Assessment of Voluntary Sustainability Standards Implementation on the Environmental Performance of the Tea Sector in Rwanda: A Comparative Study of Sorwathea and Mulindi tea Factories in Rwanda

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Abstract

The objective of this study is to assess the implementation of Voluntary sustainability standards projects on the environmental performance of tea production units in Rwanda. The key focus of implementation of the Voluntary Sustainable standards (VSS) projects is the improvement the economic, social and environmental performance of the industry that they are implemented. The study was done through a comparison of two operational tea factories (Sorwatea and Mulindi tea factories) where the VSS projects have been implemented at varied levels. The effects of these standards implementation was measured through the assessment the following specific environmental performance indicators: Water usage, Energy usage, waste generation and biodiversity loss whose trend changes were compared. The study is an exploratory research which is motivated by the confirmed gaps existing in the review of the effects of the implementation of the VSS projects in the country and the focus of going green in the tea sector in Rwanda. The research adopted a mix of both qualitative and quantitative approaches which are aimed ensuring that enough data was be gathered to cover the subject. The research strategy that has been adopted for this study is a comparative study for two tea production units (currently producing around 30% of Rwanda tea by volume). Data collection was both primary (Interviews, key informants) and secondary data (company data and other sourced data) collection methods. Data was be analyzed using a matrix table for the qualitative data and contemporary statistical tools (Student T test and correlation coefficient) for the quantitative data using the statistical Package for Social Science (SPSS) version18.The results of the study show that at least 72 % of the tea factories in Rwanda have implemented one or sacral of the VSS project in their firm. The leading firm in the implementation of the standards is Sorwatea which has 8 VSS implemented since they started the process in 2006. The key influences/drivers for the implementation of the standards were noted to be regulatory, social, improved environmental an operational performance and commercial motivations. The key challenges of implementing VSS project in firms were noted to be Financial, Operational and Human resources. Sorwatea which has a longer history of implementing the VSS projects has managed to overcome most of the challenges in comparison to Mulindi which is just starting the journey. The research study found that there is a relationship between environmental performance and the implementation of VSS. Detailed analysis of various parameters well showed that Sorwatea has better environmental performance and this could be attributed to the implementation of VSS projects as the production for the two firms, locality, type of tea is all the same. This was evidenced by the following:

- *The presence of robust Environmental management system at Sorwatea in comparison to Mulindi.VSS implementation as noted to lead to some sustainable actions like water metering and conservation, waste water analysis amongst others.*
- *The trend of water usage where it has declined overtime at Sorwatea as compared to Mulindi.*
- *There is a significant difference in water fuel, firewood and electivity usage between the two firms.*
- *Sorwatea has a functional waste water treatment plant and do undertake waste water analysis unlike Mulindi.*
- *Sorwatea has a robust Solid waste management system where there is separation of waste reuse recycling and as from this year (2005) they have started recording the quantities of waste generated in the firm. This was absent in Mulindi.*

- *Sorwatea has a biodiversity restoration program had have consistently been planting trees for firewood and general cover (indigenous) trees for the last four years unlike Mulindi where this was absent.*

As the research study has identified and can conclusively showed that that there a positive influence on Environmental performance due to implementation of VSS project in tea firms in Rwanda The study therefore recommends that other tea processing units should implement VSS projects so as to ensure improved environmental performance of their firms and also the greening of the industry as per the country aspirations.

Keywords: Voluntary Sustainable standards, Environmental performance, Biodiversity

Introduction

Around the world agriculture is and was continue to be a major building block in the achievement of the Millennium Development Goals (MDGs). Kalunda (2014) notes that recent statistics show that agricultural production needs to increase by 70 percent by 2050 in order to feed the world, while demographic growth, climate change, and urbanization put pressure on available cultivable land (IFC, 2011). In Rwanda, agriculture is the largest economic sector and remains the best opportunity for economic growth and poverty alleviation. The performance of the agriculture sector is therefore crucial and any activities that can go towards enhancing the sustainability and performance of these would greatly assist the agriculture sectors where the tea subsector lies. It is with this focus that internationally accepted voluntary sustainability standards (VSS) have been established and implemented in the agro based indeed industry. The VSS are aimed at helping the sector to achieving sustainability in the production of agricultural commodities is necessary to ensure food security, a healthy natural resource base and human wellbeing (IFC 2013). In Rwanda to meet these challenges of sustainability issues, the tea sector in particular has been adapting the VSS with varied success. This study therefore intends to see the effects of the implementation of the International VSS to the agro based industries with a specific focus to the tea sector in Rwanda. United Nations Forum on Sustainability Standards (UNFSS) defines Voluntary sustainability standards are standards specifying requirements that producers, traders, manufacturers, retailers or service providers may be asked to meet, relating to a wide range of sustainability metrics, including respect for basic human rights, worker health and safety, environmental impacts, community relations, land-use planning and other
Tea is the most popular of all non-alcoholic beverages in the world. The International Tea Committee notes that the global consumption of tea jumped by 60% between 1993 -2010 and significant growth is forecast as more people become consumers of tea. Two-thirds of the world populations drink tea. Tea *'Camellia sinensis*' is believed to have originated from South East Asia. Economically speaking too, tea is an extremely valuable source of much needed foreign exchange. Globally 35 countries grow tea with Rwanda being one of them. In Rwanda tea has progressively provided the much need foreign exchanges with statistics from the National Agricultural Export Development Board (NAEB), on Tea, Coffee and Horticulture showing that the Tea exports value totaled approximately US$55.7m in 2010,US$61.9m in 2011, USD $ 65.7mand USD56,243,600m in 2013 making it the leading export crop. The tea sector provides direct employment for about 70,000 people and several thousand more are hired as casual workers during the tea season.

1.1. History of the Tea Sector in Rwanda

NAEB has shown that the Rwandan tea is planted on hillsides at high altitude (between 1,900 and 2,500 m), and on well drained marshes at an altitude of between 1,550 and 1,800 m. Tea production in Rwanda was started by European and Asian investors in the mid-1950s. Sachin and Dimitri (2013) note that until the early 1970s, the output of the tea sector remained limited; in 1970 there were only three factories (Mulindi, Shagasha and Ntendezi) operating in the country. Tea became a priority sector in the late 1970s with the launch of the Second Development Plan and the subsequent establishment of Rwanda *Tea* Authority (OCIR-Thé) in 1978. They are also nine privately owned production units including Gisovu, Cyohoha (making up the company Société Rwandaise de Thé (SORWATHE), Pfunda (Pfunda Tea Company), Kitabi, Nyabihu,Rubaya (Rwanda Mountain Tea), Mata, Gisakura, and Nshili-Kivu.Efforts are currently underway to increase and develop more units as more areas are opened up for tea production.

Mulindi Tea Factory was the first tea unit was created in 1960 and it's located in the Gicumbi District, Northern Province. NAEB 2013 statistics records show that MULINDI tea factory produces 13.13% of the National tea production in Rwanda. The company was recently privatized in 2013 and under the previous management of OCIR tea there was a move to implementation of ISO standards but no other international certifications have been recorded ever since.

Sorwathé tea factory is the oldest private tea company in Rwanda, Gathani and Stoelinga (2013) note that Sorwathé is a tea-growing and tea-processing company in Rwanda and was established in 1975. It is has been a pioneer in introducing new varieties of tea. The tea factory is located in Kinihira, a small town 70 km north of Kigali. Sorwathé was the first private tea factory in Rwanda and currently produces about 3,200 tons of made tea per year (about 14% of Rwanda's annual production). Most (95%) of Sorwathé tea is exported, with only 5% sold for local consumption. The company has implemented various international standards and continues to do so.

1.2 Statement of the Problem

The tea sector plays a fundamental role in the economic growth and the development prospects of Rwanda. Rwanda Environmental Management Authority (REMA, 2009) notes that that progress in environmental performance in the country has been rather slow but reassuring. Globally there is a move towards buying only Tea that is produced sustainably and Voluntary sustainability standards projects have been marketed as a key tool for the efficient operation of the 'Green Economy', which as noted is a key pillar of the country development. Environmental performance refers to what extent resources such as energy, water and land are used by a company and at the same time what emission of by-products such as waste, hazardous materials and air pollution it causes (Hubbard 2009). VSS projects have been described as an alternative way to promote better environmental performance by helping the consumers to identify "green" products (Melo, 2004). Standards systems should specify how their environmental standards (minimum requirements and improvement Standards) contribute to sustainable development. NAEB 2012 notes that though part of Rwanda tea is ISO certified, there is need for more certification programs like fair-trade and rainforest for all tea factories for better environmental performance and market access. This therefore calls for studies to show the key relationship or lack of it to assist in furtherance of these.

Sorwathé and Mulindi tea factories combined produce close to 30 % of the total tea production in Rwanda (13% and 14% of the total tea production respectively). Mulindi Tea Factory which has just been privatized in 2013 has not implemented any of the VSS project while Sorwathé records show that it has implemented Six (6) VSS projects to-date. It is therefore important to compare the two and see if the international VSS projects have had have had any major effect on the environmental performance of the firms and what deduce what implication this has of this would be to the tea sector in Rwanda .The existence of a "global green market" is being driven, positioned and evidenced through the implementation of various certifications and implementation of VSS by the producers. A comparative study of two tea producers who are at two different levels of implementation of the VSS projects was inform if this assists in any changes in environmental performance. Key literature search has shown that few studies have been done on the effects of the implementation of the VSS to the environmental performance of the tea sector in Rwanda. They are more studies whose focus has been more of social and economic benefits of implementation of the VSS projects in the sector.

1.3 Objectives of the Study

General Objective

The objective of the study is to review the effects of implementation of International Standards (Voluntary Sustainable Standards projects) on the environmental performance of the tea Sector in Rwanda.

The Specific Objectives

The specific objectives of the study are:

1. To establish the extent to which International standards (VSS) are embraced by the tea sector in Rwanda.
2. To identify the challenges of implementation for the VSS in the tea production units.

1.4 Research Questions

The research questions stated in this sub-chapter are a systematic breakdown of the main problem statement. Together, the answer to these questions was providing the answer to the main problem. The research questions are; to what extent does the implementation of VSS affect the performance of tea manufacturing Unit.? What are key challenges facing tea manufacturing units in the Implementation of international VSS and how they can be overcome?

1.5 Justification of the Study

Voluntary sustainability standards have the potential to generate significant environmental, economic and social benefits in developing countries and may have different implications for production, processing, retail and consumption in both developing and developed countries. (UNFCC, 2013). Even though the environmental performance measurement is not as straight forward as the financial performance measurement, it can still be conducted by illustrating several different aspects of the environmental performance (**Schmidt 2012).** These are for example the CO2-Footprint, the Water Consumption Index and the Energy Consumption, which are presented by each one figure having the same unit. There is therefore a need for an evaluation of the effects of implementing VSS projects in the tea sector Rwanda especially in relationship to environmental performance which is one of their key selling points. This study aims to be to be a pace setter for similar studies to be embarked on the sectors in relation to other performance parameters (Economic and Social). This study informs and forms a key basis of reviewing the current sustainable agricultural practices as exemplified by the implementation of the VSS projects in the tea sector in Rwanda. The information gathered can be used to improve the tea sector in Rwanda and the country in general as it focuses towards implementation of green economy.

1.6. Significance of the Study

Current information's shows that there is a growing public awareness in the European Union (EU) and America of the social and human conditions associated with tea cultivation, and consumers are increasingly seeking to buy certified teas under various major certification schemes which include Fair-trade, Organic, Rainforest Alliance and UTZ. The market share of certified teas has grown from just 1% in 2007 to a projected 13% of global production by the end of 2011.The three biggest buyers of tea Unilever 12 %, Tata Tea 4 % and Twinings 3%, all have committed to ensuring purchase of sustainably produced tea and have all had almost 100% certification of their production lines since 2010 (Groosman, 2011).

1.7 Scope of the Study

The scope of this study is the tea sector in Rwanda with a focus on two tea processing units (Mulindi and Sorwathé).

2.0 Literature/Theoretical Underpinning

2.1 World Tea Economy

World black tea production was projected to grow by 1.7 % annually from 2003 to reach 2.7 million tonnes in 2014, mainly due to improved yields as a result of high uptake of good agricultural practices (GAP) by farmers among countries in Africa. A significant growth in output was expected as tea bushes reached optimum producing age and smallholder skills were to be maximized through intensive capacity building (FAO- Intergovernmental meeting on tea, 2005). Waweru (2012) notes that the world black tea exports were projected to reach 1.3 million tonnes in 2014, reflecting an average annual increase of 1.4 percent per year from 2003. About half of the increase would originate in Africa, where production is likely to continue to grow while domestic consumption remains small.

2.2 Rwanda Tea Industry

Tea growing in Rwanda started in 1952. Since its introduction, tea production has increased steadily, from 60 tons of black tea in 1958, to 1,900 tons in 1990, to 14,500 tons in 2000, reaching a peak of 17,800 tons in 2001. Over 90% of the production is exported, but represents only a small share of the total volume traded in the international market, which is about 1.4 million tons representing a **World share of 0.5%.**Rwanda tea is planted on hillsides at high altitude (between 1,900 and 2,500 m), and on well drained marshes at an altitude of between 1,550 and 1,800 m. Tea is grown on 11 estates. A total area of approximately 12,500 ha is planted in the provinces of Byumba, Cyangugu, Gikongoro, Gisenyi and Kibuye. World Bank (2011), shows that Rwanda produces one of the highest quality teas in the world.

2.3 Voluntary Sustainability Standards (International Standards)

They are various international VSS sustainability initiatives that have emerged over the last decades which have broader multi-stakeholder participation. The stakeholders participating in the development of these VSS include the private sector, governments, intergovernmental agencies, multilateral institutions amongst other.

The last decade has also shown many national governments and multilateral institutions having also initiated or played a key role in developing and driving the use of standards which are very well linked with the internationally accepted VSS. The ITC standard map shows the presence of over 150 VSS with the sectors search indicating a total of 46 standards that relate to the area (www.standardsmap.org).IFC summarizes the different standard types as follows:

Table 1: Types of VSS

Type of VSS	Commons Standards
Public	ISO; MTCS ,(Malaysia),Lestari Tea; Organic standards
Private & precompetitive	Global G.A.P.; SQF 1000; Starbucks C.A.F.E.; BSCI; Nespresso; SAI (Social Accountability International)
Multi-stakeholder	FSC; SPO; RTRS; RSB; 4C; BCI; UTZ Certified; FLO; Bonsucro; RA; MSC (Marine Stewardship Council)
Financial	IFC Performance, Standards; Equator Principles; FSC.

Source ITC standard map 2014

2.4 International Standards Adopted in the Tea Sector

Some of the voluntary standards and their key attributes and objectives in the tea sector in the East African region include the following:

Table 2: VSS and their Key Attributes

VSS	Key attributes and objectives
Ethical Tea Partnership (ETP	ETP began work in1997 Vision of a socially just and environmentally sustainable tea sector.
Rainforest Alliance Certified	Began working with tea farmers in 2006 Environmental, social and economic standards set by the Sustainable Agriculture Network (SAN) The SAN standards have a special emphasis on workers and wildlife.
UTZ CERTIFIED	Industry-producer partnership which has recently expanded its certification program to the tea sector. With a focus on traceability.
Organic	Strong emphasis on the protection of wildlife and the environment. Often dual certified, matching organic with other certification schemes.
Fair trade	Focus on poverty reduction and sustainable development.
Good manufacturing/ agricultural practices (GM/AP)	In order to meet these standards, good agricultural/ hygiene practices are done in the field and good manufacturing/hygiene practices in the factory.
1SO (International Organization for Standardization)	ISO is the world's **largest developer** and publisher of **InternationalStandards.** ISO International Standards ensure that products and services are safe, reliable and of good quality. For business, they are strategic tools that reduce costs by minimizing waste and errors and increasing productivity. They help companies to access new markets, level the playing field for developing countries and facilitate free and fair global trade.

Source: Fair trade 2010 and ISO Standards websites

2.5 Theoretical Framework

The study is based on the key concepts of the three sides to sustainable agriculture which are that sustainable agriculture (leads to protection of environment, has key social impacts and leads to economic benefits) and the fact that it's a well-documented fact that sustainable production makes good business sense. Sustainable agricultural practices and programs can help businesses ensure a reliable supply of food and open up new opportunities at the same time such as enhancing brands and meeting new market demands. As awareness is growing amongst business operators, sustainable sourcing has become a point of differentiation in the marketplace.

Moreover, the consumers they serve are increasingly concerned about where their food comes from and pay great attention to whether it is produced in a responsible way, from farm to fork. Sustainable agriculture has environmental, social and economic dimensions and all three must be considered together.

- ☑ **Protecting and improving the natural environment** are fundamental, and issues like climate change, energy, water scarcity, pollution, and biodiversity and soil degradation need to be addressed.
- ☑ **The social dimension** covers labor rights and the health of communities, including access to and affordability of food, labor rights and community health. Food quality, safety and animal welfare are also important social aspects.
- ☑ **On the economic side,** sustainable agriculture is productive, efficient and competitive. The benefits should be seen in farm profitability, in thriving local economies, and throughout the whole value chain

2.6 Conceptual Framework

The State-of-Knowledge Assessment of Standards and Certification (2012) study developed a model showing how the standards and certification system shows how these systems affect the practices and performance of producers, leading to impacts beyond the farm or enterprise level. COSA, 2008 further shows that the main categories covered by COSA's environmental analysis include measures on:

• Energy management (amount and kinds of energy used);
• Water management (evidence of water conservation practices);
• Soil resource management (erosion and coverage or prevention);
• Biodiversity and resource management (percentage, quality and diversity);
• Pollution reduction (record keeping, products and chemicals applied, IPM);
• Recycling and re-using (systems in place); and
• Carbon sequestration (vegetation density and quality).

This coupled with the sustainable agriculture model adopted from UNFSS and IFC have been used to conceptualize the needs for this study. As the study cannot cover all the aspects of sustainability and key specific indicators was be covered in this study as shown in the conceptual framework was be limited to the VSS impacts on the environmental performance measured through four key specific indicators: Water Use Energy use, Pollution impacts and biodiversity conversation. For this study the following conceptual frame work has been adopted.

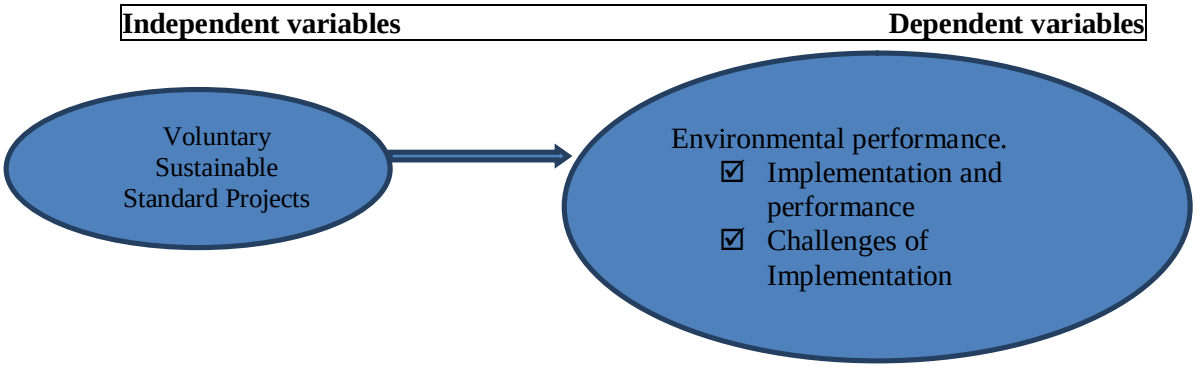

Figure 1: Conceptual Framework

2.7 Key Literature Gaps

IFC 2014 study shows that there are no systematic studies are available to determine whether VSS succeed in keeping the worst environmental practices off the market (e.g. deforestation) and ensuring compliance with national environmental legislation (e.g. on conducting environmental impact assessments to acquire permits). Though the same study notes that there is evidence indicates that certification (Implementation of VSS projects) leads to adoption of more environmentally benign practices.

3 Research Methodology

3.1 Research Approach

The main purpose of this study was to gain the deeper knowledge about the research problem but also describe the effects of implementation of the international standards VSS project's to the environmental performance of the tea sectors in Rwanda. This study uses a mixed methods research design through using quantitative and qualitative data. A mixed methods research design has many advantages, the main one being that it gives the opportunity of triangulation (Mikkelsen, 2005). Literature was reviewed from scientific books, journal articles, and through project documents.

3.2. Type of Data to be collected and used

Primary Data

The primary data was collected through a questionnaire which was used together information on the current performance of the two operational Units for reviewing the current performance, challenges and drivers of implementation of VSS in the two firms. Detailed environmental data on water, energy (firewood, fuel and electricity), Waste and Biodiversity was also collected. This was done through Face to face Interviews at the factory premises and with .In addition to this NAEB was interviewed as the Key informant

Secondary Data

Various global reports on the impacts of VSS to the performance of the sector were sourced (research reports, textbooks analysis and website reviews) were used to either confirm or negates whatever the research findings the study got and reviewed. The data that reviewed includes as noted categorized into three namely: Global trends, Regional and National.

3.3. Data analysis

The research study has generated two key types of data be collected in this baseline survey-Quantitative data and Qualitative data. The qualitative data was analysed as per thematic area and classified accordingly as per the scoring in the Likert scale. Qualitative data was edited and analyzed using themes derived from the objectives of the study.

Research Findings and Discussion

4.1 Objective One: Extent of VSS Project Implementation in Rwanda

A review of data from NAEB was undertaken and it was noted that the two key standards that have been implemented by most tea processing's units are the ISO: 22000 (on food safety and Rainforest alliance) with approximately 60 % of the firms having implemented this as shown in table 3.

Table 3 : Current Status of International Certificates in Tea Factories

	Factory	VSS Implemented	Remarks
1	**GISAKURA**	None	The factory has started the process for Rainforest Alliance certification.
2	**GISOVU**	ISO 22000:2005, Rainforest Alliance	Ok
3	**KARONGI**	None	Despite being a new factory, it has committed to Rainforest Alliance certification for the next year.
4	**KITABI**	ISO 22000:2005, Rainforest Alliance	Ok
5	**MATA**	Rainforest Alliance	Ok
6	**MULINDI**	None	ISO 22000:2005 expired (need renew)
7	**MUSHUBI**	None	New factory that has not started any certification.
8	**NSHILI KIVU**	ISO 22000:2005,Rainforest Alliance	Ok
9	**NYABIHU**	ISO 22000:2005, Rainforest Alliance	Ok
10	**PFUNDA**	ISO 22000:2005, Rainforest Alliance	Ok
11	**RUBAYA**	ISO 22000:2005,Rainforest Alliance	Ok
12	**SHAGASHA**	None	Started the process for ISO 22000:2005 certification
13	**SORWATHE**	ISO 22000:2005Rainforest Alliance ,Fairtrade, Organic	Ok
14	**Rutsiro**	None	New factory

Source NAEB

For the two firms (Sorwatea and Mulindi tea factories) it was noted to have had implemented two standards in common the Good manufacturing /agricultural practices (GM/AP) and the FSMS (ISO 22000). In overall the study confirmed that Sorwatea has in place 8 VSS out of possible 11(88%) that were being reviewed as compared to Mulindi Tea factory which has only 2 (22%) as shown in table 4.

Table 4: Extent of Implementation of VSS project in the Sorwatea and Mulindi

No	VSS	Year Implemented	
		Sorwatea	Mulindi
1	**Ethical Tea Partnership (ETP)**	2009	N/A
2	**Rainforest Alliance**	2012	In the initial implementation stage.
3	**UTZ CERTIFIED**	NA	N/A
4	**Organic Certified**	2012	N/A
5	**Fair Trade**	2006	N/A
6	**Good manufacturing /agricultural practices (GM/AP)**	2009	2009
ISO (International Organization for Standardization)			
7	**QMS**	2007	N/A
8	**EMS**	NA	N/A
9	**OHS**	NA	2000
10	**FSMS**	2009	2010
11	**RBS mark of Excellence**	2011	NA

Source: Field Data 2015

4.2 Objective Two: Key Influence and Challenges of VSS Implementation

4.2.1 Key influence for the Implementation of VSS

A review of the key influences/drivers for the implementation of the standards were noted to be Regulatory, Improved environmental performance and commercial. This is very similar to the reasons given by the two firms to the key drivers of VSS implementation as shown in table 5.

Table 5: Key Drivers of VSS Implementation

No	**VSS**	**Reason for Implementation/Non Implementation**	
		Sorwatea	**Mulindi**
1	**Ethical Tea Partnership (ETP)**	For Improvement Purposes	Not known
2	**Rainforest Alliance**	Commercial and market Driven	Cost constraints
3	**UTZ CERTIFIED**	No market needs or requests	Not known
4	**Organic Certified**	Market Demands and good prices offered for this tea	Market not known
5	**Fair Trade**	Market Demands and requirements from Suppliers	Not known
6	**Good manufacturing /agricultural practices (GM/AP)**	For Improved production	Improved production
ISO (International Organization for Standardization)			
7	**QMS**	Market and Improved efficiencies	Improved efficiencies
8	**EMS**	Cost implication and lack of statutory need	Cost implication
9	**OHS**	Statutory requirement	Statutory
10	**FSMS**	Safety of the product & market compliance and statutory requirements	Safety of the product & market compliance
11	**RBS mark of Excellence**	Market and Product assurance	

Source Field Survey 2015

4.2.2. Key Benefits for Implementation of VSS Projects

The study reviewed the key accrued benefits and challenges from the Implementation of the VSS by the two firms. The two organization listed Environmental, Social and Economic benefits as the key benefits accrued from the implementation of the VSS projects as shown in table 6. The benefits given by Sorwatea were what they have realized over time and for those of Mulindi it's what they have partially realized but would also expect to realize with full implementation of the VSS projects.

Table 6 : Benefits from the Implementation of the VSS

	Environmental	Social	Economic
Sorwatea	Use and implementation of Sustainable farming practices. Protection of flora and Fauna. Planting of trees leading to biodiversity restoration. Minimized exposure to agrochemicals. Improved Community environment Reduction of water and energy consumption, Rainwater harvesting	❖ Good relations with community and local authority ❖ Community improvement infrastructures (education & roads) ❖ Good inter-connection between producers &consumers ❖ Good working environment ❖ Customer satisfaction ❖ Repair of roads /Bridges	❖ Improved earnings and profits ❖ More markets and Market leadership in tea business in Rwanda currently the Best seller of tea in Rwanda. ❖ High quality products ❖ Consistency in production ❖ Easy to sell products
Mulindi	Environmental	Social	Economic
	Sustainable farming practices Environmental and water Conservation Minimize exposure to agrochemicals.	Customer satisfaction Good inter-connection between producers &consumers Good working environment	Improved earnings High quality products Consistency in production

Source Field data 2015

4.2.3. Key Challenges of VSS Implementation

Implementation of the VSS projects is bound to have challenges and thus it was critical to find which they are as they would greatly assist in the future implementation of the VSS project in the tea sector. The study noted that the main challenges which can be classified as financial (cost) Human resource (staff resistance and competence and farmers resistance as shown in table 7. The study found that at Sorwatea due to the time they have had implementing the VSS projects resistance from employees that was there before has gone down and competence levels have increased as the VSS projects at times have relationship. An improved market for their products has also lead to the farmers and the employees.

Table 7: Challenges of implementation of VSS

No	VSS	Challenge	
		Sorwatea	Mulindi
	Ethical Tea Partnership (ETP)	Personnel capacity and acceptance change	N/A
	Rainforest Alliance	Farmers resistance and understanding Cost of implementation	Cost of implementation
	UTZ CERTIFIED	N/A	N/A
	Organic Certified	Costs and availability of manure	N/A
	Fair Trade	Costs and understanding of farmers and workers	N/A
	Good Manufacturing /agricultural practices (GM/AP)	None	Staff expenses
	ISO (International Organization for Standardization)		
	QMS	Cost and workers resistance and staff competencies	N/A
	EMS	NA	NA
	OHS	Staff resistance	Costs and staff competencies
	FSMS	Costs & competences	Costs & competences

Source: Field survey 2015

Conclusions and Recommendations

The present study aimed to Assesses the implementation Voluntary Sustainability Standards Project on the Environmental performance of the Tea sector in Rwanda. The comparative study was undertaken also because it was well found out that Sorwatea leads in the implementation of the VSS project's in Rwanda and Mulindi is still lagging behind on this.The findings Table 3 revealed that they are 14 tea factories in Rwanda with Sorwatea and Mulindi contributing to almost 30% of the tea production in Rwanda. Out of this tea factories only 8(57%) have in place some VSS projects with Sorwatea have the highest number of the selected VSS projects for this study 8 VSS out of possible 11(72 %) and Mulindi having only 2 (18 %). The key influences/drivers for the implementation of the standards were noted to be Regulatory, Improved environmental performance and commercial reasons and motivations ass shown and summarized in table 5.

To identify the challenges of implementation for the VSS in the tea production units/factories. Various studies show that they are two key environmental advantage of implementing the VSS project's namely

☑ Improved management of natural resources.
☑ Conservation and restoration of local ecosystems and biodiversity.

To achieve this the Study revealed that they are some key challenges of implementing VSS project in firms and this could be summarized as Financial, Operational and Human resources. The survey well showed that by implementing VSS projects over a longer period of time Sorwatea they have managed to overcome dome of these challenges, but for Mulindi some of those challenges are still abound. The study well noted that continued implementation of the VSS project of different nature assist in overcoming some the challenges that firms have in the implementation of this project The experience obtained in VSS projects implementation especially conducing that they build on each other (and have the triple sustainability functions) lead to enhanced implementation performance with time. This research further contributes to the closing of the gap in the knowledge of implementation of VSS projects and environmental performance in Rwanda tea sector. Further to this the research gives baseline knowledge for further areas of research which are not very clear. These research findings also set up a business case for implementation of the VSS projects in Rwanda especially taking into account the government green growth policy.

Implication to Research and Practice

General

There has been no recorded previous study on the tea sector in Rwanda on the environmental performance of the tea sector in relation to implementation of the VSS project therefore this study greatly contributes to the environmental Knowledge field in the sector. With the key VSS project being implemented in Rwanda having being well identified. This research contributes to the closing of the gap in the knowledge of implementation of VSS projects and environmental performance in Rwanda tea sector. Further to this the research gives baseline knowledge for further areas of research which are not very clear. These research findings also set up a business case for implementation of the VSS projects in Rwanda especially taking into account the government green growth policy. The results are definitely expected to encourage the other tea factories to accelerate the implementation of the VSS projects in their firms. The environmental performance and the Implementation of the VSS projects is not limited to the tea sector alone the same is applied in the coffee sector and many other crops. Thus this research forms a key learning document for the implementation of the VSS projects in other crops and sectors

Recommendations from the Research

To the tea Firms

To overcome implementation challenges of VSS projects it is recommended that the processing firms could go for the implementation of more than one VSS project as they each build on each other, though they have difference emphasis of focus but all contribute to the enhancement of the sustainable agriculture and hence the overall performance of the firm It is crucial if the tea firms could develop a common forum where operational challenges would be shared and this would also be the best forum to exchange experiences and ideas on VSS implementation and promotion.

To the Government

The government through the tea development agency NAEB was noted to have undertaken a key role in the initial implementation of the VSS project in various tea firms. Though the implementations of the VSS projects is voluntary theirs impacts to the country that has a green growth strategy are immense thus it is recommended that the government needs to play a more proactive role in continues implementation of the VSS in the tea sector.

Recommendations for Future Research

- ☑ The study has covered a comparative analysis of only two firms to represent the whole of the tea sectors further detailed analysis for the whole of the tea sector can be undertaken with the same perspective or a more.
- ☑ The study analysis has only covered Rwanda but the secondary data shows that within the East African region there is similar trend it would be important for a comparative study of the tea sector in East Africa to be undertaken under the same parameters (environmental performance so as to review the impacts of VSS implantation in the region.
- ☑ As the VSS project implementation are not limited to tea production only the same focus and further research can be undertaken for other crop and sectors which have relevance in the economy of Rwanda e.g. Coffee and also the tourism sector.
- ☑ Since in this research various VSS have been reviewed and one of the key findings was that they are some VSS projects that are more dominant in the sector (Rani forest Alliance) a detailed analysis and study of the impacts of the implementation of this VSS to the three pillars of sustainability (Environment, Social and Economic) in Rwanda need further investigations.

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