Assessing the Role of Coffee Cooperatives on Regional Development: A Case of Huye District, Rwanda

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Dedicated to my husband John
and
Our beloved son Bence

Abstract

This study assesses the contribution of three coffee cooperatives on development of the region and members. It evaluates the role of government intervention on development of coffee cooperatives and role of other factors. Also, coffee growers' attitudes towards coffee cooperatives are examined.

The study is based on secondary and primary data. Secondary data was collected from governmental organizations and NGOs reports. Primary data was collected in three coffee cooperatives located in three wards of Huye district in southern region of Rwanda. The study employs policy evaluation techniques, with- minus without principle and comparison of coop and non coop households. It analyses data in consideration of spatial patterns such as autocorrelation using GeoDa software which combines maps with statistical graphics (Moran's I and cluster maps).

The findings of this study show that government reform policy on coffee sector is a key factor in existence and development of coffee cooperatives. Different infrastructures such as coffee processing plants for improving coffee quality were constructed as a support to coffee cooperatives. Moran's I measure for spatial autocorrelation indicated that there is negative autocorrelation of coffee processing plants in districts. The results indicated that, the policy was partially successful in increasing coffee quality. However, it was not successful in increasing coffee production due to external factors influencing coffee production such as economic globalisation and climate.

The coffee cooperatives have created both permanent and seasonal jobs to local community. They employ managers, secretaries, accountants, drivers and guards of coffee processing plants on permanent basis and seasonal workers in activities such as coffee weighing, sorting and drying. Abahuzamugambi and KOAKAKA contribute in tax revenue generated in the region; they are ranked first in rural industry sector. Coffee processing plants constructed in the region led to change from the old method of coffee processing and improved coffee quality. This led the regions to be known internationally as the producers of specialty coffee which was not the case before existence of coffee cooperatives in the regions. The cooperatives provide the members inputs, market for coffee cherries, coffee bikes and loans. They also train them on input use and techniques of coffee growing. Non coop members also benefit market for coffee cherries and pesticides from cooperatives. The results from the interviews from both the coop and non coop members showed that they regard the cooperatives as the institution that provides them economic support.

The results have shown that the coffee cooperatives have played a role in implementing the government policy. The three coffee cooperatives have facilitated in the distribution of fertilizers and inputs to the coffee growers and supervision of extension workers employed by the OCIR CAFÉ.

Key words: Policy evaluation, Coffee, Cooperatives, Regional development

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List of Abbreviations

ACDI/ VOCA	Agricultural Cooperative Development International and Volunteers in Overseas
CWS	Coffee washing Stations
FAAB	Federation of Associations of Artisans of Butare
FRW	Rwandan Francs
GDP	Gross Domestic Product
GeoDa	Geographical Data analysis
GoR	Government of Rwanda
ICA	International Cooperative Alliance
IFAD	International Fund for Agricultural development
ILO	International Labour Organization
ISAR	National Agricultural Research Institute
ISAR	National Agricultural Research Institute
KIST	Kigali Institute of Education
LIM	Last Mile Initiative
MDG	Millennium Development Goal
MINICOM	Ministry of Commerce, Industry, Investments Promotion, Tourism and Cooperatives
NGOs	Non Governmental Organizations
OCIR CAFÉ	Rwanda National Coffee Board
OCIRU	Rwanda- Urundi Industrial Coffee Board
PEARL	Partnership for Enhancing Agriculture in Rwanda through Linkages
PRS	Poverty Reduction Strategy
RITA	Rwanda Information Technology
SCAA	Specialty Coffee Association of America
SPREAD	Sustaining Partnerships to Enhance Rural Enterprise and Agro business
SPSS	Statistical package for Social Sciences
UNR	National University of Rwanda
USAID	United States Agency for International Development
USD	United states Dollars

1. Introduction

1.1. General introduction

A co-operative is business that is owned and controlled by the people who use its service and whose benefits (services and earning allocation) are shared by the users on the basis of use (Darby 2002). Cooperatives were designed as a means by which groups of people could gain economic advantages that individually they could not achieve (Birchall 2003).

Producers' organizations amplify the political voice of smallholder producers, reduce the costs of marketing of inputs and outputs, and provide a forum for members to share information, coordinate activities and make collective decisions. Producers' organizations create opportunities for producers to get more involved in value-adding activities such as input supply, credit, processing, marketing and distribution (WorldBank 2002).

Co-operatives play an effective role in developing and sustaining local communities, not only in providing local services and meeting local needs but also in providing local employment and capacity-building in terms of skills development, business development, mentoring, and employment (ICA 2006). Cooperatives have been promoted extensively in many countries. In a number of developed countries such as United Kingdom, United States of America, Iceland, Norway, Sweden, Denmark, Finland, Spain, Israel, and Canada cooperatives have been extremely successful (Pathak and Kumar 2008).

The history of African cooperatives has been tumultuous, due to the way cooperatives were introduced on the continent through colonization and later through independent yet mostly non-democratic governments. However, sufficient evidence does exist that cooperatives in Africa have the potential to make a contribution to a number of problems, in particular, the lack of decent work in the urban informal economy, lack of access to global, regional and national markets for small producers (particularly farmers), and lack of social protection for vulnerable groups (ILO 2008)

1.2. Background of the study

The Rwandan economy is primarily agricultural: this sector accounts for 41 percent of the country's GDP and constitutes 90 percent of the population's employment (Rwandagateway 2005). Coffee was introduced in Rwanda in 1904 by German missionaries. Around 1930, a considerable interest in coffee developed as it was one of the major revenue generating commodities for rural families. Up to now, coffee has played a considerable role in the socio-economic development of the country, despite the collapse of world coffee prices at the international market (CoffeeCooperative 2007). The 1990s saw a large reduction in the proportion of farmers cultivating coffee fields nationally 55 percent of smallholders grew coffee in 1991 versus only 3o percent in 2002. In absolute terms, the number of farmers with coffee fields dropped from 678,375 in 1991 to 437,196 in 2002 (Loveridge, Nyarwaya et

al. 2003). Today, Rwanda has 500,000 coffee farmers and over 80,000,000 numbers of coffee trees grown on area of 33,000 hectares. It has over 95 coffee cooperatives (OCIRCAFE 2008).

Huye district the case study of this research is located in the Southern region of Rwanda. It has the area of 581.5km^2 and population size of 290,677. It is divided into 14 wards: Gishamvu, Karama, Kigoma, Kinazi, Maraba, Mbazi, Mukura, Ngoma, Ruhashya, Huye, Rusatira, Rwaniro, Simbi and Tumba.

Huye is one of the districts in Rwanda that is known for coffee production. The coffee is produced by private individuals and they sell the coffee cherries to coffee cooperatives and private individuals, who do the coffee processing and exporting. The district has 9 coffee cooperatives which are located in different wards.

1.3. Justification of the research

Rwanda like other developing countries, has adopted the policy of strengthening the cooperatives due to their importance in economic terms, the significance they have gained in rural development and the role they play in the attainment of the basic needs to their members, and development of regions and the nation (MINICOM 2006). Though cooperatives are viewed by many countries as a preferred tool for development of members and regions, this can not be taken for granted. Therefore, it is in this respect that, the researcher was interested to carry out the empirical study on coffee cooperatives, to assess their effects to the development of the members and regions. The findings of this study will contribute to understanding of contribution of coffee cooperatives as policy instrument for regional development.

1.4. Research problem

The member controlled cooperative has long been an idea with almost universal appeal, being widely promoted in much of the developing world as an integral instrument of national rural development policy (Korten 1980). The cooperative movement has recently been attracting attention from the international community – The African Heads of States, at a special meeting on poverty reduction and job creation in 2004 acknowledged the positive role of cooperative in Africa's development (ILO 2007).

Rwanda's strategy of fighting poverty, like in most African countries is through, the establishment of cooperative companies, meant to empower citizens economically (Nambi 2008). The government of Rwanda and PEARL (Partnership for Enhancing Agriculture in Rwanda through Linkages), a project supported by the American government through USAID (United States Agency for International Development) has aided in the development of coffee cooperatives in Rwanda. Several entities supported the PEARL project: USAID, Michigan State University, Texas A&M University and various Rwandan bodies including National University of Rwanda (UNR), the national agricultural research institute (ISAR), Kigali Institute of Science, Technology and Management (KIST) and OCIR-Café (the Rwandan National Coffee Board) (PEARL 2005).

We don't know whether these coffee cooperatives benefit the region and members or not. Thus, this research is motivated by the desire to assess the contribution of coffee cooperatives to theirs members

and the regions, in order to know if they are achieving the intended objective of benefiting the members and regions and to evaluate the effect of intervention in the development of the coffee cooperatives.

1.5. Research objectives and research questions

1.5.1. Main objective

To asses the role of coffee cooperatives to the development of the region and evaluate the effect of the intervention in the development of coffee cooperatives.

1.5.2. Specific Objectives and Research questions

Table 1-1 below shows the specific objectives and research questions of this research

Table 1-1 Specific objectives and Research questions

NO.	SPECIFIC RESEARCH OBJECTIVE	RESEARCH QUESTIONS
1.	To evaluate the impact of the intervention in the development of coffee cooperatives.	1. What is the role of government on the development of coffee cooperatives? 2. What is the role of other factors in promotion of coffee cooperatives? 3. What is effect of the intervention of different stakeholders in the coffee cooperatives in relation to the international principals of cooperatives?
2.	To identify the contribution of coffee cooperatives to the region development	1. How many jobs were created by coffee cooperatives? 2. What activities in the region were done by the coffee cooperatives or due to presence of cooperatives? 2. How much tax revenue is generated from coffee cooperatives
3.	To examine the contribution of coffee cooperatives to the members	1. What do coffee cooperative members gain from cooperatives? 2. What are costs incurred by cooperative members in cooperative? 3. Do coop members gain more income from coffee than non coop members?
4	To examine the coffee growers attitudes towards the cooperatives?	1. What factors attracted the members to join the cooperatives? 2. Why other coffee growers did not join the coffee cooperatives?

1.6. Conceptual framework

The conceptual framework of this study was constructed based on existing theory and research. Figure 1-1 below shows the relationship of the concepts used in this research.

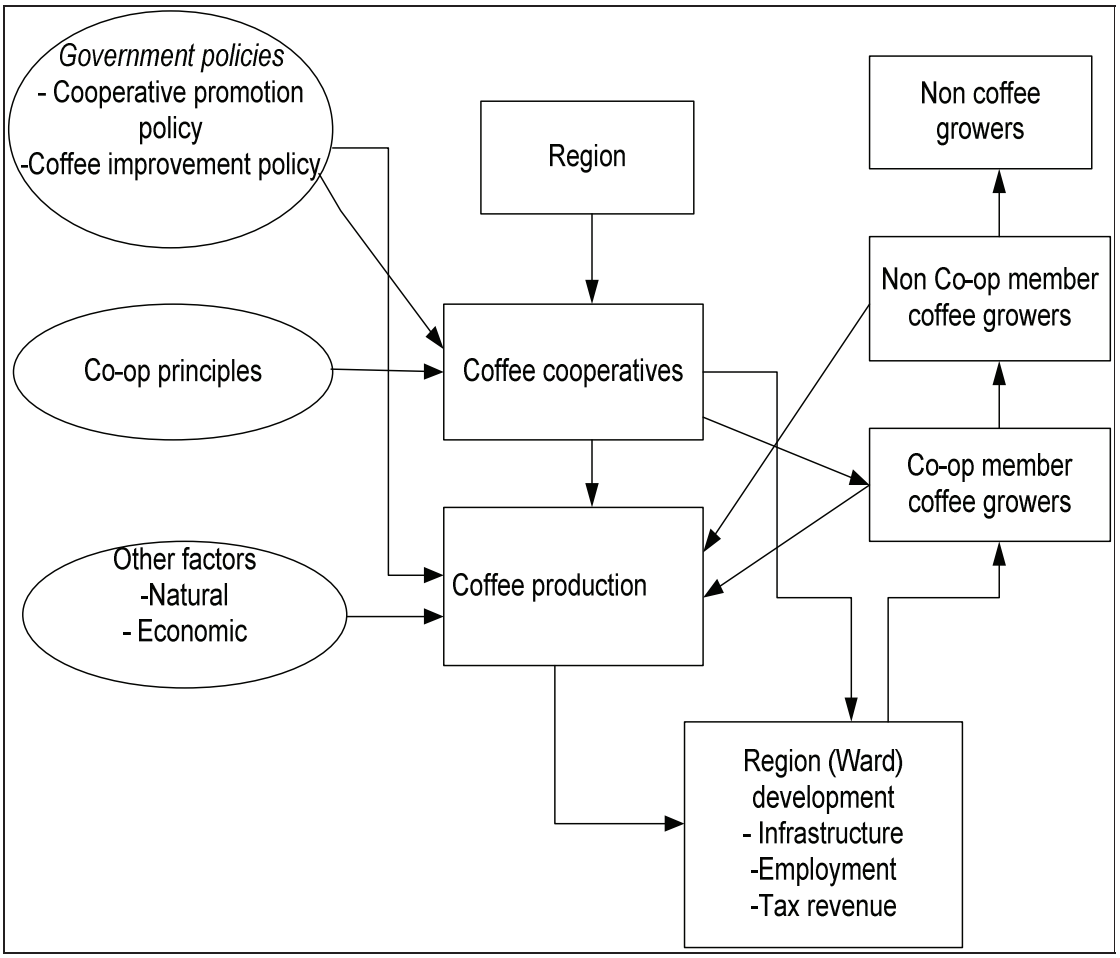


Figure 1-1Conceptual framework

1.7. Research design

Figure 1-2 below shows the plan used by the researcher to find answers to the research problem. The research problem was identified through literature review, then, based on research problem the appropriate research objectives and research questions were formulated. The required data and the objects for which the data will be collected on were identified. The techniques used for data analysis were also identified.

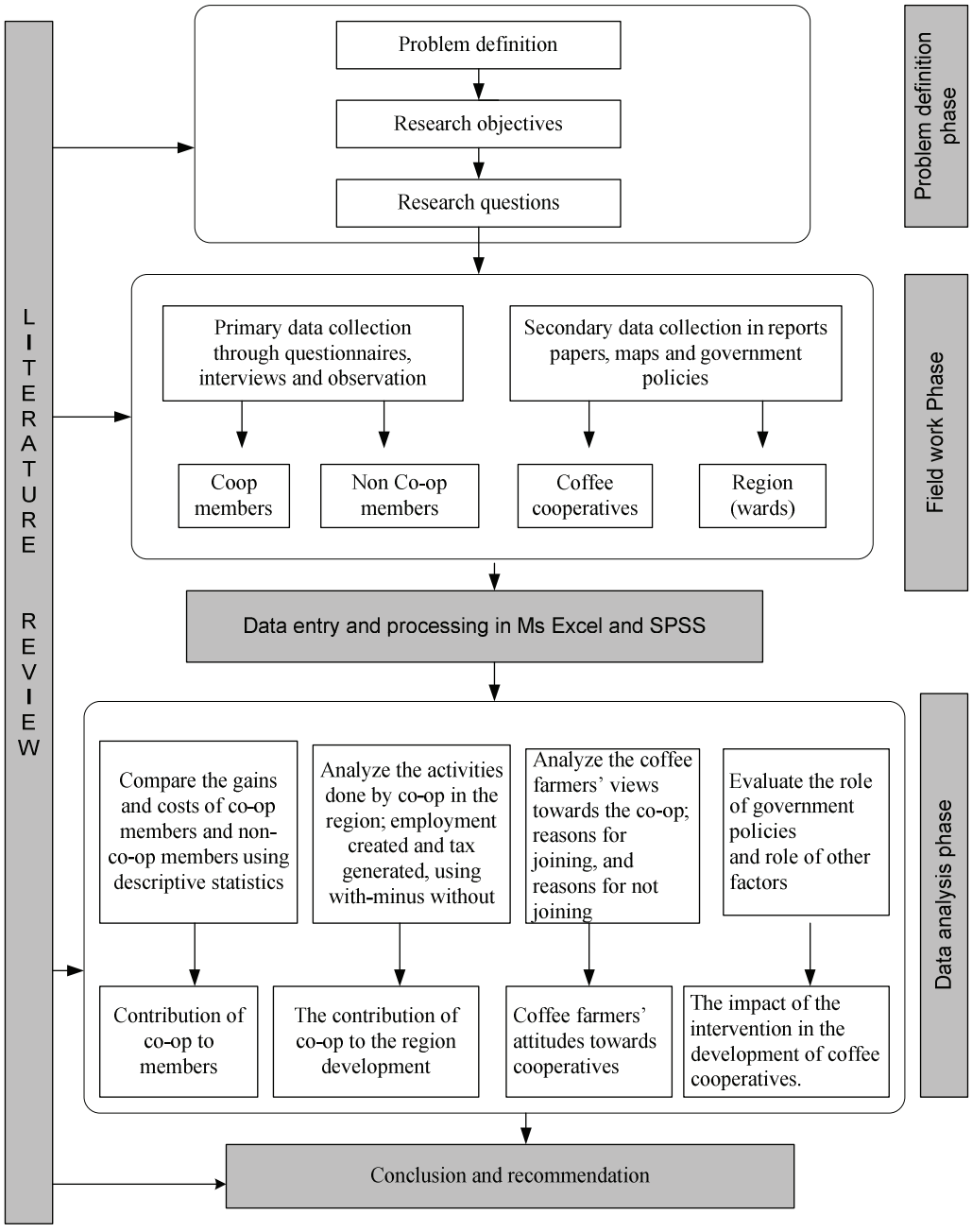


Figure 1-2 Research design

1.8. Thesis structure

This research is composed of nine chapters. The first chapter is introduction; it contains the background of the study, justification of the study, the problem statement, objectives and research questions, conceptual framework and research design.

Chapter two lays out the concepts and theories that are relevant to the study. It shows the literatures on the importance of cooperatives on regional and members, the cooperative principles, the cooperatives in developing countries, coffee production and factors influencing its production.

Chapter three shows how the research was conducted; the methods used for data collection, selection of study area and collected data. It explains techniques used for data analysis, limitation of the study and its reliability and validity.

Chapter four gives the brief background of the study area. It gives the location of the district, general aspects of the district like relief and soils, social economic situation of the district and the brief description of the three coffee cooperatives studied.

The proceeding chapters; chapter 5-8 are composed of findings, analysis and discussions of the study. The fifth chapter evaluates the role of government intervention in the development of coffee cooperatives. It evaluates the impact of policy reform on coffee sector and influence of other factors. The sixth chapter examines the contribution of coffee cooperatives on regional development in three wards; Maraba, Kigoma and Rusatira. The seventh chapter examines the contribution of coffee cooperatives to members by comparing the cooperative members and non members. The eighth chapter examines the attitudes of coffee growers towards the coffee cooperatives, by analysing the attitudes of cooperative member and non cooperative member households.

The last chapter is composed of the conclusion and recommendations of the study.

2. Literature review

This chapter lays out the concepts and theories that are relevant to the issues to be raised in the research for assessing the impact of Coffee cooperatives to regional development.

2.1. The role of Cooperatives in development

Co-operatives are based on the values of self-help, self-responsibility, democracy, equality, equity and solidarity. In the tradition of their founders, co-operative members believe in the ethical values of honesty, openness, social responsibility, and caring for others (Bibby and Shaw 2005). Cooperative owned enterprises are the common formal farmer's organizations, recognized by law in most countries (Cleaver 1993). Co-op members depend, upon village spaces, material resources, and cultural norms to realize their production activities: they share local histories, usufruct rights, and mutual social and economic obligations (Mutersbaugh 2002). Cooperatives were formed by those experiencing difficulty dealing with an aspect of economic change. Their creation came about partly because they offered practical advantages(Merrett and Walzer 2004)

2.1.1. Marketing, processing and input supply activities

Various authors such as (Alderman 1987; Cleaver 1993; Michael and Eden 2001; Henehan and Anderson 2001 ; Birchall 2003) pointed out the role of cooperatives in marketing, processing and input supply activities. Cleaver adds that, cooperatives can be efficient, using low-cost cooperative member labour, motivated by self- interest since the cooperative members own the enterprise.

2.1.2. Opportunity, Empowerment and Security

According to (Birchall 2003), one way to explore the contribution of cooperatives more systematically is through the World Bank's three notions of opportunity, empowerment and security.

***Opportunity*:** On the supply side, opportunities are created when economic growth is stimulated and *markets are made to* work for poor people. On the demand side, poor people must have the capacity to take advantage of the opportunities, and this means building self confidence through *education, training, and self-organization.* He added that cooperatives provide a means by which *credit* can be given when needed, and safe form in which poor people's savings can be invested. (Cleaver 1993), also added that, cooperative can have a secondary benefit, which is to teach members democratic political principles, and subsequently to become a force for more democratic societies.

Empowerment: is defined by the World Bank as 'the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives'. It means expanding the freedom of choice and action to shape one's life. In the development process, it means that wherever possible poor people should have as much control as possible over the resources being invested, and over the decision-making process. It has been recognized for a long time that without the participation of the beneficiaries it is difficult to make development aid effective. Unless poor people own the solutions being tried, then there will be no solutions, at least none that are sustainable.

Security: Cooperatives can help to reduce the risk to *individuals* through pooling risks at the level of the enterprise. Typically, as soon as cooperatives become large enough they offer their members insurance. Agricultural cooperatives in the developed world provide a wide range of insurance products to their members; in Japan and the United States, for instance, their insurance arms have become some of the biggest insurers in the world. Traditionally, consumer cooperatives in the United Kingdoms used to offer their members free life insurance. The Mondragon cooperative system offers its worker-members a full range of social security benefits, including pensions. In developing countries, few cooperatives have the capacity to offer this much cover. Micro-credit enterprises and cooperatives have proved to be effective in delivering publicly funded health and social insurance to very poor people. Cooperatives and similar organizations can help reduce the risks to whole *communities*, through connecting them up to wider markets, and diversifying sources of income. Through providing short-term credit and a safe place to put savings, they can help their members ride out seasonal shocks such as harvest failures or falls in market prices (Birchall 2003).

2.1.3. Employment

The International Cooperative Alliance has estimated that cooperatives contribute to the livelihoods of some 800 million members and their families. They provide direct employment and seasonal and casual work. Yet cooperatives also allow many farmers to maintain their self-employed status and contribute to rural community development. The impact of cooperatives in providing income to rural populations creates additional employment through multiplier effects such as enabling other rural enterprises to grow and in turn provide local jobs. What's more, cooperatives provide real economic benefits to farm families through increasing the stability of the farming sector, improving market access for their products and strengthening the farmers' position in the agro-food chain (ILO 2008).

2.1.4. Dividend

A large portion of the earnings generated by the cooperative can be returned to the members at the end of the year. At this time, net earnings are calculated by taking the total revenue generated from the sale of the value added product and subtracting the total expenses of the cooperative. The earnings are then divided among members in proportion to the amount of raw product they deliver (Fulton 2000).

The overall share of economic activity accounted for by cooperatives is larger in advanced market economies than it is in less-developed economies. For example, in the United States – which many people take today to be the epitome of a capitalist economy – cooperatives dominate important industries, such as basic agricultural products and supplies, and have a large market share in others, such as wholesaling and production of business supplies and services, electricity generation and distribution, housing, banking, and insurance (ILO 2008).

2.1.5. Agriculture taxation

The poorest countries taxed agriculture the most, and the reinvestments of tax revenues in agriculture were low and inefficient. With reforms in 1980s and 1990s to restore macroeconomics balance, improve resource allocation, and regain growth in many of the poorest countries, both direct and indirect taxes were reduced. For the agriculture based countries, tobacco, groundnuts, and cocoa were still heavily taxed over 2000-04. The net taxation of coffee declined from 53 percent to 7 percent, and for cotton it declined from 32 to 15 percent over the 2 periods (Worldbank 2007). In Rwanda, the agriculture crops are not taxed, but the agriculture cooperatives are taxed because they are considered

as other economic enterprises in the country. In early 1999 the export tax on coffee was eliminated as the way to facilitate opening up economy and liberalization of the coffee sector.

2.1.6. Cooperatives and local communities

The communities that host the co-op also receive economic impacts. This might be especially true in the case of processing co-ops that requires investment in a local processing facility, the hiring of local workers, and the potential for increased farm income to spend within the local community. The idea is that when a firm begins operations in a community, it generates an initial economic impact or direct effect due to initial construction costs, purchase of local utilities, and wages paid to workers. The firm also generates so – called effects as it purchases inputs from other firms in the community. finally the induced effects can be measured as workers throughout the community spend more money due to increases income generated (MERRETT AND WALZER 2004).

2.2. Dependence on external intervention

Many successful group ventures among the poor depend on external actors—the state, and NGOs, or social activists. The poorer the group, the more important this outsider role (Thorp, Stewart et al. 2005) . However, the aid is generally acknowledged to provide the donor with an element of control or leverage over the recipient. The humanitarian view considers that economic assistance is the primary rationale for aid, whereas the foreign policy view sees economic assistance as the means whereby donor's interests can be satisfied. The considerable evidence has been produced to show that aid is more strongly related to the donor's foreign policy interest than to the recipient's needs (McKinlay and Little 1977).

2.3. Principles of Cooperatives

The Rochdale Pioneers (early consumer cooperatives in England that founded the principles of cooperatives) developed a viable strategy that influenced cooperative development worldwide. They did this through the development of practical rules such as the following:

- Open and voluntary membership,
- Democratic member control,
- Member Economic Participation
- Autonomy and Independence

The International Cooperative Alliance adopted these rules with the addition of promotion of education and cooperation with other cooperatives. It was found that the cooperatives that observed these rules meticulously were successful (Pathak and Kumar 2008).

Any business organization can be defined in terms of three basic interests: ownership, control, and beneficiary. Only in the cooperatives are all three interests vested directly in the hands of the users. These interests are contemporary cooperative principles.

- The user-owner principle. The cooperative is owned by the people who use it.
- The user-control principle. The cooperative is controlled by the people who use it.
- The user- benefits principle. The benefits generated by the cooperative accrue to its users on the basis of their use.

A cooperative is business that is owned and controlled by the people who use its services and whose benefits (services received and earnings allocations) are shared by the users on the basis of use (United States. Rural Business/Cooperative 2002). The participation of the members of the

cooperative in the decision making process implies, fundamentally, the control of activities of those other members who have been chosen to administer and represent the interests of the community (Romero and Perez 2001).

Cooperatives and farmers organizations with well planned business activities can operate efficiently without subsidies, and pay commercial rates of interest. Good management and financial strength are as important for cooperatives and farmers organizations as they are for private enterprises. Cooperatives are unlikely to function well if farmer members have no stake in them, through financial or other contribution. Democratic control and the equitable distribution of cooperative income are also of vital importance for maintaining honest organizations which serve member interests (Cleaver 1993).

Over time, cooperative ideology has waned. Part of the reason for this waning is that cooperatives were unable to meet the expectations of members, thus causing disappointment and dissatisfaction with the cooperative model. Cooperative ideology also waned because subsequent generations of co-op members did not share the same philosophical viewpoint as the original founders, a viewpoint that was developed in large part because of the market failures the founders experienced (Fulton 2000).

2.4. Coffee production

All coffee is produced in the tropics, primarily by smallholders. Most is consumed in high income countries. Latin America accounts for large percent of global output, followed by Asia (24 percent, and Africa 16 percent. Historically, coffee is the second most traded primary commodity after crude oil, generating more than $15 billion in export revenue (evaluated at 1997-98 average prices and volumes) (Aksoy and Beghin 2005).

2.4.1. Factors influencing coffee production

the factors influencing the production of perennial crops, whether directly or indirectly, include climate, soil fertility, land owned, schooling, agricultural training, conservation extension, plot size and slope (Jansen 2006).

Prior to 1998-99, coffee production and consumption were relatively equal. The recent decline in coffee prices has been due primarily to a surge in supplies, but the equally important long term problem for coffee producers is weak demand. per capita consumption in Europe and the united states which accounts for nearly 90 percent has been declining due to increase in per capita consumption of soft drinks (WORLDBANK 2002).

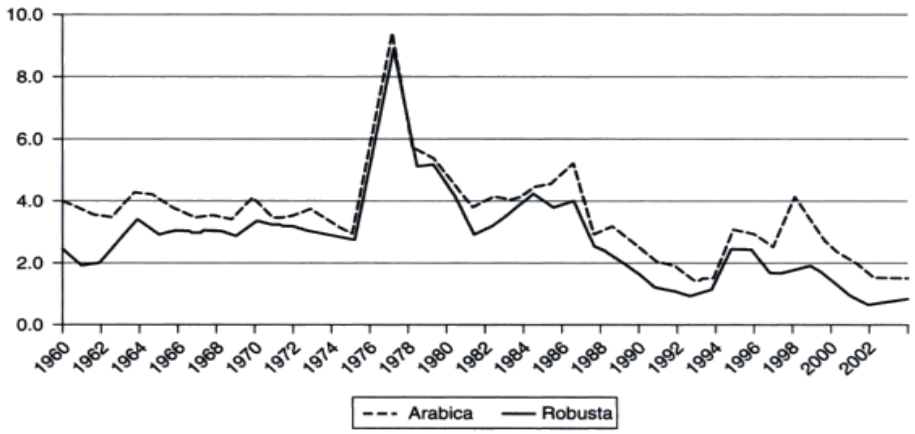
The main coffee problems confront producers

Price fluctuations: the fall in output (or even a fear of the fall in output) from one region can send the price rocketing. For a short time while the production of the commodity can be extremely profitable and this of course can prompt new producers to switch to growing the product, in the (mistake) belief that the price will remain high.

Oversupply: the price of coffee on the international market has fallen dramatically because too much was being grown. global overproduction has been exacerbated by a world bank programme to

introduce coffee production into Vietnam, which has risen rapidly to account for 10 percent of global production (Burnell and Randall 2008).

Structure of the industry: although the large fluctuations in the price and the oversupply of raw commodities are not unique to coffee, the industry's structure adds special problems. the millions of the small farmers with limited power face a very small number of producers with enormous power to dominate the final retailing of the product (Burnell and Randall 2008).



Source: World Bank.

Figure 2-1 Real coffee prices (1960-2002), US$ per Kg

The price volatility stems in part from weather conditions in Brazil, where frost affects crops every five to six years and severe drought also occur periodically (Aksoy and Beghin 2005). Climate change and economic globalisation are two 'external' processes that affect agricultural system in the developing world. The effect of unfavourable climatic conditions combined with the very low prices due to market restructuring resulted in a significant reduction in coffee production (Leary 2008).

2.5. Producer cooperatives

Producer cooperatives are owned by people who produce the same type of goods. Such cooperatives often operate shared facilities for processing or distribution. The producer cooperatives are also sometimes known as marketing cooperatives in which each farmer maintains a fairly independent path to market, but shares a name brand (McLeod 2006) Marketing cooperatives sell products produced by their members, in either raw or processed form, to persons further along the food marketing chain. Some marketing cooperatives limit their activity to negotiating prices and terms of sale by buyers (Business/Cooperative 2002). Marketing cooperatives play useful role in maintaining a high level of competition for agricultural commodities and in helping farmers by pooling together their products, creating economies of scale, higher leverage in the bargaining for better prices, and improved management of price and client relations (Csáki 2000).

Some types of cooperatives, such as agricultural cooperatives, emerged almost every where; others were more country specific, such as consumer cooperatives in England and housing cooperatives in Germany, Great Britain and Sweden (Noya, Clarence et al. 2007).

2.6. Cooperatives in developing countries

In 1960s, many developing country governments initiated cooperative development programs, often to ensure quotas for cash crops and distribute subsidized credit and inputs. Cooperatives were largely government controlled and staffed. So farmers considered them as an extended arm of the public sector, nor as an institution that they owned. Political interference and elite capture resulted in poor performance and discredited the cooperative movement. This situation changed radically in 1980s. Political liberalization opened opportunities for producers to become active players through organization of their own (Worldbank 2007).

2.6.1. The functions of producer's cooperatives

According to word bank report (Worldbank 2007), producers' organizations have increased rapidly in developing countries. Their functions can be grouped in three categories:

- Commodity- specific organizations focusing on economic services and defending their members' interest in particular commodity, such as cocoa, coffee or cotton.
- Advocacy organizations to represent producers' interest, such as national producer unions
- multipurpose organizations that respond to the diverse economic and social needs of their members, often in the absence of local government or effective public service

2.6.2. The success of cooperatives in developing countries

Where farmer management, autonomous from government, was allowed to develop, and where the farmer organization or cooperative had a business reason to exist (i.e. made money for its members), there was success. The successful Kenya coffee cooperatives are largely autonomous farmer owned cooperatives enterprises. So are the Cameroon Cooperative Credit societies (Cleaver 1993). The Oromia Coffee Farmers' Cooperative Union in Ethiopia is a representative and concrete example of how agricultural cooperatives improve their member's income and social conditions. In a broader sense, it is also an illustration of how cooperatives help to reduce poverty, fight against child labour through education, contribute to the Millennium Development Goals and promote Decent Work (ILO 2008).

2.6.3. The obstacles to development of cooperatives in developing countries

The major obstacles to the development of cooperatives in developing countries include: misconceptions among policy-makers and planners of what cooperatives are and how they work; unrealistic expectations of what cooperatives can actually accomplish; the establishment of cooperatives irrespective of whether or not the minimum requirements for successful cooperative development are met; and the artificial acceleration of cooperative growth (ILO 2001).

The implementation of cooperatives in developing countries has faced obstacles of a cultural, political and economic nature (inadequate and irregular income; low savings potential; insufficient mobilization of resources; embryonic financial infrastructure) on the part of communities and, in many cases, on the part of governments too. In those countries, the retreat of the central state to support social policies and the transfer of responsibilities to implement these policies to local government bodies, without the correspondent transfer of resources, adds to the difficulties in achieving some success in partnership programs (Fruet 2005).

A common mistake in donor, assistance to cooperatives and to farmers groups has been the view that such assistance should be provided through government, and that the objective is to provide a service of some kind to farmer members of the group. This approach reduced the members' management

autonomy and responsibility. It also did not consider the interests that the farmers might or might not have in cooperating – the objective was the service to be provided. Examples of these errors are found in the cotton cooperatives in Kenya, the cooperative credit bank in Kenya, farmers' cooperatives in Benin and Nigeria and in cooperative banks in the francophone parts of Cameroon (Cleaver 1993).

Cooperatives were formed with high hopes for reducing rural poverty. Members were not self-selected. In addition to land and labour, cooperatives were provided access to working capital, and later on technology and managerial support (through the co- managers) to offset the beneficiaries' lack of experience in managing large farm. As in many other countries, results have been disappointing. Productivity has declined, diversification has stalled, there is little innovation, and investment have not been forthcoming as earning have been used for dividend distribution instead of investment and diversification, and for providing social services to members and other uses. Cooperatives have faced increasing debt, low productivity and less job creation for non- members, which has hit women hardest because they are the first let go when wage labour falters (ElSalvador 1998).

2.6.4. Reasons for survival of cooperatives in developing countries

Why cooperatives survived?
Four factors seem important for survival of cooperatives in El Salvador

- First, during the conflicts in 1980s it was difficult for rural organizations to emerge, and the cooperative movement has been only the channel for rural organizations.
- They have developed considerable political muscle which has helped them receive favourable treatment
- They were also given legal entity (personal juridical) status, which allowed them to enter into contracts and make demands for services.
- Cooperatives have been very successful in social services (schools, health, housing, retirement and life insurance) for their members, even though their members are not among the poorest rural dwellers by far (ElSalvador 1998)

2.7. Summary

This chapter shows reviewed literature related to the role of cooperatives in development, the international principles of cooperatives, history of cooperatives in developing countries: their function, success and causes of their failures. It has also reviewed factors influencing coffee production. The literature shows that cooperative has long been an idea worldwide, being widely promoted in much of the developing world as an integral instrument of national rural development policy. Even though in many developing countries, results have been disappointing, in some countries where the cooperative principles were respected the cooperatives contributed much to the development of their members and the community.

3. Research Methodology

This chapter gives the details of how the research was conducted; the methods used for data collection, selection of study area and collected data. It explains techniques used for data analysis, limitation of the study and its reliability and validity.

3.1. Research techniques

In order to accurately assess the impacts of coffee cooperatives on development of the region and members a field work was carried out in the study area. The field work involved the collection of quantitative and qualitative data. As stated by (Gacita Maria, Wodon et al. 2001), the combination of quantitative and qualitative research techniques is especially important because "qualitative methods allow in-depth study of selected issues, cases, or events and can provide critical insights into beneficiaries' perspectives…, or the reasons behind certain results observed in a quantitative analysis"(Taschereau 1998), also adds that, Qualitative approaches can play critical role in monitoring programs and can add explanatory power to impact evaluations, and that quantitative approaches are much more appropriate in estimating the net impact, as well as the efficiency of program intended to bring about institutional and social change.

3.2. Selection of Study Area

The selection of study area was purposeful, after getting the list of all coffee cooperatives in Huye district; the researcher with the help of in charge of cooperative at district level selected the three cooperatives that are located in three different sectors (wards) that were believed to be well established of which data about the cooperatives can be obtained. The selected coffee cooperatives were Abahuzamugambi coffee cooperative which is located in Maraba sector, KOAKAKA coffee cooperative located in Kigoma and KOGIMUWAKA coffee cooperative in Rusatira sector.

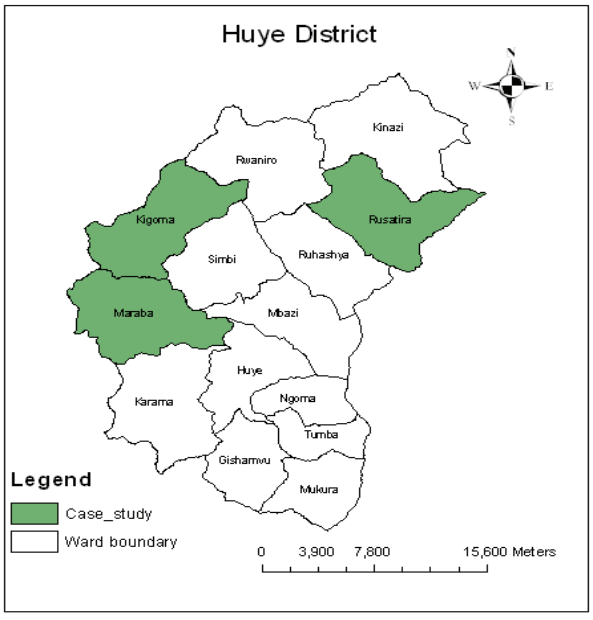


Figure 3-1 Case Study Area and three surveyed wards

3.3. Sample selection and Sample size

This study involved all Coffee growers of three wards of Huye district which include members of Abahuzamugambi, KOAKAKA and KOGIMUWAKA coffee cooperatives and non cooperative members. The non probability sampling design was used to select the sample in this study. This method is used when the number of elements in a population is either unknown or cannot be individually identified (Kumar 2005). (Ritchie and Lewis 2003) also added that, if the population is not one which can be identified through official statistics, a sample frame will need to be specially generated.

The purposive sampling is the judgement of the researcher as to who can provide the best information to achieve the objectives of the study .The researcher only goes to those people who in his/her opinion are likely to have required information and will be willing to share it (Kumar 2005). As there was no sample frames: lists of all coffee growers and their addresses, the sample were generated by approaching people in public places such as market, sector offices, shopping centres and cooperative offices. In order to identify whether the people belong to the study group and if so to collect information from them we contacted them and asked them where they live, whether they are coffee growers and whether they belong to one of the three coffee cooperatives studied. One advantage of this method of sampling as a non probability sampling is that you do not need a list (sampling frame) of all the members of a population from which to draw a representative sample. However, the disadvantage is that the sample results can not be generalized for the study population.

The sample of twenty household coffee growers was selected from each ward of which ten were cooperative members and ten non cooperative members. The sample size was 60 household coffee growers within three wards.

3.4. Data Source and methods of data collection

The study is based on both primary and secondary sources of information. Primary data was collected through household interviews, field observations and interviews with cooperative managers, and agronomists of wards. As stated by (Creswell 2003), Meanings are constructed by human beings as they engage with the world they are interpreting. Qualitative researchers tend to use open-ended questions so that participants can express their views. Open-ended questions were used so that participants can express their views. Secondary data were collected from documents provided by Huye district, Ministry of Commerce, Industry, Investments promotion, tourism and cooperatives (MINICOM) and Rwanda National Coffee Board (OCIR CAFÉ). These documents are comprised by both quantitative and qualitative data.

3.4.1. Primary data

3.4.1.1. Household interviews

In order to know the contribution of coffee cooperatives to their members and the attitudes of coffee farmers towards the coffee cooperatives, the guided questionnaire was used to collect data from household coffee growers' cooperative members and non members. Due to the participants' low level of literacy, face to face conversations provided the most effective and efficient way for collecting data on respondents' opinions, and perceptions.

The data collected from household coffee growers cooperative members include when they joined the cooperative, why they joined the cooperative, the contribution paid to become a member, the gain from cooperatives and challenges encountered in cooperatives. The data related to coffee production were the number of coffee trees, the portion of farm used for coffee production and other crops, change in number of coffee trees, the change in coffee output and the reasons for change and the change in income.

The data collected from household coffee growers non cooperative members which are related to cooperative include; whether they have been cooperative member, whether they plan to become a member and why. The data related to coffee production were the number of coffee trees, the portion of farm used for coffee production and other crops, change in number of coffee trees, the change in coffee output and reasons for change and change in the income from coffee.

Interview with Cooperative managers

The interview was also conducted on three coffee cooperatives (Abahuzamugambi, KOAKAKA and KOGIMUWAKA) such as the background of the coop, the objectives of the coop, the assets owned, number of people employed by these coops, the tax paid, the activities they have done in the ward, the benefits to their members and the support they gain from the government and non government organisations.

Discussions with the agronomists of the wards

The ward agronomists was interviewed on coffee related production such as the coffee production, the number of coffee cooperatives, the support of the ward to cooperatives, duration taken for the coffee to be harvested when planted and cut to re-grow, the contribution of coffee cooperatives to development such as the tax paid, people employed and infrastructures constructed by the coffee cooperatives.

3.4.1.2. Observation

In the field, the researcher observed the assets owned by coffee cooperatives, which include the coffee processing plants, coffee cupping laboratory, some of people employed in cooperatives, coffee farms, the coffee bikes and Tele centre (Rural internet cafe).

3.4.2. Secondary data

Secondary data were collected from various documents which include national policies, reports and action plans. These data were collected from Huye district, Ministry of Commerce, Industry, Investments promotion, tourism and cooperatives (MINICOM) and Rwanda National Coffee Board

(OCIR CAFÉ). These documents have both quantitative and qualitative data. Table 3-1 below shows the list and contents of various documents collected during the fieldwork.

Table 3-1 Secondary data collected from various documents

DOCUMENT	CONTENT	YEAR
Data collected from MINICOM		
National policy in promotion of cooperatives	The history and nature of cooperatives in Rwanda, challenges, the goals and strategies to promote the cooperatives	May, 2005
Basic study on cooperatives in Rwanda	The situation of cooperatives and number of cooperatives in Rwanda.	December, 2005
Report about the Investment in cooperatives	Speech given by the Chairman of Task Force in charge of promoting cooperatives in Rwanda to all Executive secretaries of wards at Nkumba about the importance of cooperatives in Rwanda	April, 2008
Data collected from Huye District		
Development plan of Huye district	The situation of Huye district which includes the geographic characteristics of the district, the social economic data and the number of cooperatives in the district.	June, 2007
All cooperatives in the district	Different types of cooperatives working in Huye district	September, 2008
List of taxes received	Types of tax paid (2006, 2008 and 2008) reports	
Report on the training of given to Cooperatives leaders	The missions and importance of cooperatives	June, 2007
Data collected from OCIR café		
OCIR café action plan (2006-2008)	The situation of Rwanda coffee sector, evolutions in Coffee production and export revenues and plan to increase coffee production	November, 2005
	Number of Coffee trees and coffee washing stations in Rwanda	

3.5. Data Processing

The primary data collected from household was edited, coded and entered in Statistical Package for Social Science (SPSS) to be analysed. Also, the quantitative data which was in various formats were converted into formats that facilitate the analysis like Excel sheets.

3.6. Data analysis

The following stepwise plan for conducting an effective evaluation, adopted from (Coenen and Lulofs 2008-2009) was used for policy evaluation.

1. Determine, circumscribe and systematically describe the subject
2. Select evaluation criteria
3. Determine the degree to which the selected criteria have been met
4. Determine the policy's effect on goal achievement

The policy on coffee sector was explained, it was evaluated through its goals and means. The degree to which the selected criteria have been met was measured using the time series data on coffee production, coffee prices, export revenues, and the constructed infrastructures aimed at improving the coffee quality. The policy's effect on goal achievement was evaluated by looking at other possible explanations that influenced the coffee cooperatives.

The principle of with-minus-without which involves isolating project related impacts from trends in background conditions. The methodology is to calculate the net impact of the project (Edwards-Jones, Davies et al. 2000). The purpose of impact analysis is to estimate the changes in an area's level of economic activity (often measured by changes in employment, income, and gross receipts or value added by economic sectors) that might result from a specific project, program, or policy (Merrett and Walzer 2004). This methodology was intended to be used to analyse the contribution of coffee cooperatives to the regional development. However, there was limited data for assessing the net impact of the coffee cooperatives. Instead we described what was done in the regions by three coffee cooperatives.

Data collected from the coop and non coop households respondents were analysed using descriptive statistics (percentages and frequencies). The means and standard deviations were used to analyse the difference of coop and non coop members' income from coffee trees and number of coffee trees. The Man-Whitney statistical test for independent samples was used to test whether the difference in coop and non coop members' number of coffee trees and income per coffee trees were statistically significant.

Spatial analysis methodologies

The Geographical Data analysis software (GeoDa) was used to analyse spatial clustering of coffee trees and coffee processing plants in the regions. GeoDa software combines maps with statistical graphics (Curtis and Leitner 2006).

Moran statistic indicates general properties of the pattern attributes. It distinguishes between positively autocorrelated patterns, in which high values tend to be surrounded by high values, and low values by low values; random patterns, in which neighbouring values are independent of each other; and dispersed patterns, in which high values tend to be surrounded by low, and vice versa (Longley 2005).

Moran's I is computed as follows:

$$I = \frac{m \sum_i^m \sum_j^m w_{ij}(y_i - \bar{y})(y_j - \bar{y})}{\left(\sum_i^m \sum_j^m w_{ij}\right) \sum_i^m (y_i - \bar{y})^2}$$

Where there are n regions, y_i is the observed value of the variable of interest in region i, $\bar{y}$ is the mean of y_i (i=1, m), and w_{ij} is a measure of the spatial proximity between regions i and j.

Moran's I varies between -1 and 1. A value near 1 indicates that similar attributes are clustered (either high values near high values or low values near low values), and a value near -1 indicates that dissimilar attributes are clustered (either high values near low values or low values near high values). If a Moran's I is close to 0, it indicates a random pattern or absence of spatial autocorrelation (Wang 2006).

3.7. Limitation of the study

There is the problem of shortage of data in this study. We were not able to get the required data at district and ward level that could facilitate to evaluate the net contribution of coffee cooperatives to the region development. There were no time series data and data on contribution of various sectors to the economy of the wards, also the coffee cooperatives started recently. As the result, this limited the researcher's evaluation on the contribution of coffee cooperatives to the regional development. Also, in policy evaluation section, some data about what was planned to be achieved in the given period was lacking and this has limited the researcher to know whether in a certain period the goal was achieved or not.

Comparison of coop member and non coop member households did not give the clear picture of the comparison, and this may lead to biased results. This is because even the non members in areas where there is coffee cooperatives benefited from coop directly by getting market for cherries on the same price as members and free pesticides and indirectly by learning from the coop members on the methods of farming. Also, in some coffee cooperatives there is a selection criterion for coop members, and this result to difference in number of coffee tree owned by coop and non coop members.

Some of respondents thought that the researcher was sent by the government to investigate their opinions on the cooperatives. This could lead to wrong responses from coffee growers. This was due to the fact that the government through the cooperative policy is sensitizing the people to join the cooperatives. To handle this, we assured them that the study was for academic purpose and no one was asked to mention his/her name in the interviews.

3.8. Reliability and validation

One way to conduct research that is both valid and reliable is to be found in the use of multiple methods and multiple sources of data (Case 2007). (Cohen, Manion et al. 2000), also added that the use of two or more methods of data collection in the study which is known as triangulation lead to more valid and reliable data. To assure reliability and validity of the study the various methods of data collection were applied. The researcher collected primary data from different people i.e. from the cooperative managers, the coop and non coop members and agronomists of the studied wards. Also, secondary data from various sources were consulted which include the government documents such as policies and action plans, the NGOs reports, books and scientific papers.

3.9. Summary

This chapter has explained the methodology adopted in this study. It explains the data collection techniques, instruments applied in data collection, the overview of collected data and analysis techniques used in order to come with the answers to the research problem. It also explains the limitation of the study and its validity and reliability.

4. The Case Study Area

4.1. Geographical characteristics

According (GoR 2008), Huye is one of the 8 districts which make the Province of the South; it is has 14 sectors: Mbazi, Kinazi, Simbi, Maraba, Rwaniro, Rusatira, Huye, Gishamvu, Mukura, Ruhashya, Tumba, Kigoma, Ngoma, and Karama. The Map below shows the Sectors (wards) of Huye district and specific three wards for this study, Maraba, Kigoma and Rusatira.

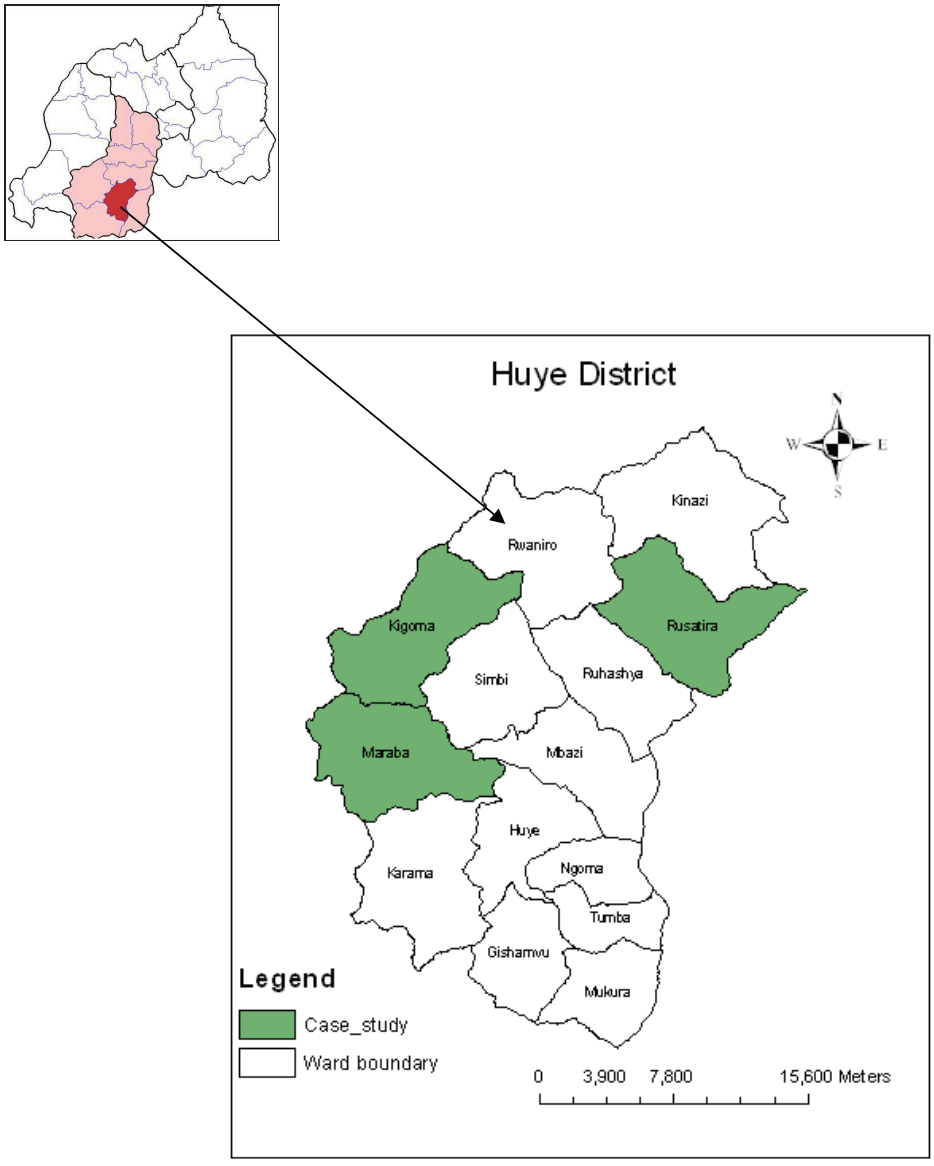


Figure 4-1 Location of Huye district and surveyed wards

4.2. General aspects of Huye District

Table 4-1 General characteristics of Huye District

Delimitation	North	District of NYANZA
	East	District of GISAGARA
	South	District of NYARUGURU
	West	District of NYAMAGABE
Surface	581,5 km^2	
Number of sectors	14	
Number of cells	77	
Number of Villages	509	
Population	290 677 inhabitants	
Density	500 Habitant/Km^2	

4.3. Relief

Huye is located on a central plateau with a topographic unit of hill type in its central part, in the East and in the South. This area has the hills with an average altitude of 1700 m, it goes down up to 1450 m. in its Western part, and it rises as one move towards the West and ends with more than 2000 m at the top of the Huye mount. The Lowlands swamp is at an altitude of 1650 mm.

4.4. Climate and Rainfall

Huye district is characterized by a subequatorial temperate climate, with an average temperature ranging around 20 ^{O}C. Its average annual rainfall is around 1160 mm. As it is on the whole country, the climate is marked by 4 quite distinct seasons: a long rainy season (mid February - May), a long dry season (June - mid September), a small rainy season (mid September -December) and a short dry season (January - mid February). It has abundant rainfall of 1400 mm per year.

4.5. Water Drainage

Water Drainage of Huye District consists of rivers. In the West, there is Kadahokwa River which directed from north to south, in the center there is Rwamamba River; in the East, there is the large valley of Rwasave drained by the river of Kihene oriented north to south. These rivers are drained towards Migina which is the tributary of the Akanyaru River; in North West there is Mwogo River which empties into the Nyabarongo River. Huye district is very rich in marshy valleys along the rivers and streams.

4.6. Soils

The soils evolve in-depth depending on their situation on the hill; the best soils are in the marshes (they are sandy and humus-bearing) if they are not washed by the erosion of the hills. The soils on the granite ridge are less fertile; they are very poor in humus. The soils of the central plateau are not bad, they are of the koalisol type, fertile when erosion did not degrade them, and when the humus-bearing horizon of these grounds is well preserved.

4.7. Socio-Economic situation

The socio-economic situation of Huye District is presented in two aspects: the sector of the human development and the sector of the economic development.

4.8. Sector of the human development

Demographic

Total population of the Huye District distributed by sectors

The total population of the Huye District is 290 677 Habitants which is distributed in the sectors as the table shows it below.

Table 4-2 Pattern of the population by ward

SECTOR	POPULATION TOTAL	MALE SEX	FEMALE SEX	% FEMALE SEX
1. MBAZI	25 525	10 544	14 981	58.6
2. KINAZI	18 450	7 948	10 502	56.9
3. SIMBI	22 876	10 822	12 054	52.7
4. MARABA	22 595	10 942	11 653	51.6
5. RWANIRO	21 290	9 814	11 476	53.9
6. RUSATIRA	27 017	13 464	13 553	50.2
7. HUYE	19 392	8 508	10 884	56.1
8. GISHAMVU	11 955	5 185	6 770	56.6
9. MUKURA	15 963	7 332	8 631	54.1
10. RUHASHYA	18 156	7 960	10 196	56.1
11. TUMBA	23 666	11 033	12 633	53.4
12. KIGOMA	18 557	8 477	10 080	54.3
13. NGOMA	13 465	5 558	7 907	58.7
14. KARAMA	31 770	13 446	18 324	57.7
TOTAL	**290 677**	**131 033**	**159 644**	**54.9**

Source: Data produced by the wards (June 2007)

The table above shows the pattern of the population of Huye District by Sector, Karama is the sector which is most populated with 11% of the total population of the District, Gishamvu being less populated with 4%. In addition, in all the sectors there are more women than men.

4.9. Sector of the economic development

4.9.1.1. Agricultural production

As in the whole country, more than 90% of the populations of Huye district are farmers. The agricultural production is characterized by a diversity of the food crops such as sweet potato, sorghum, bean, soya, cassava, and banana. These various crops are often grown on the same piece of land. There are also tomatoes, cabbages, and some fruit-bearing crops such as the palm trees, the avocado trees, and the pawpaw trees. Huye district also grow coffee as an industrial crop.

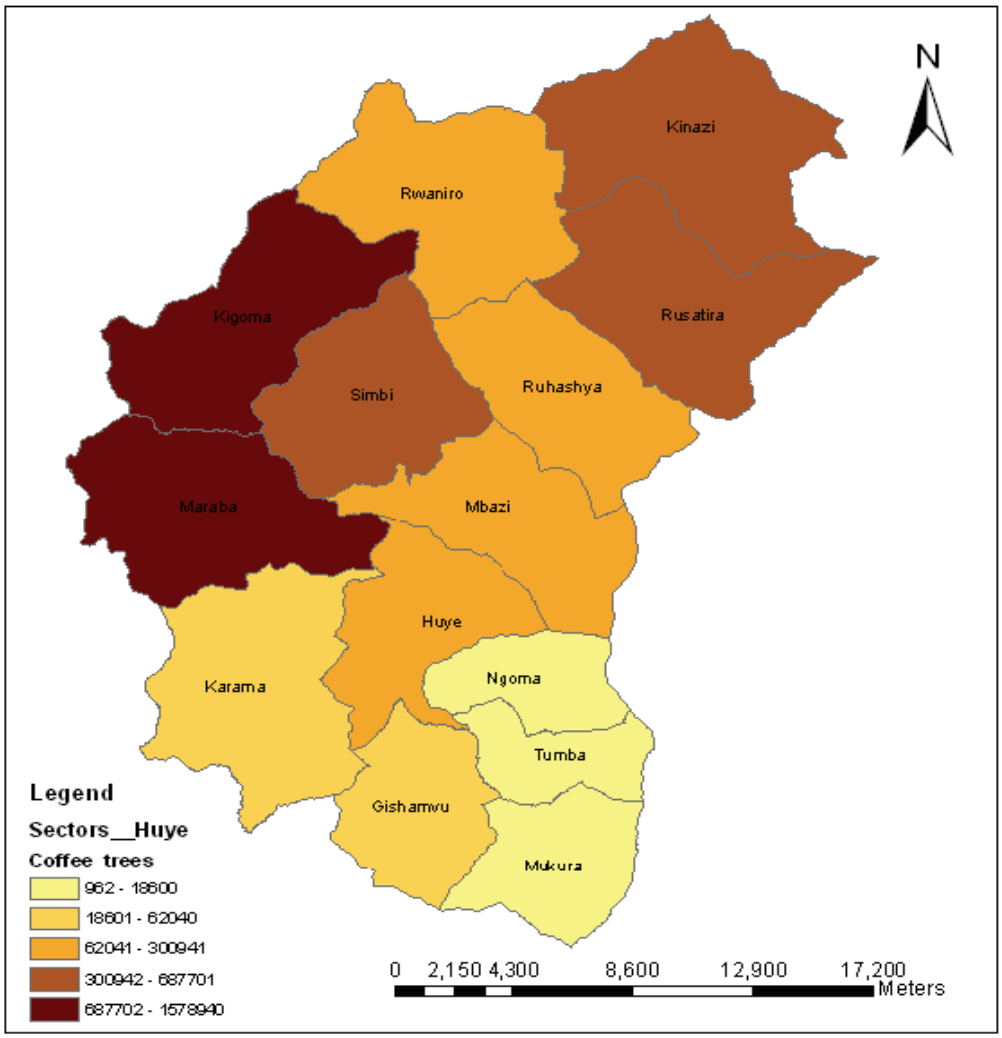


Figure 4-2 Spatial distribution of coffee trees in Huye districts

4.9.1.2. Trade

a. Trade and market

The business activities currently undergo a recession due to the decline in the purchasing power of the population. Indeed, the production in general and agricultural in particular has been falling for several years because of the overexploitation of the land.

b. Service and employment

Huye district has a number of companies and services that provide jobs such as the National University of Rwanda which employee more than 600 people in its services, the Rwandan Matches Factory, the Institute of Agricultural Research of Rwanda (ISAR), water Processing Industry of Huye (Amazi ya Huye). There are also the administrative and technical staffs of public and private institutions. People employed in non-agricultural jobs are now estimated at 16 367 out of a population of 290 677, or 5.6%.

4.9.1.3. Associations and cooperatives

Huye district has many cooperatives grouped according to operations. There are 88 cooperatives and associations which are recognized at district level (GoR 2008).There are the associations of craftsmen, farmers, taxi motorbikes, welders, carpenters, tailors, masons and blacksmith.

The sector of hand craft is still at beginning phase, many associations have joined a federation called FAAB (Federation of Associations of Artisans of Butare). But these associations has several weaknesses: the lack of training in various trades, the low quality of the product or service (apart from basket making), people has the tendency to prefer imported products (sheets ...) to local products (tiles ...). There are also other crafts such as the manufacture of bricks, sewing and carpentry. This activity is developed and exercised by both associations and individuals. In short, the artisan sector in Huye district remains traditional and underdeveloped

The associations and cooperatives in agricultural and livestock assist their members in granting credit, agricultural inputs to be paid after harvesting, and small livestock given mostly by financial institutions operating in the district. The major problems facing all associations and cooperatives are: inadequate training in management and lack of guarantees for loans in banks and financial institutions existing in the district.

4.10. Description of the Coffee Cooperatives

4.10.1. Abahuzamugambi coffee cooperatives

Abahuzamugambi coffee cooperative is located in Shyembe cell, in Maraba ward, the ward that has the highest number of coffee trees in Huye District. This cooperative started in July 1999 as an association of coffee growers, with 70 members and later become a cooperative in 2002. Today, it has 1344 members of which 495 are men and 816 are women and 33 associations. The name “abahuzamugambi” is a Kinyarwanda word which means “we work together.”

The objective of Abahuzamugambi cooperative

Abahuzamugambi has the following objectives:

- Produce the quality coffee, competitive on the world market and sell it on high price
- Sensitize the coffee growers to use fertilizers in order to have coffee of high quality
- Educate the members the need for specialty coffee and have new vision in the system of production and use of washing stations
- Use appropriate technology and attain the vision which it fixed and get market without difficulties
- Organize the system of credit to members of cooperative in order to fight poverty
- Buy the coffee on good price from members and non members of cooperative

Assets owned by Abahuzamugambi cooperative

Abahuzamugambi has the following assets:

- 1344 members
- Offices
- 4 Coffee Processing plants
- 1 Rural community internet café
- Two vehicles for production transport.
- cupping laboratory (coffee taste and quality)

Challenges facing Abahuzamugambi cooperative

- Lack of sufficient own capital to begin the campaign (buying and treatment of cherries). During campaign it uses loan from bank and buyer to buy coffee cherries from the farmers.
- Problems related to climate conditions
- Great amount of loans and debts to repay.
- Capacity building (Skills and knowledge improvement, infrastructure and equipments)
- Maintenance of coffee plantations (grass to cover the soil)

4.10.2. KOAKAKA coffee Cooperative

KOAKAKA "Koperative ya bahinzi ba Kawa ba Karaba" this means "Cooperative of Coffee growers of Karaba". This Coffee Cooperative is located in Kigoma ward in Huye district. It started in 1999 as an association of coffee growers in the former 3 districts of Kinyamakara, Karama and Rukondo. It started with 867 members of whom 543 are men and 324 women. On 25/2/2004, the association became a cooperative with 2012 members of whom 1547 were men and 465 women. Today the Cooperative has 1129 members. The number of members was big and the area was also too big. In the general assembly the members of cooperative decided to divide the members in 10 zones so as to facilitate all the members from different zones to meet in the meeting. In each zone the committee was elected made of 10 people (president, vice president, secretary, treasurer and counsellors). The presidents of the 10 zones are the one who form the executive committee of KOAKAKA.

The objectives of KOAKAKA

The KOAKAKA has the following objectives.

- Improve the quality of coffee which is important to their lives and which was affected by the genocide
- To fight against poverty through job creation, and be able to educate their children
- Unity and reconciliation, exchange views through discussions basing on the current issues.

The assets owned by KOAKAKA

The assets owned by the KOAKAKA cooperative are:

- 1129 members
- 2 coffee processing plants with drying tables, 2 deparchement Machines and 5 water tanks

The challenges facing the KOAKAKA

- Long term credit to pay for Maganza station which was build by credit from Rwanda development Bank (BRD) which includes also the fines.
- The leaders of the coop and members do not have the experience on cooperatives. Executive committee is easily convinced, they agree on what is proposed without thinking on the impact. For example they agreed to have the loan from BRD to build Muganza coffee washing station without thinking where the coop will get the money to pay the loan. The coop is having the problem of paying the loan which is very big compared to the capacity it has.

4.10.3. KOGIMUWAKA Coffee cooperative

"Koperative Gira Ingufu Muhinzi Wa Kawa" (KOGIMUWAKA), this means be strong coffee farmer cooperative. It is located in Rusatira, Buhimba cell in the village of Gasaka. It started in 1997 as an association of coffee growers and become a Coffee cooperative in 2005, with 425 members (202 women and 223 men).

Objectives of KOGIMUWAKA

- to improve the quantity and quality of coffee,
- Fight against poverty by helping each other.

Assets owned by KOGIMUWAKA

- 425 members
- Coffee processing plant with drying tables and deparchement machine
- Farm with 20.000 trees which was planted in 2007

Challenges facing KOGIMUWAKA

- Lack of money to buy enough equipments
- The coop has no its office, it uses the ward office
- The coop has no capacity to visit other cooperative and see their progress and learn something from them.
- The coop has no experience of making the projects so that it can easily ask for a loan.

Some of Coop leaders are illiterate (don't know to read and write).

4.11. Summary

This chapter gives the brief background of the case study area. It gives the location of the district, general aspects of the district like relief and soils, social economic situation of the district and the brief description of the three coffee cooperatives. This description was used as the basis for discussion in the assessing the role of the three coffee cooperatives in regional development.

5. The role of government intervention on the development of coffee cooperatives: Policy impact evaluation

5.1. Cooperative movements in Rwanda

According to the cooperative policy document (GoF 2005), at the time of its independence in 1962, Rwanda had 8 registered cooperative totalling 22,475 registered members. The analysis of the background of these cooperatives shows that all of them have been "parachuted", that means created from top, some of them by the reverends in the context of the benefit schemes, the others by OCIRU in view to develop the exports farming , others by the mining companies to alleviate the workers' poverty. These cooperatives have helped substantially in supplying agricultural inputs and materials and the commercialization especially in the tea & coffee sector.

However, most of these cooperatives eventually collapsed because they lacked clear policies and strategies and the spirit of self-help among their members. The war and genocide of 1994 had further adverse effects on the rather weak cooperatives, at the level of human, material and financial resources

The major characteristics of cooperatives in Rwanda are; small in size, leadership and management are vested with people with little or no entrepreneurial skills and attitudes, no vertical structure comprising of cooperative unions and federations. All these features cause the cooperatives to have serious capacity and structural limitations and weaknesses.

The cooperative sector in Rwanda is large and diverse. It comprises savings and credit cooperatives, banking cooperatives, agricultural cooperatives, small processing and marketing cooperatives, fishery cooperatives, consumers, workers, handicraft and artisan cooperatives. The agricultural cooperatives account for 70 percent of all cooperatives.

In 2005, the government of Rwanda through the Ministry of Commerce, Industry, Investments promotion, tourism and cooperatives (MINICOM) issued a policy document for promotion of new cooperative movements in Rwanda. The general objective of the National Policy is to facilitate all-round development of the cooperatives in the country in order to make a significant contribution of cooperatives to the national economy, particularly in areas which require people's participation and community efforts (GoF 2005).

5.2. The cooperatives sector within policy context

The national cooperative policy document stipulates that, the role of cooperatives in development is recognized in National and international policies. In National poverty Reduction Program of 2000, it is believed that cooperatives will facilitate rural economic transformation, human resource development, development and promotion of the private sector and poverty reduction. The Poverty Reduction Strategy (PRS) also stated that, *"to reduce poverty requires people's participation"*.

Cooperatives will be a tool for people's participation. Further more, the Millennium Development Goal (MDG) emphasizes that the Rwanda National Cooperative Development Policy is an implementation instrument that fosters cooperatives to reduce poverty especially in the rural areas where the poorest of the poor live and where jobs are scarce and basic services are inadequate. Often the nearest institutions to the poor are local cooperatives and strengthening their capacity would have a positive impact on rural poverty reduction (GoF 2005).

5.3. The cooperative policy

In trying to increase the number of cooperatives in the country, the government has employed the people in charge of cooperatives at district and provincial level. These employees organize training for cooperative leaders on the importance and meaning of the cooperatives. In Huye district, on 21, June 2007 the farmers cooperatives and associations were trained in the meaning of cooperative, the difference between cooperative and association, the history of cooperatives on the world and Rwanda in particular, the principles of cooperatives, how the cooperatives are formed and so on. The government is encouraging people to change associations into cooperatives in order to improve their livelihood.

Based on the findings and literature of coffee cooperatives in Rwanda, the 2005 national policy on promotion of cooperatives is still on its infancy. Its impacts on the coffee cooperatives are not significant. We found that, 1998 policy reform on coffee industry which liberalized the coffee sector and sensitized the coffee farmers to form the coffee cooperatives so that they can start exporting the coffee played the important role in the development of coffee cooperatives as a mean to develop the specialty coffee in Rwanda.

5.4. The situation of coffee in Rwanda Today

According to the OCIR CAFÉ new action plan (GoF 2005), Coffee has always played a major role in the export sector and has also been the main source of revenue for the rural population in Rwanda. Since its introduction by German missionaries around 1904, the production of coffee has increased through the years up to mid-1980s, with a maximum production of 43,000 tons of green coffee in 1986. During the years that followed, from 1987 to 1993, production dropped to an average of 30,000 tons of green coffee. At the same time with this reduction in production, the quality of coffee also fell from 48% of standard coffee in 1986 to 0.32% in 1992. After the war and genocide of 1994, the situation became worse and production fell to 55% of 1993 situation, reaching a production of only 14,268 tons in 1998.

5.5. Policy reform in coffee industry

In 1998, in response to diminishing returns resulting from global oversupply, the government of Rwanda (GoR) with help of major donors such as USAID, the European Union, the World Bank and the International Fund for Agricultural Development (IFAD), embraced a policy of total quality management. The policy targeted coffee as a priority sector by liberalizing the sector, cooperatives were formed, private sector was encouraged to build processing centres, and laboratories were built for quality control (Ntirushwa 2008). Also in early 1999 the export tax on coffee was eliminated as the way to facilitate opening up economy and liberalization of the sector.

The most frequently used criterion in policy effect evaluations is goal achievement (Coenen and Lulofs 2008-2009). Figure 5-1 below shows the goal and means to achieve them. The policy reform on coffee sector is evaluated through its goals. The indicators for goal achievements are time series data on coffee production, coffee export revenues, coffee prices and number of coffee processing plants constructed as means to improve the quality of coffee.

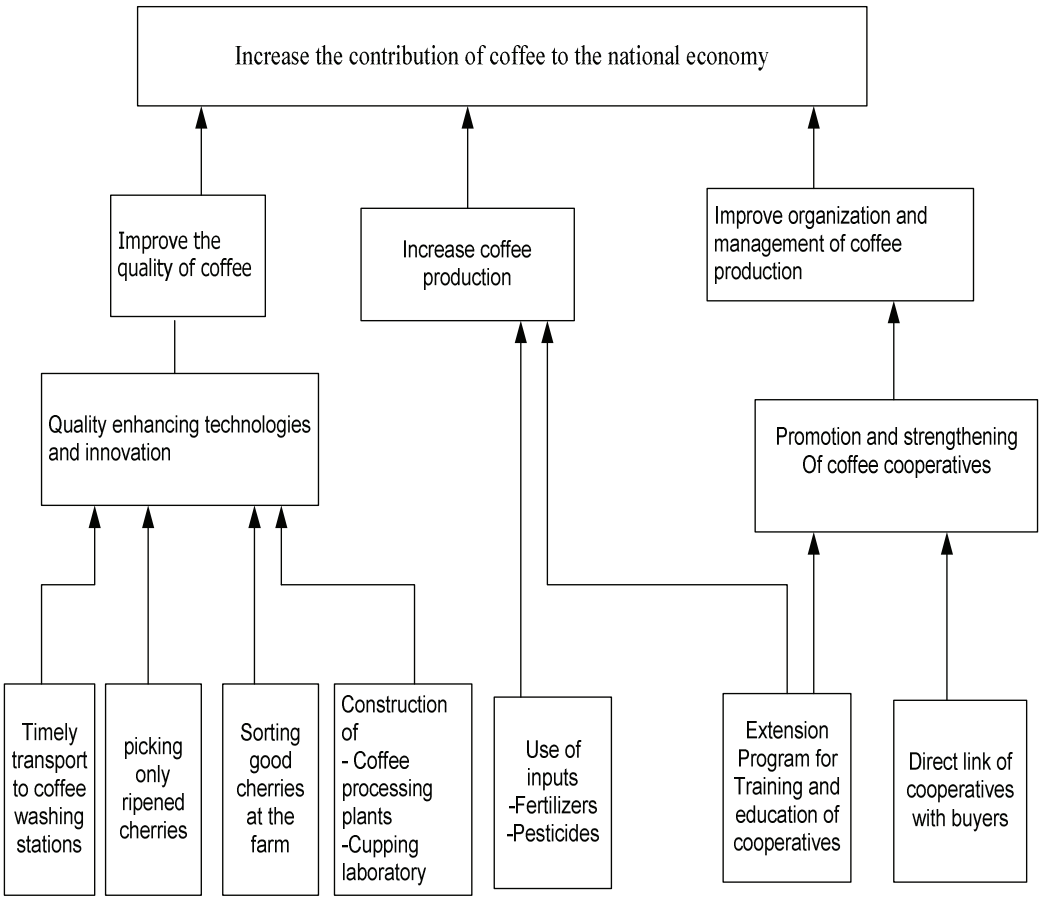


Figure 5-1 Policy tree

5.6. Improve the quality of coffee

Office of Rwanda Industrial Coffee (OCIR CAFÉ) has worked with interested NGOs, World bank, public and private individuals in order to improve the quality of coffee. They work with private individuals and coffee cooperatives.

5.6.1. Means to improve coffee quality

At production level: quality is controlled from production level, it includes: production of quality cherries, field management, pick only ripened coffee cherries, sort good cherries and timely transport to coffee processing plant for processing immediately.

In order to ensure timely transport the Rwanda bike project offered coffee bikes to cooperative to facilitate the transportation of cherries from the field to CWS. Forty percent of respondents from Abahuzamugambi and KOAKAKA cooperatives received coffee bikes. Figure 5-2 shows the effect of transport time on quality. As transport hours increase after picking of cherries, quality decreases.

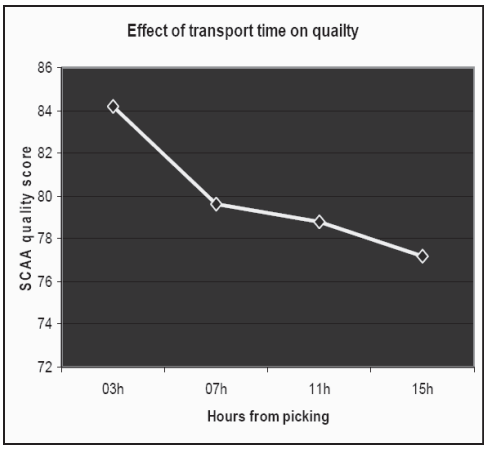


Figure 5-2 effect of transport time on Coffee quality adopted from PEARL

***At processing level*:** the cherries are sorted and damaged or poor cherries are removed, the coffee is fermented, cleaned and dried in the sun, then it is tested, sampled and packed.

Constructed infrastructures for quality improvement

In order to improve the quality of coffee, the important infrastructures were constructed. Coffee processing plants and cupping laboratory that enable coffee quality control from processing stage up to export. Since 2002, the coffee processing plants were built in the whole country as a mean to improve coffee quality. Figure 5-3 below shows the number of constructed and targeted CWS in Rwanda since 2002.

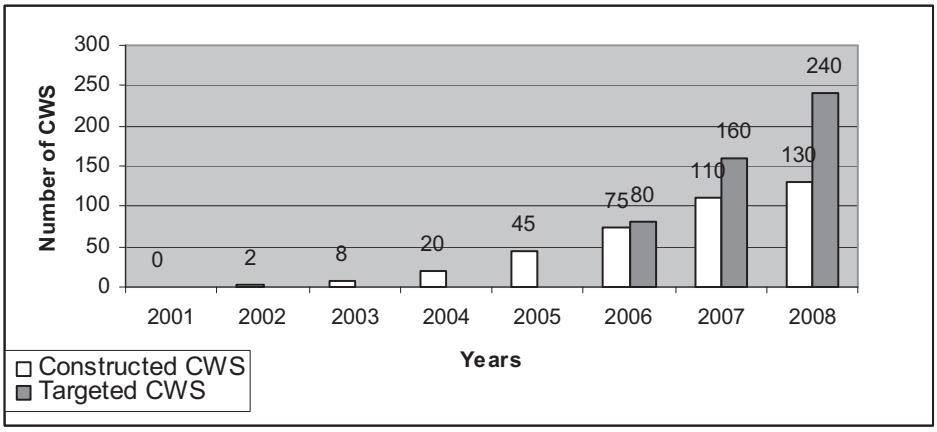


Figure 5-3 Number of constructed and targeted coffee processing plants in Rwanda since 2002 adopted from PEARL and OCIR CAFE

Note: The targeted number of CWS from 2002-2005 is not available. In 2001, there was no CWS.

Figure 5-3 above shows the increase of CWS from the year 2002 to 2008. However, the actual constructed CWS is below the targeted CWS. In 2006, the targeted CWS to be constructed was 80 but only 75 were constructed. In 2007 and 2008, the difference in targeted and actual constructed CWS

continues to increase. Though the CWS was constructed and increased from one year to another, the policy has not achieved the intended goal.

How are coffees processing plants clustered in 30 districts of the country? There is no clustering of coffee processing plants in districts of Rwanda. This is shown by Moran's I = - 0.03 which means that dissimilar attributes are clustered (high values near low values and low values near high values), this means that districts with high values of coffee processing plants are surrounded by districts with low values of coffee processing plants and vice versa. Also, P- value = 0.5 is greater than 0.05 significance level. This means that there is no clustering of coffee processing plants in districts of Rwanda.

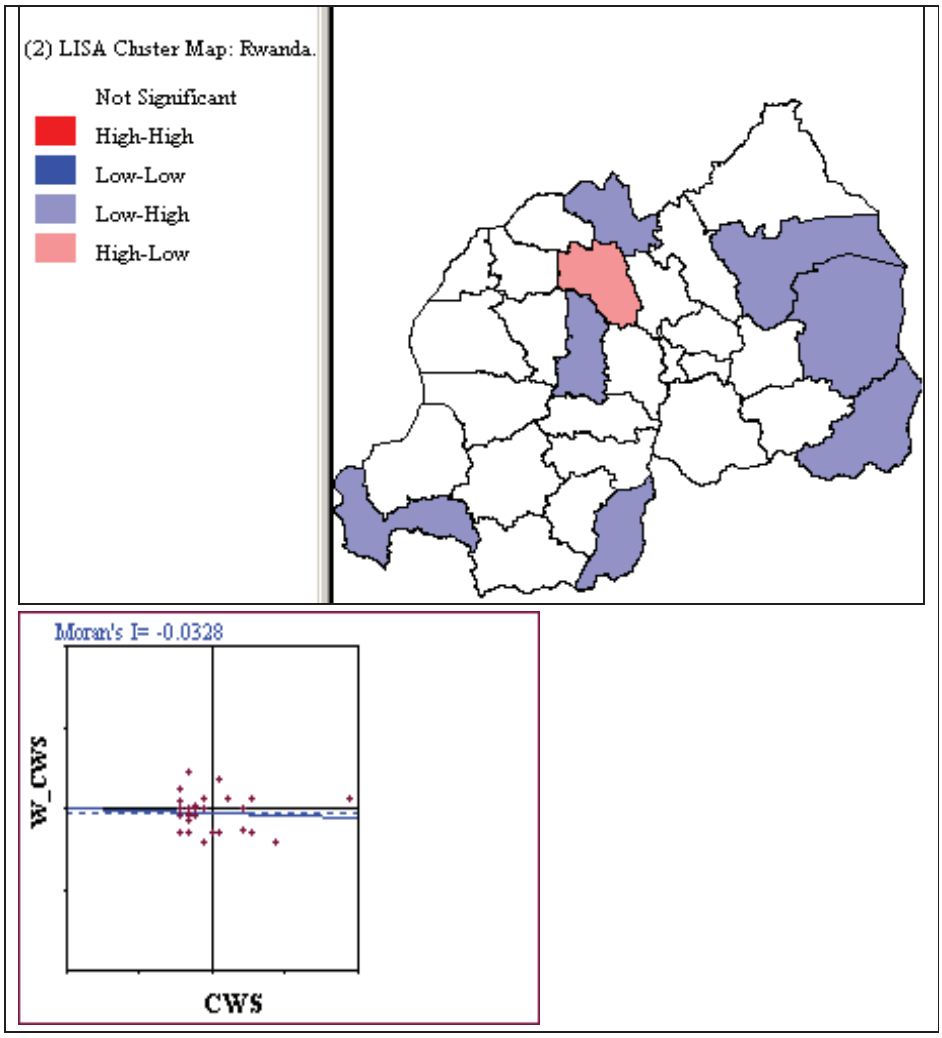


Figure 5-4 Clustering of coffee processing plants in districts of Rwanda

Figure 5-5 below indicates that 5 districts have no coffee processing plants and majority of the districts (9) have 1-2 coffee processing plants. There is one district with the highest numbers of coffee processing plants (21).

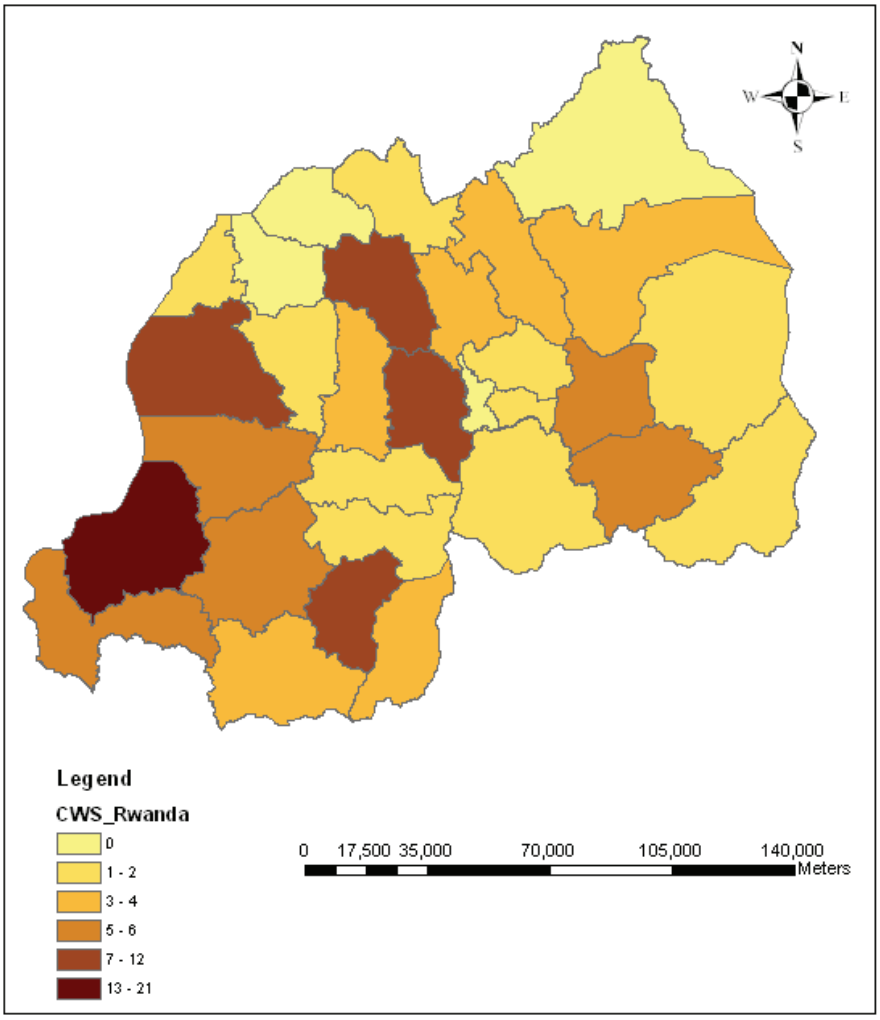


Figure 5-5 Spatial distribution of coffee processing plants in districts of Rwanda

The distribution of coffee processing plants depends on number of coffee trees in the district. The district with many coffee trees also has more coffee processing plants.

5.7. Impact analysis on quality improvement

The evolution in the export price of coffee

The cooperatives export coffee in different markets of USA, UK and Europe. The price of the coffee on these markets differs. The average price for all the market was used as the price for coffee export. The trend of export price shows increase in price of coffee since 2003-2008. The increase in price of coffee export price is due to increase in the quality of coffee. This is attributed to the impact of the policy reform on the coffee sector. However, the increase in price alone without the targeted price cannot tell us the extent to which the policy was successful.

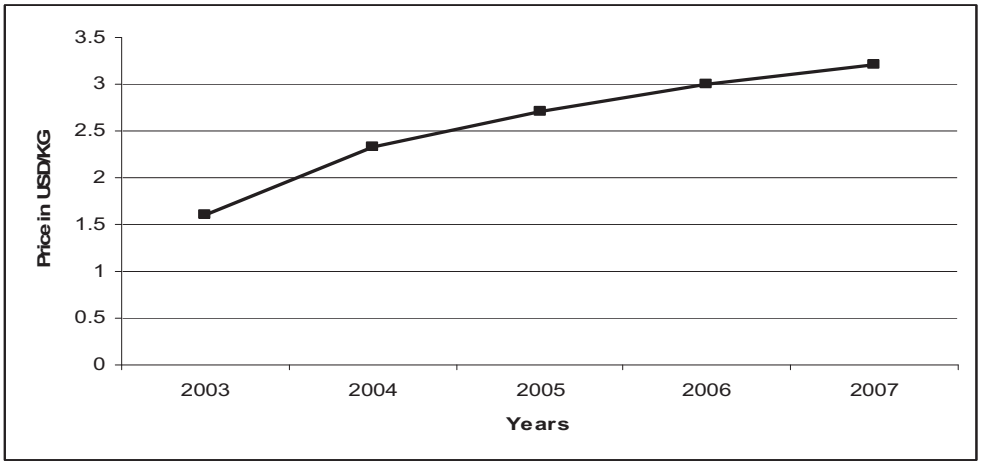


Figure 5-6 Evolution in price of fully washed coffee export since 2003 adopted from OCIR CAFE

Evolution of coffee exports values

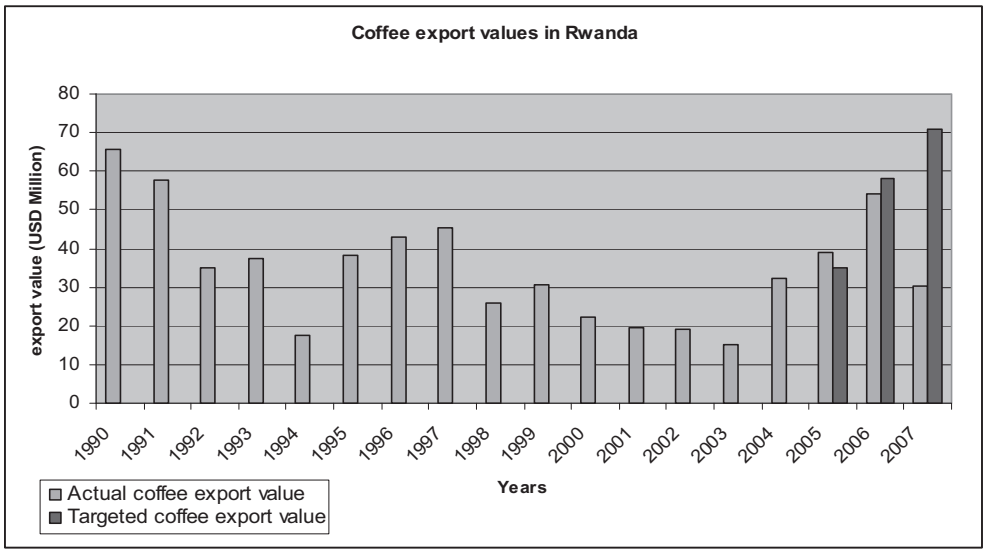


Figure 5-7Evolution of coffee exports value in Rwanda (1990-2007)
Note: Targeted export value since the policy started is not available

The trend shows the variations in export values since 1990-2007, the variations is associated to variations in coffee price, coffee output and insecurity. The trend shows the increase in coffee exports value in 2004-2006. In 2005 the coffee export value (39M USD) was greater than targeted value (35M USD) in this year the goal was achievement. However, in 2006 the difference was (-4M USD). In 2007, there was a big difference in targeted and actual value. The sharp fall in export value in 2007 was associated to the fall in coffee production in Rwanda which was also experienced on international coffee production.

5.8. Increase coffee production

5.8.1. Extension workers

The Office in Charge of Coffee in Rwanda (OCIR CAFÉ) intervenes in order to increase the production of coffee. It employs the extension workers to assist the cooperatives in training the coffee growers in techniques of coffee growing. In the three coffee cooperatives studied there are 49 extension workers employed by OCIR CAFÉ to facilitate the cooperatives in training the coffee growers in the methods of coffee growing. However, in the interview with cooperative members one coop member mentioned that *"we have been given the agronomists to assist us in coffee growing techniques, I have invited them several times to advice me but they never come".* This seems that the extension workers are not responding to the needs of farmers which can lead them to be inefficient in goal achievement.

5.8.2. Input supply

OCIR CAFÉ imports the fertilizers and pesticides and gives them to the cooperatives to provide them to the members. Fertilizers are given to cooperative members on credit which they pay after selling the coffee cherries to the cooperatives where as the pesticides is given for free to all coffee growers and the cooperatives pay 10% of the cost of fertilizers after exporting the coffee.

5.9. Impact analysis on coffee production increase

Figure 5-9 below shows the variations of Coffee production in Rwanda, from 1990-2007

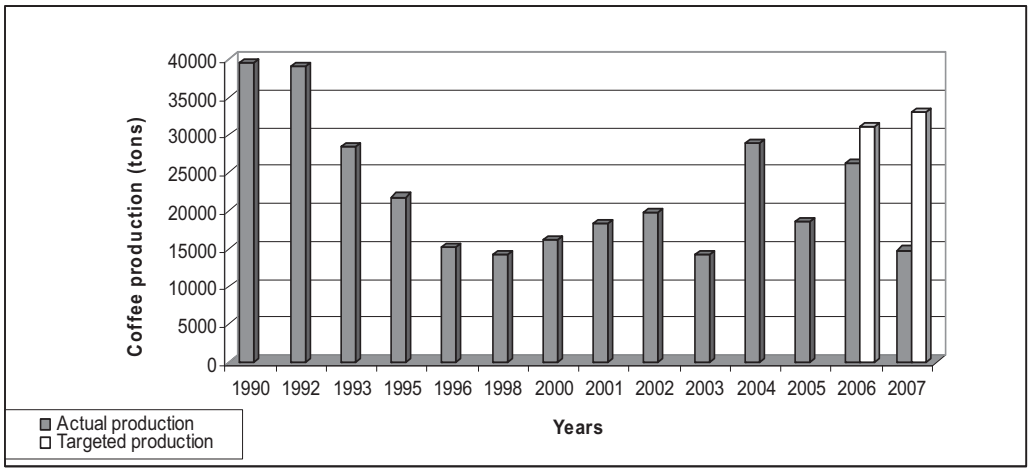


Figure 5-8 Variations in coffee production from (1990-2007)

Note: Targeted production available data is only for 2 years and data for 1994and 1999 are not available

According to OCIR CAFÉ action plan (GoF 2005) the Coffee production in Rwanda was greatly affected by the genocide of 1994 and its effects, some of coffee farmers left their farms and some of coffee trees were cut to settle people who were returning from exile. The coffee production is characterized by fluctuations which are related to coffee production cycle in Rwanda. The sharp fall in production of coffee in 2007 was caused by climate related factors and this situation was experienced on the international coffee production.

Is also other agriculture production in Rwanda characterised by low production and fluctuations in the output like in coffee? The coffee and tea productions are compared to see whether the low production and fluctuations in coffee is also experienced in tea production.

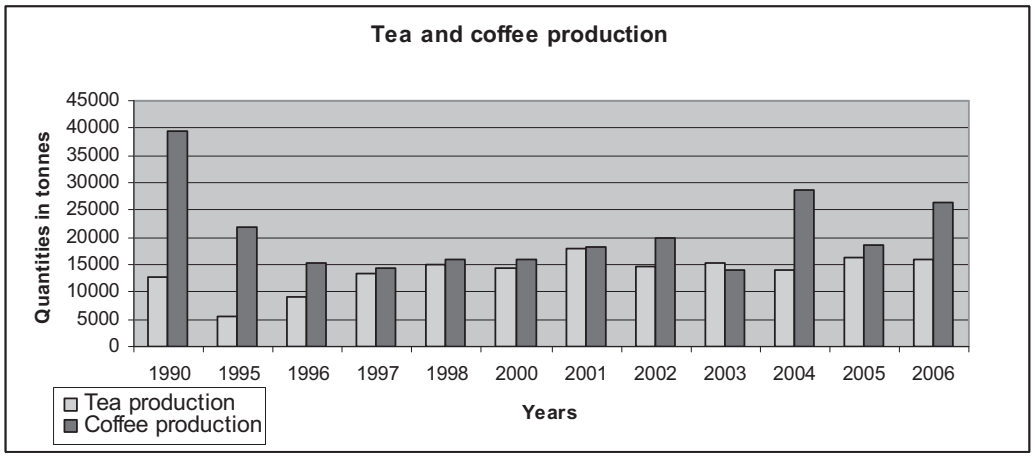


Figure 5-9 Coffee and tea production in Rwanda

Note: Production figures for some years are not available; some available figures for coffee production are left to facilitate comparison

The trend shows that the production of tea was not declined like the coffee production, but also there are fluctuations and no much increase. The increase in coffee production in 2004 may be attributed to the achievement of the policy reform as it is not related with tea production.

Based on the coffee production trend, which does not show the increase in coffee production even after the policy reform, and targeted production of coffee in 2006 and 2007, we can say that the policy is not successful in increasing the coffee production. The comparison of tea and coffee production showed that their production are characterised by fluctuations and low productions. The factors influencing the production of perennial crops, whether directly or indirectly, include climate, soil fertility, land owned, schooling, agricultural training, conservation extension, plot size and slope (Jansen 2006). Climate change and economic globalisation are two 'external' processes that affect agricultural system in the developing world. The effect of unfavourable climatic conditions combined with the very low prices due to market restructuring resulted in a significant reduction in coffee production (Leary 2008).

5.10. Organization and management of coffee production

Following the reform which liberalized the coffee sector, the coffee farmers were sensitized to form the coffee cooperatives so that they can start to export coffee. In order to improve the organization and management of coffee production the OCIR CAFÉ with the support from NGOs and other government institutions tried to promote and strengthening the coffee cooperative in management cooperative financial management, cooperative business management, export marketing and extension programs.

Table 5-1 Scaling out innovations on specialty coffee to different cooperatives and capacity building during four years period (2002 – 2006) (Ntirushwa 2008).

Year	Technological and organization Innovations promoted	Number of persons trained	Cooperatives represented	Resource people
2002	Accounting, management, production and Finance	8	Maraba (Abahuzamugambi) Karaba (KOAKAKA)	GTZ
2004	Cupping	13	11 coffee cooperatives	Cuppers from the Coffee Quality Institute and UCR
2005	Cupping	35	Representatives from Rwanda, Burundi, Uganda, and Kenya	PEARL and EAFCA
2005	Production: good agricultural practices on coffee	100 extension agents from 9 coffee coops	9 coffee cooperatives	PEARL
2006	Cooperative good governance, management	46 leaders, CWS managers, accountants	9 coffee cooperatives	PEARL

The PEARL project linked cooperatives directly to the buyers and this facilitated the cooperatives in negotiations with the buyers. Abahuzamugambi and KOAKAKA negotiate with the buyers and they give them the money in advance which is used in buying cherries from the farmers and then the buyers deduct the money after getting the dry coffee. Today the Abahuzamugambi and KOAKAKA cooperative export coffee to USA, UK, Japan market and Germany.

5.11. The role of other factors in the development of coffee cooperatives

5.11.1. Human factors

The coffee farmers contributed to the development of cooperatives by producing coffee and selling the coffee to cooperatives. As stipulated by (Michael Barke and Eden 2001), economic success is more likely to be achieved if members have a direct personal financial interest in the business. This means that the financial gain that the coffee farmers receive from the coffee motivated them to work hard to improve their livelihood, which also led to the success of the cooperatives. This argument is supported by the responses from the interviews with the cooperative members and non members on their attitudes towards the cooperatives. It was observed that the cooperative members joined the cooperatives due to the economic motives, and non cooperative members who are planning to join the cooperative are due to this motive.

5.11.2. The natural factors

The geographical distribution of coffee in the district has played the important role in the development of coffee cooperatives. We found that Abahuzamugambi cooperative which is located in the ward with the highest number of coffee trees in the Huye district has developed compared to KOAKAKA and KOGUMUWAKA.

The climate influences the development of coffee cooperatives as the production of coffee depends on climate. The fall in the production of coffee in the year 2007 was related to climate.

5.11.3. Economic factors

Shortage of land influences the development of coffee cooperatives as its success depends on coffee production. The interviews with coffee farmers showed that some coffee growers have not enough land to expand coffee farms.

Coffee prices may influence the development of coffee cooperatives. When the prices are high the coffee producers become more motivated to grow coffee and when the price falls the farmers are discouraged to grow coffee.

5.12. The effect of intervention of different stakeholders in the development of cooperatives

Many successful group ventures among the poor depend on external actors—the state, and NGO, or social activists. The poorer the group, the more important this outsider role (Thorp, Stewart et al. 2005). However, the aid is generally acknowledged to provide the donor with an element of control or leverage over the recipient (McKinlay and Little 1977). In relation to the history of cooperatives in developing countries, which was characterized by failures, the donor did not consider the interests that the farmers might or might not have in cooperating – the objective was the service to be provided, and this approach reduced the members' management autonomy and responsibility (Cleaver 1993).

Based on the above views, in relation to the study, while completing the washing station in early 2002, PEARL worked very closely with Abahuzamugambi and OCIR CAFE to organize the producers to bring high quality coffee cherries to the station. In order to do this, they decided to create a system of "Certification" of the coffee farmers. The requirements for certification included:

- Possessing 200 or more trees of the old "Bourbon" varieties of the 50s, 60s, and 70s
- Proper execution of mulching
- Proper tree pruning
- Use of fertilizer and manure

These requirements eliminated half of the member of Abahuzamugambi and they had to recruit new members who met the requirements (PEARL 2004). It seems that, though the supporters are trying to develop the coffee cooperatives, they intervene in the internal organization of the cooperatives, which may later have a negative impact on the development of cooperatives. The cooperatives members may not feel secure when they see other fellow members being eliminated by outsiders.

In the research carried out on the management of three coffee cooperatives in Rwanda seventy-three percent of the member participants believed that their cooperative was member-owned. Of the remaining twenty-seven percent, two members shared that the General Manager is the owner and another two that Tim (Dr. Tim Shilling, director of the PEARL project) was the owner (Goff 2006) . This indicates that the intervention has led some cooperative members to think that the cooperatives are owned by the supporters. As stipulated by (Cleaver 1993), this approach reduces the members' management autonomy and responsibility.

The analysis of the background of Rwandan cooperatives shows that all of them have been "parachuted", this means created from top, some of them by the reverends in the context of the benefit schemes, others by The Office in Charge of Coffee in Rwanda- Urundi (OCIRU), in view to develop the exports farming, others by the mining companies to alleviate the workers' poverty (Akiyama, Buffes et al. 2001; GoF 2005). We found that this situation still exists even today. The coffee cooperatives have been created as an instrument for management and organisation of coffee.

5.13. Conclusion

Government reform policy on coffee sector which is aimed at increasing the contribution of coffee to the national economy is the key factor in the success of the coffee cooperatives. The partners like the PEARL have contributed much in terms of financial support by constructing Coffee Washing Stations, National cupping laboratory and linking the cooperatives and private coffee exporters with buyers. Other factors that influence the development of coffee cooperatives include the role of coffee farmers in their way to improve their livelihood, the natural factors like soils and relief in the region, the availability of land and climate.

The policy reform on coffee sector was partially successful in improving the quality of coffee based on the increase in price of coffee export. However, we were not able to determine the degree to which the criteria have been fulfilled as we had no data on targeted price levels. Also, it was partially successful in increasing coffee export revenues. The number of CWS is increasing from a year to year but the intended goal was not achieved. The goal of increasing coffee production was not achieved based on the targeted production in 2006 and 2007. This was due to the influence of external factors that influence coffee production such as climate

The results of policy evaluation showed that, the policy has unintended effect on cooperatives in relation to international cooperative principles of autonomy and member owned enterprise. We found that in 2002, after the completion of the first coffee processing plant in Maraba, the PEARL project and OCIR CAFE worked closely with Abahuzamugambi (coffee cooperative) in creating the system of certification of members. This certification eliminated the half of the members of Abahuzamugambi. This approach tends to reduce autonomy and responsibility of the cooperative members. Also, as it used to be in history of cooperatives in Rwanda as top down formation, these coffee cooperatives have been formed from top to down as the instrument for managing and organizing coffee production. This effect may have a negative impact in the development of coffee cooperatives

6. The Contribution of coffee cooperatives to the development of the region

To identify the role of coffee cooperatives to the development of the regions (wards), the researcher had the plan to use the principle of with- minus- without. This principle only considers those changes directly attributed to the project, it can explain what happened in the region as a result of the coffee cooperatives. Due to data limitation at ward and district level, the researcher only describes what was done by the three coffee cooperatives in the wards and assumes that with out these coffee cooperatives this couldn't have done. The indicators for measuring the effect of the coffee cooperatives on the regional development are: Number of jobs created, infrastructures constructed due to presence of the coffee cooperatives, and those constructed by the cooperatives and tax revenue generated from the coffee cooperatives.

6.1. The spatial clustering of coffee trees in Huye district

In Huye district, there is positive autocorrelation of coffee trees. This means that similar attributes are clustered (high values near high values and low values near low values). Cluster map in figure 6-1 below indicates that there are wards with high number of coffee trees located near the wards with high number of coffee tree and vice versa.

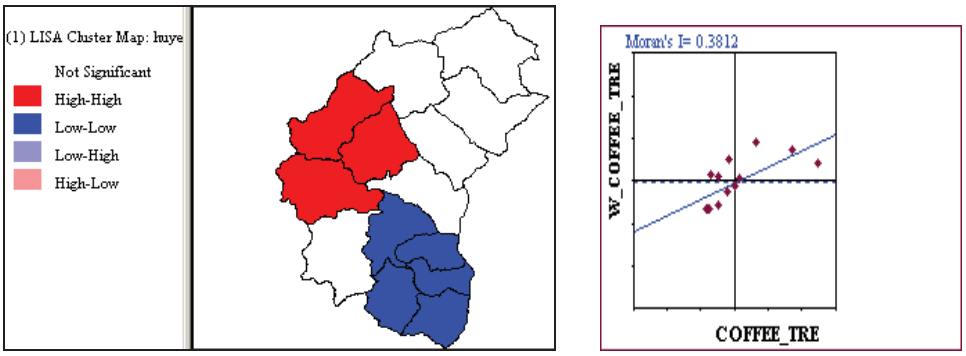


Figure 6-1Clustering of Coffee trees in wards of Huye district

Also, positive Moran's I =0.4 indicates the clustering pattern of coffee trees in Huye district. Moran's scatter plot shows at the lower left quadrant wards with low –low number of coffee trees located near by, while the low right quadrant shows the wards with low number of coffee trees near wards with high number of coffee trees. On the other hand, the upper left quadrant shows the wards with the high number of coffee trees near the wards with low number of coffee trees where as the upper right quadrant shows the wards with the high-high number of coffee trees located together.

6.2. The role of coffee cooperatives to the development of the region

Regional development in this section was explained, according to the definition of development given by (Merrett and Walzer 2004) as anything that bring good or increase in the welfare of the people.

6.2.1. People employed by coffee cooperatives

The presence of coffee cooperatives has generated employment to people in the area. The cooperatives employ permanent employees who work in various activities of the cooperative. These include Cooperative manager, accountants, secretaries, and managers of coffee washing stations, security guards of coffee processing plants, drivers and agronomists employed by OCIR cafe to assist the cooperatives in training the cooperative members on methods of farming.

Table 6-1 Permanent employees employed by cooperatives and OCIR CAFE

PERMANENT	ABAHUZAMUGAMBI	KOAKAKA	KOGIMUWAKA
EMPLOYEES	38	26	6

These cooperatives also employ the seasonal workers during the harvesting and processing seasons of coffee. Many workers are employed mainly from March to July.

Figure 6-2 Seasonal workers employed in coffee cooperatives in different activities

The number of seasonal employees varies with variations in the coffee out, as a lot of work like coffee weighing, drying, selection and so on, also increase.

Table 6-2 Number of seasonal workers employed in three cooperative

YEARS	ABAHUZAMUGAMBI	KOAKAKA	KOGIMUWAKA
2003	-	-	-
2004	450	-	-
2005	400	212	-
2006	300	198	-
2007	338	131	-
2008	342	98	102

There is big difference in number of people employed by these cooperatives. Abahuzamugambi cooperative employees the highest number of permanent and seasonal workers. The reason is that it has many projects that employ people than KOAKAKA and KOGIMUWAKA such as four coffee processing plants, internet café and Credit and saving bank.

6.2.2. Infrastructures constructed by coffee cooperatives and or due to presence of coffee cooperatives in the regions.

6.2.2.1. Coffee processing plants

The coffee cooperatives have led to construction of coffee processing plants in the regions. Some coffee processing plants were constructed by donors to support the coffee cooperatives and improve the quality of coffee. Other coffee processing plants were built by coffee cooperatives with loan.

Table 6-3 Coffee processing plants built by donors and coffee cooperatives

YEAR	NUMBER OF COFFEE PROCESSING PLANTS	CONSTRUCTOR	COOPERATIVE NAME	LOCATION
2002	1	PEARL	Abahuzamugambi	Shyembe cell-Maraba
2003	1	PEARL and ACDI/VOCA	KOAKAKA	Karambi cell-Kigoma
2004	1	PEARL	Abahuzamugambi	Kabuye cell - Maraba
2005	1	Abahuzamugambi	Abahuzamugambi	Sovu cell-Huye
2007	1	Abahuzamugambi	Abahuzamugambi	Kibingo cell-Karama
2007	1	KOGIMUWAKA	KOGIMUWAKA	Gasaka cell - Rusatira
2007	1	KOAKAKA	KOAKAKA	Muganza-Kibirizi (Nyamagabe)

These coffee processing plants have contributed to improvement of coffee quality in the regions. Before the construction of these coffee processing plants, the coffee farmers used to take coffee cherries skin off by using their own hands, legs or local machines, ferment them in buckets with water and dry them in sun, some farmers used clean water and others would use dirty water. Then, they sold their coffee when beans still have a surrounded layer which is known as ‘parchment’. This coffee was exported as ordinary coffee and their price on International market was low due to their low quality.

Methods used for coffee processing with-out the coffee processing plants in the wards

Figure 6-3Methods used for coffee processing with-out the coffee processing plants in the Wards adopted from PEARL and Ntirushwa.

Coffee processing plants constructed have the capacity to process the large quantities of coffee and have led to improve in the quality coffee.

Figure 6-4Cyarumbo Coffee processing plant constructed by PEARL in Maraba, owned by Abahuzamugambi

Today the Abahuzamugambi and KOAKAKA coffee cooperative are known world wide. They sell coffee to international markets like Union Coffee Roaster in U.K, Inter American in USA, and Mercanta in U.K, Community Coffee Company in USA and in Japan Market. This success is not the achievement of Cooperative itself, SPREAD the former PEARL and OCIR CAFE have played the important role in improving the quality of coffee.

How do coffee processing plants clustered in wards of Huye district? Are there wards with high values of coffee processing plants surrounded with wards with high values or not? Moran's I =0.1 indicates that there is weak positive clustering of coffee processing plants in Huye.

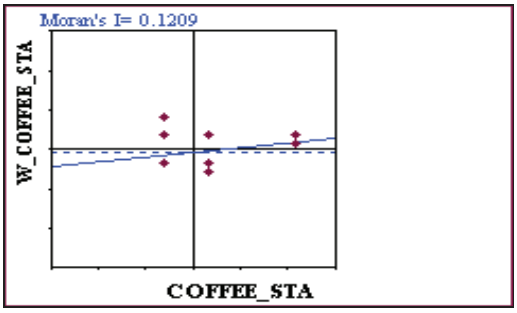


Figure 6-5 Moran's I scatter plot showing clustering of CWS in Huye district

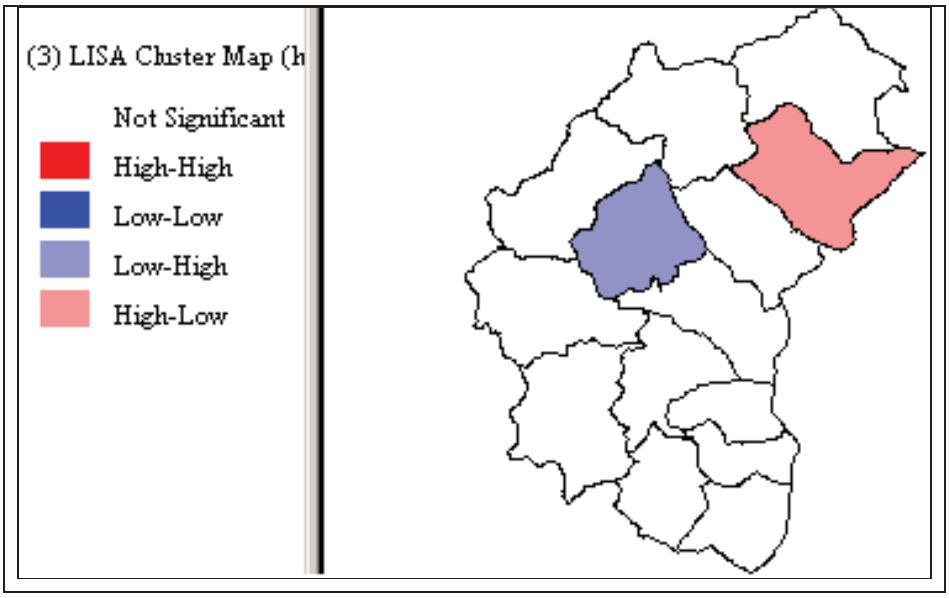


Figure 6-6 Clustering of coffee processing plants in wards of Huye district

Figure 6-5 indicates that there is ward with low number of coffee processing plants near the wards with high number of coffee processing plants and vice versa.. The ward with low number of coffee trees in figure 6-1 above is near Maraba and Kigoma wards, which has high number of coffee processing plants. Also, the ward with high number of CWS in figure 6-6 above is Rusatira which is surrounded with wards with no coffee processing plants.

6.2.2.2. Maraba Vision telecenter

The presence of Abahuzamugambi cooperative has led to the installation of Maraba internet café. It was installed as a support to Abahuzamugambi coffee cooperative by Last Mile Initiative (LMI) a Washington State University (WSU) Centre to Bridge the Digital Divide and Rwanda Information Technology Authority (RITA) gave them the Laptops. As Maraba is remote area, and there is no other internet cafe, this internet has improved the communication service in the area. In additional, it generates income to the cooperative and employs people in the area. However, most of people in the area are not able to use the internet due to computer illiteracy, which is not only in Maraba sector but in the whole country.

Figure 6-7 Maraba internet cafe and people using internet

6.2.2.3. Saving and credit bank

The Abahuzamugambi has led establishment of credit and saving bank in Maraba. In 2006, "Caisse Populaire d'Eparge et de Credit (CAPEC)" people's credit and saving bank supported Abahuzamugambi cooperative to establish a credit and saving bank in Maraba. This bank facilitates the cooperative members' to get credit and encourage them to save.

6.2.2.4. Unpaved roads and bridges

The presence of coffee cooperatives have necessitated the construction of unpaved roads going to coffee processing plants in Maraba, Kigoma and Rusatira wards.

Table 6-4Unpaved roads and Bridges constructed in Maraba, Kigoma and Rusatira

Year	Unpaved roads and bridges	Constructor	cost (Rwandan francs)	cooperative name
2002	1 unpaved road to Cyarumbo CWS	Local government and PEARL	Not available	Abahuzamugambi
2004	Bridge to Kabuye CWS	Abahuzamugambi	1,500,000	Abahuzamugambi
2005	Bridge to Cyarumbo CWS	Abahuzamugambi	800,000	Abahuzamugambi
2004	1 unpaved road to Karambi CWS	KOAKAKA	1.450.000	KOAKAKA
2007	1 unpaved road to Gasaka CWS	KOGIMUWAKA	Coop members	KOGIMUWAKA

These roads and bridges were constructed to facilitate the transportation of coffee cherries from the coffee growers' fields to Coffee processing plants and dry coffee from coffee processing plants to major roads for export. These roads and bridges are not only used for transportation of coffee, but also local community benefit from using them in daily movements.

6.2.3. Tax revenue generated by the coffee cooperatives

Normally agricultural outputs in Rwanda do not pay tax. Therefore, this makes coffee cooperatives to play a special role in income generation of the region. The tax paid is fixed by the district for all economic enterprises working in the district according to type of production and location (urban or Rural). Abahuzamugambi and KOAKAKA cooperatives are ranked first in industry sector in rural area of Huye District. They pay a yearly trading license tax of 160,000 Rwandan francs and a monthly tax of 1000frw. The abahuzamugambi and KOAKAKA contributed to an increase of 1% trading tax of Huye district in year 2007.

The KOGIMUWAKA is not paying tax because it started the coffee business in year (2008), and is not exporting the coffee. Its coffee is exported by Technoserve (project that assisted them to build coffee processing plant.

6.3. Comparison of the three coffee cooperatives

Table 6-5 below shows the location of cooperative, the number of coffee trees, the cooperative name and when it started, number of its members and coffee processing plants it owns. The table provides the basis for the comparison of the role played by these cooperatives in the development of the wards where they are located.

Table 6-5 Description of the threes coffee cooperatives

LOCATION OF THE COOP (WARD)	NUMBER OF COFFEE TREES	COOP NAME	YEAR COOP STARTED	NUMBER OF COOP MEMBERS IN 2008	COFFEE PROCESSING PLANTS OWNED
Maraba	1,578,940	Abahuzamugambi	2002	1344	4
Kigoma	1,205,162	KOAKAKA	2004	1129	2
Rusatira	405,611	KOGIMUWAKA	2006	425	1

The geographical distribution of natural resources help to explain why regions grow at different rates (Armstrong and Taylor 2000). Abahuzamugambi was the first assisted coffee cooperative in Huye district by PEARL project and OCIR CAFE. It attracted the supporters because it is located in the best coffee producing sector (Maraba) in Huye district and is among the best 22 coffee zones of Rwanda. KOGIMUWAKA contributed less to the development of the region because of its location in area that produces small number coffee compared to Abahuzamugambi and KOAKAKA.

Abahuzamugambi cooperative has contributed much in almost all the indicators used to measure the effects of coffee cooperatives to the regional development. It employs the highest number of seasonal and permanent workers, it has led to the establishment of Maraba Internet Centre and credit and saving bank in additional to construction of coffee processing plants in 2 neighbouring sectors of Huye and Karama..

6.4. Conclusion

The coffee cooperatives employ the seasonal and permanent workers, pay tax revenue to the government and have constructed and led to the construction of infrastructures in the area which include coffee processing plants, bridges, unpaved roads and installation of Maraba internet café. The coffee processing plants constructed led to change in the methods of coffee processing in wards. The old poor methods were replaced by new methods of processing in coffee processing plants which improves the coffee quality. This has led the cooperatives and regions to be known internationally as the producers of specialty coffee which was not the case before the existence of coffee cooperatives in the region. We found that, the roles of these coffee cooperatives vary from one ward to another. It has been observed that Abahuzamugambi has contributed much to the development of the ward than KOAKAKA and KOGIMUWAKA.

7. The contribution of Coffee Cooperatives to the members

The research questions provide the basis for investigation of the contribution of coffee cooperative to the members. The gains that cooperative members gain from the coffee cooperatives are analysed using frequencies and percentages. The costs cooperative members incur in the cooperatives are also discussed in this chapter. Mean, maximum and minimum number of coffee trees and income per coffee tree are used for comparison of the coop and non coop members' households. The Mann-Whitney test for two independent variables was used to test whether there is significant difference in income per coffee tree and coffee trees owned by coop and non coop households.

7.1. The gains cooperative members acquire from cooperative

The household samples (10 respondents from each coop) were asked on the gains they receive from the cooperative. The table below shows the types of gain received by coop members, their frequencies and percentages.

Table 7-1 Gains the cooperative members receive from coffee cooperatives

TYPE OF GAIN	ABAHUZAMUGAMBI	KOAKAKA	KOGIMUWAKA	TOTAL FREQUENCY
	Frequency and percentage			
Coffee bike	8 (24.2%)	4 (19%)	0 (0%)	12 (15.3%)
Pesticides	6 (18.2%)	4 (19%)	9 (39.1%)	19 (24.3%)
Fertilizer	5 (15.2%)	4 (19%)	8 (34.8%)	17 (21.7%)
Credit	6 (18.2%)	3 (14.3%)	1 (4.3%)	10 (12.8%)
Employed by coop	2 (6.1%)	0 (0%)	1 (4.3%)	3 (3.8%)
Market for coffee cherries	2 (6.1%)	3 (14.3%)	0 (0%)	5 (6.4%)
Training on use of inputs	1 (1%)	0 (0%)	1 (4.3%)	2 (2.6%)
Training in coffee processing	1 (1%)	1 (4.5%)	1 (4.3%)	3 (3.8%)
Used to get dividend	1(1%)	2 (9%)	0 (0%)	3 (3.8%)
Be with others	1(10%)	0 (0%)	1 (4.3%)	2 (2.6%)
Lend weighing machine to coop	0(0%)	1 (4.5%)	0 (0%)	1 (1.3%)
None	0(0%)	0 (0%)	1 (4.3%)	1 (1.3%)
Total	33(100%)	22 (100%)	23 (100%)	78 (100%)

Producers' cooperatives create opportunities for producers to get more involved in value-adding activities such as input supply, credit, processing, marketing and distribution (WorldBank 2002). The findings of the study are in line with this argument.

Table 7-1 above shows that many respondents from all 3 coffee cooperatives receive pesticides and fertilizers. Fertilizers and pesticides are given to cooperatives by OCIR CAFE and the cooperatives distribute them. The fertilizer is given to members on credit which they pay after selling the coffee cherries. Both the coop members and non coop members receive pesticides for free and the cooperatives pay OCIR CAFE the cost of pesticides after selling the dry coffee. The impact of fertilizers and pesticides on the output is not known because some of respondents said to have the problem of coffee diseases. However, some respondents stated that the pesticides control the coffee diseases when applied in time (during flowering).

The respondents also gain the coffee bike from cooperatives. The bikes were provided to cooperatives by Rwanda bike project in order to facilitate the transportation of coffee cherries from the field to washing stations or collection points where the cooperative trucks collect them. This was done in order improve the quality of coffee because the coffee farmers used to carry the coffee on their heads or on wooden bikes. This delay deteriorates the quality of coffee because the coffee cherries need to be processed immediately after picked. The bikes also help the farmers in their daily activities.

Figure 7-1 Wooden bicycle and coffee bike used for coffee transportation

Source : http://projectrwanda.org/ *Source: http://projectrwanda.org/cargo-bike*

The coffee bikes are given to coop members on credit; a bike costs 80,000 Rwandan francs to be paid in three years period. However, 20% of Abahuzamugambi and 10% of KOAKAKA respondents said that they did not receive the coffee bike. This is due to the fact that, the number of coffee bikes given to cooperatives is less compared to number of members, and the cooperative considers the capacity of the member to pay the loan in duration of 3 years. The cooperative members with few coffee trees and poor maintained coffee did not receive the bikes. KOGIMUWAKA did not receive the coffee bikes because it was not supported by PEARL project. The Coffee bike project distributes the bikes in Cooperatives that work with SPREAD, former PEARL project.

The cooperative members also get credit from cooperative. Although 3% of respondents mentioned that credit is little, (13%) of the respondents said that they have been able to take their children in schools and solve some financial problem by receiving credit from the cooperative.

From the above findings (table 7-2), it can be observed that the cooperatives members do not receive the dividend from the coop. In Abahuzamugambi 10% of respondents and 20% in KOAKAKA stated that they used to receive dividend from the coop but two years have passed without receiving them. In KOGIMUWAKA 10% of respondents mentioned that they don't receive the dividend. This can be attributed to the lack of finance in these cooperatives. The cooperatives do not even have money for buying coffee cherries from coffee farmers; they use money they receive from buyers of dry coffee as pre- payment. Before this arrangement started the coop used to delay paying the coop members for coffee cherries.

The cooperative members also gain market for coffee cherries. Before the construction of coffee processing plants the coffee growers used to process the coffee themselves by using hands, legs and local machines which they said, that was time and energy consuming.

7.2. The cost involved in cooperatives

7.2.1. Contribution fee paid to the cooperative

To be a cooperative member, one must pay the membership fee. This fee varies from one cooperative to another.

Table 7-2 Membership fee (amount in Rwandan francs)

ABAHUZAMUGAMBI	KOAKAKA	KOGIMUWAKA
5000	2000	3000

The membership fee is agreed upon in general meeting of cooperatives. If the fee increases, even the old members have to pay additional amount, so that they all have equal shares in the cooperative. The contribution fee has become one of the hindrances for coffee growers to join the cooperatives. In Maraba 20% of non coop members stated that they failed to get the contribution fee in order to join.

7.2.2. Time and energy

Other cost related to cooperative is time used to attend cooperative meetings. Also, some cooperative members do a joint activity for example KOGIMUWAKA cooperative constructed the unpaved road going to coffee washing stations which was time and energy consuming.

7.2.3. Payment delay

The cooperative members used to encounter the problem of payment delay for coffee cherries from the cooperative while the non cooperative members were getting their money in time. However, since year 2007 this problem was solved, when the cooperatives do not have the

money to pay for coffee cherries bought from the coop members, the buyers of green coffee give the coop the advance to be used and they pay after selling the coffee.

7.3. Comparison of income received by cooperative members and non cooperative members from coffee cherries

In order to compare the income of coop and non coop members, the mean, standard deviation, minimum and maximum of coffee trees, total income and income per coffee tree were computed. The income received from the coffee in year 2008 and the numbers of coffee trees were used for computation. Table 7-3 below gives the summary.

Table 7-3 Summary of number of coffee trees, total income and income per coffee tree.

Case Summaries

Is the household a member of cooperative		Number of coffee trees owned	Total income	Income per coffee tree
no	Mean	173.93	40667.86	233.49
	Std. Deviation	110.045	30573.370	57.922
	Minimum	70	10500	105
	Maximum	655	180000	321
yes	Mean	427.46	128242.86	295.07
	Std. Deviation	216.037	83722.798	80.589
	Minimum	80	29250	105
	Maximum	850	375000	484
Total	Mean	300.70	84455.36	264.28
	Std. Deviation	212.647	76499.050	76.160
	Minimum	70	10500	105
	Maximum	850	375000	484

Table 7-3 above shows that there is difference in the mean, std. deviation and minimum and maximum of number of coffee trees, total income and income per tree for coop and non coop members' households.

The cooperative members have higher values of mean, maximum and minimum number of coffee trees than the non coop members. This difference may be explained by the fact that the coop members use the fertilizers from the cooperatives and are trained on coffee growing techniques and input use. In additional to this, most of the cooperative members have more coffee trees than non coop members due to the fact that some cooperatives set the criteria for selecting the members. For instance for one to become a member of Abahuzamugambi coop he/she must have at least 200 coffee trees, which are well maintained. As stipulated by (Thorp, Stewart et al. 2005), the poor may be less likely to form groups in the first place, less likely to make a success of groups, and the poorest may typically be excluded from successful groups.

The standard deviations have high values which indicate that there are variations in number of coffee trees and income per tree for both coop and non coop members. However, the standard deviations for income per coffee tree are lower than that of number of coffee trees. Also, the standard deviations for non coop for both number of coffee trees and income per coffee tree are lower than for coop members. This is due to the fact that, in Maraba and Kigoma the variations in the number of coffee trees owned by coop and non coop members is high.

The following hypothesis were formulated and used to test whether the difference in number of coffee trees owned and income per coffee tree are statistically significant.
H_o: There is no significant difference in number of coffee trees and income per coffee tree owned by coop and non coop households

Mann-Whitney statistical test for two independent samples was done to test the statistical significance of the difference. Table 7-4 below shows the results.

Table 7-4 Statistical test for difference in income per coffee tree and the number of coffee trees

Test Statistics

	income per coffee tree	number of coffee trees owned
Mann-Whitney U	208.500	110.500
Z	-3.008	-4.622
Asymp. Sig. (2-tailed)	.003	.000

The results show that there is significant difference in number of coffee trees and income per coffee tree owned by coop and non coop, with critical level of .003 in number of coffee trees and .000 in the income per coffee tree which is less than significant level of 0.05. The null hypothesis that there is no difference in number of coffee trees and income per coffee trees is rejected. Therefore, we conclude that there is significant difference in coffee trees and income per coffee trees owned by coop and non coop households. This means that coop members have more coffee trees than non coop members and higher income per coffee tree than non coop households.

7.4. Conclusion

In this section, the contribution of coffee cooperatives to the development of the members was discussed. The cooperative members gain fertilizers, pesticides, coffee bike and credit. They also get market for coffee cherries and training on input use and on coffee processing for the coop members who are employed in the cooperative. The non coop members also have some benefits from the coffee cooperatives like free pesticides and market for coffee cherries. The costs involved in the cooperative include the contribution fees, time to attend cooperative meetings and activities involved in the cooperative. Statistical results showed that coop members have more coffee trees and income per coffee tree than non coop households.

8. Attitude of coffee growers towards the coffee cooperatives

To identify the attitudes of coffee growers towards the coffee cooperatives in the area of study, the coop members were asked why they joined the coffee cooperatives, while the non members were asked whether they plan to join the coop and if so, why?. The data was analyzed in frequencies and percentages and presented by tables and texts. The analysis of the responses helped us to identify the attitudes of coffee growers towards the coffee cooperatives.

8.1. The factors that attracted the cooperative members to join the cooperative

Table 8-1below gives the summary of the reasons for joining cooperatives by members of Abahuzamugambi, KOAKAKA and KOGIMUWAKA.

Table 8-1 Reasons of cooperative members for joining the cooperatives

REASON TO JOIN THE COOPERATIVE	ABAHUZAMUGAMBI	KOAKAKA	KOGIMUWAKA	TOTAL FREQUENCY
	Frequency and percentage			
Improve coffee production	7 (35%)	7 (29%)	6 (28.6%)	20 (31%)
Get market for coffee	4 (20%)	4 (17%)	3 (14.3%)	11 (17%)
Coffee bike	0(0%)	1 (4%)	0 (0%)	1 (1%)
Credit	1 (5%)	2 (8%)	4 (19%)	7 (11%)
Pesticides	3(15%)	4 (17%)	2(9%)	9 (14%)
Fertilizers	1 (5%)	4 (17%)	3(14.3%)	8 (12%)
Get support from donors when together	2(10%)	1(4%)	2 (9%)	5 (8%)
Training on use of inputs	0 (0%)	1(4%)	1 (5%)	2 (3%)
Get dividend	2 (10%)	0 (0%)	0(0%)	2 (3%)
Total	20(100%)	24 (100%)	21 (100%)	65 (100%)

Economic motives are significant in the origins of the cooperatives (Michael Barke and Eden 2001). The results from the interviews with the coop members showed that they were attracted to join the cooperative by the economic motives. The majority of respondents as indicated by the highest total frequency (20) which is 70% of respondents from the three cooperative joined the cooperatives in order to improve the production of coffee because the cooperatives provide the coffee growers pesticide for free and fertilizers on credit. Also, the cooperative members are trained on the techniques of coffee growing.

In the Rwandan cooperative sector strategies document, it is stated "*indeed, the members were considering a cooperative as a mean of receiving the financial assistance from donors rather than a productive enterprise".* It can be observed that 17% of the respondents joined the cooperatives so that they can gain support from the donors.

8.2. Non cooperative member's attitudes towards the cooperative

The non cooperative member's respondents were asked whether they plan to join the coffee cooperatives or not. Table 8-2 below shows the willingness of the non coop members to join the cooperatives

Table 8-2 Willingness of non cooperative members to join the cooperative

Plan to join coop	Yes	No	Not decided	*Total*
Non coop members Maraba	9	0	1	10
Non coop members Kigoma	8	1	1	10
Non coop members Rusatira	6	0	4	10
Total	23	1	6	30

The majority of non cooperative member's respondents, 77 percent said that they plan to join the cooperatives. They said that they could have joined the cooperative earlier but their coffee tree was still young. One of the respondent in Kigoma who is not planning to join the coffee cooperatives said that *"I sale my coffee cherries to the private person, who provide me credit and collect my coffee at home after harvesting, so I can not stop selling my cherries to her".*

8.3. Reasons why the non cooperatives members wish to join the cooperatives

Table 8-3 below gives the summary of the reasons why the non cooperative members plan to join the coffee cooperatives.

Table 8-3 Reasons for plan to join the coops by the non coop members

REASON NON COOP MEMBERS PLAN TO JOIN THE COOPERATIVE	ABAHUZAMUGAMBI	KOAKAKA	KOGIMUWAKA	TOTAL FREQUENCY
	Frequency and percentage			
Get Coffee bike	5 (22%)	3 (16 %)	0(0%)	8 (15%)
Get credit	6 (26%)	6(32%)	5 (42%)	19 (34%)
Get fertilizers	7(30%)	5 (26%)	3 (25%)	14 (25%)
Improve coffee production	5 (22%)	2(11%)	3 (25%)	10 (18%)
Get support when together	0(0%)	1 (5%)	1(8%)	2 (4%)
Get training on input use	0 (0%)	1(5%)	0(0%)	1 (2%)
Sensitized by the local leaders	0(0%)	1(5%)	0 (0%)	1 (2%)
Total	23(100%)	20(100%)	12 (100%)	55 (100%)

It can be observed from table 8-3 above, that the non cooperative members are attracted to join the cooperatives so that they can gain what cooperative members gain from the cooperatives. The majority of non cooperative respondent's showed to be attracted to join the cooperative so that they can get credit; this is indicated by the highest total frequency of 19, which is 63% of respondents from non cooperative respondents. Others showed to be attracted by getting fertilizers and other gains that coop members receive from the cooperative. Also, the local government sensitizes the coffee growers to join the cooperative.

8.4. Conclusion

The results from the interviews indicated that the cooperatives members joined the cooperatives for economic reasons. They joined the cooperative so that they can work with others and found the way of improving coffee production and receive the gains cooperatives give to the members like credit, training, fertilizers, market and support from government and NGOs. Also, the majority of non cooperative member who are planning to join the cooperative are attracted by the gains cooperatives give to the members like credit, training, fertilizers, market and support from government and NGOs.

9. Conclusion and recommendation

9.1. Conclusion

The role of cooperatives in development of the region and members is known world wide. The cooperatives in Rwanda are small in size; they face the problem of inadequate training in managerial and lack of finance. The government of Rwanda has the objective of promoting the cooperatives in order to make a significant contribution of cooperatives to the national economy, particularly in areas which require people's participation and community efforts.

The results have shown that the coffee cooperatives have played the role in implementing the government policy. The policy on coffee sector which is aimed at increasing the contribution of coffee to the national economy has a sub-sector goal of improving the management and organisation of coffee production by use of cooperatives. In Huye districts, the three coffee cooperatives have facilitated in the distribution of fertilizers and inputs to the coffee growers and supervision of extension workers employed by the OCIR CAFÉ.

This study evaluated the government intervention on the development of coffee cooperatives and the role of other factors. It assessed the contribution of three coffee cooperatives to the development of the region and members. Also, the coffee growers' attitudes towards the cooperatives were examined. The main findings of this study are summarised below.

The role of government intervention on the development of coffee cooperatives
The government reform policy on coffee sector is the key factor in the existence and successes of coffee cooperatives. The Partnership for Enhancing Agricultural through Linkages (PEARL) and Rwanda National Coffee Board (OCIR CAFÉ) have contributed much in terms of financial support by constructing the infrastructures for improving the coffee quality such as coffee processing plants and National cupping laboratory. The number of coffee processing plants constructed in Rwanda since 2002-2008 increased from 1-130. However, the targeted goal of 240 coffee processing plants was not achieved; this could be due to financial related problem.

The results have shown that the policy have been partly successful in improving the quality of coffee based on the increase of coffee export prices. The coffee export prices increased since year 2003-2007 from 1.6-3.3 USD. However, we were not able to determine the degree to which the criteria have been fulfilled as we had no data on targeted price levels. Also, the policy achieved the intended goal of increasing the coffee export value in year 2005 however; in 2006 and 2007 the intended goal was not achieved.

The policy did not achieve the goal of increasing the coffee production, this could be due to other factors that influence agricultural production directly or indirectly such climate, soil fertility and land owned. Climate change and economic globalisation are two external factors that affect agricultural system in the developing countries.

The results of policy evaluation showed that, the policy has unintended effect on cooperatives in relation to international cooperative principles of autonomy and member owned enterprise. We found that in 2002, after the completion of the first coffee processing plant in Maraba, the PEARL project and OCIR CAFE worked closely with Abahuzamugambi (coffee cooperative) in creating the system of certification of coffee farmers to be the coop member. This certification eliminated the half of the members of Abahuzamugambi. This approach tends to reduce autonomy and responsibility of the cooperative members. Also, as it used to be in history of cooperatives in Rwanda as top down formation, these coffee cooperatives have been formed from top to down as the instrument for managing and organizing coffee production. These effects may have a negative impact in the development of coffee cooperatives.

The contribution of cooperatives to the regional development

The coffee cooperatives have created jobs in Huye region. The cooperatives employ people in different activities of the cooperatives. They employ managers, secretaries, accountants, drivers and guards of coffee processing plants on permanent basis. During the harvesting period of coffee the seasonal workers are employed in activities such as coffee weighing, sorting and drying. Abahuzamugambi and KOAKAKA contribute in the tax revenue generated in the region; they are ranked fist in rural industry sector in Huye district.

The cooperatives have constructed and led to the construction of infrastructures in the area which include coffee processing plants, bridges, unpaved roads and installation of Maraba internet café. The coffee processing plants constructed led to change from the old method of coffee processing which improved the quality of coffee and this lead the cooperatives and regions to be known internationally as the producers of specialty coffee which was not the case before the existence of coffee cooperatives in the region. Today, Abahuzamugambi and KOAKAKA export the coffee to Europe and USA. However, we found that, the contribution of these coffee cooperatives vary from one ward to another. Abahuzamugambi has contributed most to the development of the ward compared to KOAKAKA and KOGIMUWAKA due to its location in best coffee producing ward in Huye district.

The contribution of cooperatives to the members

The cooperatives provide the members fertilizers on credit, pesticide for free and train them on inputs use and other techniques of coffee growing. They also provide loan to members which is paid after coffee harvesting. Abahuzamugambi and KOAKAKA provided some of members coffee bikes on credit in order to facilitate the rapid transportation of coffee from farms to coffee processing plants in order to improve quality of coffee.

The results showed that the coop members have the higher values of mean, minimum and maximum number of coffee trees and income per coffee tree than non coop members. The Mann-Whitney statistical test results indicated that the difference in income per coffee tree and the number of coffee trees owned by coop and non coop members is significant.

The Attitudes of coffee growers towards the cooperatives

The results from the interviews from both the coop and non coop members showed that they regard the cooperatives as the institution that provides them economic support. The cooperative members joined the cooperative so that they can work with others and found the way of improving the coffee production and receive the gains cooperatives give to the members like credit, training, fertilizers, and market for coffee cherries, and support from government and NGOs. Also, the majority of non cooperative member who are planning to join the cooperative are attracted by the gains cooperatives give to the members like credit, training, fertilizers, coffee bike, and support from government and NGOs.

9.2. Recommendation on methodology

This study has employed the approach of comparing cooperative and non cooperative members in the same wards. The approach did not provide the good way for comparison and this may lead to biased results. This is because even the non members in areas where there is coffee cooperatives benefited from coop directly by getting market for cherries on the same price as members and free pesticides and indirectly by learning from the coop members on methods of farming. Also, we found that in some cooperatives there is minimum number of coffee tree the coffee farmers must own to become a coop member and this limited the better way for comparison of coffee tree and income from coffee as the majority of members have already the higher number of coffee trees.

A different approach to this type of research may lead to better results. Therefore, we recommend the approach of comparing the coop members with the non coop members in wards with cooperatives and wards without cooperatives.

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Appendices

A. Check list for data collection

Concept	Data collected
Cooperative	Name of cooperative
	The Objective /vision of the cooperative
	cooperative structure
	when the started
	The number of members
	Variations in Number of members over years (2001-2007)
	Assets of cooperative
	Activities done by Cooperative in the Region
	People employed by Cooperative
	Challenges facing the cooperative
	Support/ Aid from Government or NGOs
Region	Location of the district
	Economy of the district
	Total area
	Area used for coffee production
	Area used for production of other crops
	Total population
	Total Population involved in Agriculture
	Total number of coffee growers
	Total number of coffee trees
	Total number of Agriculture cooperatives
	Total Number of coffee Cooperatives
	Total income
	Per capita income of population
	Total employment
	Employment generated by cooperatives in the district
	Total infrastructures
	Infrastructure constructed by cooperatives
	Government support to economic enterprises
	Government support to cooperatives
Policies	Goals
	Means
	Instruments (support and other favouring conditions to coop)

Coop member Households	Farm (Plots used for coffee production and other crops, number of coffee trees, method used in coffee production Income gained over years Coffee production/output over years Reasons for joining cooperative Gains from cooperative Yearly contribution to cooperative Challenge associated to coffee production and cooperatives Average yearly tax paid
Non Cooperative household	Farm (Plot used for coffee production and other crops, number of coffee trees, method used in coffee production) Income gained from coffee over years Coffee production/output over years Reasons for not joining cooperative Either they plan to join the cooperative Average yearly tax The number of coffee trees Challenge associated to coffee production