IFAD RESEARCH REPORT

THE IMPACT OF TEA EXPORT ON SMALLHOLDER FARMERS' LIVELIHOOD IN RWANDA

BY

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LIST OF ACRONYMS/ABBREVIATIONS

GDP: Gross Domestic Product

GOR: Government Office Region

IIRR: International Institute of Rural Reconstruction

MINAGRI: Ministry Of Agriculture and Animal Resources

MFI: Micro Finance Institution

NISR: National Institute of Statistics Rwanda

PRSP: Poverty Reduction Strategy Paper

USAID: United States Agency for International Development

USD: United States Dollar

WHO: World Health Organisation

NAEB: National Agriculture Export development Board

ABSTRACT

This study was carried out to assess the impact of tea exports and PRICE on smallholder tea farmers' livelihood in Mushubi District, Rwanda. A purposive sampling technique was used to select 300 smallholder tea farmers in the five sectors of the Mushubi district from a total population of 1500 tea farmers using the Yamane calculator method. The primary data were obtained using a structured questionnaire, a key informant interview and a focus group discussion on 300 tea farmers, cooperative heads and 12 members of the farmers' association respectively.

Results revealed that 71% of the respondents were males while 29% were female farmers. More than half (58%) of these tea farmers have had no formal education, 31% had primary education, and 5% had secondary education, and 5% had tertiary education. On average, before the emergence of PRICE, each farmer had earned about 6,000 RWF from their tea production on daily basis; since joining PRICE, the average income per farmer increased to about 14,500 RWF. Majority (93%) of the farmers remarked they had been able own assets for themselves since their involvement with PRICE. Assets owned were livestock – such as pig (60%), cow (5%) and domestic animals (5%); automobiles (29%); forest trees (24%); tea field/plantation (11%); land (11%); and houses (8%). Majority of the farmers who owned assets affirmed they had purchased the assets (70%), a few claimed they inherited the assets (19%), while others did not specify (11%). Majority of the farmers (95%) affirmed they were responsible for the upkeep of their homes before the emergence of the PRICE project – 38% were very much responsible for the upkeep, 57% were just fairly responsible for the home upkeep.

Conclusively, smallholder tea farmers in Rwanda are organised in different cooperative societies and they export 80% of what they produce. Mushubi tea farmers benefitted greatly from (PRICE) which has supported the smallholder farmers for a period of 6 years. This has greatly improved the standard of living of the farmers as they can now easily afford basic amenities, healthcare facilities and good schools for their children. However, the production of tea seedlings is still a major challenge for the farmers to produce more to meet high tea export demand. The seedlings take about four(4)years to produce which is a long time and not also cost-effective. Although fluctuation in the price of the tea affects the income of the smallholder farmers greatly, this factor should be greatly addressed for the optimum production of tea in Rwanda. To solve the problem of the farmers meeting high-quality tea demands, there is a great need to provide the farmers with more quality seeds.

Keywords: Tea exports, Smallholder farmers, Livelihood, Rwanda

CHAPTER ONE

INTRODUCTION

1.1 Background and Problem Statement

Tea is one of Rwanda's main export crops and it forms a key sector in the country's agricultural sectors that currently employs about 60,000 people (World Bank, 2016). It is however not surprising that the Rwandan government viewed tea as central to the country's economic development due to its market and exports potential, potential to boost smallholder farmers' incomes thereby reducing poverty, supporting the growth and increasing investment opportunities for private investors and assist the country meet its targets in repaying debt loans. In recent times, the Rwandan Government undertook a number of reforms in the tea sector in 2000 and embarked on a programme which involved privatising tea estates to improve tea production output and level of quality in the tea sector. Furthermore, there have been tea pricing reforms and plans of land intensification for tea by 18,000 hectares also aimed at increasing income and production output with the smallholder farmers, private investors as the target beneficiaries (World Bank, 2016).

Smallholder farmers are often characterised based on their farm size, purpose of production which could be either for home consumption or market, low level of income, low purchased input and use of technologies associated with small-scale farming in resource-poor environments (FAO, 2017; Salami *et al.*, 2010; Machethe *et al*., 2004). While some notable progress has been made on reducing poverty levels in Rwanda since 1994, poverty levels have still remained quite high among smallholder farmers in recent years. Poverty and food insecurity remain concentrated in rural areas among low-income smallholder farmers, particularly female-headed households. Such challenges prompt the need for targeted interventions that can improve low agricultural productivity among poor smallholder farmers and improve food security which directly improves farmers' livelihood in terms of natural, social, financial and physical capital (Willoughby and Forysthe, 2012; AfDB, 2013).

Due to the strong connection between agriculture and poverty in Rwanda, the challenges in the country's tea sector are also associated with rural poverty despite the recent remarkable improvements in the sector. Rwanda's tea sector still faces many challenges such as land degradation and soil erosion, low levels of productivity, land use distribution, strong dependence on rainfalls and vulnerability to climate shocks, weak processing capacity and higher value-

added products placed on the market (FAO, 2018). In addition to the limited availability of agro-ecologically suitable areas for cash crop production and productivity in the country, the participation among smallholder farmers' production and marketing participation even in the agro-ecologically suitable areas for cash crop production is seen as discouraging and far below the available potential. Smallholder farmers in Huye, Karongi, Kayonza district of Rwanda with suitable agronomic conditions for growing cash crops are still not participating in the production and marketing of cash crops despite the available potentials and opportunities to do so. This could be due to some external and internal (household) factors serving as constraints to smallholder farmers' participation. Also, the extent to which the participant farmers participate varies significantly and the overall participation is incomparable with the available potential.

Furthermore, over the last few decades, Rwanda's export sector has consistently depended on a few agricultural products such as tea, coffee, silk and horticulture but the market for these products have been unstable in terms of volume and prices which carry a high degree of risk, uncertainty as well as low-income elasticity, which has affected the livelihood of smallholder farmers negatively (Thomas, 2011; AfDB, 2013). Such peculiarities are not conducive to the contribution of agricultural exports to the economic growth and development of rural smallholder farmers. It is certain that the exports of primary goods are less competitive on the world market and weigh less against manufactured goods exported by developed countries resulting in trade deficits and deterioration (IPAR, 2009). Despite these unfavourable terms in the agricultural production and marketing sectors, the country still depends on agricultural exports but its impact on the economy has not been evaluated. It is against this backdrop that this study seeks to analyse the impact of tea exports (PRICE) on smallholder farmers' livelihood in Rwanda. The current study is also designed to analyse the impact of household-specific factors influencing participation decisions of smallholder farmers in sesame production and marketing in Diga Wereda, by considering one particular production year, 2017/2018.

1.2 Objectives of the Study

The purpose of this study was to understand the role of tea exports on the livelihood of smallholder farmers in Rwanda. The specific objectives were;

1. To examine the effect of tea export on smallholder farmers livelihood
2. To evaluate the level of support for smallholder farmers in reaching high-value markets.

3. To examine how quantity produced affects smallholder farmers' income.
4. To analyse if fluctuations in the prices of tea export have an impact on smallholder farmers' livelihood.

1.3 Justification of the Study

This study receives its significance in the United Nations Sustainable Development Goals 1 and 2 which is to end poverty in all its forms, zero hunger and improves nutrition. These global goals would be tedious to achieve without analysing the impact of tea exports on smallholder farmers who account for about 70% of the world's poor (IFAD, 2011) and also determine the household-specific factors influencing the participation decisions of smallholder farmers in sesame production and marketing.

Many earlier studies such as Sorsa (2009), Wijnands *et al*.(2010) and Thomas (2011) have been carried out regarding sesame production and marketing in Rwanda, however, majority of these studies have mainly focused on the marketing aspect of the crop while some have considered the common cash crop production-related problems. But most of these studies have ignored the factors affecting production participation decisions of smallholder farmers at individual household levels and the role tea exports play on the livelihood of smallholder farmers. Many of the efforts made by these authors were spent on general production and trade arrangement problems which allowed them to examine factors that are mainly external to individual farm households and common to all farmers in the area. However, identifying household-specific factors, which are responsible for limiting some households from cash crop production and marketing participation is imperative. This could be analysed by considering specific agro-ecologically feasible areas for growing the specified crop which this study seeks to address with superior analysis and methodology. This study will also contribute to the existing knowledge of people in finance tea research, academicians, and policymakers on the fluctuations of tea prices and how it affects smallholder farmers. This research is essential to understanding the rate at which smallholder tea farmers benefit from export.

1.4 Scope of the Study

This study was undertaken in the Mushubi District of Rwanda with a focus on the impact of tea exports and PRICE on the livelihood of smallholder farmers. In this context, the research will examine the effects of tea exports on the livelihood of smallholder farmers,assess whether fluctuations in the prices of tea export have an impact on smallholder farmers' livelihood and the

level of support these smallholder farmers have received from PRICE will be discussed. The target population are the smallholder farmers in the Mushubi district of Rwanda and the timeframe for the study is between 2017 and 2018.

1.5 IFAD-PRICE

IFAD in Rwanda is involved in several projects aimed at reducing poverty by empowering poor rural men and women to participate in the transformation of the agricultural sector and rural development which helps to reduce the vulnerability to climate change (IFAD, 2013). The Project for Rural Income through Exports involves the establishment of pro-poor cash crop value chains involving smallholder production and early transformation in partnership with private operators. It focuses mainly on the proven export crops of coffee and tea, the upcoming export crop of silk, and horticultural crops principally for local and regional markets. PRICE has national coverage, supporting interventions in selected areasacross the country along with specific criteria for each value chain (PRICE PDR, 2011). IFAD-PRICE's general objective is to promote sustainable increased returns to farmers from key export-driven agricultural value chains through increased volumes and quality of production, improved marketing, and effective farmer organisations, thereby raising smallholder farmers' income. IFAD-PRICE targets 128,700 farming households, including some 72,400 coffee farmers, 14,300 tea farmers, 1,600 farmers producing raw silk, and about 7,200 horticultural producers. The project built on the Smallholder Cash and Export Crops Development Project (PDCRE) that closed in September 2011(PRICE PDR, 2011).

1.6 Tea in Rwanda and Smallholder Farmers

Rwanda's trade with other countries consists of mainly agricultural products with tea and coffee as the country's main export crops. Tea is already Rwanda's second most significant export earner and the third-largest employer of labour behind coffee and the public sector making it a vital source of income for over 30,000 smallholder farmers and 60,000 households across 11 of the 30 districts in the country. Researchers show that Rwanda's tea sector still has significant potential to benefit a large number of poor people as smallholder farmers produce more than 65% of Rwandan tea (Gatsby, 2014; World Bank, 2016; CIC Impact Program, 2013).

Rwanda's tea sector is comprised of about 27,000 independent smallholder tea farmers who possess about 70% of the total area under cultivation where these growers either harvest their leaves or employ pluckers for the tasks every day. Tea is a perennial tree crop and it takes

almost three years to yield new plants for the first harvest. Plucked tea is delivered to a factory as soon as possible after harvesting to ensure that the smallholder farmers within the radius of the factory only deliver the plucked tea to the nearest factory. This makes vertical integration almost perfect and prices of tea are easily monitored. However, unlike coffee, no primary processing occurs on the farmland and recent Rwanda is a price taker on the international market given the scale of production relative to the global market (CIC Impact Program, 2013).

The Rwandan Government had originally embarked on a tea factory privatisation programme in response to the inefficiencies in government-owned factories to stimulate private investments and growth in the sector (Essama-Nisah *et al*., 2008). The Rwandan government views the tea sector as essential and central to the economic development of the country across a number of key dimensions which include its potential to increase smallholder farmers' income to reduce poverty, provide investment opportunities for private investors and assist the country to balance owed payments. Owing to this, the Government of Rwanda (GOR) undertook a number of reforms in the tea sector in 2000 to privatise the tea estates but the objective was not ultimately achieved until 2012 (CIC Impact Program, 2013). The Rwandan Government introduced reforms to the price setting of green leaf tea and most recently increased both tea quality and land cultivation area of tea by 18,000 hectares to support the drive for greater tea production (World Bank, 2016). The green leaf price system reform was undertaken by the government with smallholder farmers, private sector investors as targeted beneficiaries with the aim of increasing the income of smallholder farmers, enhance incentives to raise the productivity and quality of raw material utilized by tea factories. Also, the aims of the government's rural poverty alleviation scheme through price reform were critical to improve the efficiency and competitiveness among Rwanda tea factories and to increase export revenues (MINAGRI, 2012).

CHAPTER TWO

MATERIALS AND METHODS

2.0 Introduction

This chapter explains how the research was conducted starting fromthe statement of hypothesis to the study area, sampling design, type and sources of data, research sample size and target population, sampling procedure, and methods of data analysis.

2.1 Research Hypothesis

H_1: There is no positive effect of tea production and exports and PRICE on the livelihood of smallholder farmers

H_2: There is a positive effect of tea production and exports and PRICE on the livelihood of smallholder farmers

2.2 Research Study Area

Rwanda is a landlocked country in Central East Africa with both mountainous terrain and plateaus. It is made up of numerous lakes and elevated at 800-4500m above sea level, the country is also known as 'country with a thousand hills', due to its dramatic undulating landscape (WHO, 2015). Rwanda has a total area of 26,338 km2. In 2012, a total resident population of Rwanda was 10,515,973 inhabitants (NISR, 2014) and an estimated population density of 395 per square kilometre. According to the (GOR, 2013), Rwanda is the most densely populated country in Africa and land holdings average less than 0.5 hectares denser than Japan. Even if we include arable land on hillsides, 60% of farmers own farmland no larger than 0.5 ha. Around 30,000 farmers produce tea along with other crops, notably beans, savoury banana and corn. The average number of trees per farmer varies from 150 to 300, depending on the region, qualifying the production system as one of micro rather than smallholder. There are, however, a handful of large coffee plantations, the biggest being 53 hectares (USAID, 2007).

Tea project activities are organised around six greenfield tea sites in the Southern and Western provinces. Two sites (Nshili and Mushubi, Southern Province) with other four new greenfield sites where PRICE earmarked for supporting the four tea cooperatives and expand smallholder plantations in all four sites. They are located in Gatare and Muganza Kivu in Southern Province,

and in Karongi and Rutsiro in the Western Province of Rwanda.This research was carried out in Mushubi area in Nyamagabe district in the western province of Rwanda. This area is known for its height and topography which is highly required for optimum tea production. The higher the Altitude the better the tea quality produced. The various research was carried out in Gothegab cooperative with a number of 1499 tea farmers. Mushubi tea factory is also located in Mushubi where the proceeds of the farmers are being processed. Habitants of Mushubi are predominantly farmers.

Fig 1.0: Map of Rwanda. Source: Premium Times NG, 2017.

2.3 Sampling Design

This study adopted a multistage sampling. A simple random sampling method was carried out in stages and sampling was done by district and sector where the farmers were selected. The sectors in the Mushubi district were selected based on low and high populations of tea farmers.

2.4 Data requirement and Sources

This study made use of both primary and secondary data. The primary data was obtained from a structured questionnaire administered to 300 smallholder tea farmers. A key informant interview was also conducted on the cooperative head of farmers in each selected sector in the Mushubi district.Also, a focus group discussion was also done with 12 smallholder tea export farmers who belong to the cooperative society. Secondary data sources included reports from PRICE, review of the baseline study, journals and publications on research works, reports, newsletters and books.

Target Population and Sample Size

A purposive sampling technique was used to select 300 smallholder tea farmers in the five sectors of the Mushubi district from a total population of 1500 tea farmers. The Yamane sampling method calculator was used for this selection by taking a precision level of 4.12% which represents 20% of the study population. The respondents were randomly selected from the district based on their sample size using probability proportional to size (PPS) sampling technique to administer the questionnaires.

(i) Yamane method

$$n = \frac{N}{1+Ne^2}$$

Where n = sample size, N = Total population of tea farmers, e = error term

Preparation of Research Instrument

A structured questionnaire involving one on one interaction with the farmers, key informant interview using interview guides and a focus group discussion on the members of the cooperative were the main research instrument used for the data collection on issues relating to the objectives. Information was obtained through these instruments to have an oversight of the impact of tea exports on smallholder farmers in the Mushubi District.

Administration of Research Instrument

Random sampling was used to obtain data from 319 tea farmers in the Mushubi district but 19 were rejected due to poor quality and irrelevance. A key informant interview was conducted on each cooperative head of the farmers in the chosen sectors of the district and focus group discussion was done on 12 members of the farmer's association. A structured questionnaire was administered to 300 smallholder tea farmers to gather information on tea production and exports, income generation, and price fluctuations of tea. Field observations were also used to gather additional data for verification.

Validity and Reliability of Research Instrument

The survey questionnaire was pretested to ascertain if it met the requirements of the study. Enumerators who aided in the administration of the questionnaires were trained to ensure reliable data entry, and a validity and reliability test was carried out to filter out non-useful questions from the survey.

2.5 Description of Relevant Variables

Age of the household head: a continuous variable that refers to the age of the household head measured in years. Age is usually used as a measure of experience and a predictor of productivity. In this study, age is expected to have a positive effect on tea production and export.

Gender of the household head: in the tea farming system, men and women take part in both production and processing, however a prior about the likely sign of the coefficient of gender in sales volume is not possible to tell due to several constraints like lack of access to credit, market buyers and extension services which may hinder participation of women in tea production.

Education level of household head: this variable was measured using formal schooling of the household head and it is expected to affect farm yield. It takes dummy variable 1 if the household head possessed any formal education and 0 otherwise.

Size of household: this is a continuous independent variable that is measured in terms of the number of members in a household. Household size increases consumption requirements and may restrain the household from taking more risks.

2.6 Method of Data Analysis (by Objective)

Table 1 showing the objectives, data collection and analytical methods

S/N	Objectives	Data Collection (Source of data)	Analytical Methods
1	Examine the effect of tea export on smallholder farmers livelihood	Survey Instrument (Questionnaire Administration)	Descriptive Statistics (Means, Frequencies, Percentages, T-test).
2	Evaluate the level of support for smallholder tea farmers in reaching high-value markets	Focus Group Discussion, Key Informant Interview	Inferential Statistics (Regression)
3	Examine how quantity produced affects smallholder tea farmers income	Survey Instrument (Questionnaire Administration)	Descriptive Statistics(Means, Frequencies, Percentages) and Inferential Statistics (T-test, Regression)
4	Analyse if fluctuations in the prices of tea export have an impact on the livelihood of smallholder farmers	Focus Group Discussion, Key Informant Interview	Inferential Statistics (T-test, Regression)

CHAPTER THREE

FINDINGS AND RESULT DISCUSSION

3.1Socio-Demographic Characteristics of Small-scale Tea Farmers

Information from the socio-demographics of the small-scale tea farmers (Table 1) revealed that most of them were male farmers, as compared to the female farmers, 71% and 29% respectively. Almost nine of ten of the farmers had been married (88%), 2% were single or never married, 10% had been formerly married – separated or divorced or widowed. More than half of these tea farmers have had no formal education (58%), 31% had primary education, about 5% had secondary education, and 5% had attained tertiary education. Most of the enumerated tea farmers had been in the business for not more than 10 years (71%), about 29% have had an experience of over ten years but not more than twenty years, not up to 1% have had an experience of more than 20 years. The average age of the farmers was about 49 years; a very few were below 30 years of age (4%), approximately one-fifth were aged 30 – 39 years, a bit more than a quarter of the farmers were in each of the age category 40 – 49 years (27%) and 50 – 59 years (28%), 20% were aged 60 years or higher. Averagely, each of the farmers had a household of about 6 persons; more than half (53%) had a household size of 1 – 5 persons, a little below half (44%) had a household of size of 6 – 10 persons, about 3% had a household of more than 10 persons. Averagely, each of the farmers owned about 54 hectares of land for their tea farm; about half (52%) cultivated the tea production on a land sized below 40 hectares, a little more than a quarter (27%) owned up to 40 – 79 hectares, about one-fifth cultivated their production on a land size of 80 hectares or more.

Table 2 showing the socio-demographic characteristics of small-scale tea farmers

Table 2: Socio-demographics	Frequency (n = 303)	Percentage
Gender		
Male	216	71.3
Female	87	28.7
Marital Status		
Single/Never married	7	2.3
Married	266	87.8
Separated	1	0.3
Divorced	3	1.0

Widowed	26	8.6
Highest Level of Education		
Non-formal education	175	57.8
Primary	94	31.0
Secondary	17	5.6
Tertiary	17	5.6
Years of Experience		
1 – 10 years	214	70.6
11 – 20 years	88	29.0
21 – 30 years	1	0.4
Age Group [49.2 ± 11.5].2±11.5]		
Below 30 years	12	4.0
30 – 39 years	63	20.8
40 – 49 years	83	27.4
50 – 59 years	85	28.1
60 years or more	60	19.8
Household Size [5.7 ± 2.77±2.7		
1 – 5 persons	162	53.5
6 – 10 persons	133	43.9
More than 10 persons	8	2.6
Farm Size [53.6 ± 49.6.6±49.6		
1 – 19 hectares	56	18.5
20 – 39 hectares	103	34.0
40 – 59 hectares	53	17.5
60 – 79 hectares	28	9.2
80 – 99 hectares	24	7.9
100 hectares or more	39	12.9

3.2 Productivity: Input Accessed and Source

The study revealed the inputs accessed by the farmers and their various sources, in Table 2. About one-fifth of the farmers reported they had not made use of the improved cuttings in their tea production; most had sourced their improved cuttings from an agro-dealer service provider (45%), about one-third purchased their improved cuttings from a supplier on an agreement basis (33%), about 2% indicated they had accessed the improved cuttings through one-time sale between them and supplier.

About a quarter (24%) indicated they had not used fertilizers in their tea production; approximately four of ten farmers accessed their fertilizers through an agro-dealer service provider, one-third reported having had a purchased agreement with a supplier for fertilizers (33%), while the remaining farmers (2%) accessed fertilizers through one-time sales between farmers and supplier.

More than half of the farmers had not used the pesticides in the course of their tea production (51%); a bit more than one-third sourced their pesticides from an agro-dealer service provider (36%), almost 10% sourced their pesticides through purchase agreement between farmer and supplier, the others had either gotten pesticides through one-time sales from the supplier (2%) or from a fellow farmer (less than 1%).

Many of the farmers had not used the herbicides for their tea production (86%); a few of them who had used the herbicides got it from a purchase agreement between farmer and supplier (7%), about 6% got it from their fellow farmer, not more than 1% indicated getting it from an agro-dealer service provider. Only about 7% had used machinery in their tea production, the majority (93%) had not sued machinery in the processes of their tea production.

Table 3 showing the inputs accessed by the farmers and their various sources

	Frequency (n = 303)	Percentage
Improved cuttings		
Not in use	63	20.8
Purchase agreement between farmer and supplier	101	33.3
One-time sale between farmer and supplier	7	2.3
Agro-dealer service provider	132	43.6
Fertilizers		
Not in use	72	23.8
Purchase agreement between farmer and supplier	101	33.3
One-time sale between farmer and supplier	7	2.3
Agro-dealer service provider	123	40.6
Pesticides		
Not in use	156	51.5
Purchase agreement between farmer and supplier	29	9.6
One-time sale between farmer and supplier	7	2.3
Fellow farmer	1	0.3
Agro-dealer service provider	110	36.3
Herbicides		
Not in use	261	86.1
Purchase agreement between farmer and supplier	22	7.3
Fellow farmer	18	5.9
Agro-dealer service provider	2	0.7
Machinery (Threshers, Tillers, etc.)		
Not in use	282	93.1
Purchase agreement between farmer and supplier	21	6.9

Results from the study exposed that the farmers had experienced a statistically significant increase in all their inputs and yield between their periods before and during PRICE; land cultivated ($p < 0.001$), fertilizers used ($p < 0.001$), labour employed ($p < 0.001$), and yield ($p < 0.001$).

Averagely, each of the farmers had cultivated farmland of about 30 hectares prior to the engagement with PRICE, the average farm size had risen up to 39 hectares per farmer since joining PRICE. Average fertilizer usage before and during the price was estimated as 45*kg* and 55*kg*. Before PRICE, the use of labourers was below 3 men per day, during PRICE labourers had increased to 3 men per day. Yield in tea production before PRICE was on an average of 80*kg* per farmer, during PRICE, the yield had increased to about 150*kg* per farmer.

Table 4: Descriptive statistics on land cultivated, fertilizers used, labour employed and

	Min.	Max.	Average	25th Percentile	75th Percentile	p-value
Land cultivated						
Land cultivated before PRICE (ha.)	1	300	30	15.25	53.5	< 0.001
Land cultivated during PRICE (ha.)	2.5	350	39	24	75	
Fertilizers used						
Fertilizers used before PRICE (in kg)	1	1500	75	45	150	< 0.001
Fertilizers used during PRICE (in kg)	1	1500	100	55	200	
Labour						
Labour employed before PRICE (men per day)	1	75	2.5	2	5	< 0.001
Labour employed during PRICE (men per day)	1	50	3	2	5	
Yield						
Yield before PRICE (in kg)	5	1200	80	40	180	< 0.001
Yield during PRICE (in kg)	5	2500	150	80	300	

yield; before and during PRICE

3.3 PROFITABILITY: INCOME AND ASSETS

On the average, before the emergence of PRICE, each farmer had earned about 6,000 *RWF* from their tea production on daily basis; since joining price, the average income per farmer increased to about 14,500 *RWF*; with an indication of a statistically significant increase in income before and during PRICE ($p < 0.001$).

Table 5: **Descriptive statistics on income from tea production before and during PRICE**

	Min.	Max.	Average	25th Percentile	75th Percentile	p-value
Income						
Yearly income before PRICE (RWF)	60	240,000	6,000	2,400	15,000	< 0.001
Yearly income during PRICE (RWF)	100	420,000	14,500	6,400	25,500	

The study also revealed the status of the assets owned by the tea farmers as a result of their participation in the PRICE project (Table 6).

In terms of size or number of landed properties owned by the farmers, only about three of ten farmers had experienced an improvement since joining PRICE (38%), majority of them had not experienced a change in the size or number of landed properties despite joining PRICE (62%). Just a little below half acknowledged they had experienced an improvement in the size of their houses/dwelling unit (45%); while more than half remarked they have had an improvement in the quality of their houses/dwelling unit since their engagement with PRICE. About 30% confirmed their means of transportation had undergone an improvement as a result of joining the PRICE project. One-third of the farmers (33%) remarked improvement in the electrical appliances they owned at their homes since joining PRICE.

In terms of farm inputs, only as few as 2% indicated they have had an improvement in their water points since joining PRICE; 18% had experienced an improvement in farm machinery; about 19% remarked an improvement in their harvesting system; about half of the farmers (52%) confirmed they had an improvement in their business assets since their involvement with PRICE.

With respect to their farm outputs, it was found that about 37% confirmed an increase in their profits making since joining PRICE; more than three-quarters have had an improvement in their access to credit since joining PRICE (78%), income from tea production (86%), and household savings (84%).

Table 6: Status of physical and financial assets since joining PRICE

	Improving	No change	Worsened	Not Applicable
Size/Number of landed properties owned	114 (37.6%)	189 (62.4%)	-	-
Hectares of land under improved management	103 (34%)	199 (65.7%)	1 (0.3%)	-
Size of dwelling unit	144 (47.5%)	157 (51.8%)	2 (0.7%)	-
Quality of dwelling unit	173 (57.1%)	128 (42.2%)	2 (0.7%)	-
Means of transport	91 (30%)	211 (69.6%)	1 (0.4%)	-

Electrical appliances	99 (32.7%)	203 (67%)	1 (0.3%)	-
Crops cultivated	179 (59.1%)	115 (38%)	5 (1.7%)	4 (1.3%)
Water points	5 (1.7%)	69 (22.8%)	2 (0.7%)	227 (74.9%)
Harvesting system	59 (19.5%)	241 (79.5%)	1 (0.3%)	2 (0.7%)
Farm machinery	55 (18.2%)	247 (81.5%)	1 (0.3%)	-
Income	260 (85.8%)	35 (11.6%)	8 (2.6%)	-
Household savings	256 (84.5%)	43 (14.2%)	4 (1.3%)	-
Access to credit	235 (77.6%)	62 (20.4%)	1 (0.3%)	5 (1.7%)
Business assets	159 (52.5%)	141 (46.5%)	3 (1.0%)	-
Profit making	112 (37%)	187 (61.7%)	4 (1.3%)	-

3.4 Access to Market and Social Services during Price

In terms of the farmers' access to various production and market services almost all of the farmers confirmed the cost of transportation had experienced betterment since involvement of PRICE (99%), access to input supply had also improved (97%), access to market information had improved (98%), improvement was also remarked on access to training services (96%); more than three-quarters of the farmers (86%) acknowledged improvement in their access to extension services; close to a two-third of the farmers rated the level of support received has been improved since involvement of PRICE.

The social services available to the farmers had also generally improved since the involvement of PRICE, this include, improvement in their access to clean drinking water (55%); improvement in their access to food market (83%); improvement in access to primary or secondary school as well as improvement in means of information and communication (95%); improvement on access to health care services (98%).

Table 7: Farmers' access to various production and market services

	Improving	No change	Worsened

Access to production and market services			
Access to input supply (fertilizer, credit, etc.)	295 (97.4%)	4 (1.3%)	4 (1.3%)
Cost of transportation	301 (99.3%)	1 (0.3%)	1 (0.3%)
Access to market information	297 (98%)	6 (2%)	-
Access to training services	290 (95.7%)	13 (4.3%)	-
Access to extension services	262 (86.5%)	41 (13.5%)	-
Level of support	191 (63%)	111 (36.7%)	1 (0.3%)
Access to social services			
Access to clean drinking water	166 (54.8%)	137 (45.2%)	-
Access to food market	251 (82.8%)	52 (17.2%)	-
Access to primary/secondary school	288 (95%)	15 (5%)	-
Access to health care services	296 (97.7%)	7 (2.3%)	-
Means of information and communication	289 (95.4%)	14 (4.6%)	-

3.5 Empowerment Index

Most of the farmers acknowledged they were allowed to cultivate other types of crops (97%); while only 3% remarked they did not grow other crops, 13% of the farmers cultivated other crops, about 43% had two other crops they grew asides tea, about 37% cultivated about three other crops asides the tea plantation, about 4% cultivated four other crops besides the tea. As presented in Figure 1; some of the crops grown were maize (78%), Irish Potatoes (64%), Beans (42%), Peas (22%), Wheat Corn (18%), and Cassava (2%). Almost all of the farmers (98%) confirmed they were allowed to make decisions on their methods of production and techniques.

A major percentage (93%) of the farmers remarked they had been able own assets for themselves since their involvement with PRICE. Information on assets owned were (Figure 2); livestock – such as pig (60%), cow (5%) and domestic animals (5%); automobiles (29%); forest trees (24%); tea field/plantation (11%); land (11%); and houses (8%). Majority of the farmers who owned assets affirmed they had purchased them by themselves (70%), a few claimed they inherited the assets (19%), while others did not specify their means of acquiring the assets (11%).

More than three-quarter of the farmers answered that they had gained access to credit since their involvement with PRICE; among these 248 farmers who had gained access to credits, up to 97% of them (241 farmers) reckoned they were allowed to take their decisions on credit. More than half of the farmers (58%) believed they still had room for improvement, while about 42% believed they had reached the peak of their farming carrier.

Table 8: Information on the farmers' empowerment index

	Frequency (n = 303)	Percentage
Allowed to grow any type of crop for Consumption and export		
Yes	295	97.4
No	8	2.6
Number of other crops grown		
None	8	2.6
One crop	41	13.5
Two crops	130	42.9

Three crops	111	36.7
Four crops	13	4.3
Allowed to make decisions on methods of production/techniques		
Yes	297	98.0
No	6	2.0
Owned any asset		
Yes	281	92.7
No	22	7.3
Means of acquiring asset (n = 281)		
Purchased	196	69.8
Inherited	54	19.2
Unspecified	31	11.0
Access to credit		
Yes	248	81.8
No	55	18.2
Allowed to take decision on credit (n = 248)		
Yes	241	97.2
No	7	2.8
Peak of your carrier or still room for improvement		
Yes, at the peak	127	41.9
No, there is still room for improvement	176	58.1

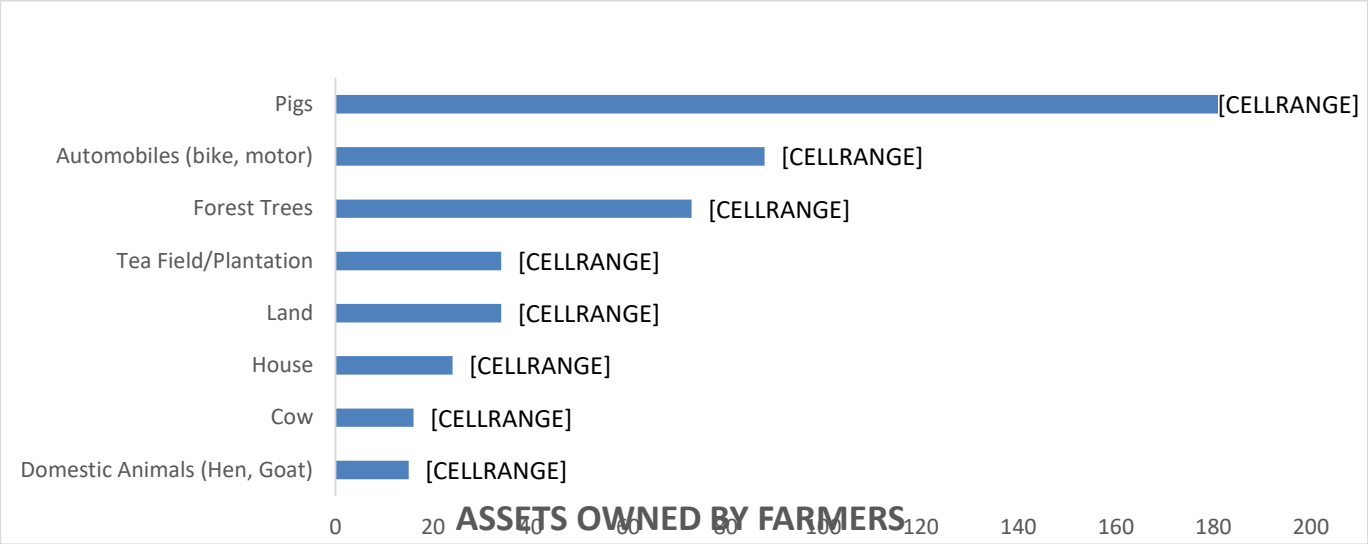

Figure 2: Assets owned by the tea farmers during PRICE

3.6 Control Over Use of Income

Many of the farmers (95%) affirmed they were responsible for the upkeep of their homes before the emergence of the PRICE project – 38% were very much responsible for the upkeep, 57% were just fairly responsible for the home upkeep. More than three-quarter of the farmers (79%) answered that they were jointly involved in decision taking overuse of income with their partners; 13% indicated decision overuse of income was taken by wives; 7% stated the decision over income in their houses were taken by the husbands; others (less than 1%) either had someone outside the family to make decisions for them or they did not engage in such decision making in their houses.

About one-third of the farmers (33%) stated they can own decisions overuse of income to a high extent, almost two-thirds also reported having an influence overuse of income but to a mild (or medium) extent, others claimed their influence overuse of income was only to a small extent (2%). More than nine of ten of the farmers (94%) reckoned price inflation had highly impacted their income; about 5% claimed the impact of price inflation on their income has been mild; while 1% remarked the price inflation had not affected their income level.

Table 9: Respondents' control over the use of income

	Frequency (n = 303)	Percentage
Responsible for general upkeep of home before PRICE		
Yes, very well	116	38.3
Yes, fairly well	172	56.7
No	15	5.0
Persons involved in decision taking overuse of income within the household		
Main male or husband	22	7.3
Main female or wife	40	13.2
Husband and wife jointly	239	78.9
Someone outside the household	1	0.3
Household does not engage in any activity	1	0.3
Extent to which you can own decision over use of income		
High extent	101	33.3
Medium extent	196	64.7
Small extent	6	2.0
Impact of price fluctuation on income		
High	285	94.1
Medium	14	4.6
Not at all	4	1.3

3.7 Time Allocation and Community Leadership Engagement among Tea Farmers

The result from the study also revealed just a very few of the farmers visited their farmlands on a daily basis (37%). Not too many of the farmers (12%) had much input in the decision making of the farmers' community groups; a proportion around two-thirds (69%) stated they had just a little input in the decision making of their community groups; not more than 19% remarked they had no input at all in the groups' decision making. Most of the farmers reported belonging to an agricultural group (94%); some others belonged to groups such as credit or micro-finance group (83%), mutual help or insurance group (78%), religious group (36%), political group (5%), trade and business association group (5%), and producers' group (3%).

Many of the farmers (95%) reckoned they were comfortable with speaking in the public on matters to help decide on infrastructure, but at varying degrees of comfortability – 8% remarked they still had an underlying great deal of difficulty in doing so, 31% remarked they had a little difficulty in doing so despite being comfortable, about 18% stated they were just fairly comfortable, while 39% stated they were very comfortable doing so.

More than half of the farmers (57%) stated outrightly they were not at all comfortable with speaking in public to ensure proper payment of wages for public works or other similar programs; about 7% stated they very comfortable at doing that, 9% stated they were just fairly comfortable, 22% indicated they were comfortable but with a little difficulty, 5% indicated they would have a great deal of difficulty doing so despite being comfortable.

Majority of the farmers (93%) affirmed they were comfortable speaking up in public to protest against misbehaviour of authorities or elected officers, although at varying levels of comfortability; 36% stated they were very comfortable, 20% stated they were fairly comfortable, 28% were comfortable but with a little difficulty, 9% stated they would have a great deal of difficulty but still comfortable doing the same. Results also shows that fluctuation in tea prices affects the farmers income.

Table 10: Time allocation and community leadership

	Frequency (n = 303)	Percentage
Visits farm everyday		
Yes	113	37.3

No	190	62.7
Level of input in decision making in the community group		
Much input	37	12.3
Little input	208	68.6
No input	58	19.1
Comfortability speaking up in public to help decide on infrastructure		
No, not comfortable	14	4.6
Comfortable, with a great deal of difficulty	23	7.6
Comfortable, with a little difficulty	95	31.4
Yes, fairly comfortable	54	17.8
Yes, very comfortable	117	38.6
Comfortability speaking up in public to ensure proper payment of wages for public works or similar programme		
No, not comfortable	172	56.8
Comfortable, with a great deal of difficulty	17	5.6
Comfortable, with a little difficulty	66	21.8
Yes, fairly comfortable	26	8.6
Yes, very comfortable	22	7.3
Comfortability speaking up in public to protest the misbehavior of authorities/elected officers		
No, not comfortable	22	7.3
Comfortable, with a great deal of difficulty	26	8.6
Comfortable, with a little difficulty	86	28.4
Yes, fairly comfortable	60	19.8
Yes, very comfortable	109	36.0

CHAPTER FOUR

CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

Smallholder tea farmers in Rwanda are all coordinated by various cooperatives societies in strategic locations in Rwanda and they export 90% of what they produce. Mushubi tea farmers benefit greatly from (PRICE) which has supported the smallholder farmers for a period of 6 years**.** This has improved the standard of living of the farmers a great deal in which they can easily afford basic amenities, health care facilities and good schools for their children. They earn as high as a school teacher and are paid according to the units of kilograms they produce by the cooperative society they belong to. The cooperative societies are also supported by the government who also contributes greatly to the smooth operations of the farmers by providing good road networks, water supply e.t c.to the tea cultivation sites.

The production of tea seedlings to grow has been a major challenge for the farmers to produce more and meet high tea export demand. The seedlings which take about four(4)years to produce are very high and not cost-effective and the farmers cannot afford to invest their time and money for that long in as much that all the seedlings planted by the farmers are produced by the cooperative society.

Although fluctuation in the price of the tea affects the income of the smallholder farmers greatly, this factor should be greatly addressedfor the optimum production of tea in Rwanda.

1. Since the involvement of PRICE, the farmers have improved significantly in terms of land cultivated for tea production and yield obtained in production prior to the involvement of PRICE, the farmers averagely recorded a yield of about 80*kg*, during PRICE, the average yield had increased to 150*kg.*
2. The income level of the farmers had also been significantly positively impacted since their involvement with PRICE; average income of about 6,000 *RWF* before price had increased by 8,500 *RWF* – up to 142% increment.
3. Generally, access to production and market services had undergone an increase as over three-quarters remarked improvement in access to; input, cost of transportation, market information, training services, and extension services.

4. In terms of the status of their social services, while a significant proportion remarked improvement in aspects such as education, food market, and healthcare services; access to clean drinking water was still a huge challenge for many, as up to 45% reckoned their access to water had not changed since involvement with PRICE.

5. Major factors that contributed to the high level of tea production among the farmers were – having; a tertiary level of education added immensely to their production level (up to 144*kg* increment), and cultivating on at least 100 hectares of land boosted production level by almost 400*kg*.

6. The tea production level of the farmers was greatly associated with their income level; it was found that a unit increase (1*kg*) in the production level affected their income positively by 64 *RWF.*

4.2 Recommendations

The Project for Rural Income through Exports should embark on more educational programmes for the farmers, to enable them to acquire formal education, which in turn impacts their technical know-how of the tea production.

1. To solve the problem of the farmers meeting high-quality tea demands, there is a great need to provide the farmers with more quality seeds.
2. Social amenities should be worked on, so farmers can generally experience more improvement.
3. A limit on land size dedicated to tea plantation should be set, to ensure the farmers are able to produce at an optimum level.
4. The tea farmers should be encouraged and trained to cultivate other crops, for market purposes, and not just for their family consumption.

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APPENDIX

UNIVERSITY OF IBADAN
CENTRE FOR SUSTAINABLE DEVELOPMENT

QUESTIONNAIRE

EFFECTS OF TEA EXPORT ON SMALL HOLDERS FARMER'S LIVELIHOOD IN RWANDA

Introduction **Questionnaire ID:** _____

This questionnaire is to understand and evaluate the role of Tea exports on smallholder farmers' livelihood in Rwanda and the effect of PRICE project on the farmers' livelihood. This questionnaire is, therefore designed to elicit information from Farmers involved in the exports of Tea on the effects on their Livelihood. Whatever information obtained from you will be treated with strict confidentiality. Thank you for your cooperation.

Section A: Socio-Economic and Demographic Characteristics of Respondents

Serial No.	Variables	Responses	Code
1	Province/District	Name	
2	Sector/Cell/Villages	Name	
3	Age of respondent (years)		
4	Gender	Male Female	[1] [2]
5	Marital status	Single/never married Married Separated Divorced Widowed	[1] [2] [3] [4] [5]
6	Household size	Number of people in household	
7	Highest education level attained	No formal education Primary Secondary Tertiary	[1] [2] [3] [4]
8	Farm size (in hectares)	_____	
9	Years of experience in farming	1-10 11-20 21-30 31-40 >40	[1] [2] [3] [4] [5]
10	Type of tea enterprise	Black tea Green tea Orthodox tea	[1] [2] [3]

Section B: Productivity

B1: Inputs accessed and source

Inputs accessed Tick (Multiple Responses Allowed)	Yes	No	Source Pick options 1= purchase agreement between farmer and supplier 2= one time sale between farmer and supplier 3= fellow farmers 4= agro dealer service providers
1. Improved Cuttings			
2. Fertilizers			
3. Pesticides			
4. Herbicides			
5. Machinery (threshers, tillers, etc.)			
6. Others (specify)			

B2: Input Quantity

Inputs	Quantity (before PRICE)	Quantity (during PRICE)
1. Land Cultivated Tea(ha)		

2. Fertilizers used in 6 months (kg)		
3. Proportion of family labour in total labour		

B3: Yield

Output	Yield before PRICE (kg or ton/ha)	Yield after PRICE (ton/ha)
1.Tea		
2.Actual amount of tea that is exported		
3. Proportion of total output that is exported (%)		

Section C: Farmers' Income, Physical Assets and Financial Assets

C1. Kindly indicate your income before and after PRICE

Variable	Before PRICE	After PRICE
1.Average Monthly Income of the household		
2.Average Yearly income from tea production in rwf		

C2. Kindly rate the improvement in ownership/access to physical and financial assets as listed in the table below is due to the involvement of PRICE

Variable	Improving (3)	No change (2)	Worsened (1)	Not applicable (0)
1. Size/number of landed property owned				
2. Size of dwelling unit				
3. Quality of dwelling unit				
4. Means of transport				
5. Electrical appliances				
6. Hectares of land owned				
7. Hectares of land under improved management				
8. Crops cultivated				
9. Water points				
10. Harvesting system				
11. Farm machinery				
12. Income				
13. Household savings				

14. Access to credit				
15. Business assets				
16. Profit making				

Section D: Access to Market and Social Services

D1: Kindly indicate changes in the following as a result of PRICE

Variable	Improving (3)	No change (2)	Worsened (1)	Not applicable (0)
1. Improved input supply (fertiliser, credit, etc.)				
2. Cost of transportation				
3. Access to market information				
4. Training services				
5. Receipt of extension services				
6. Level of support				

D2: Kindly indicate changes in the following as a result of PRICE

Variable	Improving (3)	No change (2)	Worsened (1)	Not applicable (0)
1. Access to clean drinking water				
2. Access to food market				
3. Access to Prim./Sec. school for your children				
4. Access to health care services				
5. Means of Information and communication				

SECTION E: Empowerment Index

Production decision making

1. Are you allowed to grow any type of crop for consumption Yes ( ) No ( )
2. If yes in 1 above how many types of crops? (Please specify)

   _____ _____
3. If No in 1 above, why? _____
4. Are you allowed to make decisions on methods of production or techniques? Yes ( ) No ( )

Access to productive resources

5. Do you own any asset? Yes ( ) No ( )
6. If yes in Question 5 above, what type of asset do you own? Please specify

   _____
7. How did get the asset? Purchase ( ) Inherited ( )
8. Do you have access to credit? Yes ( ) No ( )
9. Do you take decisions on credit? Yes ( ) No ( )
10. Are you at the peak of your carrier or you feel there is room for improvement? Yes ( ) No ( )

Control over use of income

11. Were you responsible for the general upkeep of the home before PRICE? Yes ( ) No ( )
12. If yes how much input did you have? Very well ( ) fairly well ( )
13 When decisions are made regarding use of income generated for the Household, who normally takes decision? Main male or husband ( ) Main female or wife ( ) Husband and wife jointly ( ) Someone else in the household ( ) Jointly with someone in the household ( ) Someone outside the household ( ) Household does not engage in activity ( )
14 To what extent do you feel you can own your decision regarding control over use of income?
High extent ( ) medium extent ( ) small extent ( ) Not at all ( )
15. How does price fluctuation affects your income?
Highly ( ) Medium ( ) Not at all ( )

Time allocation (Workload and Leisure)

16 Please specify the time you wake up

	Wake-up time
Weekdays	
Weekends	

- Do you go to the farm every day? Yes ( ) No ( )
- On the days you don't go to the farm, when do you wake up? _____Please tick the activities you engage in on the days you don't go to the farm
(Multiple responses allowed)

Activities	Average time use (in hours)
Cooking	
Domestic work(including fetching wood and water)	
Care for children/Adults/Elderly	
Social activities, watching TV and hobbies	
Religious activities	
Going to Market	
Others specify	

Community leadership: Group Membership and Public Speaking

- Are you a member of the any of the groups stated below?

Group categories	Yes	No	What is your position in the group? (leader or member)
Agriculture Cooperative			
Credit or microfinance group			
Mutual help or insurance group			
Trade and business association			
Religious group			
Producers group			
Political group			

21. How much input do you have in decision making in the group?
Much input ( ) little input ( ) No input ( )

22. Kindly pick an option from the options in the Response chart

Variables	Response	Response options/instructions
1. Do you feel comfortable speaking up in public to help decide on infrastructure (like small wells, roads, water supplies) to be built in your community?		Yes, very comfortable_____4 Yes, fairly comfortable_____3 Comfortable, with a little difficulty____2 Comfortable, with a great deal of difficulty_____1 No, not comfortable_____0
2. Do you feel comfortable speaking up in public in to ensure proper payment of wages for public works or other similar programs?		
3. Do you feel comfortable speaking up in public to protest the misbehavior of authorities or elected offices?		

23. How would you describe the relationship between the tea cooperative and the factory?

Very well ( ) fairly well ( )

Name of Enumerator_____

Signature & Date_____

SUSTAINABLE DEVELOPMENT PRACTICE

CENTER FOR SUSTAINABLE DEVELOPMENT

UNIVERSITY OF IBADAN

SURVEY INSTRUMENT ON THE IMPACT OF TEA EXPORT ON SMALLHOLDER FARMERS LIVELIHOOD IN RWANDA

FOCUS GROUP DISCUSSION RESEARCH QUESTIONS FOR SMALLHOLDER TEA FARMERS THAT HAVE BENEFITED FROM PRICE PROJECT.

Dear Respondent;

I am Adedamola Tolulope Adelodun a post graduate student of the centre for sustainable development university of Ibadan. I am currently carrying out an assessment on the impact of tea export on smallholder farmers' livelihood in Rwanda. This questionnaire is to help gather important data for the study.

Whatever information obtained from you will be treated with strict confidentiality. Thank you for your cooperation.

1. Why did you choose to grow tea?

2. How long have you started growing tea?

3. How much tea do you produce per month?

4. What do you know about PRICE?

5. How would you rate the level of support from PRICE?

6. What is your evaluation on the cooperatives performance?

7. Are you at the peak of your career or is there a need for improvement?

FIELD PHOTOS

Fig 4.1; Farmers bagging tea leaves

Fig 4.2; Farmers at the collection centre weighing their leaves

Fig 4.3; Focus group discussion with tea farmers

Fig 4.4; Tasting tea quality at NAEB with farmers

Fig4.5; with some young tea farmers at Mushubi