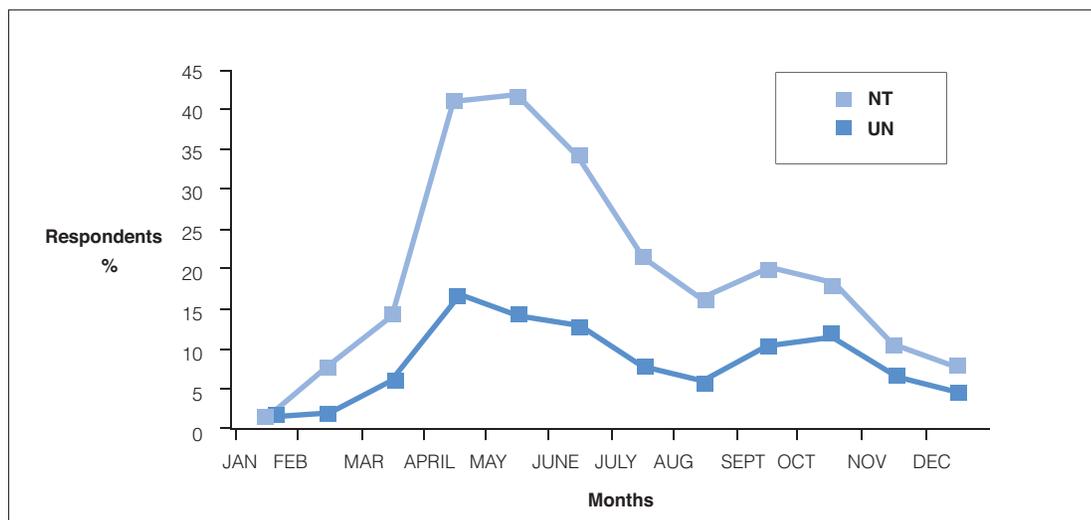
Farmers were asked to assess the fertile and productive cycles of their orchards. The majority estimated that the average cocoa tree in Kyela matured in around 3 years, reached peak production at around 8 and ½ years, and began to decline around 36 years.

The assessed yields between the two divisions were very different. Unyakyusa was producing 158 kilograms of dry beans per hectare, whereas Ntebela's yields were substantially (58%) higher at 250kg/ha. Both figures are low compared to average African yields of 400kg.¹⁶ There could be several reasons for the significant difference in marketable yields. Firstly, the soil in Unyakyusa is less fertile and less protected from the weather. Second, Unyakysua has a higher proportion of immature trees, many of which have not yet reached optimal production levels (see figure 1 above).

Annual Harvesting Trends

The peak months for harvesting cocoa in Kyela are April and May (see figure 2) with a second smaller peak in September/October.

Figure 2: Cocoa Harvesting – Annual Trends

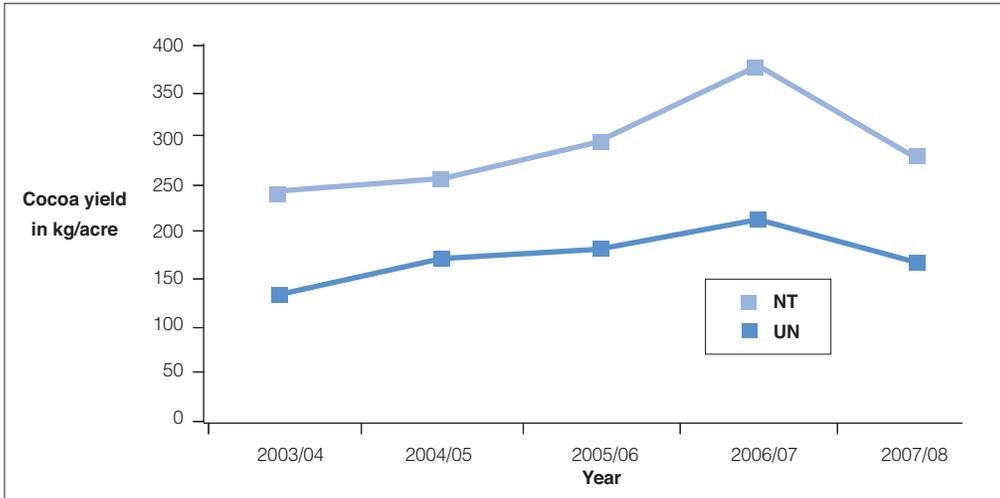


Five-year Trends in Cocoa Production

From 2003/4 cocoa production increased, peaking in 2006/7 (see figure 3). Thereafter productivity declined sharply, though still remaining above 2003 levels. Farmers attributed the 2007/8 dip to pests and insect-borne diseases (in particular stem borers caused by *Helopeltis* spp, and black pod rot caused by the fungus *Phytophthora palmivora*). Respondents also mentioned poor husbandry practices (particularly by inexperienced new growers), as well as drought as causative factors in the 2007/8 dip. It is worth noting that annuals yield per kilogramme between 2003 and 2008 were substantial higher in Ntebela.

¹⁶ See www.africanagricultureblog.com/search/label/cocoa.

Figure 3: Trends in Cocoa Bean Production, 2003 – 2008

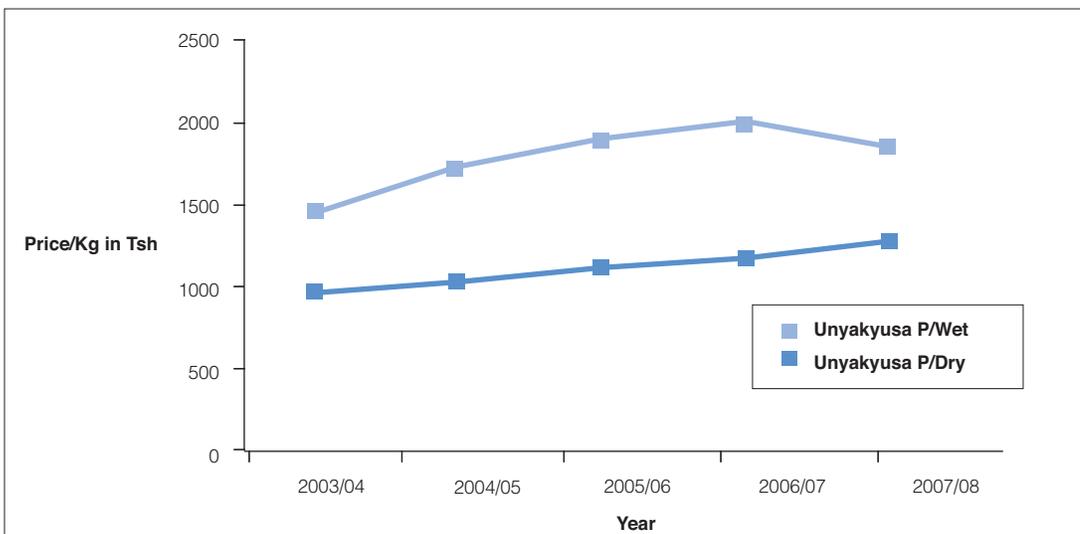


3.4 Cocoa Prices and Marketing

Trends in Cocoa Prices

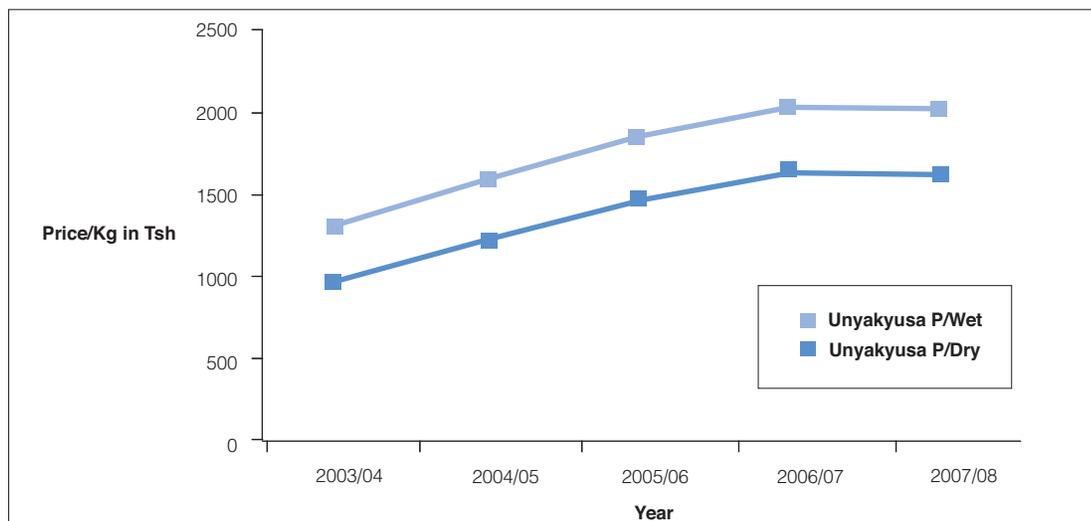
Figures 4a and 4b show price trends in Ntebela and Unyakyusa over the five-year period preceding the study. It should be noted that ‘dry’ processed beans sold for at least 50% more than ‘wet’ unprocessed beans over that period. Cocoa beans from Ntebela also consistently sold for more than those from Unyakyusa. The survey team opines that this is because growers in Ntebela were more organised and unified, better able to negotiate with buyers, and thus to sell their crop for higher prices.

Figure 4a: A Comparison of Wet and Dry Cocoa Prices in Unyakusa between 2003 & 2008



P/Wet = price of wet cocoa, P/ Dry =price of dry cocoa

Figure 4b: A Comparison of Wet and Dry Cocoa Prices in Ntebela between 2003 & 2008



P/Wet = price of wet cocoa, P/Dry = price of dry cocoa

Cocoa processing

Since processed beans sell for considerably more than unprocessed beans, most growers are keen to properly ferment and dry their crop, and thereby add value to their harvest. Some of the farmers interviewed, however, said that they did not always process their beans, and were asked why. Some replied that they did not have the knowledge, skills or equipment to aid proper processing. Others said that they harvested small quantities very regularly and therefore could not be bothered to process. Others reported that they feared their beans would be stolen if left to dry outside in the sun, or that they didn't have time to dry them because they had to sell them in a hurry to meet a pressing household need. Still others said that they had been persuaded to sell their beans before processing by buyers or middlemen visiting their farms. Further detail of why farmers did not process can be seen in table 6 below.¹⁷

Table 6: Reasons Given for Not Processing Cocoa Beans

Reasons	Division		Production Level		Gender	
	Unyakyusa	Ntebela	Low	High	Male	Female
Lack of processing skills	14	86	50	50	46	54
Lack of processing equipment	44	56	70	30	68	32
Small cocoa volumes	64	36	43	57	50	50
Persuaded to sell by middlemen	75	25	50	50	83	17
Fear of drying beans being stolen	50	50	50	50	96	3.6

Source: Field Data, 2008.

¹⁷ It is worth noting that processing beans can also add to soil nutrition, since the dry empty pods can be spread in the cocoa fields to rot.

Cocoa Marketing

The survey team sought to establish who bought Kyela's cocoa beans, how they reached their market, and the price they commanded when they reached there. Table 7 summarises these results. As can be seen, in 2007/8 almost half (48%) of the cocoa produced in the two divisions was sold to private companies (these are discussed in more detail in the following section). Traders/middlemen took over a quarter of the crop (27%), and the rest was sold to individual traders and agents. Only 1% was sold through cooperatives.

The majority of buyers (80%) visited the growers' orchards and bought directly from them, negating the need for most farmers to transport their crop to market. Of those who did travel to market, most went on bicycle (>15%), and a few carried their crop on their heads. It is worth noting that although it is convenient for farmers to have buyers visit their farms, central market places can help farmers to connect and learn from each other, to more fully understand the value of their product, the links between quality and price, and can help strengthen negotiations with buyers so that growers can receive a fairer price for their goods.

Table 7: Buying, Selling and Transporting Cocoa Beans in Kyela

	% of respondents ^z		
	Unyakyusa	Ntebela	Total
Cocoa Buyers			
Individual traders	12	6	18
Primary cooperatives	0	1	1
Traders/middlemen ('nchemke')	13	14	27
Private companies	18	30	48
Agents	7	9	16
Mode of transporting cocoa to selling centres			
Vehicle	0	0	0
Bicycle	5.9	10.3	16.2
By head	2.2	1.6	3.8
None (sold at home)	40	40	80
Sources of cocoa price information			
Private companies	34	6	40
Neighbour	39	6	45
Cooperatives	0	0	0

Source: Field Data, 2008

^z The figures do not add up to 100% due to multiple responses.

Cocoa-buying Companies

In 2008, there were five major cocoa buying companies and institutions operating in Kyela:

- Biolands International;
- Hai Tanzania Company;
- Olam Tanzania Limited;
- The Kyela Cooperative Union (KYECU);
- Mohammed Enterprises Ltd.

While Biolands and Hai bought only cocoa, KYECU bought cocoa and rice, and the others bought multiple commodities. Whilst the first three were organically certified buyers, the latter two had yet to complete the organic certification process. More detailed profiles of these companies can be found in annex 3.

Since the report, additional new partners have begun working in cocoa in Kyela. Most noticeable among these is the NGO, TechnoServe. An overview of its work can be seen at the end of this report.

Price Setting and Sources of Information on Cocoa Prices

Buyers rather than suppliers were setting the prices of cocoa in Kyela in 2007/8. Cocoa farmers were not generally organised into cooperatives or growers’ associations and therefore had little bargaining power or ability to demand a fair price for their crops. In addition, there was no central market place where information on the price of cocoa could be found. Farmers therefore tended to hear about prices paid in an *ad hoc* way – either from their neighbours, or from private buyers visiting their farms. This lack of neutral, objective information is a constraint to effective bargaining. Recommendations to ameliorate this can be found later in section 4 of this report.

Table 8: Sources Used by Farmers to Obtain Cocoa Prices in Kyela District

Sources	Unyakyusa	Ntebela	Total
Private companies	34	6	40
Neighbours	39	6	44
Cooperatives	0	0	0

Source: Field Data, 2008

3.5 Contribution of Cocoa to District Council’s Revenues and Farmers’ Incomes

Cocoa’s contribution to District Council revenues

Cocoa is one of the major sources of income in Kyela. In the past decade (2001-2010), over 20,000 tons of cocoa has been sold in the district, generating over 2.1 billion Tanzanian shillings for the Local Council over that period. It is worth noting that in 1998, cocoa was included in district sales analysis under ‘other crops’. Now it is the largest earner in the district, showing its escalating importance.

Table 9: Kyela District Revenues Earned from Cocoa Sales

Year	Production (tons)	Contribution to district revenues (TSh.) ^z
2000-01	3,780	1.89 million
2001-02	4,620	2.31 million
2002-03	4,830	6.76 million
2003-04	4,896	5.38 million
2004-05	4,830	151 million
2005-06	3,335	175 million
2006-07	5,080	290 million
2007-08	5,150	482 million
2008-09	-	492 million
2009-10	-	495 million
Total		2.1 billion

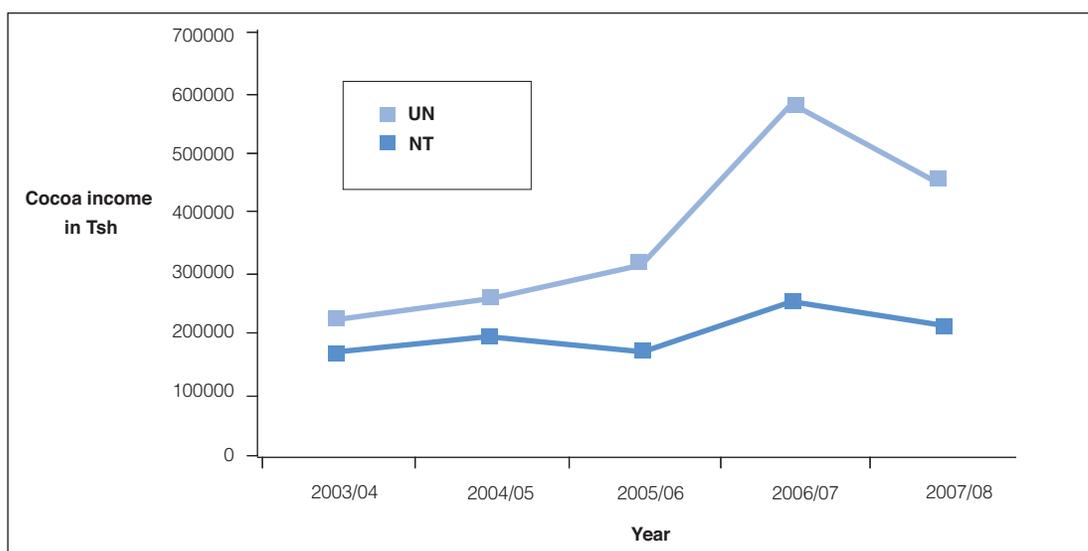
Source: Kyela District Profiles (2009)

^zThe big jump in data in 2004-05 and 2007-08 could have been attributed to Kyela District Authority becoming strict on revenue collection from cocoa buyers, increased % of contribution to KDA and to some extent, increased production

Cocoa’s contribution to Household Incomes

Figure 5 analyses cocoa sales in the five years prior to the survey. As can be seen, household cocoa incomes in Unyakyusa have been relatively steady over that period, whereas those in Ntebela have seen substantial peaks and troughs. Overall, income in Ntebela can be seen to mimic production curves (see figure 3), with annual rises from 2003/4, peaks in 2006/7 and a dip in 2007/8 following a blighted harvest.

Figure 5: Trend of Cocoa Income by Household from 2003/04 – 2007/08



Source: Field data 2008 and 2011.

Proportion of Household Income Contributed by Cocoa and Other Crops

Cocoa contributed more to household income than any other crop in Kyela in 2007/8 according to the 478 farmers interviewed for this study. In Unyakusa, farmers estimated that some 23% of their household income came from cocoa sales, followed by 16% from rice, 13% from peanuts, and 11% from palm oil, cassava and maize. In Ntebela, cocoa contributed an estimated 18%, followed by cassava (15%), beans (13%), Rice (12%) and maize (12%).

Figure 6a: Contribution of Various Crops to Total Household Income, Unyakusa, 2007/08

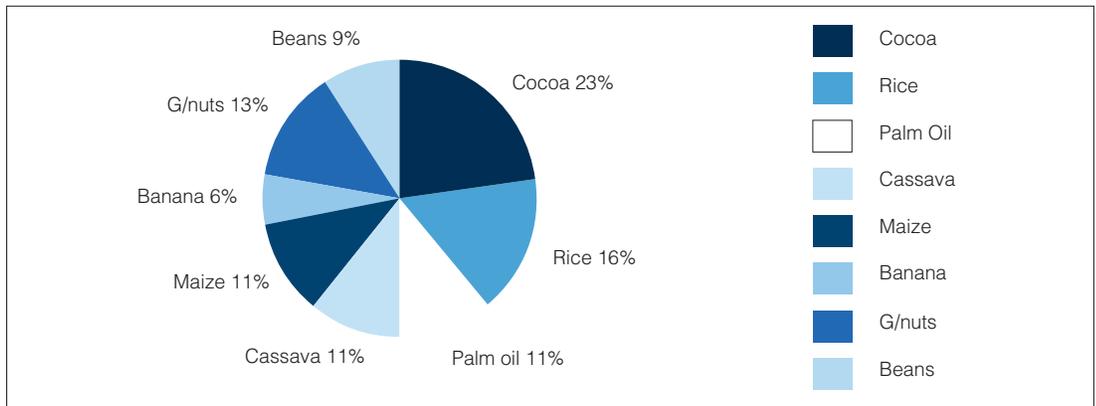
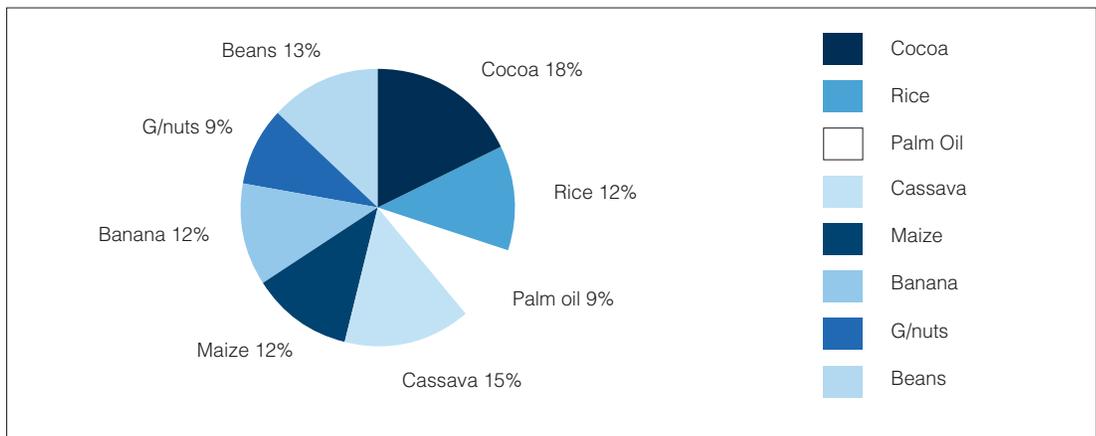


Figure 6b: Contribution of Various Crops to Total Household Income, Ntebela 2007/08



Gross and Net Incomes Accrued by Growers from Cocoa Sales

The average gross income of a Kyela farmer from a high producing cocoa area was over one million shillings in 2007/8. Those from low producing area grossed just over 400,000 shillings. In short, farmers in high producing areas were grossing 150% more than those in low producing areas, and netting more than 286%. Only 2.3% of those in the high producing areas were in the top bracket and earning above 1.87 million shillings a year. Around 14% of those in less intensive areas were in the lowest income bracket, earning less than 100,000 a year.

Table 10: Gross and Net Incomes Accrued by Growers from Cocoa

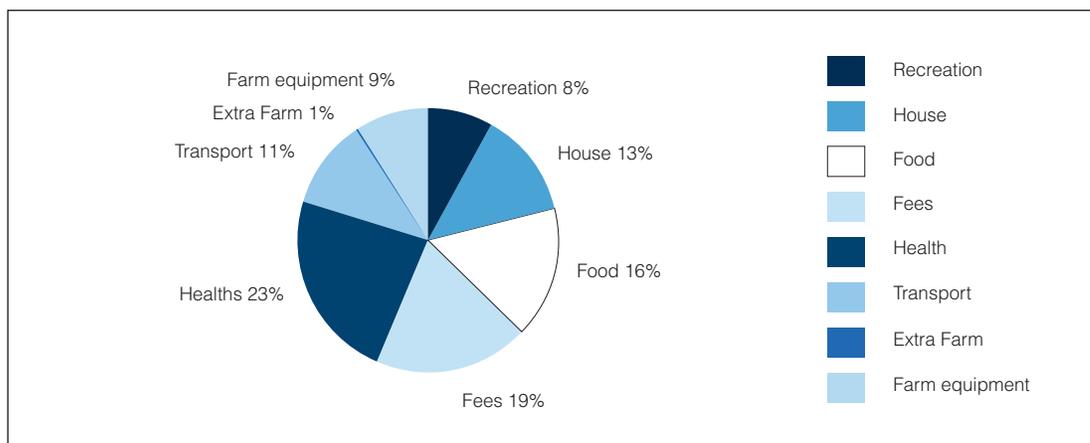
Production Level	Gross Income	% of Growers in this income Bracket	Average Cost of Production*	Net Income
High Cocoa producing Areas	1,875,000	2.3	350,000	1,525,000
	1,500,000	9		1,150,000
	1,150,000	27		800,000
	1,126,000	30		776,000
	1,011,000	32		661,000
Mean	1,027,906	-		982,400
Low Cocoa producing Areas	568,125	32	155,000	413,125
	437,500	27		282,500
	377,500	27		222,500
	253,125	14		98,125
Mean	409,063	-		254,062

* The cost of family labour was difficult to quantify due to regular harvesting of small quantities of cocoa.
Source: Field Data, 2008

Household Uses of Income from Cocoa

Revenue from cocoa is used to meet a range of household needs (see figure 7 below), with income most commonly used to pay for health services (23%), school fees (19%) and food (16%). Interviewees indicated that without cocoa revenues, farmers would tend to sell food crops, borrow from a neighbour, or labour for payment on other farms. Cocoa-growing households were demonstrably better off in comparison to households that didn't grow the crop, as evidenced by better quality houses and more material possessions (see next section).

Figure 7: Household Uses of Income from Cocoa



Types of houses owned by cocoa growers

Growers in high-producing cocoa areas are more likely to build homes from more permanent materials (such as burnt bricks and corrugated iron), than those in low-producing areas, who are more likely to use mud walls and grass thatch. This indicates that wealth from cocoa is helping to support household building materials.

Table 11: Building Materials used in Different Cocoa Producing Areas

Division	Ward	Cocoa Production	Types of houses owned		
			Burnt bricks/corrugated iron roof	Burnt bricks/grass thatched	Mud wall/grass thatched
Ntebela	Ngana	High	71.4	28.6	0
		Low	63.3	30.0	6.7
Unyakyusa	Kajunjumele	High	70.0	9.0	21.0
		Low	37.3	18.7	44.0
	Ipinda	High	71.0	26.0	3.0
		Low	64.0	17.0	19.0
Ipande	Ipande	High	76.6	17.6	5.8
		Low	67.0	13.0	20.0

Some figures do not add up to 100% due to multiple responses

Source: Field Data 2011

3.6 Contribution of Cocoa to Household Food Security

Overview of Food Security Issues in Kyela

Rice is the staple food in Kyela. It is also sold to supplement household incomes. Cocoa, on the other hand, is not consumed locally and is solely a cash crop. Traditionally, the most insecure food period in Kyela is between January and April when the rice crop is still growing, but household supplies of rice are depleted.¹⁸ However, since this period coincides with the biggest cocoa harvest of the year, those who grow cocoa have a buffer against hunger, and can sell their crop to purchase food.

It has been observed that rice and cocoa revenues come in at different times and in different ways. Rice is harvested once a year because it is rainfed lowland type of farming system, and produces a significant lump-sum income that is commonly used to pay for large purchases, such as health services, school fees and livestock.¹⁹ Income from the sale of cocoa tends to trickle in throughout the year and is more commonly used (than rice money) to buy food. Cocoa thus has a very important and particular impact on livelihood strategies, and provides a buffer for households against food insecurity.

It is worth noting that most cocoa is grown on owned land, whereas rice is also grown on borrowed or rented land.

¹⁸ ICRA, 1994.

¹⁹ See, for example, the report by Mwaseba et al in 2007.

Impact of Cocoa Farming on Food Security

Households in Kyela were categorised by the survey team as being surplus producing, self-sufficient or none self-sufficient. (The former had more than 10 bags of paddy, the latter none.) The majority (58%) were found to be none self-sufficient and only 7% were found to produce surplus. There is a direct correlation, as might be expected, between the amount of land owned or cultivated and self-sufficiency: in short, the more land you cultivate the more likely you are to be self-sufficient or produce a surplus. Those who do not own sufficient land are often forced to compound their poverty by buying food. Those who are not self-sufficient and are more likely to hoe by hand rather than use more modern technologies, and eat fewer meals per day (see table 12 and 13 below).

Table 12: A comparison of self-sufficient, non-self sufficient and surplus-producing households

Household Characteristics	Producing Surplus	Self Sufficient	Not Self Sufficient
HH proportion (%)	7	36	58
Land cultivated/HH (Acre)	4	1.5	0.5
Source of food	Own production	Own production	Own/ purchasing
Rice bags in stock	5-10	3-6	0
Number of meals per day	3	3	2
Technologies used to produce food	Own oxen plough/ tractor	Own or hire oxen plough	Hand hoe/hire oxen plough

Source: Modified from DPLO's Office, Kyela, 2011

Table 13: Food consumption patterns between divisions and cocoa producing areas (%)

Level of cocoa production	Food Consumption (# meals/day)	Division		
		Unyakyusa	Ntebela	Mean
High	3	33	28	31
	2	60	53	56
	1	7	13	10
Low	3	20	9	15
	2	69	55	67
	1	11	36	23

Source: Field Data, 2011

Ability of Cocoa Grower's from Different Areas to Purchase Services and Goods

The number of children attending school and the numbers of bicycles owned are important indicators of household wealth. The survey team found that children from high-producing cocoa areas were 50% more likely to be sent to secondary school than those from low-producing areas. They also found that farmers in Kyela's high-producing cocoa areas were 20% more likely to own two or three bicycles per household, than those in low-producing areas (see table 14).

There were some substantial differences between the two divisions with Unyakyusa demonstrating more striking disparities of wealth (as measured by bicycle ownership and children in school) between the high and low producing areas.

Table 14: Contribution of Cocoa on Grower’s Ability to Purchase Goods and Services

Division	Production level	No. Of bicycles				Educational level		
Unyakysua	High cocoa producing area	3	2	1	0	3 ^o	2 ⁰¹	1 ^o
		14	40	34	13	2.5	40	50
Ntebela	Low cocoa producing area							
		12	32	52	4	1	21	69
Ntebela	High cocoa producing area							
		12	23	55	6	1	29	57
Ntebela	Low cocoa producing area							
		7	23	67	3.9	1.2	25	52

*3^o = tertiary; 2⁰¹¹ = high school; 2⁰¹ = secondary school; 1^o = primary

Source: Field Data, 2008

3.7 Constraints to Cocoa Production

Constraints Faced by Growers

Like coffee, the quality of the cocoa bean can be greatly enhanced by how it is tended, yet much of the country’s crop does not yet reach its full potential because of poor planting, cultivating and processing techniques. Since an exceptional harvest can command up to eight times the price of an average one²⁰, the advantages of improving yields and quality are clear.

The major constraints identified by cocoa farmers in Kyela District are shown in Table 15. It is worth noting that whilst pests, diseases and technological problems impacted the two divisions more or less equally, socio-economic problems caused more problems in Unyakysua.

The importance of addressing these issues are clear, and include improving farming practices, organising planters into business groups, and strengthening direct contact between growers and buyers so as to ensure a fairer trade. (Please see section 4 of this report for an update on these issues and specific recommendations for change).

²⁰ See for example, the findings from TechnoServe’s two year Q1 2009 programme based in two districts (Kyela and Rukwa) in Mbeya region.

Table 15: Key Constraints to Cocoa Production as identified by farmers in Kyela District

Constraint	Details	Unyakyusa	Ntebela	Mean*
Pests & Disease	Insects, monkeys, diseases	34%*	32%	33%
Technology	Lack of knowledge, lack of improved seeds, inadequate extension services	26%	28%	27%
Social-Economic	Inadequate land, land tenure issues, inadequate family labour, theft, lack of a national cocoa production policy, middlemen	24%	18%	21%
Marketing	Lack of markets, unreliable markets, low prices, lack of bargaining power	19%	22%	21%

Source: Field Data, 2008

* Mentioned as a key constraint by this % of cocoa farmers

Post-Harvest Processes

Cocoa farmers in developing countries have tended not to be involved in extensive post-harvesting processes. In Tanzania, cocoa is not consumed locally, and the beans are merely harvested, fermented and sun-dried before being shipped overseas to cocoa consuming countries.²¹ Once there, the beans are sent to cocoa-processing plants to be cleaned, roasted, winnowed, alkalisied, milled, pressed, pulverised and otherwise transformed into finished or semi-finished products (e.g. cocoa butter, powder, or liqueur). These conventions deprive farmers of the wealth of value-added practises.

Growers' Suggestions for Improving Cocoa Production

During the survey, farmers were asked how cocoa production could be improved in Kyela. Their responses are recorded in table 16. Improving agricultural inputs (such as seeds), extension services, technologies and value-added measures, were by far the most important interventions, and mentioned by some 43% of farmers.

Those interviewed also stressed that a strategy for improving cocoa yields in the district was needed, and that the establishment of cooperatives could help strengthen farmers to improve their lot and avoid exploitation by buyers and middlemen.²²

It is worth noting that private companies have encouraged growers to continue to farm their cocoa in an organic manner, but farmers need to objectively weight up the benefits of organic/non-organic methods. Organic cocoa, for example, can sell for much more, but also puts crop at greater risk of pests and disease. (Specific recommendations on this subject can be seen in section 4).

²¹ Approximately, 43% of the global cocoa harvest is consumed in Europe, 24% in the Americas and 14% in Africa.

²² According Kyela LGA collects a levy of 1% on all cocoa sold in the district, it does not yet have a policy to improve or oversee cocoa production yields and sales.

Table 16: Key interventions to improve cocoa production as suggested by Kyela farmers

Constraint	Mitigation measures	Unyakyusa (%)	Ntebela (%)	Mean (%)
Technologies	Improved practices, inputs, extension services, value added measures, cultural practises	45	41	43
Pests	Pest control, resistant varieties	14	15	14.5
Marketing	Establishment of farmers' cooperative union	31	27	29
Socio- Economic	Increase production/unit areas	11	17	14

Source: Field Data, 2008

Conclusions and Recommendations

Cocoa is a wonder plant, and is more of a saviour than rice to poor farmers in Kyela....”

Elderly cocoa farmer in conversation with the survey team

The purpose of this study was to learn more about Tanzania's largest cocoa-producing district – Kyela. The study team found that cocoa was playing a major role in improving livelihoods and reducing poverty in the district, and was contributing more to household income than any other crop. Households in higher producing cocoa areas were demonstrably better off in comparison to households in lower producing areas as evidenced by better quality homes, increased food security, more possessions, and greater numbers of children in school. Cocoa was seen to have relieved farmers from dependency on rice, with the money from cocoa trickling in more regularly throughout the year. Cocoa was also having an effect on district income, and generated more than 2.1 billion Tanzanian shillings for the Kyela District Council between 2001 and 2010.

There are noticeable land shortages in the district. Most of the agricultural land is owned and parcelled out by clan members. Since the population is increasing, land portions are getting smaller and have become increasingly fragmented. This has important implications for the future of cocoa expansion in the area (see below).

In Tanzania, cocoa is not consumed locally, and the beans are merely harvested, fermented and sun-dried before being shipped overseas to cocoa consuming countries. These conventions deprive farmers of the wealth of value-added practises. Since post-harvesting processing is also quite basic, farmers do not receive much of the possible value that could be added to their crop. Middlemen and private buyers are in a powerful position, and take a disproportionate share of the money to be made from cocoa.

Other specific study findings are summarised in box 1.

Box 1: Summary of Survey Findings

The study team found that in 2007/8 in Kyela:

- > 5,000 tonnes of cocoa were produced in the district (80% of the national total).
- The amount of cocoa produced increased by 36% between 2000/1 and 2007/8, though the land given over to its cultivation did not increase. Better yields are most likely the result of improved agricultural practises.
- Cocoa was the third largest crop (in terms of volume) but the highest in terms of value.
- The 'average' cocoa farmer in Kyela was a married man, aged over 55, and educated to a primary school level but not beyond.
- The 'average' farmer assigned a third of his total available land (0.6 of 1.8 hectares) to cocoa, and intercropped his plants, mostly with bananas.
- The district has both high and low producing areas, with the former marked by annual flooding/heavy rains and the latter by highly weathered soils.

- Farmers in Ntebela produced significantly higher yields than those in Unyakyusa (250kg/ha and 158 kg/ha respectively). The latter are explained by differences in rain and soil quality.
- The average gross annual income of a Kyela farmer from a high producing cocoa area was over one million shillings.
- Almost half of the cocoa produced was sold to five major cocoa-buying companies. Middlemen took just over a quarter of the crop; and the rest was sold to individual traders and agents. Only 1% was sold through cooperatives.
- Farmers were not generally organised into cooperatives and therefore had little bargaining power. Prices were set by buyers, rather than growers.
- The majority of buyers (80%) visited the growers' orchards and bought directly from them. Although convenient, this deprived farmers of the advantages of more centralised and systematised market places.

Recommendations

Cocoa has become a substantial cash crop in Kyela district, but has not yet reached its full potential. In order to capitalise on emerging market opportunities, farmers need to improve productivity, quality, market visibility, and develop their reputation as reliable suppliers of distinctively flavoured top-quality cocoa.

A national cocoa policy could help support farmers in these goals, and set the direction of future efforts to improve the quantity and quality of yields from the country. Tanzania could also benefit from a marketing board to promote it overseas and increase its global visibility. At a district level, the formation of cooperatives or growers' groups could empower farmers, help protect their interests and lobby for fairer trade prices and initiatives. Cooperatives could also be the channels through which farmers are reached with education, improved varieties technological innovations, and other methods to increase their yields and revenues.

In view of these overall findings, the survey team make the following specific recommendations:

- **Establish a cocoa policy:** The absence of a national cocoa policy impedes production at a household, village, and district, regional and national level. An evidence-based strategy for improving cocoa yields needs to be formulated. Some of the key areas for further research that will inform evidence-based policy direction can be seen in box 2.
- **Establish a cocoa marketing board:** The majority of Tanzania's cocoa crop is consumed outside country. The Ministry of Agriculture and Food Security should create a cocoa board to promote Tanzania's cocoa industry and accelerate its growth.
- **Establish farmers' cooperatives:** Farmers' incomes are limited by the low price of cocoa, disorganised pricing systems, and prices that are set by buyers not growers. Farmers currently rely on external markets and middlemen to connect them to private

buyers. The establishment of cooperatives or growers' associations (together with a national policy, marketing board, and strengthened umbrella organisations – see points above and below) could help address these issues and protect farmers' interests. Growers – with the support of district councils – should organise themselves into cooperatives.

- **Strengthen organisations to oversee and support cooperatives:** In 2007/8, KYECU – the umbrella organization for farming co-operatives in Kyela – existed but was not functional. The survey team believe that a strengthened KYECU could support farmers' interests as well as fair trade initiatives. The Tanzania Organic Certification Association (TANCOCERT) – already advocating on a number of cocoa issues – could also help protect farmers' interests.²³ A cooperative catering for all cocoa growers – irrespective of the farming system used (i.e. organic or non-organic) – could also have an important role, as could the TechoServe programme (discussed below).
- **Intensify production and improve quality:** Acute land shortages in Kyela indicate that the future of cocoa lies in increasing yields and bean quality on existing smallholdings rather than expanding cocoa cultivation areas. It is suggested that production can be intensified through modernised crop management technologies, and that bean quality can be improved by enhanced post-harvest processing.
- **Add value:** All growers should be encouraged to ferment and dry their beans in order to add value to their produce (currently, a minority do not). It is worth noting that selling 'wet' cocoa beans not only deprives farmers of important value-added revenue, but also from using the nutrient-rich emptied pods for mulch or biomass fuel. Other post-harvest processing techniques could help farmers add further value to their crop. They should also be encouraged to make good use of waste and by-products (such as empty pods).
- **Overcome exiting constraints:** Pests, inadequate extension services, poor husbandry, and old-fashioned technologies and cultivars were identified as key agricultural constraints. Mitigation measure would include improved agricultural practices, strengthening extension services, and feeding new research into farming practises (see below)
- **Further research:** The study team identified a number of key areas that require further research if cocoa is to reach its full potential in Tanzania. To date, there has been little research into cocoa, and there is little understanding of many elements about its cultivation. It is recommended that the Kyela District Council Authority – together with the Uyole Zonal Agricultural Research Institute in Mbeya, and other stakeholders such as National Agricultural Research Systems (NARS) – should facilitate a participatory cocoa research program to address some of the technical issues and constraints currently facing the cocoa industry. Box 2 shows in more detail some of the suggested areas for research.
- **Informed action by extension staff:** Research is the first step towards taking informed action. Lessons learnt from the above research should be formulated into practical

²³ For example, it already advocates on member for better cocoa prices, insecticide supplies and other farm inputs. It also educates its members-cooperatives on methods for improving crop production.

strategies to improve husbandry and yields. Extension staff should be responsible for implementing any measures suggested by new research. They should also oversee adherence to organic protocols. While the genetic material for higher quality and higher yielding exists, there has been little investment in new cultivars in Tanzania to date. Cocoa production in Kyela could be boosted if district authorities, researchers and donors can investigate and invest in this area.

- **Financial support to farmers:** Farmers should be encouraged to establish local credit and micro-finance organisations (such as Savings and Credit Co-operatives) to assist them with capital inputs that can help them improve their husbandry and processing techniques. **Promote organic:** Tanzania exports about 6,500 metric tonnes of cocoa a year, of which 100% is grown in a traditional manner (largely without pesticides), and 90% of which is organically certified (e.g. by Ceres or USDA). The basics of organic production are thus already in place. Small changes in farming practise could help farmers achieve organic certification and so add value to their crop. At the moment, most farmers have all the disadvantages of organic production (increase risk of pests and diseases etc.) without the financial rewards. Organically certified cocoa beans can sell for far more than those that are not certified, but farmers need to be encouraged to weigh up the pros and cons of each, so that they can make an informed choice about which methods to follow. The Tanzania Organic Agriculture Movement (TOAM) can help guide these decisions, as can the Tanzania Organic Certification Association (TanCert) which offers training to stakeholders to raise awareness about organic farming. International organic players (such as International Federation for Organic Agriculture Movement or IFOAM) and companies such as Export Promotion of Organic Products from Africa (EPOPA) can also help guide Tanzania and support the county to increase and improve its organically produced cocoa.

The implementation of all these recommendations will depend upon the empowerment of key players – farmers, researchers, district agricultural extension staff and pro organic NGOs. Capacity building measures will be needed to support sustainable agronomic practices, and to institute the protocols for organic farming.

Box 2: Areas Identified for Further Research

Research is a key method by which farmers will be supported to increase yields. For example, three cocoa cultivars are currently grown in Kyela (Criollo, Forastero and Trinitario). These are the three most common cocoa cultivars planted worldwide, yet they have been planted in Kyela rather haphazardly, and no research has yet been done into which variety might best be suited to the climatic conditions of the district.

Research is also needed into mass propagation, high-yielding germplasm, and biotic and abiotic stresses; soil fertility; the replacement of old trees with higher-yielding higher-quality varieties; intercropping, spacing, and shade strategies;²⁵ integrated cocoa orchard management; pests and diseases (notably black pod rot disease and *Helopeltis* spp). Research is also needed into how best to improve bean quality through postharvest handling, and whether waste products can be used for ethanol or biomass fuel. The study team believes that research is needed to help fully understand, investigate, address and provide guidance on these issues, and will be the first step towards taking informed action.

Way Forward and update since 2008:

Like coffee, the quality of the cocoa bean can be greatly enhanced by how it is tended, yet much of the country's crop does not yet reach its full potential because of poor planting, cultivating and processing techniques. Since an exceptional harvest can command up to eight times the price of an average one, the advantages of improving yields and quality are clear.

Tanzania has the potential to produce some of the finest cocoa in the world, and its unique flavour and largely organic production has recently been attracting the attention of the speciality chocolate market. The escalating demand for chocolate together with the decline of the crop in some of the world's largest producers (Brazil, Cote d'Ivoire) have created a fantastic opportunity for the 25,000 or so Tanzanian farmers that depend upon cocoa to put food on their tables and send their children to school.

In mid 2009, the Q1 2009 programme, run by the NGO TechoServe began to address some of the issues raised in this report, to teach improved farming practices, organise planters into business groups, and strengthen direct contact between growers and buyers so as to ensure a fairer trade. The two-year project has been a great success, surpassing many of its original objectives.²⁶ Over 70 farmers' business groups have been formed in Mbeya (in the focus districts of Kyela and Rukwa)²⁷, and over 5,000 farmers are now producing more and better quality cocoa and selling it for 54% more per kilo. In addition, the project has helped support two historic firsts: with a gourmet chocolate company now producing a single-origin bar from Tanzania, and another buying directly from growers. The programme envisages raising incomes by 60% and generating \$ 2.2 million in revenue (www.comodityonline.com).

The Q1 2009 project – funded by multiple donors – is fulfilling its objectives of raising the profile of Tanzanian cocoa and can be an important channel through which to support the reform of the cocoa sector in Tanzania.

²⁵ Technical expertise is needed in establishing appropriate levels of intercropping cocoa with other agroforestry trees including bananas while studies on optimal spacing in cocoa monocrop and intercropped cocoa is worthwhile to maximize cocoa production. It is generally known that cocoa can survive in dense shade that would kill many other species. However, more research in this area is needed to establish the optimal intercropping and most appropriate crops plants to intercrop with.

²⁶ Its three core aims are to strengthen the capacity of farmers, especially women; to increase market access and incentives for quality; and to capture and disseminating knowledge on the lessons learnt.

²⁷ Groups must have a minimum of 72 of members and must elect leaders, and establish a constitution or bylaws to guide the day to day running of the group. They must also have a bank account and business plan. Business groups could be the embryos from which fully-fledged cooperatives could develop.

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Annex 1:

Conceptual Models of Poverty

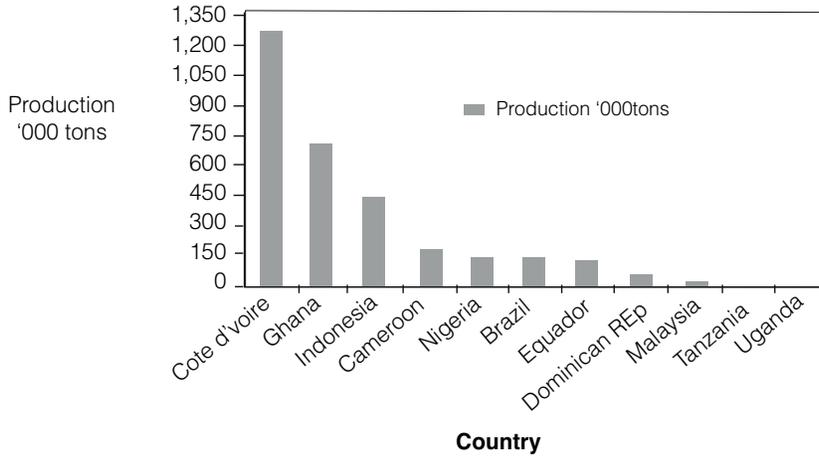
Characteristics of Poverty in a Society

There are two characteristics of poverty as described by researchers. These are the absolute (abject or hard-core) poverty and relative (soft-core) poverty. Absolute poverty, as defined in section 1.1, is a condition of living below a poverty line or standard of living (Semboja, 1994). This means that absolute poverty is referred to as inability to attain a specified or a minimum standard of living. Relative poverty can be defined as the condition of one person or a portion of a population living in a lower standard of living in comparison to the other. Relative poverty measures define the segment of the population that is poor in relationship to the income of the general population (Blackwood and Lynch, 1994) Relative poverty is a comparative term of living standard among the people of the same population. The implication is that every society has poverty except where everyone has the same standard of living. Hence a society may have relative poverty and at the same time has no absolute poverty while there is an increase in absolute poverty. Conversely, relative poverty may increase while absolute poverty may decline.

Poverty reduction here means making or enabling an individual, household, a community or a country as a whole to acquire additional wealth or income which will shift him/her or it from the poor to the less poor standard of living. Poverty is a challenge to human life which always is a struggle. The ability to overcome the challenges is within human capabilities. Mhagama (1995) argued that poverty alleviation is concerned mainly with the cushioning of low –income and vulnerable people from effects of sudden deterioration in their standard of living. Limbu (1995) stated that poverty alleviation in rural areas ‘means increasing the ability of rural population to acquire basic necessities, namely food security, adequate and decent clothing, better shelter/housing which include better place to sleep, improving democracy and security. Other things remain the same, which seems to be a mathematical definition; household poverty alleviation is included in net household product (NHP) which satisfies some human needs, Net household product is a total value (money value) of product and services (including wages from casual labour) minus total cost (except the value of the household labour) incurred to produce the product and services in a year (Kayunze, 2001). The net household product per adult equivalent is compared with national poverty line which is about 1 per adult equivalent per day (URT, 2005).

Annex 2: World Cocoa Production: Facts and Figures

Average World Cocoa Production ('000 tons)



Source: AllAfrica.com (28th December, 2009)

COCOA FACTS AND FIGURES

Number of cocoa farmers, worldwide: 5-6 millions
 Number of people worldwide who depends upon cocoa for their livelihoods: 40-50 millions
 Annual global cocoa production: 3 million tons
 Annual increase in demand for cocoa: 3% per year, for the past 100 years
 Current global market value of annual cocoa crop: \$5.1 billion
 Cocoa growing regions: Africa, Asia, Central America, South America
 (all within 20 degrees of the equator)
 % of global cocoa harvest that comes from West Africa: 70%
 Length of time required for a cocoa trees to produce its first beans (pods): 5 years
 Duration of "peak growing period" for the average cocoa tree: 10 years

Source: World Cocoa Foundation (2011)

Annex 3

Cocoa Trading Companies in Kyela District

Cocoa Trading Companies in Kyela

S/N	Name of Company	Address
1	Biolands	P.O. Box 602 Kyela Mbeya
HAI		Hai Tanzania Ltd; P.O.Box 696; Kyela; Phone: 255252540530, E-mail: haitanzania@gmail.com
2	Mohamed Enterprise Trading Ltd	Kihonda Industrial Complex, P.O.Box 239, Morogoro; Phone no. 255-23-2604860 E-mail: tpm@metl.net
3	Olam Tanzania Ltd	Plot No. 352, UN Road, P.O. 71062 Dar Es Salaam
4	KYECU	profmwakabumbe@yahoo.com

Biolands is Africa's largest exporter of certified organic cocoa. Since 1999, the company has implemented a bottom-up cooperative model and has been working directly with farmers in Kyela, to increase production, improve the quality of cocoa, and ensure that farmers receive fair prices for their crop. Today, some 20,000 smallholder cocoa farmers in more than 130 villages participate in the Biolands program.

Kilimo Hai ('Living Earth') has been trading cocoa in Kyela since 2007. The company is committed to a sustainable approach to cocoa farming. It seeks to establish long-term relationships with farmers, to offer premium prices for high quality beans, and provide training and equipment to improve cocoa quality. GBF has co-invested with Root Capital to enable HAI to build its operations, establish its reputation among international cocoa buyers, and increase its reach from 2,700 registered organic farmers to an estimated 9,000 farmers by 2013.

The **KYECU** is an umbrella organization for farming co-operatives in Kyela. It was originally the Kyela/Rungwe Cooperative Union (KYERUCU) from 1984 to 1995. This union, however, broke down due to conflicts stemming from the liberalization of paddy and cocoa trade. Currently, KYECU advocates for better prices for farmers' cocoa, supplies, insecticides and other farming inputs, and educates its member on methods of improving crop production. It has recently been trained by the Tanzania Organic Certification Association.

Mohammed Enterprises Ltd is one of the major players in the country's commercial sector, and has been working in Tanzania since the 1980s. It is involved in producing, transporting, trading and exporting a number of agricultural commodities including cocoa, and it contributes some 2.5% to the country's GDP. It procures agricultural commodities at farm-gate prices from all corners of the country. It has more than 1,000 regional offices from where its staff visit local farms to purchase crops. Thereafter, crops are cleaned, processed, sorted and graded ready to meet the standards of the International market. In Kyela, the Mohammed Enterprises partners with Biolands.

Olam International Limited is a leading global integrated supply chain manager of agricultural products and food ingredients. It has a presence in 60 countries, sources 20 products (including cocoa) and sells them to over 10,000 customers. Olam sources directly, and processes in many producer countries, and is a market leader in terms of supply of cocoa, coffee, cashews, sesame, rice, cotton and wood. Headquartered in Singapore, Olam was listed on the SGX-ST on February 11, 2005.

The **Q1 2009** is a two-year programme aimed at raising the profile of Tanzanian cocoa in the world market by promoting it to chocolate manufacturers. This farmer-focused programme comprises three core components: strengthening the capacity of farmers, especially women; increasing market access and incentives for quality; and capturing and disseminating knowledge on the lessons learnt. Through this strategy, it was intended that farmers would realise higher yields, higher quality, and higher prices.

In addition to those benefits listed in the main body of the report, the programme has also supported the formation of 80 farmer business groups. The programme was intended to completely reforming the cocoa sector in Tanzania, and indications thus far are that it already had (see conclusion to this report).

Annex 4

Survey Questionnaire for the Kyela Cocoa Farmers

BIODATA OF FARMERS

1. QN Number:
2. District:
 1. Kilombero
 2. Kyela
3. Location:

Division _____ Ward _____ Village _____
4. Name of respondent: _____
5. Gender:
 1. Male
 2. Female
6. Age group:
 1. 15 - 24yrs
 2. 25 - 34yrs
 3. 35 - 44 yrs
 4. 45 - 54 yrs
 5. Over 55 yrs
7. Head of household:
 1. Self
 2. Dependent
 If 2 what is the relationship to HH _____
8. Marital status:
 1. Married
 2. Single
 3. Widower
- Education:
 1. Primary
 2. Secondary
 3. Tertiary
 4. None
 5. Vocational training

COCOA CULTIVATION

11. Do you grow Cocoa?
 1. Yes
 2. No
12. If yes,
 1. How?
 1. Mono-crop
 2. Intercropping-
13. If intercropping, what do you intercrop with? _____
14. How many Cocoa plants do you have? _____
15. What is the area of your cocoa farm? _____
16. If not, why not?
 - 1: Not enough land
 - 2: Do not want it
 - 3: I do not know how to
 - 4: Others (Specify _____)
17. When did you first plant cocoa
 - 1: 0 - 5
 - 2: 6 - 10
 - 3: 11 - 15
 - 4: 16 - 20
 - 5: 20 - 25
 - 6: Over 25
18. What types of varieties do you grow?
19. Where did you get planting material?
 1. Nursery
 - 2: Neighbour
 - 3: Volunteer crop
 - 4: Self
20. If self-selection what is the criteria for selection?
 1. Colour
 2. Berry size
 3. High yielding
 4. Others _____
21. What time does cocoa take to first fruits? _____
22. When do you harvest? _____
23. How often do you harvest in a given month _____
24. How long is one harvesting season? _____
25. When is the peak age of production? _____
26. What is the yield at each harvesting? _____ in a year? _____
27. At what age does production decline? _____

POST-HARVESTING

28. How do you process your cocoa? _____
29. Where do you sell your cocoa?
1. Individual 2. Cooperative 3. _____
30. How do you sell:
1. At home 2. Have to transport? _____
31. If 2 how?: _____
30. How much do you consume at home? _____
31. What are the current prices per kg
1. Dried beans ____ 2. Wet seeds _____

INCOMES FROM COCOA

32. What was your income/year before engaging in cocoa growing? _____
33. What is your income/year after engaging in cocoa production? _____

CONTRIBUTION OF GROWING COCOA TO LIVELIHOOD

34. Have you benefited from growing cocoa?
1. Yes 2. No _____
35. If yes;
1. Built a permanent house
2. Paying school fees ____ For how many children?
4. Buying a bicycle
5 Starting a new business
6. Purchasing foodstuff
7. Health care
8. Dowry-price
9. Others _____

PRODUCTION CONSTRAINTS

- 35 What kind of problems are you facing in cocoa growing?
A: Marketing:
1. Pricing
2. Markets unavailability
3. Transport Technical: 1. Seeds/propagule
B: Diseases 3. Insects 4. Vermin 5. Know-how 6. Others (Specify) _____
C: Social: 1. Labour 2. Land ownership/tenure 3. Land shortage 4. Thefts 5. Others (Specify) _____

IMPROVEMENT OF COCOA PRODUCTIVITY

- 36 What other crops do you grow _____
- 37 Which ones do you sell? _____
- 38 Which ones do you consume yourself? _____
- 39 Is cocoa production a viable project?
1. Yes 2. No _____ What does this mean?
- 40 If yes, what in your opinion can be done to increase cocoa production in your district?

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- **develop the research capacity in Tanzania;**
- **enhance stakeholders' knowledge of poverty issues and empower them to act;**
- **contribute to policy dialogue;**
- **support the monitoring of the implementation of poverty related policy;**
- **strengthen national and international poverty research networks, and forge linkages between research(ers) and users.**

It is our conviction that research provides the means for the acquisition of knowledge necessary for improving the quality of welfare in Tanzanian society.

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