

**PRODUCER PERCEPTIONS, ECONOMIC VALUE AND
INCENTIVES FOR PROMOTION OF POTENTIAL
GEOGRAPHICAL INDICATIONS IN KENYA**

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DECLARATION

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DEDICATION

To my mum

To my husband, Daniel and daughter, Neema

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To God, my Father! Thank you! This is for Your Glory and Honour!

I salute my supervisors Prof. John Mburu, Prof. Henrik Egelyng and Prof. Chris Ackello-Ogutu: You have taught me and allowed me to learn on my own as well; you have been tough on me and encouraging in the same breath; You stretched me and you have sharpened me, thank you my Professors!

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ABSTRACT

Product differentiation can be a means to contribute to economic growth and development through increasing rural incomes and thereby enabling agricultural producers to contribute towards sustainable environmental management. Use of Geographical Indications is one such differentiation option that can benefit agricultural producers in the marketing of products whose given quality, reputation or other characteristics are exclusively or essentially attributable to its geographical origin. Geographical Indications (GI) mainly distinguishes products that differ due to characteristics and attributes inseparably linked to the geographical region of production, unlike other trademarks and standards. Kenya, as a member of the World Trade Organisation and a signatory to the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, is able to benefit from GI protection and marketing, as several agricultural and forestry products have unique place-based qualities in the country. However, considering most agricultural products exist in a ready market and within consumer preferences, understanding producers' willingness to adopt changes that would be required to enhance such protection is important. The producers' willingness to protect the products with GI as well as their perceptions are a result of the experiences with the production, markets as well as existing value chain actors and institutions.

The objective of this study was therefore to estimate producer perceptions, economic values and institutional incentives that would influence promotion of unique agricultural products as potential geographical indications in Kenya. Specifically, the objectives were to: (i) identify and characterise origin products with potential to be registered as GI in Kenya; (ii) determine producer awareness and perceptions of territorial qualities in their origin products (products

perceived to have added value that is due to its place of origin); (iii) estimate producer economic values of the origin products as potential geographical indications; and (iv) describe policy and institutional incentives influencing evolution and development of potential GIs in the country.

Potential GI products were identified through interviews with key informants and focus group discussions. The developed criteria provided a basis to score and rank the identified products based on perceptions of their uniqueness. The four highest ranked products were then used in the study to answer the second, third and fourth objectives. Theoretically, the study is grounded on the random utility maximisation theory, the institutional theory and the theory of planned behaviour. The study on producer preferences was based on choice experiments, a non-market valuation technique. Factor analysis summarised producer perceptions for each product to determine the underlying patterns in their attitudes. The products and respective sample sizes were Baringo (Goats [n=135]), Kirinyaga (Tea [n=134]), Murang'a coffee [n=135]) and Makueni (apple mango [n=137]). The research design included qualitative, quantitative and case study approaches. Data collection involved use of literature review, key informant interviews, focus group discussions, semi-structured questionnaires to elicit producer perceptions (likert scale questions) and preferences for registering their respective products as GIs as well as other socio-economic and institutional data. SPSS, NGENE, MS Excel and NLOGIT were used in data entry and/or analysis.

Generally, the respective producers are aware of the territorial-based uniqueness of their products. Reduction of producer perceptions using factor analysis produced factors that were product specific. The highest variation in the factor analysis was from institutional-related

factors for each of the products. These were the role of private and public sector in coffee production; price information and market access in tea production; and role of policies and rules in mango production. In goat production, the role of the environment and its sustainability accounted for the highest variation.

The choice experiments revealed that tea and coffee producers' willingness to pay was KES 900 and KES 600 respectively for minimum guaranteed returns associated with GI protection. Mango producers' willingness to pay was KES 399 for GI protection in order to access price information at the beginning of the season, while the WTP for goat producers was KES 350 to have coordinated channel of selling their products with attribution to the region. The total willingness to pay (Total WTP) for GI protection was positive for each of the four agri-food products analysed.

Institutional factors and actors in the current value chains are important for success of GI protection. There are both incentives and disincentives for GI protection within the existing organisation and institutional structures. In Baringo (goats), collective action, which involves both state and community actors, is in place to regulate actions in the industry. However, producers mainly prefer to trade individually, and are hence not able to benefit from the collective action. Coffee and tea, both export products, are characterised with value chains that go beyond the national borders. Whereas this would make it easier to regulate due to the government's efforts towards regulating these scheduled crops, the role and influence of external actors complicates the value chain process more. Therefore, the role of institutions and actors

should attract the highest consideration and efforts, in order to successfully register agri-food products in Kenya with geographical indications.

The study concludes that whereas producers are willing to pay for GI protection of agri-food products, the current policy and institutional environment serve as a disincentive to successful implementation of the concept in Kenya. The assessment highlights the importance of having an effectively enforced *sui generis* GI law, with the potential to enhance social inclusion, economic benefits and environmental sustainability in the production regions. This would reduce the potential problems of moral hazard and free-riding that may arise from the GI registration. The prescriptive GI law is also necessary to provide guidelines on producers who may not be willing to participate in the protection, but are still involved in production of similar product within the production region.

Keywords: Characterisation; Geographical indications; institutional incentives; policy incentives; producer awareness; producer preferences; producer perceptions, origin products; territorial attributes

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LIST OF ABBREVIATIONS

AEZ	Agro-ecological Zone
AFA	Agriculture and Food Authority
ASDS	Agricultural Sector Development Strategy
CRI	Coffee Research Institute
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus group Discussion
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GI	Geographical indications
GoK	Government of Kenya
HCD	Horticultural Crops Directorate
HHH	Household head
IAD	Institutional Analysis and Development
KALRO	Kenya Agricultural and Livestock Research Organization
KEBS	Kenya Bureau of Standards
KEPHIS	Kenya Plant Health Inspectorate Service
KES	Kenya Shillings
KIPI	Kenya Industrial Property Institute
KNBS	Kenya National Bureau of Statistics
KTDA	Kenya Tea Development Agency
MDG	Millennium Development Goals
OECD	The Organisation for Economic Co-operation and Development
PCA	Principal Component Analysis
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
SDG	Sustainable Development Goals
TRIPS	The Agreement on Trade-Related Aspects of Intellectual Property Rights
WTO	World Trade Organisation

Definition of operational terms

Geographical indications: Geographical indications identify a product as originating from a territory, or a region or locality, where a given quality, reputation or other characteristics of the product are exclusively or essentially attributable to its geographical origin’.

Origin products: Origin product is a general term that applies to any product whose origin is implicitly known by the consumer due to long-lasting association of the product with its place of origin (Giovannucci et al., 2009)

Place-based qualities - unique taste and quality characteristics that are influenced by the ecology, culture, and traditions of a specific geographic region

Territorial based attributes: Product qualities/characteristics that arise from the recognise the traditional and cultural know-how in the context of specific geographical regions

Terroir: The interaction of natural elements (environmental factors, farming practices, growth habitats) and at times human-controlled elements (varietal/breed selection, production practices) that have over time distinguished/delimited a geographic space and the quality of products originating in that *terroir*.

CHAPTER 1: INTRODUCTION

1.1 Background

1.1.1 Geographical Indications – What and why

Agri-food markets are increasingly becoming consumer-led with consumers demanding information on the quality, production methods and/or geographical characteristics of the production region from which the commodities originate. This has seen a rise in product proliferation and product differentiation. Lessening margins and declining competitiveness in food and agricultural markets have also led the value chain actors to seek ways of adding value to the products (Phillips & Peterson, 2004). Global development agenda (like the Millennium Development Goals [MDG] and currently the Sustainable development goals [SDGs]) have also contributed to the need for differentiating products for increased value in the agri-food sector (ECDPM, 2012). Consequently, agri-food product differentiation has been achieved through various means including organic farming, use of Fair Trade and differentiation based on quality. Where quality characteristics form the basis for product differentiation, this has been described as institutionalisation of quality where institutions that define quality standards and norms become an important part of the products' market mechanisms and pricing (Bramley et al., 2009; Menapace & Moschini, 2012).

Where these differentiating quality traits of the agri-food products can be linked to the geographical region of production and human characteristics, intellectual property rights like geographical indications (GI) have been used for value addition (Giovannucci et al., 2009; Vandecastelaere et al., 2010; Bagal & Vittori, 2011). According to the TRIPS definition (Article

22), geographical indications (GI) *‘identify a product as originating from a territory, or a region or locality, where a given quality, reputation or other characteristics of the product are exclusively or essentially attributable to its geographical origin’*.

The unique qualities, reputation or other attributes of GI attract the consuming public and are a guarantee, expected to reduce the asymmetry of information between producers and consumers (WTO, 1994; Aprile et al., 2012). Like trademarks, GI are a form of intellectual property rights and branding tools. However, unlike trademarks, which give “private rights”, GI give “semi-public rights” and are collective in nature. Like club goods, GI are characterised by little or no rivalry and participation is voluntary. However, unlike club goods, which have finite membership, GI within a given geographical location cannot have finite membership, neither can there be registered more than one GI for the same product in the same region (Benavente, 2010). The geographical characteristics that give the product its uniqueness may also be faced by over-exploitation and hence uncertainty in future production. Hence, like common pool resources, GI may at times be subtractable, as long as no one is responsible for management of the environmental conditions responsible for the unique characteristics (Saunders, 2014).

With proper coordination and consumer satisfaction, therefore, GI protection can provide producers with higher and stabilised incomes. Since all producers in the given geographical region can benefit from the protection, as long as they adhere to the given codes of conduct (non-excludability), proper coordination creates an avenue to achieve three-fold outcomes on the supply end, viz: poverty alleviation, environmental sustainability and social inclusion (Giovannucci et al., 2009; OECD, 2011). However, without proper coordination and implementation, GIs can be harmful and exclude the very poor due to lack of resources and

information (Giovannucci et al., 2009). Kerr (2006) also highlights that poorly implemented GIs can accumulate rent for developed countries at the expense of developing countries; the rich at the expense of the poor. There is therefore need for holistic ex-ante approach in assessing possible outcomes and potential benefits that can be derived from GI protection.

1.1.2 Opportunity and status of GI implementation in Kenya

Agriculture, forestry and fisheries form an important sector in the growth and development of the economy of Kenya. The percent contribution of the sector to the country's Gross Domestic Product (GDP) increased from 26.4% in 2013 to 32.1% in 2016 (KNBS, 2018). However, although the contribution increased over the 4-year period, the rate of growth of the sector actually declined from 5.4 in 2013 to 4.7 in 2016. Basic wages were the lowest according to the 2016 rates. With small-scale farmers constituting majority of producers in the sector, the net effect of the negative growth rate directly affects them hence rural development. Increasing value to agricultural produce would require concerted efforts and coordination that would in turn contribute to rural development.

There are currently more than 10,000 products protected as GI in the world. Approximately 90% of these come from the OECD (The Organisation for Economic Co-operation and Development) countries. Increasingly, non-OECD countries are protecting their origin products as geographical indications (Wongprawmas et al., 2012; Mancini, 2013; Biénabe & Marie-Vivien, 2017). Since January 1995, Kenya has been a member of the World Trade Organisation (WTO) and a signatory to the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement. The TRIPS agreement on GI requires individual countries to adopt the GI protection and develop country-specific and contextual laws and developmental needs (Biénabe & Marie-Vivien, 2017).

The Kenya Industrial Property Institute (KIPI) has, together with stakeholders, developed the drafting instructions for a *sui generis*¹ GI bill (2011) that currently awaits enactment (Bagal & Vittori, 2011; Ramba, 2013).

The justification for the efforts towards a *sui generis* GI Bill is that there already exists highly sought after products in the country, where consumers demand for them due to geographical related qualities. In the international market, this is especially so for coffee and tea. However, traders, who are aware of consumer demand, engage in free-riding on the reputation by either blending the products with others from different regions or by selling products from other regions as though from the regions with the desired quality. Asymmetry results as producers do not benefit from the consumer demand and consumers do not get full information from the traders.

KIPI also seeks to encourage GI protection of the unique products so as to accelerate rural development in target regions. Some of the producers have over time switched from production of these more adapted agri-food commodities, including replacing agricultural land with real estate in order to bridge the declining income gap from agricultural production. This threatens the future of the agricultural production in the country, as well as the environmental sustainability of the production region.

Currently, the Kenya Trade Marks Act (CAP 506) allows for protection of potential GI products as either collective trademarks² or certification trademarks³. Certification marks have been

¹ *Sui generis law* – A form of legal protection that exists outside typical legal protections

developed for both tea and coffee in the country. Kenyan coffee and tea have a reputation worldwide for their unique characteristics, which are a result of, among others, the geographical conditions (including soils and weather characteristics) of the regions where they are grown. Based on this reputation, the exported bulk coffee and tea are blended with cheaper variations that are then sold as Kenyan coffee and Kenyan tea or as other trademark without differentiating the geographical source. This practice harms the quality as well as the reputation of the products and the prices received by producers (Gerz et al., 2007; TRFK, 2011).

The certification marks for these commodities provide for standards of production and handling of the products at national level, regardless of the different geographical characteristics of the growing regions, in a principal-agent type of arrangement between the factories and producers (Bagal et al., 2013). The Agriculture and Food Authority (AFA) of Kenya, through the relevant Directorates, is the custodian of the certification marks for various agri-food commodities in the country. Where applicable, therefore, the producers in specific regions can build on the existing (or develop new) certification mark standards (as codes of practice), and define the product characteristics attributable to their geographical region.

Environmental sustainability is envisaged as paramount in order to sustain the economic growth in Kenya. Value addition and efficiency in production methods are prerequisites for competitiveness of Kenya's agriculture products in the international and local markets (GoK,

² A collective mark is one that distinguishes the geographical origin, material, mode of manufacture or other common characteristics of goods and services from others. A collective mark is owned by an organization or association.

³ A certification mark is used by a person other than the owner to certify certain standards, characteristics and quality etc., based on the indicated standards.

2007). Of the country's total agricultural-related exports, 91% comprise semi-processed, low-value produce (GoK, 2010a). By exporting raw or semi-processed agricultural products that are highly valued in the end market, the country therefore loses an opportunity to generate more revenue. Therefore, to meet the objectives of the Vision 2030 and also contribute to the Sustainable Development Goals (SDGs) 1 (*No poverty*) and 2 (*zero hunger*), a multiplicity of strategies is required. It is evident that in some instances, sustainable environment management and not necessarily intensified food production would be a better strategy towards meeting these goals and objectives (World Resources Institute, 2005). Use of GI protection for product differentiation should therefore be assessed on a case by case basis to determine its applicability and efficiency in meeting the country's objectives sustainably.

1.2 Problem Statement

Geographical indications (GI) have benefitted producers of many origin agri-food products, whose product quality results from environmental and human factors in the region of production (Belletti, 2000). Whereas most of the registered GI products are mainly found in developed countries, increasingly developing countries are also seeking to exploit the potential for producers to benefit from the same. There are numerous potential GI products which have not been properly recognized by markets, hence the need to characterize them. Kenya has products in both the local and international markets that are reputed by the consumers for their high quality linked to geographical attributes. However, the producers of the origin products do not necessarily reap the price premiums that consumers willingly pay for the quality of the products (Bramley et al., 2009).

Considering that small scale agri-food production in Kenya accounts for at least 75% of production and 70% of marketed agri-food produce, poor product prices have a huge negative effect on rural development and environmental management (KNBS, 2018). Producers of unique origin agri-food products can hence add value to their products using quality as a marketing option and hence contribute to rural development and environmental management. Indeed a number of producer initiatives exist. They include organic labelling, willing participation in exporting horticultural produce that adheres to the Kenya GAP, use of trademarks and collective marks and Rain Forest Alliance certifications, among others. However, there remains a gap in identifying and protecting products that have qualities that are specific to the region of production and the human cultures and attitudes. It is also not known whether producers would be willing to pay for protection of GI in their production regions. Furthermore, there is uncertainty whether the interests of and potential benefits to producers of various agri-food products from such protection in view of the current policy and institutional environments would be realised (Kerr, 2006). Since reputation is formed through continuous provision of a product to the market (Cai & Obara, 2009), producers' adoption of GI would be dependent on their perception of the current market structure as well as the policy and institutional environment for respective products. These perceptions have not been studied from the GI perspective in Kenya.

Literature on various registered GI initiatives points to the fact that even with consumer demand and willingness to pay for geographical indications, producers in some instances struggle to register and maintain the GI attributes in face of modern technology, business demands and changing institutional environments (Sepúlveda et al., 2010; Fredskild, 2014). Most of the agri-food producers in Kenya, being small-scale in nature, often have to contend with larger producers or marketers. The small scale producers, due to their nature, may not have full

information on consumer needs and willingness to pay price premiums for specific products. Since these producers (through their endless toil and dedication to produce food through continuously managing resources) are the reason why the vibrant food system exists, understanding their preferences, incentives and perceptions is an integral part of determining the potential of GI protection in increasing local incomes and hence livelihoods. This study therefore makes an attempt to fill these knowledge gaps by studying various unique origin agri-food and forestry products in Kenya in order to determine their potential for GI protection.

1.3 Objectives

1.3.1 General Objective

The general objective of the study was to analyse producer perceptions and economic value of potential geographical indications origin products and the policy and institutional incentives that favour their protection in Kenya

1.3.2 Specific objectives

The specific objectives were to:

1. Identify and characterise origin products with potential to be registered as geographical indications in Kenya
2. Determine the producer awareness and perceptions of territorial qualities in origin products (OPs) and potential GI
3. Estimate the producer economic value of origin products with potential as geographical indications

4. Describe policy and institutional incentives influencing evolution and development of potential geographical indications

1.4 Study hypotheses

The study tested the following hypotheses linked to Objectives 2 and 3:

1. Producer value of origin products as potential geographical indications is positive and significant
2. Producers are aware of territorial qualities in origin products as potential GI
3. Producers perceptions of the uniqueness in their agri-food products positively influences the incomes they currently receive

1.5 Research Questions

The study also answered the following research questions:

1. Which agri-food origin products have potential to be protected as Geographical Indications?
2. What are the characteristics of the agri-food products that have potential for GI labelling?
3. What are the existing policy and institutional incentives that would influence the evolution and development of geographical indications as green growth policy instruments in Kenya?
4. What perceptions do producers have on the territorial qualities in origin products as potential GI?

1.6 Justification

The process of developing the legal framework for protection of unique origin products as Geographical Indications in Kenya has gained interest over the years. The results of this study contribute towards filling in the empirical literature and analysis gap as well as understand the producers' willingness to participate in protecting their products as geographical indications. Focusing on geographical indications in Kenya is established on the fact that market players often benefit from the higher prices or volumes of origin-based products, without the benefits necessarily trickling down to the producers. The producers are the custodians of the production environment. The producer actions and hence the sustainability of the region are hence influenced (positively or negatively) by the actions of actors along the supply chain.

Unlike consumer assessment studies, this study focused on producer perceptions in relation to protecting agri-food products with geographical indications. Where consumers may be willing to pay higher premium for market products, market and government failures as well as low social benefits would still prevent producers from gaining from the full value of improved environmental management. Geographical indications, well-coordinated, have potential for accruing economic benefits to producers, rural development and environmental sustainability. Therefore, by understanding producer perceptions, incentives and willingness to pay for GI protection, the study contributes not only to the relatively new GI debate in Kenya, but also towards greening growth in agricultural production regions.

1.7 Scope and limitations of the study

The study is based on producer perceptions since geographical indications are still a new concept in the country, and hence no product has as yet been registered as GI. The results might hence be subjective since there are no past studies for comparison.

Considering the changing political environment in Kenya, some of the organisations and institutional arrangements have been fluid during the study period, and might continue changing thereafter. Therefore, the results of the study should, in future, be assessed each time based on the prevailing conditions.

1.8 Organisation of the thesis

The thesis is organised in eight chapters. The second chapter gives a summary of literature reviewed and theoretical frameworks linked to the study objectives. Chapter 3 provides the methodology of the study and a brief description of the study sites.

Chapters 4 to 7 present the results of the study, each linked to the specific objectives. Chapter 4 comprises the results of the first objective, to identify and characterise products with potential to be registered with GI. The chapter derives (from literature) a criterion for identification of agri-food and forestry products that have potential to be registered as GIs.

Chapter 5 addresses Objective 2 and looks at the producer awareness and perceptions of geographical indications as an option for adding value to (i) potential GI products from semi-arid lands; and (ii) potential export crops as GI.

Chapter 6 presents results based on Objective 3. It determines the producer willingness to pay for GI attributes for each of the products. The analysis is also presented within the two groups of products, (i) potential GI products from semi-arid lands; and (ii) potential export crops as GI, each constituting a paper submitted to a journal.

Chapter 7 discusses the policy and institutional incentives that influence the evolution of geographical indications for agri-food origin products in Kenya. This therefore addresses Objective 4 of the study.

Chapter 8 provides the summary, conclusion and policy implications of the study as a whole. Each chapter has a standalone conclusion and Chapter 8 provides the overall conclusion and policy implication of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Geographical indications for support of agri-food production

Agri-food commodity prices have been declining globally mainly due to the competitive environment. Producers of products with unique qualities either based on production patterns or strong link to geographical region of origin often seek to move away from the conventional commodity markets and differentiate their products to target niche markets, which offer more lucrative prices (Bramley et al., 2009). Niche markets thrive when there is reduced information asymmetry (i) between producers and consumers as well as (ii) regarding the quality of output (Lucatelli, 2000). However, according to New Institutional Economics (NIE), producers, as profit maximising individuals, will only invest in providing the additional information and to supply quality agri-food products if they perceive that the resulting returns more than outweigh the investment incurred or where the option of not doing so attracts punitive measures from the regulating organisation (Josling et al., 2004).

Intellectual property, including geographical indication, are used not only to provide economic incentives but also to serve development-related concerns and societal interests (Dagne, 2015). They provide culture (traditional knowledge) protecting function as well as origin function (indicators of product link to place). However, the cost effectiveness of GIs relative to that of using collective trademarks or certification marks is hardly documented. Therefore, different countries adopt different systems based on what is deemed to work for them. European Union has adopted three protection regimes based on the level of detail and attribution required. These are (i) the more strict Protected Designation of Origin (the product must be entirely produced and derive uniqueness from the region of production); (ii) Protected Geographical Indication (PGI)

(the product must be produced traditionally and at least partially from the region of production) and (iii) Traditional Specialty Guarantee (TSG) that protects traditional food product not necessarily having quality links to region of production. Other countries have adopted a twin system of using both a *sui generis* law and a trademarks law to protect origin-based products, with the objective of helping consumers save on search costs by making product quality predictable (Evans, 2010). The trademarks law can provide an avenue to describe the codes of conduct, hence making enforcement easier for producers where the national regulator becomes the custodian of the trademark. However, it is not as adequate as a *sui generis* law which spells out the conditions that qualify a product as suitable for GI.

The protection of products as GIs is founded on the economic theories of collective action, information and reputation as well as common pool resource (Lucatelli, 2000). When reputation is institutionalised, well-coordinated and received by the market, the protection reduces market distortions that arise from free-riding, information asymmetry and the resultant potential negative impact on the product quality (Belletti, 2000; Lucatelli, 2000; Moschini et al., 2008; Bramley et al., 2009; Giovannucci et al., 2009). The product then moves from being an experience good, where consumers ascertain the quality after use, to search goods where consumers can ascertain the quality before buying it (Lucatelli, 2000).

Geographical indications, unlike most intellectual property rights, take into account the collective nature of a production system (Dagne, 2015). In agricultural production, this collective nature is an aggregation of individual producer decisions and actions related to production, processing and marketing of the commodities. To successfully and sustainably maintain

geographical indications, through collective action, the heterogeneous producers need to deliver a 'homogenous' product to the market (Bramley et al., 2009; Peiffer, 2015).

To deliver a homogenous high value product with reduced information asymmetry, producers will require to increase investment in the product reputation development and will, most likely, reap the benefits in the future (Shapiro, 1983; Lucatelli, 2000). It is therefore possible to have an initial reduction in producer well-being due to the decision, mainly because the producers have to first establish the reputation and reduce information asymmetry consistently before they reap tangible benefits. The tangible benefits in the future, in terms of economic benefits, provide incentives for short run investment in reputation and long run investment in ecosystem management. To govern the uncertainty in the short run, the use of the trademarks and collective action among producers would help streamline quality consistency. This may call for more government involvement, especially if the producers are unable to harness sufficient collective action to operate a credible information and quality scheme on their own (Josling, 2006).

Achieving homogenous production of a GI is therefore a complex process, and requires investment in terms of finances, time and other resources. If producers do not perceive it to be a viable proposition, they will not be interested in its protection, however much the consumers demand for GI is and regardless of government involvement in providing the institutional environment to ensure consistent production (Giovannucci et al., 2009). Accountability, transparency, participation and equity are necessary for collective action to bear fruit (Rahman et al., 2012). This therefore stipulates the need to determine producer awareness and perceptions of the uniqueness of their produce and the benefits they perceive to accrue from protection of the

products as GIs. The benefits will be assessed based on the producers' willingness to pay to adopt GI protection.

2.2 Theoretical background

2.2.1 Assessing producer perceptions

Assessment of producer attitudes and perceptions is founded on the theory of planned behaviour. According to the theory, an individual's intentions and actions are shaped by their attitudes towards a situation, their subjective norms and perceived ability to perform the action, relating to the level of control they have (Ajzen, 2005). Behaviour and attitudes of agri-food producers towards the environment and its management determine whether they will engage in behaviours that either increase or decrease environment quality (Gifford & Sussman, 2012). How the data that displays attitudes and behaviours is collected is of importance as individuals tend to over-report. Often, attitudes and perception data is collected through use of likert scale questions. Attitudes comprise affective, cognitive, and intentional components and are not always (on their own) sufficient behaviour predictors. In some instances, however, awareness and attitudes are necessary steps towards predicting producer decision in adopting an environmentally related component (Floress et al., 2017).

Rogers (1995) and Wossink et al. (1997) stated that knowledge of (awareness), and subsequent formation of attitudes towards an innovation (perceptions), are important steps towards the decision to adopt or reject it. Perceptions and attitudes can be used in profiling the producers according to their objectives and tendency towards adoption (Adesina & Baidu-Forson, 1995; Adisa & Adekunle, 2010; Sepúlveda et al., 2010; Blazy et al., 2011). Models on adoption of

innovations in agri-food production are based on producers' utility (or profit) maximizing behaviours. This is based on the assumption that farmers will adopt an innovation only if their perception of the profit (utility) of using the innovation is higher than that from their current method (Norris & Batie, 1987).

This study therefore used likert scale questions to determine producers' attitudes towards GI related attributes. Producer gross margins were adopted as a proxy measure for profit.

2.2.2 Determining producer economic value

Geographical indications are an intangible asset. As an intellectual property right, GI is a non-monetary resource, not physical in nature and having special rights and privileges attached to it that can only be claimed legally in the future. GIs, as IPs, are established in order to reduce information asymmetry along the supply chain to the consumer, hence reducing transaction costs associated with seeking information on the product quality and price. Information about product type (or quality) is often asymmetrically held in the market thus making transactions costly for other maximising players resulting in reduced welfare (Bates, 1995). Protecting origin agri-food products using geographical indications may result in higher intermediate transaction costs, including coordination and enforcement costs (Raynaud et al., 2009). The producers' choice of investing in GI protection is hence dependent on their perception of the resulting change in welfare from the same. This was measured using choice experiments since most of the benefits will be non-monetary in nature.

The theoretical framework of choice modelling is based on the Lancaster consumer theory (Lancaster, 1966) and is consistent with the random utility maximisation theory (McFadden &

Zarembka, 1974; Hanley et al., 2001; Louviere et al., 2003). The theory states that utility is the characteristics that goods possess rather than the entire good *per se* (Lancaster, 1966; Louviere et al., 2003).

Economic valuation seeks to assign quantitative values to goods and services that are provided by environmental resources (Barbier et al., 1997; Turner et al., 2004). In monetary terms, total economic value (TEV) of any change in well-being brought about by a project or policy is the net sum of all relevant measures of the willingness to pay (WTP) and willingness to accept (WTA). The monetary TEV can result from use or non-use values. Use values relate to the actual use of the product through direct or indirect (e.g. regulation) utilisation. Non-use values relate to the willingness to pay to maintain a good even though there is no actual, planned or possible use for it (Hanemann & Kanninen, 2001; Mburu et al., 2006). The resulting analysis is based on the whether study focuses on use or non-use values, and if the goods are marketed or non-marketed.

In literature, two ways of estimating economic value attached to use and non-use values and marketed and non-marketed goods and services are widely discussed. These are revealed preference method and stated preference method. The stated preference methods are based on the assumption that the intended behaviour of individuals in hypothetical markets reflects their preference for non-market assets. The valuation in this case is based on intended future behaviour. The ability to vary some of the features of the good in question is an advantage of the stated preference techniques and this helps yield very useful data, especially if sub-sets of respondents are provided with this different information (Pearce et al., 2002; Birol et al., 2012).

From the supply side, economic valuation has been applied in understanding producers' value for marketed and non-marketed produce and attributes, including protecting agro-biodiversity

through a traditional cropping system (Arslan & Taylor, 2009; Birol et al., 2009). Economic valuation has also proved useful when identifying farmers' preferences before adopting a new technology. Producer preferences are an aggregate of the productivity, profitability and attributes of the commodity or innovation of interest (Jæck & Lifrán, 2014). Since GIs may not always result in higher prices at the onset, producer perceptions of the various attributes is measured, which differ from consumer attributes (Teuber, 2011). Appropriate use of geographical indications (GIs) can generate considerable economic value since they reward producers from a given geographical area for their long-term investment in building the reputation of the product. GIs, which are largely public goods, have been said to influence product valuation, international trade flows and farm policy (Herrmann & Teuber, 2010; Oana et al., 2011).

2.2.3 Assessing policy and institutional incentives

Assessing the institutional incentives that influence the evolution of geographical indications is based on institutional theory, which is based on the tenet that institutions matter in accounting for social behaviour. Institutions, being the rules of the game, reduce uncertainty by providing structure to everyday life (North, 1990). North states that institutions, which can either be formal (statute law, common law, regulations) or informal, include any form of constraints that human beings devise to shape human interaction and the enforcement characteristics of the constraints. Formal institutions are embodied in constitutions, laws, policies and regulations enforced by different arms of a government, bureaucracy, among others, and they provide frameworks to curtail impersonal contracts, rent-seeking behaviour by the private sector, politicians, etc. Informal institutions are the conventions, norms of behaviour, self-imposed (*by a group or*

society) codes of conduct, historical traditions, etc., that are enforced by custom or habit (Behera & Engel, 2006; Ménard & Shirley, 2008).

Institutions and institutional structures and agreements are capable of contributing to competitiveness by reducing transaction and information costs and improving collective action along the supply chain (Stein, 1995). They reduce uncertainty, and hence transaction costs along the supply chain, by setting up a stable (even though not necessarily efficient) human interaction structure (North, 1990). Use of the institutional analysis development (IAD) framework (Polski & Ostrom, 1999) (Figure 2.2-1), among other frameworks, has provided a systematic procedure for analysing institutions and rules in a given situation and examining the underlying structure in diverse action situations of an institutional arrangement (Raheem, 2014).

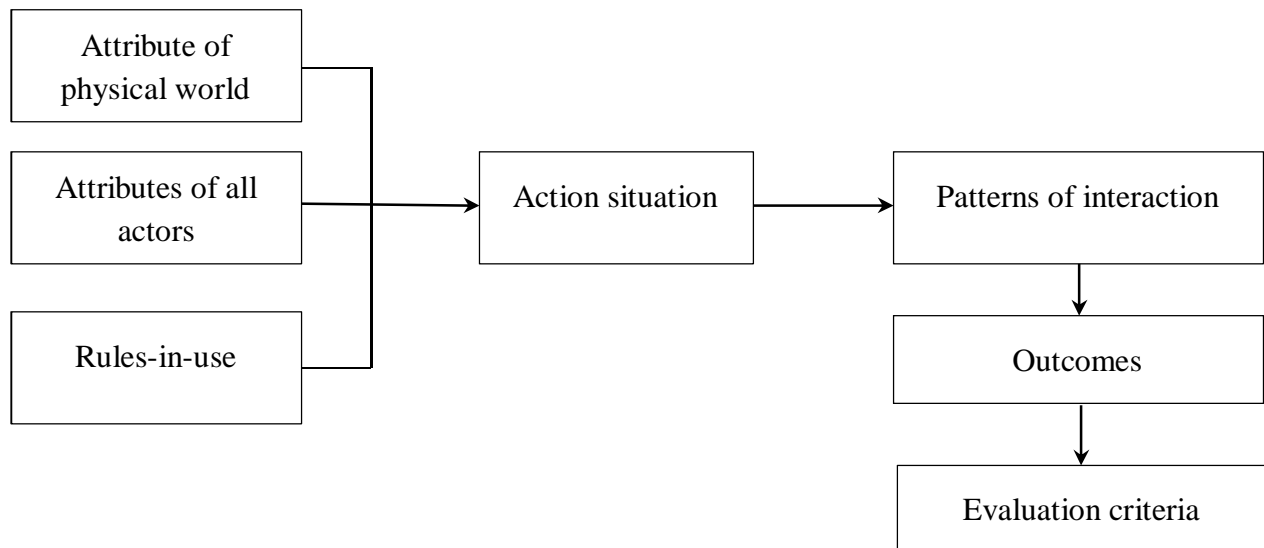


Figure 2.2-1: Institutional Analysis and Development (IAD) framework

(Adapted from Ostrom et al (2006) and Polski & Ostrom (1999))

The attributes of the physical world and the actors as well as the rules-in-use formed the basis for the identification and characterisation study. The action situation and patterns of interactions

formed the background for assessing the policy and institution incentives likely to lead to the outcome of having producers register their products with GI.

2.3 Review of related empirical literature

2.3.1 Analysis of producer awareness and perceptions from past literature

An assessment of producer behaviour towards Protected Geographical Indications (PGI) schemes in Europe showed that although producers already received a premium price, their perception of the additional non-monetary benefits accruing to them influences their willingness to uphold the GI protection. The benefits include better market access due to institutionalized reputation, reduced information asymmetry, and improvements in farm administration (Sepúlveda et al., 2010). The study applied factor analysis and a cluster analysis in understanding producer perceptions towards production of lambs as Protected Geographical Indications in Spain (Sepúlveda et al., 2010). Perceptions and awareness are characterised by multiplicity of variables. Techniques like the Principal Component Analysis (PCA) and Factor Analysis (FA) have been adopted as they can analyse the interrelationships among this group of variables simultaneously by condensing and explaining them in terms of their common underlying factors without losing any information (Jolliffe, 2002; Hair Jr. et al., 2010). Factor analysis has been applied in assessing producer perceptions of quality attributes of commodities providing or benefiting from environmental services (Barreira et al., 2009; Munyuli, 2011); as well as in assessment of perceptions on risk and conflict (Abebaw et al., 2006; Adisa & Adekunle, 2010). The application helped the studies go beyond identifying factors to understanding any underlying patterns among the factors (Jolliffe, 2002; Field, 2013).

Assessing producer awareness and perceptions of territorial quality attributes in the respective commodity hence provides the underlying aspects of importance to the respondents. Understanding their perceptions can give an indication of how likely the producers are to embrace the GI concept and hence contribute to environmental sustainability of their production.

Barreira et al (2009) applied factor analysis to summarise producer perceptions on quality of their Protected Designation of Origin (PDO) beef, determined from a 7-point Likert scale questions. The perceptions covered pre-, on-farm and post-production aspects of production. The study was based on the precept that for quality to be assured to the consumer, quality has to be respected throughout the value chain. Barreira et al (2009) observed that the attributes to consider when assessing perceptions depend on the part of the chain one is considering and the product's stage of protection.

In analysing farmers' perceptions of new agricultural technologies or concepts, it is possible to profile producers' tendencies towards uptake (Sepúlveda et al., 2010; Blazy et al., 2011). Applying factor and cluster analyses, Sepúlveda et al (2010) summarised farmers' attitudes towards their Protected Geographical Indication (PGI) lamb in Spain and profiled them based on their attitudes. The study concluded that producers' perceptions to a certain extent determine their behaviour towards the protection. Both studies targeted different GI types already registered in Europe.

Anson and Pavithran (2014) applied factor analysis to explain producer perceptions of rice production under GI protection in India. The study concluded that since the burden of registering and maintaining GI protection rests with the producers, their attitudes and perceptions towards

the protection is significant. They summarised nine Likert-scale variables into three factors that motivate farmers to produce traditionally linked products as GIs.

Following these studies, the important factors that would determine the producers' collective decision-making on whether to register their products as GI were identified using factor analysis. The analysis was used to summarise the farmers' perceptions regarding the economic and non-economic attributes of importance to the producers of the identified potential GI products. The assessment is important as it gives an indication of expected results from possible registration, including potential influence on incomes, food security and natural resource management (Theesfeld et al., 2010).

Due to the subjectivity of perceptions, multiplicity of variables are often used to elicit and draw patterns from a group of respondents (Danielsen et al., 2005). Drawing from these past studies, perceptions in this thesis were based on biophysical, institutional, market-related variables. Using factor analysis, such variables are condensed and explained in terms of the common underlying "factors" (Hair Jr. et al., 2010). Though specific based on the commodity, the 5-point Likert-scale questions aimed at eliciting producers' perceptions towards the geographical link, market structure, role of policies and institutions in the current product market.

The factors were summarised based on the following matrix equation specification following Pennings and Leuthold (2000) and Jolliffe (2002):

$$\mathbf{F} = \mathbf{\Lambda L} + \boldsymbol{\delta} \quad (1)$$

Where F is a $qx1$ vector of observed variables; Λ is a qxn matrix of regression coefficients (factor loadings) to be estimated; L is a $nx1$ vector of latent variables (factors) that are estimated

along with coefficients; and δ is a $qx1$ vector of specific error terms corresponding to the variables to be observed.

There are different proposed methods in literature to determine the number of factors to retain (Hayton et al., 2004; Ledesma et al., 2007; Field, 2013). In this study, the factors with Eigen value greater than 1 (one) were retained as recommended by (Kaiser, 1960; Field, 2013).

Factor scores were generated using the Bartlett's method. Bartlett's method produces unbiased estimates that have a mean of zero (0) and a standard deviation of one (1). The factor scores were then used as predictor or dependent variables in subsequent profit regression equations for coffee and tea analysis (DiStefano et al., 2009; Howley & Dillon, 2012; Field, 2013) to examine their relationship with the respective export commodity profit through linear regression. The linear regression was specified as:

$$\sum_{i=1}^I \pi_i = \beta' X + \gamma' W + \varepsilon_i \quad (2)$$

Where: π_i stands for the gross margin (representing profit) of the i^{th} product; I is the total number of respondents in each study site; X is a vector of explanatory variables relating to the respondent; W is a vector of factor scores as explanatory variables for each of the respondents; β' and γ are vectors of regression parameters to be estimated and the ε_i are vectors of disturbance terms in the regression

2.3.2 Assessment of producer preferences from past literature

This study used choice experiment as the more appropriate stated preference method (Hanley et al., 2001). Hartman et al. (2012) used choice experiments to determine consumers' willingness to

pay (WTP) for GI mangoes. Loureiro and Umberger (2007) also applied choice experiments using the discrete choice multinomial conditional logit to analyse consumers' willingness to pay for specified meat attributes in labelled steak. The specific attributes for each study were defined based on the product characteristics used in differentiation of the product in the market. The attributes were mainly identified from literature and validated through focus group discussions.

Although widely applied in consumer WTP studies, choice experiments have also been used to assess producers' valuation. Birol et al. (2006) and Arslan and Taylor (2009) are examples of economic valuation studies aimed at investigating producers' value of agro-biodiversity associated with production of subsistence crops. The outputs, functions and services from such systems are generally not traded in the market. The farmers' preferences determine the implicit values and their attributes.

Choice experiments have also been applied to investigate farmers' preferences for environmental conservation and yield characteristics associated with new technology traits (Asrat et al., 2010; Blazy et al., 2011). The studies showed the importance of farmers' subjective preferences and attitudes in adopting innovation. A monetary attribute and the random utility model upon which the CE method is based allows for estimation of welfare gains either as willingness to pay or willingness to accept compensation. The attribute varies based on the study, as shown by Arslan and Taylor (2009) who used shadow prices for non-traded subsistence goods. In other instances, a proportion change in the monetary attribute is used instead of an actual monetary value (Birol et al., 2009).

The choice experiments technique was adopted for this study due to its robustness in estimating value for non-traded commodities and/or services. Producer valuation was conducted to elicit

producers' willingness to pay for various attributes related to registration of origin products as potential GIs in the various study regions (Birol et al., 2009). As an initial study in identifying producer preference for GI related attributes and considering that all producers in a given region with origin products can benefit from such a protection, this study did not classify the producers in the analysis. However, to determine heterogeneity in preferences, random parameter logit model was used following Revelt and Train (1998) and Hensher et al. (2015).

2.3.3 Analysis of policy and institutional incentives from literature

In understanding the role of institutions in shaping how policy reforms affect governance outcomes, Andersson (2006) and Raheem (2014) adopted the Institutional Analysis and Development (IAD) framework. Other studies have adapted institutional analyses and developed frameworks suited to their study contexts. These include analysis for river basin context (Bandaragoda, 2000), water use efficiency, management of coastal aquaculture (FAO, 2001), and analysis toolkits adapted at organizational level (World Bank, 2007). Studies by Rahman et al. (2012) and Rahman et al. (2014) used a modification of the IAD for monitoring responses of informal institutions and collective action to government interventions on land resource governance. The modification allowed a situation analysis at a given time as well as analysis of change due to a policy intervention. This ability to adapt the IAD framework to specific analysis needs makes it a robust approach to apply in this proposed study. Whereas the quoted studies above had before-and-after situation analysis, in assessing institutional incentives present for GI protection in Kenya, focus is placed on the understanding of how the existing arrangements would likely create incentives for producers to protect their origin products as geographical indications.

The ability to modify the IAD framework has also meant that it can be used to capture the roles of different actors along a supply chain. Fischer et al. (2007) gives an analysis of various authors who have applied the IAD framework to capture roles, influence and incentives of different actors in natural resource management. Assessment of actors and their power is important in determining who is important and influential in the process of getting the products through their respective value chains (Polski & Ostrom, 1999; Ostrom et al., 2006). According to Kennon et al (2009), stakeholder analysis is important in establishing who has impact in the implementation of a project or concept. The authors classify stakeholders into influential and important. Influential are those who impact the organisation of a program while important stakeholders are those that have impact over the program implantation process. Stakeholder analysis can take various forms depending on the objective of the analysis. Vanderlinden et al (2011) give guidance for conducting a stakeholder-issue analysis, with the objective of identifying the policy and non-policy issues that affect the stakeholders. Schmeer (1999) point out that for a successful stakeholder analysis, the stakeholders can be classified based on their level of influence. Their level of knowledge and position on key policy issues can either block or facilitate a policy process or program. This is influenced by their vested interests, alliances and resources they command. In agricultural production, returns to investment are influenced by prices at the end of the season. Therefore, of interest to this study are the stakeholders who influence prices and access to markets, which are key aspects in marketing a geographical indication. Hence, whereas a robust stakeholder analysis was not conducted, the role of the different actors in the respective value chains, their influence and importance was assessed through key informant interviews, focus group discussions and assessment of various policy documents.

CHAPTER 3: METHODOLOGY

3.1 *Conceptual framework*

The conceptual framework (CF) for this study is illustrated on Figure 3.1-1. The study conceptualised that the decision by producers to label/protect an origin product as a Geographical Indication is influenced by the producer perceptions based on the geographical characteristics of the region, the reputation the product has, and the existing policy and institution environments.

For origin products, quality, which influences reputation, is an interaction of the geographical characteristics of the region as well as the human influence (culture, attitudes, processing methods, etc.). Success in the GI process requires efficient coordination of the actors (producers as well as other public and private actors) (*denoted as C on the conceptual framework*). The power and influence of the different actors in the current value chains affect market access and prices received by the producers, through formal and informal rules of interactions. Enforcement of policies and legal frameworks that regulate the actions within each sub-sector (*D*) pattern producers' actions and perception of potential effectiveness of a GI protection. The interaction of the value chain actors, the institutions and the investment and commodity-specific policies are all aspects of and influenced by the policy and governance (*A*), which in turn are shaped by the existing political environment.

The complex interaction described above (product quality and reputation, actors, policies and institutions), coupled with the household and farm characteristics (*B in the CF*), in turn is hypothesised to shape the producer perceptions (*F in the CF*) of a commodity and the subsequent decisions made on production. The household and farm characteristics also tend to influence the

perceptions as well as the value (V) the producer attaches to the specific product, hence their willingness to engage in a GI registration process.

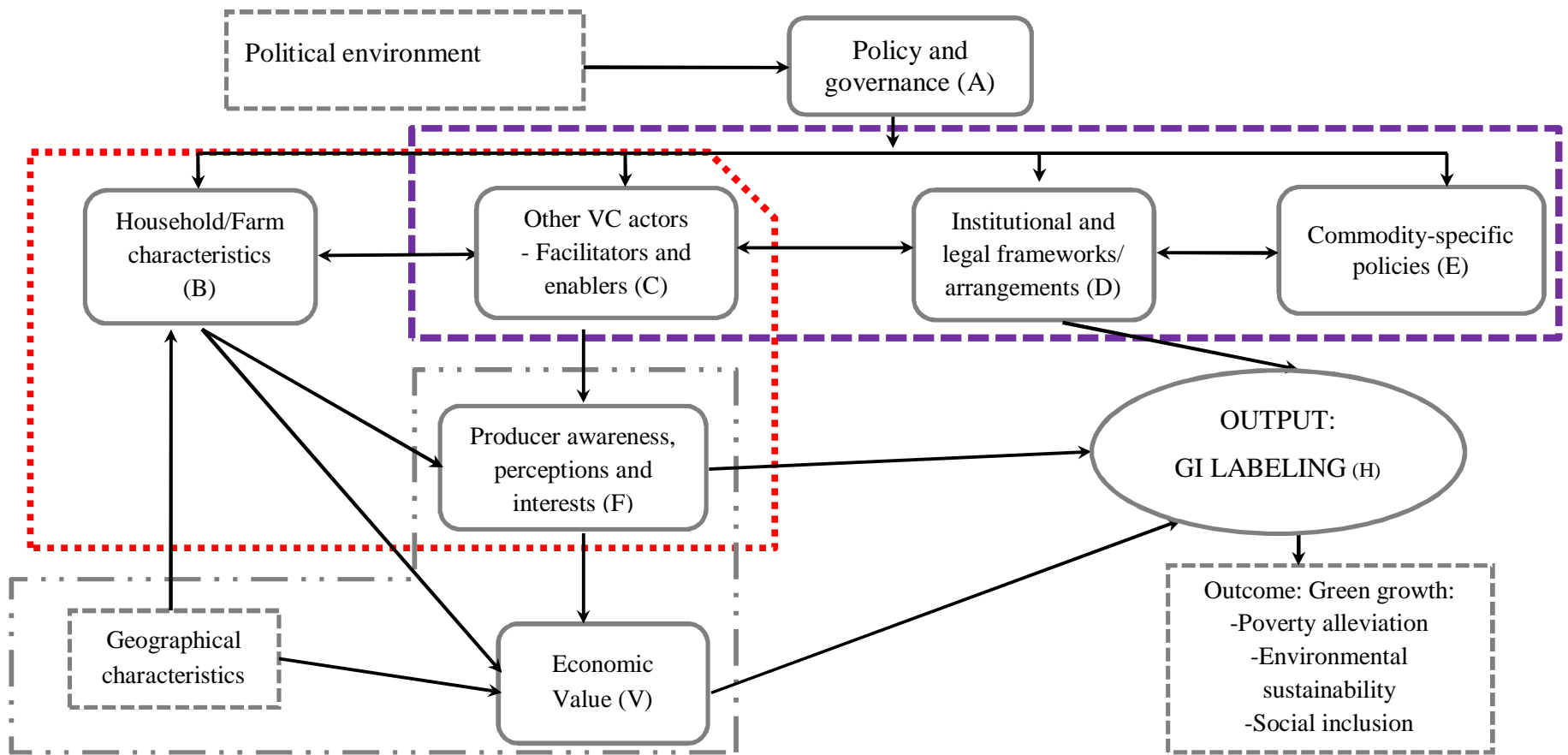


Figure 3.1-1: Conceptual Framework for the analysis of producer economic value and institutional incentives of geographical indications as green growth policy instruments in Kenya

(Source: Author)

From literature, origin products protected and successfully traded as GI are conceptualised to contribute to poverty alleviation, environmental sustainability and social inclusion. These are the key components of green growth. Successful GI protection is characterised by partial excludability, (excludes similar products from other regions but includes all producers in the given region) hence creating social inclusion. To ensure same quality of product, through collective action, the producers develop, register and implement specific codes of conduct, which would have to be environmentally sustainable. Effective GI protection differentiates the products and overcomes information asymmetry. This in turn would earn the producers a premium price and they would hence become more willing to invest in environmental management that protects the source of the quality attributes. The environmentally sustainable practices as well as social inclusion would also result in steady production over time, hence providing stable incomes and hence poverty reduction. This implies that the collective reputation and effective coordination that characterise GI protection contribute to green growth within the region.

3.2 Research design

The research was non-experimental, based on qualitative and quantitative data from both secondary and primary sources. The primary data was collected through descriptive household survey and case study approaches.

3.2.1 Qualitative approach

Qualitative approach was used to elicit information for each of the objectives. A scoping study was conducted to identify products with GI potential, leading up to objective one on identification and characterisation of the products. This included key informant interviews to identify these products that had unique qualities perceived to be place-based. Focus group

discussions were also held in each identified study areas during the scoping study (Objective 1) to obtain the perceptions of the participants on the source of product quality and any link to the region of production (including cultural linkages).

Once the in-depth study products were identified, two focus group discussions (FGD) were held in each study site to validate the attributes linked to each commodity and identify the levels for of the attributes to address Objective 4. Key informant interviews were also held to validate the policy related attributes. The FGD were also used to identify formal and informal institutions within each study area and their level of influence and importance in the trade of the four identified commodities (Objective 2).

3.2.2 Quantitative approach

Producer/household surveys were conducted in order to obtain quantitative data on the awareness and perceptions of territorial attributes inherent in the respective products; as well as information on production patterns and costs. The farm gross margins were regressed against territory-based attributes and preferences of the producers and the household socio-economic characteristics (Objective 2). Choice experiments were also conducted for each household, for use in determining the producers' willingness to pay for GI related institutional and other attributes under Objective 4.

3.2.3 Detailed case study approach

To gather data and understand description of the complex relationships (how and why) between policy, institutions and actors relevant to the four commodities, the case study approach was applied. Key actors in the goat, tea, coffee and mango (horticulture) sub-sectors were interviewed with the aim of establishing the existing policies, rules and institutions governing the sectors, as well as the role of the various actors in influencing market access

and prices of the target commodities. The selection of the respondents for the case study was purposive to ensure as much relevant information as possible was gathered for each of the products.

3.3 Sampling approach for household survey

The survey was conducted on producers in each of the study regions. Probability sampling was used to determine the sample size for the survey. Considering that geographical indications are non-exclusive to all producers within the given region of origin who adhere to the codes of practice, sampling targeted the entire population. There are at least more than 100,000 coffee growers under the Murang'a Farmers' Cooperative Union, with approximately 255,696 households within the specific coffee-growing regions. Representative factories were clustered based on the perceived characteristics of the product. From each of the clusters, a random sample was then drawn for the study.

In Marigat sub-county, the specific region where the producers perceived the goats to be naturally salted comprised five locations, namely Marigat, Kimalel, Ewalel Soi, Kimondis and Ilchamus. Based on the county statistics, the five locations had approximately 26,708 households, which formed the basis for the sampling (County Government of Baringo, 2014).

The tea growing regions of Kirinyaga County formed the study area. There are five KTDA factories in the county. Three (Kangaita, Kimunye and Ndima) were identified for the full survey while Thumaita was sampled for the characterisation study. The producers in the catchments that delivered tea to the sampled factories formed the sampling frame. Approximately 44,481 households are present in the tea growing regions of the county.

Makueni County accounts for a third of the approximately 3 million apple mango trees found in the Eastern Region of Kenya (ABD, 2011). The fruit is cultivated in a cross-section of agro-ecological zones, and often in regions that are not suitable for production of most food crops. Hence it is an important contributor to the economy of the County (Rohde et al., 2010). The approximate population in the mango growing regions was 24,500 households, according to the County Ministry of Agriculture staff.. There are 6 mango production sub-counties in Makueni, namely Mbooni, Kilome, Makueni, Kibwezi East, Kibwezi West and Kaiti. Proportionate sampling was done in order to cover all 6 sub-counties.

For each County, a sampling frame was developed through the respective extension offices including the KTDA and Coffee Cooperative Societies. The sample size was determined based on the following equation by Yamane (1967):

$$n = \frac{N}{1+N(e)^2} \quad (3)$$

where n is the suggested sample size, N is the population size and e is the level of precision, set at 9% for the study (due to budgetary constraints).

The resulting sample size for the producer survey was 123 households for each County, due to the large error term used. Since the 123 was the minimum number of respondents for the set precision term, 10% of the total sample size was added to take care of data collection errors that may arise. Proportional sampling was done within the sub-counties, hence the resultant specific county sample sizes differed, resulting in 135 households in Baringo, 135 in Murang'a, 134 in Kirinyaga and 137 in Makueni counties.

3.4 Data collection and analysis

Key informant interviews and focus group discussions for the scoping study were conducted between May and December 2014. Collection of secondary information on policies and rules began in May 2014 and has been an on-going process due to the dynamic nature of the policy arena in Kenya.

Focus group discussions and key informant interviews to validate the attributes used in the choice experiments as well as determine the institutions and rules in place for each commodity were conducted between December 2014 and January 2016 (**Error! Reference source not found.**). Household surveys in all the counties using the semi-structured questionnaire (Appendix 2) were conducted from June to August 2015.

Household survey data was analysed using SPSS version 24. The choice experiment responses were entered using MS Excel 2016 and analysed using NLOGIT 6.

RESULTS

Results are presented in four chapters each addressing a specific objective. The chapters comprise papers submitted to journals; some have been published and others are under peer review.

CHAPTER 4: IDENTIFICATION AND CHARACTERISATION OF ORIGIN PRODUCTS WITH POTENTIAL TO BE REGISTERED AS GEOGRAPHICAL INDICATIONS IN KENYA

4.1 Background

This chapter provides the results that answer the first objective. Based on a scoping study, the chapter sets out to identify unique agri-food and forestry products and regions of production that is perceived to manifest the quality. Using criteria identified by various authors, the identified products from specific production regions are assessed for potential to be protected with geographical indications.

4.2 Characterisation of unique agri-food products for geographical indications protection potential in Kenya and scope for up-scaling⁴

Abstract

Sustained growth in Kenya's agricultural sector is the main driver of economic development hence the focus of the sector as one of the key economic pillars in the Vision 2030 and the Agricultural Sector Development Strategies. Diversification through protecting products presented in the market with geographical indications (GIs) is an opportunity for increasing rural incomes. A scoping study was conducted as a first step towards identifying Kenyan origin products that have potential to be registered as GIs. Before identifying the products, a selection criterion was developed from literature and interaction with key informants. Potential products and their production regions were then identified based on the perceived

⁴ Paper published as: "Maina FW and H Egelyng. 2018. Characterisation of unique agri-food products for geographical indications protection potential in Kenya and scope for up-scaling. *African Journal of Intellectual Property*, Volume 2 (2) (June 2018): 164 – 191".

uniqueness from similar products from different production regions. Eleven products were identified, namely tea, coffee, apple and ngowe mangoes, oranges, avocados, pyrethrum, Koriema goats, tilapia from Busia, Baobab and wild silk. Relevant stakeholders were identified with help from key informants in the different sub-sectors. The informants were interviewed either individually or through focus group discussion comprising of producers and few traders. Traders in the urban markets were also interviewed. Each product was then subjected to the selection criteria developed. From the criteria, tea, Koriema goats, coffee, tilapia fish and Makueni apple mangoes were ranked highest. The criteria provide a combination of factors to consider, in establishing the potential success of GI protection. The analysis points to the relevance of future research on the quality of origin products and institutional regimes for geographical indications in Kenya.

Keywords: Characterisation, geographical indication potential, selection criteria, weighted score

4.2.1 Introduction

Evidence of consumers increased knowledge and demand for origin-labelled products has led to an increased interest and supply of products with potential for geographical indication (GI) registration, the world over. Successful GIs have often been associated with sustained agricultural growth and value addition. These goals double as the focus by the Government of Kenya through improving income, equity and environmental protection in the rural areas (GoK, 2007, 2010a).

According to Dagne (2015), where economies are highly dependent on agriculture, they stand to benefit from protecting products whose unique qualities are essentially due to the geographical region of production, rather than trade them as standard goods. Whether sold in

domestic or export markets, the author indicates that, successfully applied, GI protection can result in accrued local economic and environmental benefits and producers can reap the benefits accruing from consumer demand (Bramley & Kirsten, 2007). The Article 22 of the TRIPS Agreement has given a universal definition of GIs and required the World Trade Organisation (WTO) member countries to provide the legal framework for their protection. Each country is hence responsible to develop their own guidelines based on the products that are unique essentially and exclusively due to the region of production. In Kenya, protection of GIs, can be achieved through registration as collective marks under the Trademarks Act CAP 506 (GoK, 2012b). Whereas the features of collective marks are quite similar to geographical indications, the former do not provide regulatory framework for the GI protection. The marks however are a good starting point for producers to consider protecting their products as GIs later. To provide the framework and pave way for implementation policies for geographical indications, the Kenya Industrial Property Institute (KIPI) together with relevant stakeholders have developed the drafting instructions for a GI bill, the enactment of which is yet to be done.

However, as Aubard (2012) and Giovannucci et al (2009) point out, GI is not a panacea. The fact that a product has unique qualities essentially attributable to the geographical region of production does not necessarily mean that marketing it as a GI will automatically be successful in improving producer income, equity or even environmental protection (Kerr, 2006). There is therefore need to justify any potential investment in GI protection by assessing identified unique products against a criteria that goes beyond commercial and legal instruments. The assessment is based on the tenet that the country has an untapped potential to value and market their origin products based on unique and specific regional/geographical characteristics, which would result in better income for the producers as well as better management of the environment and increased social inclusion.

Previous studies have already identified some agri-food products that have potential to be protected as GIs in the country. However, most of these studies did not report use of any criteria that could be adapted for replication in similar studies. The objective of this study was to identify, using a set of predetermined criteria, unique characteristics of agricultural products that would inform potential for protection as GIs as well as the scope for up-scaling. The study uses a set of selection criteria developed from literature to rank the agricultural products. This provides a means to identify products for further analysis since not all origin-based products have the potential to benefit from GI labelling, protection and marketing (Musungu, 2008; Bramley & Biénabe, 2013; Fredskild, 2014)

4.2.2 Methodology

4.2.2.1 Study design

A first detailed interview was held with the patenting office of the Kenya Industrial Property Institute (KIPI). This gave an initial status of the legislation as well as any existing initiatives toward identification of potential GI products. Literature review and interviews with relevant stakeholders in the agricultural sector were the main sources of primary and secondary data for the characterization study. Interviewees included key informants and experts in the respective value chains, comprising of government officials, traders, key producers and other relevant stakeholders with relevant information, identified through snowballing. In each study region, at least two focus group discussions were held with producers. The interviews helped identify products that have unique qualities essentially linked to the geographical region of production. Checklists guided the discussion in line with the objective of the study.

4.2.2.2 *Developing and defining the identification criteria*

The process of developing and defining the identification criteria was based on literature sources as well as the interaction with the KIPI staff. The process resulted in eight identification criteria against which unique place-based products were assessed for their potential to be registered and marketed as GIs:

- a) Reputation – Reputation forms the basis of a GI supply chain as it transforms cultural surplus value of a product into an economic surplus value as cited by Bramley and Biénabe (2013) and Belletti (2000). Reputation arises from the recognition of a product's unique characteristics/quality in the market and consumer perceptions centred on their cumulative previous experience. Giovannucci et al (2009) indicate that a product's reputation can be at local, national or international levels.
- b) Specificity and typicity – specificity refers to specific product characteristics inherent to the place of production that give the product its reputation among consumers (Giovannucci et al., 2009; Belletti et al., 2017). This differentiates the product from similar ones produced outside the region. Specificity leads to a products reputation. Besides having a specific quality, the combination of human and natural factors anchored in the territory of production gives the product uniqueness, referred to as typicity. This links to the definition of GI that the products characteristics are essentially attributable to the *terroir* (WIPO, 2003; Giovannucci et al., 2009; Vandecandelaere et al., 2010; Bramley & Biénabe, 2013).
- c) Environmental impact – The current and possible future changes in environmental impact of production are important in the sustainability of a potential GI. A positive environmental association with protection of a product as a GI affects both the reputation of the product as well as consumer. GIs also provide an opportunity to

protect the environmental landscape that makes up the product qualities (Giovannucci et al., 2009; Vandecandelaere et al., 2010; Bramley & Biénabe, 2013).

- d) Cultural aspects and linkages (Dagne, 2015; Belletti et al., 2017) – Often GIs are strengthened by the link between the geographical region characteristics and the use of traditional knowledge and locally specific resources (the combination of climate, soil types, indigenous plant varieties/animal species) (Belletti et al., 2017). GI protection can provide protection for traditional knowledge on which a product quality is hinged, while the cultural associations would strengthen the local landscape of a community (Vandecandelaere et al., 2010; Dagne, 2015; Belletti et al., 2017)
- e) Premium price – Whereas this would be an outcome of a GI registration, there are instances where consumers already pay a premium price for the unique characteristic of a product. Differentiating a product through GI registration can be used as a tool for fair redistribution of any premium income or added value among the suppliers and especially the producers (Vandecandelaere et al., 2010). Often producers do not receive the premium price due to their lack of bargaining power in the supply chain. In other instances, the intrinsic characteristics of some products (e.g. shelf life) do influence the magnitude of the premium price (Oana et al., 2011).
- f) Collective rights and coordinating institutions – Whereas producers are independent in their economic and legal aspects of production and marketing, they are linked together by their activities and common product, providing for collective reputation. Various authors envisage collective action and coordination in the supply chain as a prerequisite for success in differentiating origin products (Barjolle & Sylvander, 2002; Reviron & Chappuis, 2011; Bramley & Biénabe, 2013). Poor coordination of the collective reputation can result in its misuse both within and outside the region (Vandecandelaere et al., 2010).

- g) Organisational and institutional support (including macro institutional support) – In some sub-sectors, the smallholder producers may be unfamiliar with various legal and market concepts that affect them. The presence, role and influence of the existing value chain actors and their specific roles and influence will have a bearing on the outcome of protection of a product as GI. The support provided to producers could be the provision of regulatory framework, financial contribution, assistance with registration and enforcement procedures, among others (Bramley & Kirsten, 2007).
- h) Market attractiveness, scope and supply chain characteristics (Barjolle & Sylvander, 2002; Bramley & Kirsten, 2007; Bramley & Biénabe, 2013) – Beyond reputation, there should be an indication of market demand for the attributes as well as the potential for establishment and growth of the niche GI market. Market attractiveness emphasizes that the image of the production region should boost the value of the potential GI product and vice versa, the GI product should reinforce the region's image (Barjolle & Sylvander, 2002; Bramley & Biénabe, 2013). Supply chain characteristics spell out the degree of competition, barriers to entry, the structure of the patterns away from production and the scope of the market (is it local, or goes beyond national boundaries) (Bramley & Biénabe, 2013).

Each criterion was given a weight based on its relative importance in identifying a product as a potential GI. Criteria based on the reputation, specificity, environmental impact and cultural links were given a weight of two (2) while the rest were given a weight of one (1). Those with a weight of two are necessary aspects for a product to be considered for protection with Geographical indications. Those with a weight of one are important and contribute to successful implementation of GI registration, however, their absence does not disqualify a products GI potential.

The selection criterion was then developed and adapted for the study as summarized below:

Criteria	Score	How scoring was done
1. Reputation (2)	0 – 2	0 – No product reputation; 1 – Product reputation is implied and not necessarily linked to product characteristics 2 – There is clear link between consumers reputation of product and geographical region
2. Specificity/Uniqueness – linked to demand (2)	0 – 2	0 – There is no clear link between product reputation and specific region of production 1 – The link between product unique qualities and region of production is implied but not verifiable 2 – There is a clear and known link between the product unique qualities and region of production
3. Environmental impact and sustainability (2)	0 – 2	0 – Production of the unique product negatively impacts the environment 2 – There is a strong linkage between producing the unique product and its sustainability
4. Cultural aspects embedded in the product (2)	0 – 1	0 – There are no cultural linkages associated with production or processing of product 1 – There are cultural linkages associated with production or processing of product
5. Premium price (1)	0 – 2	0 – Premium price does not exist currently for product qualities 1 – Consumers pay a higher price for the product 2 – Consumers pay a premium price for the product characteristics
6. Collective action and institutions (1)	0 – 2	0 – Producers do not exhibit any collective action in production and marketing of product 1 – Producers engage in collective action but only in part 2 – There is clear collective action in production and/or marketing of the product
7. Macro organisation and institution support (1)	0 – 2	0 – There is no organisational support for the product 2 – The product has strong macro-institutional support which can help with GI registration
8. Market attractiveness, supply chain characteristics and scope (1)	1 – 3	3 – Image of region boosts the value of potential GI; supply chain encourages producer-market linkages and a clear market is available that can be differentiated either locally or internationally; 2 – Has at least two strong characteristics compared to 3 above 1 – Market attractiveness, supply chain characteristics and scope of market are not evident or low

4.2.3 Results and Discussion

The results are presented in two sub-sections. The first sub-section presents the identified products while the second applies the identification criteria on each of the products. A summary is then given on the scoring of each product against the criteria.

4.2.3.1 General description of the potential GI products

From literature, various initiatives including the Kenya-Swiss project (IPI & KIPI, 2009), Ramba (2013), (Blakeney & Mengistie, 2012) and Bagal et al. (2013) among others show that there are products with potential to be protected as GIs in Kenya. Bagal et al. (2013) and Gichovi (2011) focus specifically on coffee, Blakeney & Mengistie (2012) on Tea while the IPI and KIPI study lists more products, including non-agricultural ones. Whereas some of the products with potential including tea and coffee are largely produced for export, other products mainly target the local and regional markets. Major stakeholders who have local knowledge and interest in the success of regional and local products include the Counties and their administrations and political leadership Governors and sectoral producer representatives/commodity boards, where they exist. At least eleven products were identified that could have uniqueness that is essentially due to the geographical region of production in Kenya (Figure 4.2-1).

Though grown in different regions in the country, only specific regions were visited based on information received from expert interviews and literature search. The regions visited are those where the identified products were perceived to have unique characteristics.

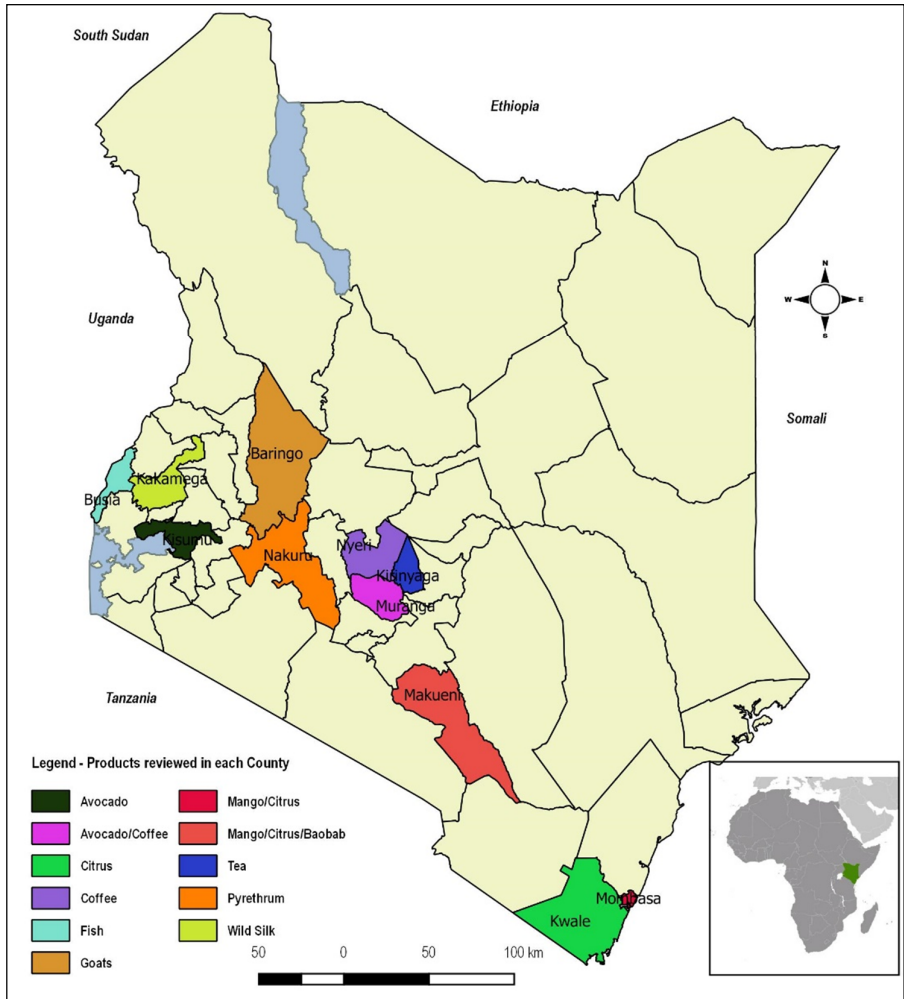


Figure 4.2-1: Map of Kenya showing unique products reviewed in different Counties

4.2.3.2 Application of the identification criteria

Checklists were used during the interviews, and respondents were asked if they were aware of the concepts of GIs and/or origin products (OP). The majority of respondents were not aware of the terms neither the draft bill. However, when the concept was explained, the respondents were able to describe the products and their place-based uniqueness based on their perceptions, as described in this section.

Each of the identified potential GI products is described based on the identification criteria. At the end of the entire section, a joint summary of all products is given and a scoring and ranking of the attributes done to identify products for further research.

4.2.3.2.1 Tea as a potential GI

Tea was identified as a potential GI due to the reports and perceptions that Kenyan teas have uniqueness in their taste that leads to increase in demand. Tea is among the most valuable of all exports from the country. Production is practiced at altitudes between 1550 and 2200 metres above sea level, often characterised by steep/hilly slopes requiring appropriate management against soil and water erosion. Producers are both small-scale farmers as well as large-scale estates. The Kenya Tea Development Agency (KTDA) manages production, processing and marketing of tea produced by small-scale producers.

At least 90% of tea produced in the country is sold on the export market either through the auction in Mombasa or through direct sales to specific specialty buyers. According to practitioners in the industry, specialty market for tea is attributable to the unique tea qualities from different gardens.

Producers and factory personnel in the Mt. Kenya region indicate that quality of tea is dependent on the producers' adherence to good management practices. To ensure uniform and appropriate environmental management, KTDA have developed clear codes of practice, which covers production aspects related to all agricultural enterprises on the tea farmers' fields. The guidelines also include handling of waste at household and community level to ensure that there is sustainable management of the landscape. They also emphasise on timeliness of operations including delivery, handling and processing at the factory, which are cumulatively important in determining the grade of the teacup. Any error in one of the processes in the factory results in poor quality tea in the cup, regardless of the field management practices observed. Therefore, tea quality is a product of the efforts of different supply chain actors.

Fertilizer is the only inorganic additive in the entire tea production and processing cycle. However, regardless of similar management procedures (both field and factory) under small-scale production, the KTDA and the Tea directorate have, based on feedback from the demand-side, appreciated that teas produced in different geographical regions have different taste and body attributes. This difference is especially evident among various consumers who purchase teas from specific gardens (factories) at different prices. Teas from Mt. Kenya region, for example, have consistently attracted the highest prices per kilogram, nationally, indicating that there is more to the quality than timeliness of operations and good management. This difference in the quality of the teacup is distinct East and West of the Rift Valley in terms of taste, body and colour, irrespective of management practices. The Tea Directorate and other stakeholders are in the process of analysing and classifying these distinct qualities into well-defined tea zones.

Each factory comprises several buying-centres for ease of management and collection of the tea leaves. Each producer can only deliver tealeaves to a specific buying centre where they are registered; hence, tea can be traced back to a group of producers, who in turn provide quality check in the field management. At the buying-centre, farmer-led committees enforce hygiene and safety standards. The factory boards include producer representatives, who participate in decision-making regarding finances and other management issues.

Sorting of tea is done at the buying centre. Grading is done at the factory and the final products delivered to the auction or sold at factory door to local consumers and traders. Each factory, referred to as a garden, sells its tea separately. Therefore, tea quality is a joint outcome of producers and factory processes with buyers associating specific tea qualities with different factories.

4.2.3.2.2 Coffee as a potential GI

Identification of coffee as a potential GI was based on literature, efforts by the Coffee Directorate to develop the Coffee Mark of Origin, as well as interviews with various stakeholders within and outside the coffee sub-sector.

The Coffee Research Institute (CRI) classifies coffee production regions in Kenya into at least five distinct production zones. Within these regions, the high and medium altitude coffees are generally of higher-grade quality compared with those from lower altitude. In addition, taste of the resultant coffee differs according to the regions, but no scientific evidence is available yet on this distinction. Coffee from Mt. Kenya region generally attract higher prices among consumers, and are described as having rich floral tastes (François & Gichovi, 2011; Gichovi, 2011; Bagal et al., 2013). Coffee buyers validated this and described

these coffees as having varying and rich floral tastes attracting premium prices from specific consumers.

Producers in Mt. Kenya region indicated that observing good management practices is of critical importance to the quality and grade of the coffee. This is evident from the fact that within the same geographical regions, coffee from different factories attracts different prices at the Nairobi Coffee Exchange. One of the best small scale coffee producers in Nyeri County says: *“if a farmer in a different coffee production region, practices and adheres to the laid down coffee production codes of practice in a timely manner, the resulting berries will be similar in quality to mine.”*

A technologist at the Dedan Kimathi University of Technology, Nyeri, Kenya described coffee from Nyeri and the bordering Murang’a regions as very acidic with a sharp taste. They are characterised by varying distinct floral flavours and the parchment are bold (swell from behind), a desirable quality. This is in contrast to coffees from Aberdare region that are not acidic and the parchment is not bold. The red volcanic soils with high percentage of phosphoric acid favour the quality and boldness of the Nyeri and Murang’a coffees. The high altitude contributes to the high acidic taste.

Small-scale coffee producers are organised into factories, a number of which collectively constitute a Coffee Cooperative Society. Each factory is responsible for wet milling of the berries. The factories have committees whose task is to ensure quality of produced berries through monitoring timeliness of on-farm production practices by the producers as well as timeliness of operations at the factory. However, due to poor performance of the sub-sector over years resulting in low producer prices, many producers either abandon their crop or perform the bare minimum to sustain the crop in the field. The Society rules require the factories to process berries separately based on adherence to on-farm management practices.

Some factories do not strictly observe the rule due to low and declining volumes of berries delivered. The result is poor prices for those who manage their coffee crop well and the low prices further aggravate the production and productivity problem. The producers attributed the low investment in management of the crop to the low prices they receive. This is despite having the industry as one that is advanced in terms of differentiating coffees from different regions and factories. Where collective action among producers is passive and inefficient, they have not been able to benefit from these premium prices, which then remain in the hands of the other investors higher up in the supply chain.

According to the Coffee Auction, coffee produced in Kenya is sold mainly in the export market (at least 80%) with low, but increasing, local consumption. Bagal et al (2013) describes the Kenyan coffee value chain in detail. Through collective decision-making, the factories select the dry millers and marketers for the parchment coffee. The Coffee Directorate provides regulations that guide deductions made to each segment of this supply chain. The regulations require that producers receive at least 80% of the buying price.

Crops Act (2013) managed nationally under the Agriculture and Food Authority (AFA) recognizes both coffee and tea as scheduled crops. The Kenya Coffee Standards developed by the Coffee Directorate (of the AFA) gives the codes of practice on cultivation, processing and packaging. All Arabica coffee produced in the country in accordance to the Kenya Coffee Standards and other codes of practice in the coffee industry is eligible for registration using the Coffee Kenya Mark, which is a certification mark enforced under the KIPi, which acts as a country GI (Melli, 2015). There is a general perception that Kenyan Arabica coffee exhibits production-region related uniqueness and most buyers blend it with other coffees to enhance the qualities. As currently designed, Coffee Kenya does not differentiate coffees from

different geographical regions (Melli, 2015) and the impact of the monetary benefits on producers is yet to be quantified.

At the time of the study, coffee production in the Mt. Kenya region varied between producers who received good and stable prices due to well managed crop and those who received poor and low prices due to poor field and factory management. When producers receive low prices, they compromise on the field management of the crop, and this has resulted in low quality production, unsustainable practices and in other cases, shift from coffee production to other enterprises. This shift has direct effect on current and future coffee production.

4.2.3.2.3 Apple mango as a potential GI

The study focused on Apple mangoes from lower Eastern region of Kenya due to consumer and traders' perceptions that the fruits from the region were generally sweeter and juicier. Makueni County is the largest producer of Apple mangoes in the Country, and the lower eastern region in particular. It therefore formed the basis of the study.

An interview with traders in high-end green groceries and markets in Nairobi showed that mango prices might differ by season, but rarely by region of production. The prices fluctuate based on volumes and seasonality of production. However, the traders indicated that customers often enquire the geographical source of the mangoes, with most preferring those from lower Eastern region. Due to the preference, the peak season for mango availability is associated with lower Eastern region. The traders in turn sell an assortment of mangoes from different regions during the peak season, benefiting from the lower Eastern mangoes to enhance sales.

According to the State Department of Agriculture officials as well as apple mango producers, a major setback for producers in marketing the fruits, at the time of the study, was the lack of

collective action on the supply side. Not all previous efforts at enhancing collective marketing have been successful beyond project cycles and at the time of the study most of the groups and umbrella bodies were stronger in production aspects as compared to marketing aspects of apple mango. A focus group discussion with apple mango producers in Makueni indicated that collective action often fails due to the high number of buyers (often intermediaries) and mistrust among producers. A processing factory built by the County government is envisaged to enhance not only the marketability of the produce but also collective decision making of the producers. However, the factory may initially focus on production of Ngowe mangoes.

Intermediaries sell the apple mangoes in both the domestic and international markets through exports to the United Arab Emirates. Access to the export market opportunity is conditional on adherence to the set standards. The export market attracts higher prices per piece, with some producers, especially those in Kibwezi, receiving up to 0.5USD (KES.50) per piece. Producers in Kibwezi are able to benefit from an early season crop through irrigation. Export to the European market is limited due to more stringent requirements as well as preference for the gentler tastes of Tommy and Kent mango varieties as opposed to the Apple mango (*Joseph, KALRO Thika, personal communication*). The intermediaries in the export market are also more likely to be part of the investors, willing to invest their funds to ensure sustainability of the export market.

Intermediaries often purchase the mangoes from the small-scale farmers and deliver them to various markets in major urban regions. The producers are often not able to access these urban markets due to informal barriers to entry set by the traders. The short mango-harvesting season (often three months) and the fact that the fruits are highly perishable expose producers

to exploitation by the intermediaries. Due to lack of collective marketing, price setting is mainly done through individual farmer negotiation with the intermediaries.

Fruit trees are generally good for agroforestry and according to Rao et al (2009) soil temperatures are lower where there are trees, especially in semi-arid areas. In Makueni, the producers practice agroforestry with the fruit trees therefore creating a micro-climate that would facilitate production of other adaptable crops.

4.2.3.2.4 Ngowe mango as a potential GI

Ngowe is typically a coastal cultivar but also well adapted to mid-altitude zones. Commonly known as Lamu mango, the fruit originated from Zanzibar introduced to Kenya in the late 19th Century (Griesbach, 2005). Mango production in Kenya was traditionally associated with the coastal region, especially due to the presence of the Ngowe mangoes. This long history of production in the region is associated with a number of culinary recipes from mangoes. The County governments and AFA consider the fruit tree an important poverty alleviation and source of income in the region.

Producers perceive the taste of the mango grown in the region to be distinctly tastier compared to those from other Ngowe producing regions. According to two focus group discussions held in Kwale and Mombasa counties, Ngowe mangoes from the coastal region have a unique skin, with an attractive powdery look when held against the sun. Juice processors prefer Ngowe mango due to its large size, thin skin and small seed and high quality pulp, hence little wastage (USAID 2015). The producers and juice makers in Mombasa reiterated this. These characteristics (large size, thin skin, small seed and high quality pulp) and its characteristic unique taste also make it more preferred for juice making compared with apple mango, which is more suitable for eating as a fruit.

Producers in Mombasa and Kwale attributed the unique taste and enhanced colour of the fruit to the early morning breeze from the ocean, the soil as well as temperature and rainfall patterns. However, the taste is also a function of adherence to good management practices. Since most farmers do not practice good management practices, the resulting fruits are often characterised by a bitter taste and infestation by diseases. Poor management is harmful to the environment as the trees can serve as hosts for harmful pests and diseases that may infest other plants in the vicinity (Griesbach, 2003).

According to officials from the then Horticultural Crops Directorate of the Agriculture and Food Authority, collective action is not common among mango producers in the region. As with Makueni County, this lack of collective action complicates mango marketing since the intermediaries, who are the main buyers, capitalise on it and become the price setters, offering producers low prices.

Ngowe mangoes from the Coastal region are mainly sold in the local and national market, with very little going to the export market. The mango can be consumed whole or processed into various products including juices, jam, ice-cream, yogurts, or used as a flavour. Several processing companies including Coca-Cola and Afia fruit processors, among others, have established in the coastal region to take advantage of the available raw materials. Most of the processors access the fruit from the market or intermediaries. The lack of penetration into the EU market is mainly due to the taste preference. However, as with Apple mango, market for Ngowe mangoes exists in Middle East. The export market from Kenya benefits from the advantage that the mango season in the country coincides with off-peak season of other big exporters like Pakistan and India.

4.2.3.2.5 Wild silk from wild silkworm as a potential GI

The *Anaphe panda* silk moth (hereinafter called the Kakamega wild silk moth) is indigenous to Africa and particularly the areas around the Kakamega forest, where the *B. micrantha* tree thrives. Wild silk from other regions in Kenya is a product of different silk moths, since the different silk moth species occur naturally/are adapted to different ecosystems (Raina et al., 2009). Although the wild silkworms occur naturally in Kakamega forest, the only mid-altitude tropical rainforest in the country, it was not until the early 1900s that exploitation of their silk began (Kioko et al., 2007). Wild silkworms are non-timber forest products, which contribute largely to the preservation of the trees and tree cover. To increase production, the producers have planted the *B. micrantha* tree on their farms, hence increasing tree cover in the region.

In Kakamega, the producers who harvest wild silk allow the natural processes to take place in the wild. The silk moth feeds on the leaves of the *B. micrantha* tree, which occur naturally especially in the forest area, or grown by the farmers near their homesteads. The role of the producers is to collect the cocoons once the adult moths leave the cocoon. The producers ensnare the tree by putting a net to ensure they can find the cocoon once the moths have left. While individual mulberry silkworm moths spin their own cocoon, the wild moths spin in colonies. The resulting cocoon is therefore much bigger in size, but attracts lower prices since more work is required to extract the silk. However, the wild silk, especially from the predominantly indigenous part of the forest, is described as being of higher quality with a longer lifespan (Mbahin et al., 2012)..

The producers in Kakamega did not have diverse market options for the wild silk. At the time of the interview, the producers received KES.200 (appx. 2USD) for each cocoon. The wild

silk is perceived to be of good quality and coarse texture with resulting high quality fabric. According to the producers, the demand is high but the quantity produced is low.

No cultural links exist with the wild silk as, traditionally, the communities around the forest would not engage in catching “*caterpillars*”. Caterpillars were seen as a taboo and, therefore, although they are in plenty in the forest, the communities did not exploit them. This could also explain the slow rate of engaging in wild silk production despite having high demand for it.

At least 19 collector/producer groups were identified around Kakamega forest region who engage in various economic activities that benefit from the non-wood forest products, including silk production. Each producer harvests their own silk and later sells through the group, therefore having a limited ability to bargain for better prices – *limited since the producers have only few market options.*

The Kakamega marketplace, established to sell the produce from the farmer groups, was the main marketers of the wild silk. However, once the producers sell the cocoons to the market place, they did not benefit from any value addition done. Silk traders in Nairobi’s upmarket were not aware of existence of the wild silk from Kakamega. They mainly purchased wild silk from Pakistan and more recently from Rwanda. The producers of the wild silk were also not aware of the market chain beyond their farms, besides the Kakamega Marketplace. Due to this lack of alternative and aggressive market, the producers do not have an incentive to increase their efforts in looking for the cocoons in the wild. The producers have received support from the *ICIPE* as well as the Sericulture research centre. Kakamega forest service has also made it possible for the producers to access the silk from the forest. However, the groups do not seem to have grown much despite the support (Egelyng et al., 2017).

4.2.3.2.6 *Pyrethrum as a potential GI*

Pyrethrum (*Chrysanthemum cinerariaefolium*) is a perennial crop with a daisy-like appearance and white flowers that possess insecticidal properties (pyrethrins). Pyrethrin is low on mammal toxicity hence safe to use and is not persistent in the environment, making it the oldest insecticide known. Producers often use the dried flowers in pest and disease control in other plants on their farms and on stored grains.

The quality of pyrethrin extracted from pyrethrum is dependent on altitude (upto a maximum of 2900 masl) and temperature. The higher the altitude, the lower the temperatures are and the higher the production of the flowers (Wandahwa & Ranst, 1996). According to the Pyrethrum Directorate, pyrethrum produced in most parts of Kenya has higher pyrethrin content compared to most world production. Whereas the global average is about 2.0% or below, pyrethrin content of 3% can be achieved in Kenya. This is attributed to the altitude, and proximity to the equator as well as the characteristics of the soils in the regions (*Verbal communication, Pyrethrum Directorate*). In previous years, export from the Kenyan pyrethrum accounted for up to 90% of the global market. Pyrethrum producers in Nakuru County are aware of the quality of their pyrethrum in the world market. However, over time, inefficient institutional patterns in the industry have forced many producers to abandon pyrethrum production in favour of other more profitable enterprises (Monda 2015). Pyrethrum in Molo region in the high altitudes of Nakuru County in the Rift Valley has high flower productivity as well as the highest pyrethrin content globally.

Currently the pyrethrum directorate of the Agriculture and Food Authority (AFA) oversees the production, marketing and establishing regulations in the Country (GoK, 2013a). At the time of the study, the Pyrethrum Directorate was still the main marketer of the crop (Burnett et al., 2002; Monda, 2014).

4.2.3.2.7 Lake Victoria Tilapia fish as a potential GI

Whereas captured fish can move from one beach to the other, the geographical characteristics of the regions feeding into Lake Victoria influence the feed available for the fish and consequently the characteristics (taste, size and colour) of the captured fish. The study focused on the landing beaches in Busia County, based on the urban traders' preference for captured fish from the region.

The fishermen (anglers) and traders of captured Tilapia fish from Busia County indicated that the taste of the fish from the Lake varied slightly from one port to another. This was due to the predominant characteristic of the available feed and the Lake bottom. Where there was more rock, hence better algae, and less contamination of incoming waters from rivers, the Tilapia, and fish in general, were tastier. They also indicated that compared to Tilapia from other Lakes and fishponds in the country, those from Lake Victoria are tastier. They attributed this mainly to the quality of water flowing to the lake and the characteristics of both the soils and rock bed. There is need for further research to ascertain the source of these perceptions and differences.

Among the traders and consumers in Nairobi, once fish is cooked, most consumers are not able to distinguish their physical characteristics. The taste is, therefore, the main selling point of the fish. Although the price will not vary, consumers will frequent eating-places they perceive to have tastier fish. According to the anglers and traders at the beach, prices are mainly set by the urban centre markets, especially those in Nairobi. This in turn has implication on the prices at the local fish market, as the traders will often sell to the highest bidder. Therefore, although the local market is characterised by minimal transport costs and value addition, prices are relatively high and comparable to the prices in the urban the tilapia

is quite costly at the local market. These perceptions agree with findings by Akande and Diei-Ouadi (2010) that fish prices are based on marketability and not on quality.

Fishing in Lake Victoria is organised in beaches managed by community-elected beach management units in collaboration with the State Department of Fisheries. Capturing is done by fishermen, either using their own boats or on contract with boat owners. At the beach, the anglers sell the fish to traders who in turn sell it to transporters who then ferry the fish to major urban centres. The government has imposed restrictions to the export of Tilapia fish due to low volumes and high demand.

Due to the high demand for Tilapia, where rules are not enforced, anglers have been known to use smaller-than-recommended nets that catch very young tilapia, hence endangering the survival of the breed. In addition, key informants indicated that most of the beaches in Busia serve as breeding grounds for Tilapia fish. Fishing near these breeding grounds therefore endangers the survival of the Tilapia.

In terms of cultural linkages, fish has traditionally constituted a major part of the diets of the communities living around Lake Victoria. According to the focus group discussions held, consumption of fish is associated with child brain development.

4.2.3.2.8 Koriema goats as a potential GI

The term “Koriema goats” is widely used to refer to goats grown in a specific zone in Baringo County, in the Central Rift of Kenya. Goats from Baringo County generally attract higher prices among consumers and traders. Interviews with traders at common goat meat-roasting sites in nearby urban centres indicated that they hardly source goats from Baringo since they are priced higher compared to those sourced from the southern parts of the Rift Valley. Consumers interviewed indicated that Baringo goat has a unique natural salty taste

that endears it to many. Some consumers travel all the way to Baringo to purchase the meat. A spot-check also reveals a number of butcheries named using the name “Koriema”. This has implications on the use of the name to register the potential GI.

The producers in Baringo County were aware of the “naturally salty” characteristic of the goats found in the specific belt. They attributed this to the salt deposits visible in the region and the resultant bitter herbs and pods of acacia trees on which the goats browse and feed on. The goats graze freely (without a herdsman). That way they are able to browse on a wide selection of herbs and shrubs and lick from the salt deposits along the belt. The producers at the focus group discussions indicated that these consumption habits and sources were the source of the goat meat quality. Unique ear notching identifies the clan and family of the goat owner, and serves as security for the goats as they browse freely. In addition, the goats rarely require veterinary treatment since the herbs make them immune to various diseases and infestations. Further, the producers perceive the goat meat and bone soup to be medicinal to human beings.

The producers indicated that the salt licks do not diminish. However, due to tree felling for charcoal burning and fuelwood, erosion has become rampant resulting in gully formation in the region. This has affected the presence of the useful shrubs and herbs in the region. In addition, increased land subdivision is also posing a threat to the sustainability of the free browsing system. Currently, communal ownership is the main land tenure system especially for grazing land. Increasingly, there is evidence of land-subdivision and sale of land, especially to people from outside the region.

To the women, the goats serve as a source of seeds for important trees. Once they graze in the wild, they drop seeds in the homestead, which can be washed and used for oil extraction, or planted hence ensuring tree cover in the region.

In Baringo, Koriema goats have a strong cultural linkage to the community activities. According to the then chief of Kimalel location in Marigat sub-location, Koriema means “meeting”. He adds: *“In the 19th century, Koriema was the place where elders met to form clans, perform circumcisions and other important meetings. They always sealed the meeting with Koriema meat”*.

The community members consume the goat meat, blood and milk mixed with natural herbs, which were also important items for their ceremonial events. With increased awareness, however, the producers indicated that the consumption of blood is on the decline. They consider goats sacred and therefore do not use them in ceremonies associated with averting curses and omens.

During slaughter, there are specific old men who had to be present to foretell the future by feeling the texture of the goats’ offal. The “prophecy” could be on an individual family, community or nation at large. However, the elderly community expressed concern that the younger generation is detached from most of these cultural linkages.

The markets at location level as well as the Sub-county levels form the main sale points for live goat trade in Baringo County. Informal abattoirs in the County supply the goat meat butcheries in the County. Traders purchase the goats either at the farm gate or the market where the producers take their goats and negotiate for prices. Goats from Baringo rarely access the export market. According to the Kenya Meat Commission, consumers in the United Arab Emirates, the main export market, prefer goats that are less than 1.5 years old. On the contrary, producers in Baringo do not sell young goats, as goats are a sign of wealth.

Collective action in production was mainly through allowing the goats to browse in the communal land together. During sale of the goats, there is a generally agreed upon price per

kilogram upon which both the traders and producers base their bargain. This is usually set with the help of the State department of livestock production at the sub-county level. There are no restrictions in the trade, as long as the buyers and sellers adhere to safety standards. However, during the peak selling periods listed above, e.g. early in the year, when most producers are selling goats to raise school fees for their children, they are often prone to exploitation by the buyers due to the desperation of the moment. With the exception of the goats sold to local abattoirs, the goat producers are often not aware of where the buyers sell the live goats they buy.

4.2.3.2.9 Baobab from lower Eastern Kenya as a potential GI

Referred to as the “*upside-down tree*” due to its hugely swollen tree trunk and stiff bare branches that resemble roots, Baobab tree occurs naturally in the coastal and the semi-arid regions of the lowland eastern regions of Kenya. The nutritive quality of the tree and its products is higher than that found in most other fruits and sources of similar nutrients (Maundu & Tengnas, 2005). In Kenya, Baobab tree is regarded as an underutilised tree with few community members recognising its health and nutrition benefits (*KEFRI, verbal communication; Mbora et al. 2008*).

According to the Kenya Forestry Research Institute (KEFRI), the baobab tree is a very useful but highly unexploited tree in the semi-arid regions of Kenya. Occurring near the equator, every part of the baobab tree is useful including the bark, and the seeds, fruits and leaves are of high nutritional value. The bark of the tree is very hardy and helps the tree survive for years even after the inside of the tree is completely burnt out (Mbora et al., 2008). The products of the baobab tree in Kenya are perceived to have higher nutritional properties compared to those from other regions, since it occurs closest to the equator compared to other countries where it is produced. However, the uses and benefits of Baobab products are poorly

documented in the country and majority of the buyers who sell to the international market remain largely unknown. Currently, the most common use in Kenya is consumption of the fruit and pulp-coated seeds (mabuyu).

According to informal sources, the Kamba elders often met under the Baobab tree. Due to the longevity of the tree, the elders regarded it as a fellow “elder”, hence appropriate place for meeting since it often outlived most of the community members. Further, during times of long treks, travellers through the region sheltered under the baobab tree and drank water collected in the clefts of the larger branches. According to Sidibe & Williams (2002), Baobab tree is able to withstand the two major hazards of dry/semi-arid areas, namely fire and drought. The tree trunk shrinks during dry seasons and expands in wet seasons, while its thick bark is fire-resistant able to regenerate after a fire.

According to literature, all parts of the Baobab tree are useful. Market exists for the products especially due to the role in food security. However, the figures on the actual scope of the market for baobab are scanty and not readily available. The study could not immediately determine whether there exists any market linked to the specificity of the baobab grown in Kenya, as the trade details are not available as well.

Various organisations have invested in popularising the tree and its products among locals as well as the urban market. These include government and international research bodies as well as the State department of Agriculture.

4.2.3.2.10 Coastal Oranges as a potential GI

The survey focused on oranges from the coastal region, specifically Kwale (Msambweni, slopes of Shimba hills) and Mombasa as well as the lower eastern region. Oranges and other fruits produced in the region are generally sweet. Citrus fruits are good agro-forestry trees,

providing useful shade on the farm when pruned. They are a source of income in areas where other food crops may not perform well. At the time of the survey, most producers had Minneola and Pixie citrus varieties, both imported from Israel. Mineola citrus are sweet, juicy and large, though having a shorter shelf life than Pixie, which lasts for at least 4 months. The producers indicated that the climate around Shimba hills (i.e. warm temperature, adequate rainfall) coupled with the sandy loam soils makes the region favourable for fruit production. Due to high perishability, the prices received for the oranges are not different from those they receive for the other oranges. Further, the study established that the Voi oranges are sweet and unique due to production practices and not necessarily due to the geographical area of production.

The Horticultural Crops Development directorate of the AFA and the Kenya Plant Health Inspectorate Service (KEPHIS) have provided the guidelines to enable certification of the fruits for sale. Other standards exist, including the good agricultural practices (GAP). However, when producing for local market, the producers often do not strictly adhere to these standards. The HCD directorate has facilitated registration of nurseries for fruit trees at the rate of KES.500/year (at the time of the survey), while the Kenya Agriculture and Livestock Research Organisation have ensured availability of planting materials through their seedling multiplying programs. This ensures availability of clean planting material for establishment of the fruit orchards.

Although the State department of Agriculture over time has encouraged collective action among producers, the short shelf life of the citrus has often made producers succumb to lower-than-set prices offered by buyers. High poverty levels further complicate the bargaining power, as producers opt to receive immediate lower prices hence going against laid down collective agreements.

Different markets exist for different varieties of citrus fruits. The buyers at the Kongowea Fruit Market in Mombasa prefer the normal traditional orange varieties, while the Asian market prefers the Minneola provided that good agricultural practices (GAP) and good handling practices (GHP) are met. This means that the citrus fruits have high juice content and are transported using crates and not gunny bags. The producers however, lack the volumes to sell directly and consistently to greengrocers and processors. The low volumes also mean that they are unable to invest in purchasing the crates and hence have to rely on the intermediaries to access the markets. The traders come with trucks from urban centres including Nairobi, Mombasa and as far as Kisumu.

4.2.3.2.11 Avocados from Murang'a as potential GIs

According to the Horticultural Crops Development (HCD) directorate, there is a link between oil content of avocado and the area of production. In Kenya, Kakuzi has identified Murang'a and Kisumu as regions that produce avocados with highest oil content. The regional characteristics that contribute to this include the heat units (sunshine hours the avocado trees receive in each season) in the region as well as the well-drained soils. The altitude of a region also influences pest and disease incidences. Therefore, grown in the right regions, avocados from the country tended to exhibit higher oil content compared to those from other countries (*personal communication, HCD*). For example, avocados from Murang'a have higher oil content and less incidences of pests and diseases. The production season is also off-season to most other production regions within and outside the country, providing an opportunity for better prices.

Traditionally, farmers practiced avocado production individually, often without any specific link to the market. Over time, with increased demand for the fruit both in the domestic and export markets, there has been an increase in production for the market. Producers market

their produce either as groups/collectively or individually to processing and exporting firms like Kakuzi, Vegpro, and Sunripe etc. or brokers in the industry. The farmers sign contracts with the companies, who then offer technical capacity building and in return, the producers have a ready market for their harvest. Small-scale producers of avocados attribute the quality more to management practices as well as temperature and sun hours, as trained by the supporting institutions like Kakuzi Limited.

The major challenge for exports from Kenya has been certification. However, increased surveillance and management of the farms, and linkages with exporters, has resulted in better quality of the fruits in terms of the size of fruit as well as the oil content. During the interviews, there was consensus that there could be a link between the quality of the fruits and a combination of variety and geographical region of production.

Market demand has resulted in production of more exotic varieties (especially Hass and Fuerte) as opposed to the initial local ones. The local fruits, produced by at least 70% of avocado producers, are smaller and exhibit lower oil content (World Economic Forum 2014). However, according to HCDA, there are markets, both local and export, that prefer the smaller-sized varieties, hence providing an opportunity to exploit. New processing factories and markets have been established to capture these quotas.

The Horticultural Crops Development directorate of the AFA and the Kenya Plant Health Inspectorate Service (KEPHIS) have provided the guidelines to enable certification of the fruits for sale. The HCD directorate has facilitated registration of nurseries for fruit trees at the rate of KES.500/year (at the time of the survey), while the Kenya Agriculture and Livestock Research Organisation (KALRO) have ensured availability of planting materials through their seedling multiplying programs.

4.2.3.3 Summary of products identified as potential GIs:

The description above indicates that each of the eleven (11) products identified during the scoping study had unique aspects that provided a niche in the market. Initial selection was based on its reputation and uniqueness that are perceived to have a link to the region of production. Only Koriema goats, baobab tree, Ngowe mango and tilapia appeared to have varying cultural links to the communities. Each of the products has potential to contribute to environmental sustainability, and part of their uniqueness is a result of the complex environmental constituents and their interactions in the different agro-ecosystems of their production.

With the exception of wild silk, goats and baobab tree, the other products reviewed were introduced into the country within the last two centuries and, over time, adapted to different climatic conditions. Collective action was evident in tea and coffee, mainly guided by regulations in the industry. The other products had varying but inconsistent levels of collective action, which influenced the producers' access to the markets. All the products have macro-institutions that provide guidelines related to production and marketing, and could provide support if further product differentiation were explored. Producers' awareness of the uniqueness of the products as well as the implication of the same on market prices varied.

Overall, Tea, Koriema goats, Coffee, Tilapia fish and Makueni Apple mangoes were ranked highest as having potential of linking their uniqueness to the geographical region of production as well as the market characteristics (Table 4.2-1 and Table 4.2-2).

Table 4.2-1: Scoring of products identified as potential GI against identified criteria

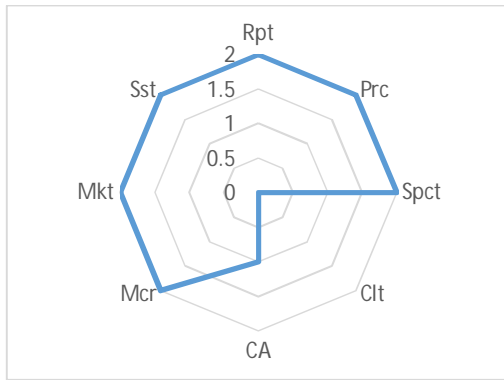
Criteria	Score for each product (out of 16)										
	Tea	Coffee	A. Mango	N. Mango	Wild silk	Pyrethrum	Tilapia	Koriema goats	Baobab	Oranges	Avocado
1. Reputation (2)	2.0	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	1.5
2. Specificity/Uniqueness (2)	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	1.0	1.0
3. Environmental impact and sustainability (2)	1.5	1.0	2.0	1.0	2.0	2.0	0.5	1.5	2.0	1.5	1.5
4. Cultural aspects/linkages (1)	0	0	0	0.5	0	0	1.0	1.0	0.5	0	0
5. Premium price (2)	2.0	2.0	0.5	0.5	0.5	0.5	0.5	2.0	0.5	1.0	0.5
6. Collective action and coord institutions (2)	1.0	1.0	0.5	0.5	1.5	0.5	1.5	1.0	0.5	0.5	1.0
7. Macro organisational and institutional support (2)	2.0	2.0	1.0	1.0	1.5	0.5	1.5	1.0	1.0	2.0	2.0
8. Market attractiveness, supply chain & scope of market (3)	2.5	1.5	2.0	2.0	1.0	2.0	1.5	1.5	1.0	1.0	1.0
TOTAL SCORE (16)	13.0	11.5	10.0	8.5	9.5	8.5	10.5	12.0	8.5	9.0	8.5
RANK (1 = highest score)	1	3	5	8	6	8	4	2	8	7	8

Table 4.2-2: Ranking of products using weighted average

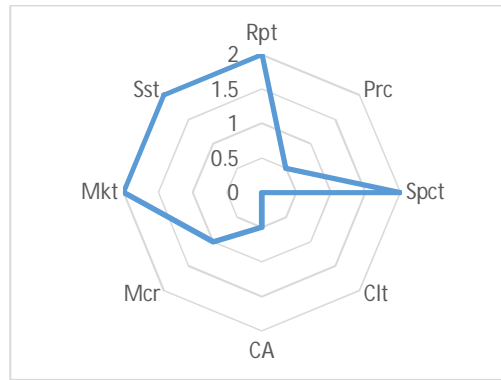
Criteria	Criteria weight	Weighted Score for each product										
		Tea	Coffee	A. Mango	N. Mango	Wild silk	Pyrethrum	Tilapia	Koriema goats	Baobab	Oranges	Avocado
1. Reputation (2)	2	4.0	4.0	4.0	2.0	2.0	4.0	4.0	4.0	4.0	4.0	3.0
2. Specificity/Uniqueness (2)	2	4.0	4.0	4.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0	2.0
3. Environmental impact and sustainability (2)	2	3.0	2.0	4.0	2.0	4.0	4.0	1.0	3.0	4.0	3.0	3.0
4. Cultural aspects/linkages (1)	2	0	0	0	1.0	0	0	2.0	2.0	1.0	0	0
5. Premium price (2)	1	2.0	2.0	0.5	0.5	0.5	0.5	0.5	2.0	0.5	1.0	0.5
6. Collective action and institutions (2)	1	1.0	1.0	0.5	0.5	1.5	0.5	1.5	1.0	0.5	0.5	1.0
7. Macro institutions recognition and support (2)	1	2.0	2.0	1.0	1.0	1.5	0.5	1.5	1.0	1.0	2.0	2.0
8. Market attractiveness and scope of market (3)	1	2.5	2.0	2.0	2.0	1.0	2.0	1.5	1.5	1.0	1.0	1.0
Weighted average (Total weighted score/total weight)		1.5	1.0	1.3	1.1	1.2	1.1	1.33	1.5	1.2	1.1	1.0
RANK (1 = highest score)		2	3	4	10	6	8	4	1	7	8	11

Figure 4.2-2: Charts showing summary of scoring criteria for each of potential GI products characterised

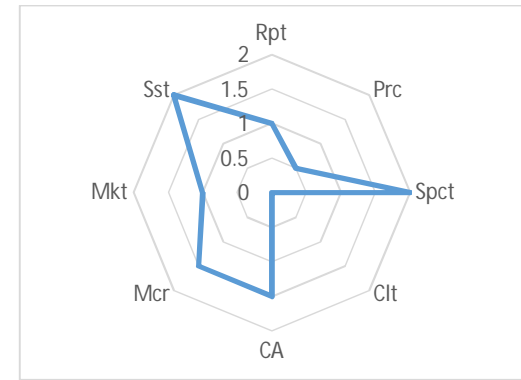
(Key at the end of the charts)



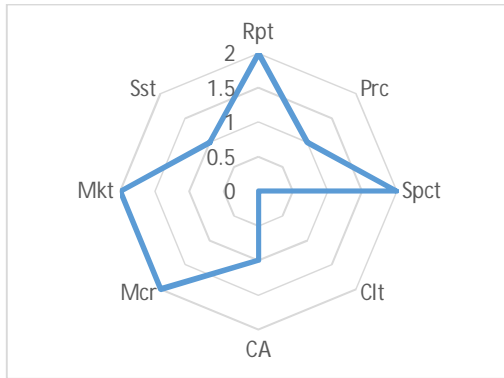
(a) Tea production



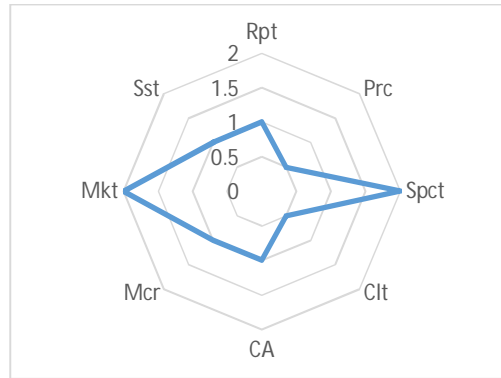
(c) Apple Mango



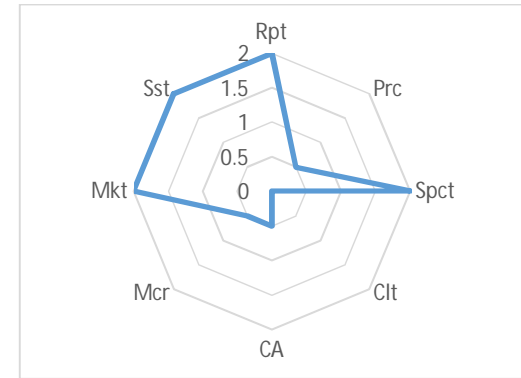
(e) Wild Silk



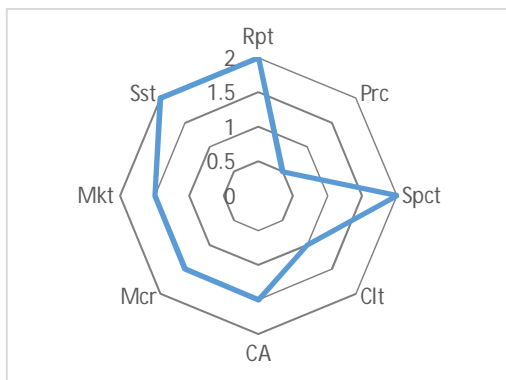
(b) Coffee production



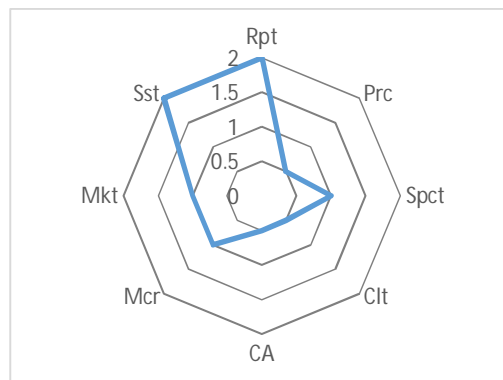
(d) Ngowe mango



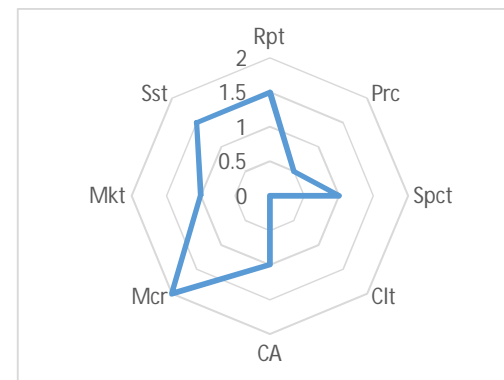
(f) Pyrethrum



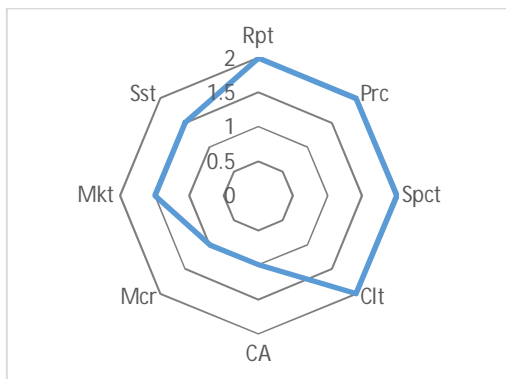
(g) Tilapia Fish



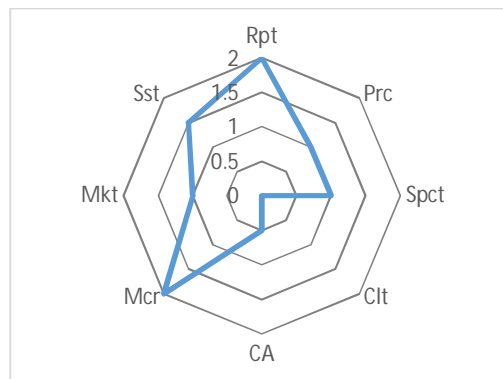
(i) Baobab



(k) Avocado



(h) Koriema Goats



(j) Oranges

Key: **Rpt**=Reputation, **Prc**=Premium price, **Spct**=Specificity/Uniqueness, **Clt**=Cultural aspects/linkages, **CA**=Collective action and institutions, **Mcr**=Macro institutions recognition and support, **Mkt**=Market attractiveness and scope of market, **Sst**=Environmental impact and sustainability

4.2.4 Conclusion

The study focused on applying a range of criteria as a basis to select agri-food products for further assessment on their characteristics and potential to register them with geographical indications. The criteria were developed to identify products that have potential linkages to geographical regions (endogenous factors) and with exogenous factors relating to markets, institutions, among others, which could facilitate or hinder development of the products as geographical indications. A case in point is the Kakamega silk, which does not currently have a stable market, and hence is not fully exploited. It is possible to invest in establishing a market based on the link to the geographical region. However, Giovannucci et al (2009) advice that care be taken, as this can be a costly affair that results in losses to producers, hence jeopardising the current efforts.

The study concludes that the GI potential of a product cannot be identified using any one indicator alone. A combination of attributes is required as it helps identify different aspects that would require attention in developing the potential GI, agreeing with Barjolle & Sylvander (2002). With the growing interest in GI protection in Kenya, this study and other similar ones contribute to the literature and basis for further exploitation of the differentiation opportunity. Through literature, applicable tools are developed for the assessment of GI potential products. Whereas some products have reputation and uniqueness, other factors including collective action, existence of macro institution recognition and support may not be in place, making it harder to develop the said products as GIs. Our application of the selection criteria in this scoping study, however, provided a quick and replicable approach to identify potential GI products for further analysis.

The analysis points to the relevance of future research on the quality of origin products and institutional regimes for geographical indications in Kenya. It also highlights the importance of distributional issues. These are the conditions under which and extent to which local producer alliances can be enabled or empowered (or empower themselves) to gain awareness of the factors constituting the unique qualities of their origin products and thus gain a higher share of the price premiums created through product reputation based on these qualities.

CHAPTER 5: DETERMINATION OF THE PRODUCER AWARENESS AND PERCEPTIONS OF TERRITORIAL QUALITIES IN ORIGIN PRODUCTS AND POTENTIAL GI

5.1 Background

This Chapter presents producer awareness and perceptions relating to their unique products as potential GIs. The chapter is sub-divided in two parts for ease of analysis and presentation of the results. Section 5.2 assesses the potential of using GI as a product differentiation tool in semi-arid agriculture, hence focusing on (goats and mangoes). Section 5.3 assesses the potential of using GI as intellectual property for products already trading in the international market (tea and coffee).

5.2 Producers' perception of Geographical Indications as a product differentiation tool for agri-food products in semi-arid regions of Kenya⁵

Abstract

The study assessed producers' awareness and perceptions of territorial-based qualities and the economic potential of two potential origin-based geographical indications in two semi-arid counties in Kenya. Protection of the origin products as geographical indications is presented as an option for ecosystem approach in managing fragile semi-arid regions while providing producers economic incentives and social inclusion; key components of green growth. Factor

⁵ Paper published as: Maina FW, C. Ackello-Ogutu, J. Mburu and H Egelyng. 2018. Producers' perception of Geographical Indications as a product diversification tool for agri-food products in semi-arid regions of Kenya. *International Journal of Food and Agricultural Economics* Vol 6(2): 85-100

analysis was conducted on Likert scale perception questions administered to producers of goats (Baringo) and mangoes (Makueni). The producers were aware of the uniqueness of their products and the geographical source of the uniqueness. The resultant factors reveal the importance of public policies, institutions, market access and public sector actors as important to producers' perception of the success of protecting their products as geographical indications. Clustering revealed producers' heterogeneity in their perceptions of protecting their respective products as geographical indications. The constitution of the clusters was significantly different based on the number of years the producers had practiced farming in the region, their awareness of the uniqueness of their goats, income received from goat production and institutional factors. Enhanced collective action for both goats and mangoes in the semi-arid regions would ensure collective reputation in the product presented to the market. The producers' perceptions emphasise geographical indications as a marketing tool rather than an environmental tool, agreeing with Principle 4 of the ecosystem approach on managing ecosystem in an economic context.

Keywords: Agri-food product differentiation; Factor analysis; geographical indications; producer perceptions; semi-arid region

5.2.1 Introduction

5.2.1.1 Background information

Product and market differentiation through labelling provides agri-food producers and especially small-scale farmers with opportunities for wealth creation while providing consumers with information about the quality of their preferred products. Successful differentiation leads to increased economic benefits for the producers, hence reducing poverty and food insecurity. In

semi-arid regions, where intensifying production is constrained by the fragile ecosystems and threatened by economic neoliberalism (privatisation, free-trade, etc.), sustainable management of the natural resources may be achieved by differentiating the products and markets that are adapted to the regions, without over-exploiting the environment to increase production and hence incomes (Fernández & Saunders, 2018).

Ecosystem approach to management of natural resources fosters both sustainable use of the ecologies and the equitable distribution of their benefits among the population (World Resources Institute, 2005). Use of geographical indications to differentiate the markets for origin products found in semi-arid regions conforms to Principle 4 of the ecosystem approach. According to the Principle, “*there is need to understand and manage ecosystems in an economic context*”. This includes reducing market distortions that affect biodiversity; aligning incentives to encourage the conservation and sustainable use of biodiversity; and internalizing the costs and benefits to the extent possible within the given ecosystem (World Resources Institute, 2005).

The United Nations Development Program (UNDP) also calls for a holistic approach towards providing market incentives for agricultural production, which will ensure that ecosystems are preserved while contributing to poverty alleviation, environmental sustainability and inclusive rural development (UNDP, 2013). Interventions that enhance this mutually reinforcing relations between economic benefits and environmental protection would yield sustainability especially in the marginal and fragile ecosystems (Giovannucci et al., 2009).

Geographical indications, a form of intellectual property, are able to provide market incentives towards ecosystem management. According to the TRIPs definition, *Geographical Indications* ‘*identify a product as originating from a territory, or a region or locality, where a given quality,*

reputation or other characteristics of the product are exclusively or essentially attributable to its geographical origin' (Trade-Related Aspects of Intellectual Property Rights, Article 22) (TRIPS, 1994). Geographical indications tend to value the land and the particular agro-ecological characteristics that impart unique organoleptic properties on an agri-food product that may be difficult to replicate in other regions or countries (Giovannucci et al., 2009).

Whereas most registered products are in Europe, Asia and South America, there is increased interest in Africa to protect and market origin products as geographical indications, in order to diversify markets as well as preserve the natural characteristics that contribute to the product uniqueness. According to the TRIPS agreement, each member country seeking to protect its unique products based on territory-linked characteristics is responsible for identifying the products and providing the legal framework for the protection (Blakeney et al., 2012). At implementation level, producers of origin products are responsible for defining, registering, popularising and maintaining the GI registration. With strong structures and management efforts, the codes of practice accompanying each GI registration should be environmentally sustainable. Where consumers pay for the information received through the GI registration, the producers are able to conserve the ecosystem (environmental resources, biodiversity and traditional knowledge) sustainably while earning economic benefits (Giovannucci et al., 2009), in line with ecosystems approach to natural resource management.

Producers already have experience with the unique products and have close to perfect information on the quality presented to the market based on the production decisions they make. However, in making these decisions, not all producers may present the same quality of product to the market, although the consumers may have the impression that the quality is the same. This

gives rise to problems of information asymmetry and free-riding on reputation on the side of the producers. Without controls, unsustainable management of the ecosystem has also been evident as some producers exploit the environment in order to increase production and hence incomes.

GI protection is built on reduction in the information asymmetry between the producers and consumers and hence how the marketing of the product is done (Lucatelli, 2000; Pénard, 2008). This is achieved through institutionalising reputation (Belletti, 2000; Bramley et al., 2009) and territorialisation of environmentally friendly rules of production (Belletti et al., 2015), indicating that geographical indications, are not an environmental tool per se. However, as an institution, they may bring efficiency in repeated trade relations by facilitating information transmission and dissemination among players, enhancing producers' protection of the environment. Where trade is based, solely, only on reputation of origin products, especially those produced by resource-constrained rural households, there is possibility of mass production of similar products from other regions at lower cost. This would affect producers' incomes and hence result in production decisions that may lead to unsustainable exploitation of the environment. Institutionalisation of the reputation through geographical indication protection hence can contribute to curbing such malpractices and unplanned for negative outcomes.

5.2.1.2 GI Protection in Kenya

In Kenya, despite existence of potential GI products from semi-arid areas, there remains a dearth of information on the producers' perceptions of the uniqueness of their agri-food products and environmental, institutional and economic attributes that they associate with successful development and sustenance of the protection. Understanding producer perceptions is important as the obligation of paying for and maintaining the protection would essentially be the

responsibility of the producers (Vandecandelaere et al., 2010), majority in Kenya of whom are small scale in nature (GoK, 2010a). In semi-arid regions, challenges are also more complicated, such as severe or prolonged drought situations, which might result in loss of agricultural livelihoods, and can compromise the protection of the GI.

Considering the effort required to institutionalise reputation of origin products as well as the challenges that might result, producers' willingness to engage in such a process is an outcome of their previous experience with the existing product value chain. Their past experiences and general awareness provide indications of producers' subjective assessment of the reputation and the environmental, market, cultural and institutional aspects they view as important incentives for the successful protection of their respective agri-food products as geographical indications. The objective of this study was, therefore, to assess the producers' awareness and perceptions of the ecosystem management attributes (environmental, economic, cultural and institutional) of their potential GI agri-food products. The paper focuses on two potential agri-food commodities produced in drylands of Kenya, mangoes from semi-arid lower Eastern region in Kenya and Koriema Goats from semi-arid regions of Central Rift, Kenya.

The term "Koriema goats" is widely used to refer to goats grown in a specific zone in Baringo County, located in the Central Rift region of Kenya. Goats from Baringo County generally attract higher prices among consumers and traders and reputed to be naturally salty and tastier than goat meat from other regions. Consumers and traders perceive apple mangoes from lower Eastern region of Kenya to be sweeter and juicier compared to those from other production regions.

5.2.2 Methodology

5.2.2.1 Study site and sampling

The study was conducted in Makueni and Baringo Counties in Kenya (Figure 5.2-1). Site selection was based on the results of a characterisation study that subjected identified potential GI food and agricultural products to criteria that enabled selection of products for the study. Among the products ranked highly were Baringo goats (from the North Rift region of Kenya) and Makueni mangoes from lower Eastern region. Apple mango, which originated along the Kenyan coastline, is a chance seedling with unknown parentage and of excellent fruit quality (Griesbach, 2003). Apple mangoes are the most widely grown in Makueni County, the study area and formed the target mango variety in the study. Goat production in Baringo County, in Central Rift of Kenya, other than providing milk, meat and blood, is an important source of social and cultural value (Johansson & Svensson, 2002). The goats are well adapted to the arid and semi-arid lands (ASAL) regions of Baringo County and are reputed to be naturally salty, a trait that consumers appreciate.



Figure 5.2-1: Map of Kenya showing location of study sites

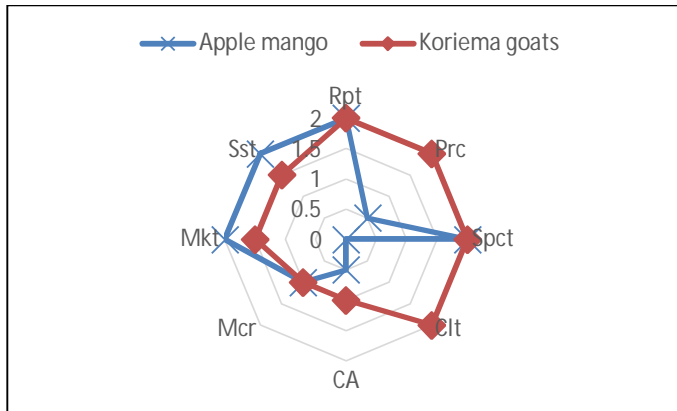


Figure 5.2-2: Characterisation scores for Mango and Koriema goats as potential GI products

Key to Figure 5.2-2: **Rpt**=Reputation, **Prc**=Premium price, **Spct**=Specificity/Uniqueness, **Clt**=Cultural aspects/linkages, **CA**=Collective action and institutions, **Mcr**=Macro institutions recognition and support, **Mkt**=Market attractiveness and scope of market, **Sst**=Environmental impact and sustainability.

To identify the respondents, stratification was done based on a sampling frame developed with the relevant government ministries on site, to ensure all locations where the target unique commodities are produced where proportionately sampled. Random sampling was then done within the locations resulting in a sample size of 135 respondents from Baringo Goat keeping region and 137 from Makueni mango production regions.

5.2.2.2 Data Collection and Analysis

A semi-structured questionnaire was administered in 2015 to household heads or, in their absence, their spouses, to gather qualitative and quantitative primary data from the two study counties. Data was collected on household demographic, farm and production related information; as well as producers’ perceptions relating to the geographical linkage, market

dynamics, and policy and institutional support. The perceptions were determined based on a five-point likert scale (*where 1=least important to 5=most important*).

Data entry and analysis were done using SPSS v24 and the factors were extracted using principal component method with varimax rotation. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was greater than 0.5 in all cases, indicating the appropriateness of factor analysis in yielding distinct and reliable factors (Field, 2013). To determine the adequacy of the sample size, communalities (shared variance) of the variables that were greater than 0.5 were considered sufficient (MacCallum et al., 1999; Field, 2013). The factor loadings retained on the rotated component matrices had values greater than 0.4 (Stevens, 2002).

5.2.3 Results and Discussions

5.2.3.1 Producer Awareness of Product Uniqueness

The producers in both study counties generally perceived their respective products to be unique. At least 40% of respondents producing goats and mangoes were aware of possible free-riding on the reputation of their respective products by traders or producers from other regions (Figure 5.2-3). From the focus group discussions, the producers sell live goats to traders with no follow-up on where or in what form the goats and goat products are sold thereafter. In the mango production regions, intermediaries were the main buyers of mangoes from the region and the producers indicated that the intermediaries combine the mangoes from the region with those from other regions in order to sell the latter faster. Due to high perishability, distance to markets and lack of collective marketing, the producers were not able to negotiate higher prices for the fruits. The characteristics of the marketing channels for the different products may contribute to producers' perception on free-riding. Lucatelli (2000) cautions that due to information

asymmetry and free-riding, potential benefits from GI registration do not always accrue to producers, who are often price takers.

Taste of final product was the single most common characteristic associated with the quality of the product uniqueness cited by at least 80% of respondents in each study area. The perceived source of the uniqueness varied from the soil characteristics to weather (temperature and rainfall) parameters as well as natural resources on which the goats foraged and natural salt licks (Figure 5.2-4). Only two respondents among goat producers identified cultural practices as being a source of the uniqueness in the resultant goat meat quality. The producers perceive the herbs and shrubs that the goats in Baringo freely browse on to contribute most to the quality of the goat meat as they are naturally salted.

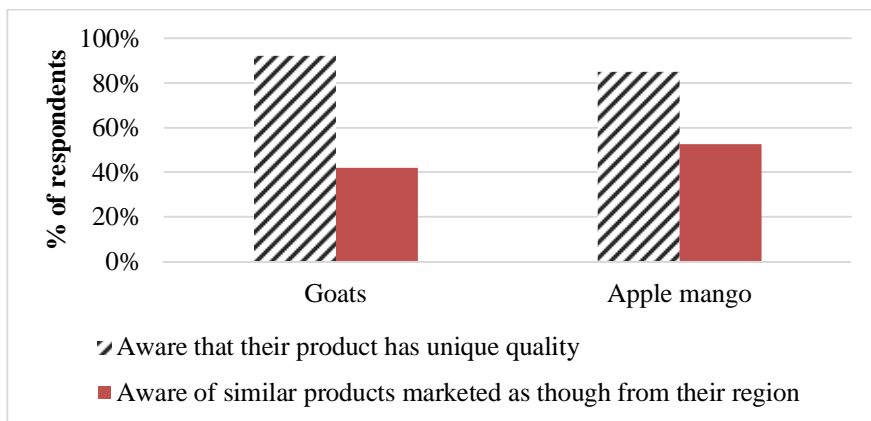


Figure 5.2-3: Producer awareness of the uniqueness of goats and apple mangoes

Among mango producers, the dryland conditions (including high temperatures, soil characteristics and rainfall) contribute most to the quality. They also cited field management as important for product quality and reputation as this kept the farms and fruits disease free Figure 5.2-4.

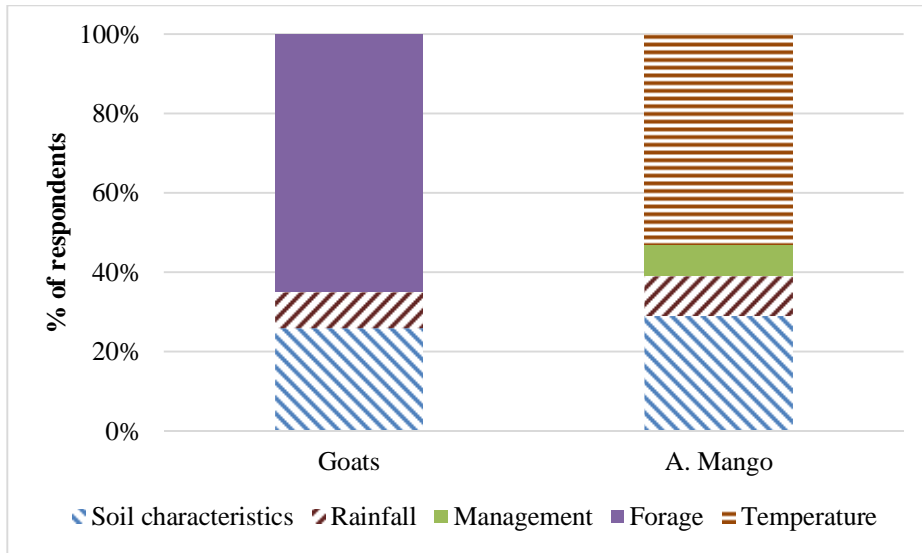


Figure 5.2-4: Producers’ perceptions on the sources of uniqueness in goats and apple mangoes

Giovannucci et al (2009) indicate that the first step towards a geographical indication is the ability to identify and establish an existing rationale for a unique product that is truly origin-related and differentiated. Although identification for GI registration would require more scientific analysis and characterization to delineate the geographical region clearly, the results of this study provide a guide towards producers’ awareness of the uniqueness of their origin products.

5.2.3.2 Producers’ perceptions of related institutional and economic attributes of Baringo goat meat and Makueni mango production

A five point likert scale was used to measure the respondents’ perception of the importance of: (i) characteristics of the production region; (ii) role of various stakeholders (iii) role of policy and (iv) GI and market/price related variables. The summary of producer perceptions for production region characteristics as well as the role of stakeholders is presented below on a 3-

point likert scale. From the analysis, at least 43% of goat producers agreed that cultural practices related to goat production were important in preservation of the quality of the products. At least 90% of respondents in both counties perceive that the soils characteristics contribute to the uniqueness of the products. In goat production, the characteristics of the soils and the natural grazing grounds were important attributes in the quality of the resulting meat. In mango production, characteristics of the soils, rainfall and temperature patterns were perceived as most important in the quality traits (Figure 5.2-5). Producers in both study regions appreciate that current management practices may be detrimental to the success of a GI protection.

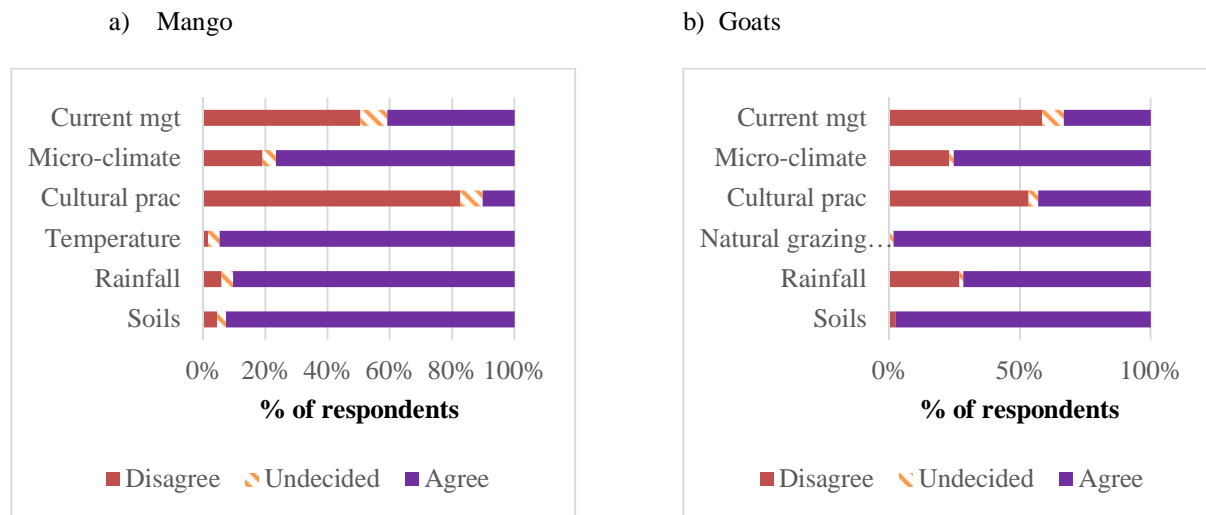


Figure 5.2-5: Producers' perceptions of importance of geographical attributes in the quality of their (a) mango and (b) goat products respectively

At least 80% of mango producers perceived that involvement of the public extension and the County governor's offices as well as being a member of a producer organisation were important aspects in the success of protecting their products as geographical indications. Ninety percent (90%) of the goat producers perceived the role of the governors' office, the administrative unit office and being members of a producer organisation as important to the success of the

protection Figure 5.2-6. Only 33% of the goat producers belonged to an agricultural producer organisation.

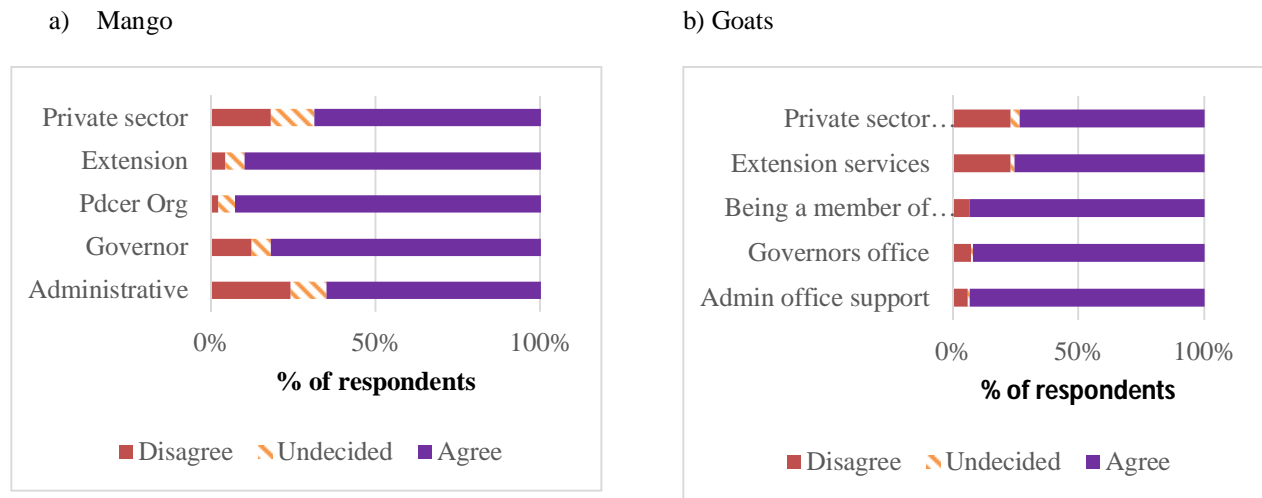


Figure 5.2-6: Producers perceptions of importance of roles of various stakeholders in protecting the quality of their (a) mango and (b) goat products as potential GIs

Using Kaiser’s criterion, six factors were retained for each of the commodities accounting for 67.7% and 72.3% of the variance in the original variables for goat and mango production respectively (Table 5.2-1). The four important factors among the goat producers were (i) environmental sustainability, (ii) market prices and access as a result of protection; (iii) the role of state policies and (iv) natural grazing ground for successful GI registration. However, perceptions relating to collective action, including the importance of having producer associations did not form any of the underlying variables. The variable had communality less than 0.4 with no correlation with other variables and was dropped from the analysis.

Analysis of perceptions for mango producers showed that importance of policies & rules and importance of administration & extension office accounted for approximately 15% and 14%

respectively. The first three factors in the analysis of mango producer perceptions were related to both policies and institutions.

Table 5.2-1: Factor analysis of goat producers' perceptions of institutional and economic potential of their products as geographical indications

GOATS		MANGOES		
Factor No.	Factor description and Variable Importance of ...	Explained variance and factor loading	Factor description and Variable Importance of ...	Explained variance and factor loading
1	Environment sustainability ($\alpha=0.67$)	Exp $\sigma^2=15.7\%$	Administrative and extension office ($\alpha=0.61$)	Exp $\sigma^2=13.5\%$
	Environmental sustainability	0.71	Support from administrative office	0.76
	Micro climate in the region	0.70	Increased extension services	0.71
	Administrative office support	0.66	Labelling as a GI for better marketing	0.67
	Extension services	0.65		
2	Market prices and access ($\alpha=0.52$)	Exp $\sigma^2=12.4\%$	Market prices and access ($\alpha=0.73$)	Exp $\sigma^2=12.0\%$
	Protection will result in higher selling price per kg	0.85	GI protection and better market access	0.90
	Protection will result in better market access	0.67	GI protection and better market prices	0.85
	Importance of mode of market access	0.45		
3	State policies ($\alpha=0.53$)	Exp $\sigma^2=10.4\%$	Policies and rules ($\alpha=0.80$)	Exp $\sigma^2=14.9\%$
	Support from the state policies	0.75	Increased support from the state policies	0.87
	Increased inclusion of goat keepers in decision making	0.74	Having rules regarding quality	0.85
4	Natural grazing grounds ($\alpha=0.32$)	Exp $\sigma^2=10.2\%$	Cost of protection ($\alpha=0.53$)	Exp $\sigma^2=11.7\%$
	Importance of natural grazing grounds	0.74	Cost of GI	0.79
	Importance of cost of registering/maintaining GI	0.66	Protection of commodity as a GI by region	0.76

GOATS		MANGOES		
Factor No.	Factor description and Variable Importance of ...	Explained variance and factor loading	Factor description and Variable Importance of ...	Explained variance and factor loading
5	Management practices ($\alpha=0.77$)	Exp $\sigma^2=9.6\%$	Management practices ($\alpha=0.28$)	Exp $\sigma^2=8.7\%$
	Importance of management practices	0.78	Microclimate contribution to uniqueness	0.80
	Importance of governor's office support	0.77	Management practices (environmental sustainability)	0.66
6	Rules	Exp $\sigma^2=9.5\%$	Producer-private sector interaction ($\alpha=0.41$)	Exp $\sigma^2=11.5\%$
	Importance of having rules regarding quality	0.79	Devolve to include producers more	0.72
			Private sector participation in marketing	0.68
			Information on expected prices	0.57
	Total variance explained	=67.7%		=72.3%
	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	=0.621		=0.62
	Bartlett's Test of Sphericity Chi-Square (df)	=301.1*** (91)		=446.2*** (91)

***Chi-square test is significant at less than 1% probability; Exp σ^2 = Explained variance; α =Cronbach's alpha
Factors extracted using principal component analysis, Varimax rotation with Kaiser normalization;
Source: Household survey June – August 2015

5.2.3.3 Factors influencing producers' perceptions of potential of GI registration

A cluster analysis further provided a means to profile the producers in accordance to their perceptions towards the enabling factors of protecting their products as geographical indications. Among the goat producers, those in cluster 3 had, on average, practiced goat production in the region for a shorter time than those in the other two clusters and had lower income in the study year compared to those in cluster 2. They also had negative and significantly different factor score values for factors 2 (market access and prices), 4 (role of natural grazing grounds), 5 (importance of management practices) and 6 (importance of rules and institutions). The producers in cluster 3 could hence be described as being more conservative towards GI protection of their goat. Those in cluster 2 were significantly older and less involved in group membership (Table 5.2-2).

Mango producers in cluster 3 had on average practiced farming in the region for a significantly shorter time than those in cluster two. Cluster 3 also had significantly lower income in the study year compared to those in the other two clusters. Cluster 1 had significantly higher factor scores for the first three factors (policies and rules; administration and extension; and market prices and access). Those in cluster 1 had significantly positive perceptions towards the role of the first three factors in the success of GI protection on their mango product (Table 5.2-3).

Table 5.2-2: Characterisation of the clusters obtained for Baringo goat producers

Variable	Cluster 1 (n=40)	Cluster 2 (n=50)	Cluster 3 (n=45)
Years farmed in region**	21.45ab	26.60a	17.20b
<i>Attitudes</i>			
FS1 (Environmental sustainability)*	0.29a	-0.05ab	-0.21b
FS2 (Market prices and access)***	0.14a	0.43a	-0.59b
FS3 (Role of state policies)	-0.01	0.21	-0.23
FS4 (Natural grazing grounds)***	0.59a	0.00b	-0.52c
FS5 (Management practices)***	0.65a	-0.12b	-0.45b
FS6 (Rules and institutions)***	0.40a	0.15a	-0.52b
<i>Perceptions (agreement with statements)</i>			
Aware that Baringo goat is unique***	100%	98%	80%
Community livestock marketing committee will support protection***	60%	88%	53%
Abattoir owners will support protection**	63%	80%	53%
Region of production influences price**	58%	68%	40%
Aware who end users are***	5%	6%	29%
<i>Producer characteristics</i>			
Gender of household head (% male)	93%	90%	91%
Log of income from goat production**	9.50a	10.4b	9.7a
Age of household head (years)	43.3b	52.5a	41.7b
Member of producer association***	55%	16%	31%
Receives agricultural extension services***	73%	36%	33%

*Source: Household survey among Baringo goat producers; Analysis of variance tests and Pearson Chi square tests show significant differences among the clusters at 1% (***), 5% (**)* and 10% (*) significance level

Table 5.2-3: Characterisation of the clusters obtained for mango producers

Variable	Cluster 1 (n=51)	Cluster 2 (n=60)	Cluster 3 (n=26)
Years farmed in region**	21.90ab	25.56a	16.08b
<i>Attitudes</i>			
FS1 (Policies and rules)***	0.37a	-0.47b	0.37a
FS2 (Administration and Extension office)***	0.12a	0.17a	-0.63b
FS3 (Market prices and access)***	0.50a	0.15b	-1.35c
FS4 (Cost of GI protection)	-0.04	-0.07	0.25
FS5 (Cost of GI protection)	-0.01	0.09	-0.18
FS6 (Micro-environment management)	-0.22	0.21	-0.04
<i>Perceptions (agreement with statements)</i>			
Aware that Makueni mangoes are unique	86%	83%	89%
Mango as priority enterprise**	37%	60%	58%
Mango factory will support protection***	80%	67%	12%
Influence of mango quality on price***	62%	88%	45%
Aware who end users are**	14%	16%	41%
<i>Producer characteristics</i>			
Age of household head**	52.55a	54.87a	46.15b
Land size (acres)**	8.43a	6.03ab	3.95b
Log of income from mango production**	9.78a	9.78a	8.61b

Source: Household survey among Makueni apple mango producers; Analysis of variance tests and Pearson Chi square tests show significant differences among the clusters at 1% (***) and 5% (**) significance level

5.2.4 Conclusion

The analysis reveals potential legal, environmental or physical opportunities and/or threats that would be pertinent to the success of specific GI protection implementation. Perceptions of producers relating to protecting their unique products potentially as GI were summarised in six factors. Although the attributes presented to the producers in each study region were almost similar, the resulting factors were different and unique to the products, showing the importance of differentiating each origin product based on its characteristics. The producers acknowledged the importance of the environmental characteristics (territorial specificities) in influencing the quality of their unique products.

Public policies and institutions as well as public and private sector actors would play a significant role in supporting mango producer initiatives towards protecting their products as geographical indications. Environmental and public sector actors, as well as market-related aspects and public policies, were perceived as important factors in protecting Baringo goats with geographical indications. Clustering also showed that producers are heterogeneous in their perceptions towards GI protection. Therefore, different efforts would be required to target the different producer clusters.

The results emphasise GI protection as a market tool as opposed to an environmental tool, as shown by the producers' outlook of important perceptions based on the market characteristics. Producer perceptions mirror the actual happenings in the respective sub-sectors. The perceptions provide an indication of the areas of interest that policy makers and other enablers should focus on in order to support successful registration of each origin product with geographical indication.

The rules resulting from the protection would in turn enhance environmental sustainability, thus supporting the ecosystem approach to natural resource management.

The analyses show heterogeneity in the underlying variables related to producers' perceptions of registering different products as geographical indication. The heterogeneity emphasises the importance of conducting product-specific analysis in identifying the potential of registering different products as geographical indications. The results agree with other studies on factor analysis relating to different techniques (Birol et al., 2009). The cluster analysis further provides need for specific efforts to ensure consensus building and aligning expectations among the different communities. Producers would differentiate origin agri-food products from semi-arid regions as geographical indications. The role of public policies as well as public actors is important in protection of both mangoes and goat products. There is however need for enhanced collective action among the producers especially in the goat production region to ensure collective reputation of the products presented to the consumers and therefore their social characteristics.

5.3 Intellectual Property and agricultural trade: Producer perceptions of tea and coffee as potential geographical indications⁶

Abstract

Kenya tea and coffee are major foreign exchange earners and have high reputation among consumers in the international market. Faced by declining prices and competition from other sub-sectors, production area under these commodities has been declining. Use of intellectual property (IP) rights to protect and market agricultural commodities has been on the increase. Geographical indications as IP have been successfully implemented in developed countries and increasingly in developing countries. The study assesses producers' awareness and perceptions of territorial-based qualities and the influence on product profits from the two export beverage crops, tea and coffee. Factor analysis was conducted on Likert scale perception questions administered to producers of coffee and tea from Murang'a and Kirinyaga, respectively, in the Central region of Kenya. Producers of the two products were aware of the uniqueness of their products and their geographical source. Only perceptions related to market access in coffee and tea, and policies and rules as well as role of county government in coffee, positively influenced income. Rather than have GI as a certification trademark, a prescriptive *sui generis* law would provide the required streamlining needed for collective participation of various actors along the value chain of potential GI products

Keywords: Factor analysis, export crops, geographical indications, producer attitudes, profit

⁶ Paper published as: Maina FW, J Mburu, C. Ackello-Ogutu and H Egelyng. 2018. Intellectual Property and agricultural trade: Producer perceptions of tea and coffee as potential geographical indications. *Open Agriculture*: 3:586-595

5.3.1 Introduction

5.3.1.1 Kenya coffee and tea markets

Kenya coffee and tea are among the major foreign exchange earners. Tea is the main export commodity accounting for, on average, 25% of total domestic export earnings (KNBS, 2018), with the country being the largest tea exporter in the world (Blakeney & Mengistie, 2012). Coffee (unroasted) on the other hand contributes at least 4% of the total domestic export earnings (KNBS, 2018).

In the international market, Kenya tea and coffee are reputed to have unique characteristics linked to region of production (Blakeney & Mengistie, 2012; Bagal et al., 2013), thus leading to rise in participation in specialty markets. However, specialty markets form a very small proportion of the outlet, which are often factory-led initiatives. According to marketers and buyers interviewed, consumers of Kenya tea and coffee often request for information regarding the region of production and other distinguishing attributes. These characteristics are used to market the beverages, without necessarily having the resulting premium prices trickling down proportionately to the producers, especially the majority who sell their products through the tea or coffee auction and not in specialty markets. Often, this is due to a lack of producer awareness of the premium accruing from the quality of their products.

A product's pre-existing reputation popularises it in the market. Similarly, the subsequent actions of the owners or producers of the product can appreciate or depreciate the value of the product in the market (Coulet, 2012). In view of low market prices and high production costs, coffee producers are replacing the existing (mostly Arabica-based) varieties with new varieties that have lower production costs. However, the new varieties do not necessarily possess the taste

quality attributes that consumers are willing to pay for, thereby leading to value depreciation and therefore, a further decline in prices (Bagal et al., 2013).

In producing standardized products or selling products with pre-existing reputation as standard goods with limited knowledge about the reputation these products have in the market, agricultural producers must contend with the economic power of the players beyond the farm gate, including processors, marketers, traders, middlemen (Blakeney et al., 2012). To overcome this, product differentiation can be a viable option for adding value to the unique export agricultural products that have pre-existing reputation.

Geographical indications (GIs), as a form of intellectual property rights (IPR), are signs that identify a product whose quality, reputation or other characteristics are linked essentially to the region of production. The generic description of GI given by Article 22 of TRIPs puts emphasis on attribution of the product characteristics to the natural and human links inherent in the region of production. Therefore, unlike other IPR, the distinguishing characteristic of GI is that the protected subject matter is related to the product itself and not dependent on a specific right-holder. Thus, rather than protect the product or production methods, GIs as IPR confer the exclusive right to use a distinctive sign that identifies a product to all the producers in the given region (Addor & Grazioli, 2002).

Considering this distinction, successful protection and marketing of origin products using GI registration (for example, in the EU) is often attributed to, among others, effective and well-developed coordination and participation of key stakeholders along the supply chain as well as the relevant administrative authorities and institutions (Dagne, 2015).

Theoretically, different models conclude that the effect of strengthening IP laws for agricultural trade are contradictory and/or ambiguous (Grossman & Lai, 2004; Campi & Duenas, 2014). Opponents of strengthening IP laws for agricultural products argue that it would hamper free flow of information needed to advance rural societies in developing countries or block technology transfers from industrialised countries to the developing countries. Developing countries also fear that stronger protection and enforcement of IP would result in prohibitive premium prices resulting in anti-competition practices (Olwan, 2013). Olwan (2013) further points out that rent transfer may result especially where foreign firms are involved in the marketing chain (as is the case with Kenya Coffee), as more of the profits would be retained abroad rather than accrue to producers. Tea producers raised concern in having a regional based GI as opposed to the current factory level standards as it may reduce competition among the factories and maybe compromise quality.

It is evident that use of any IP on its own (including GI), without enforcement and other supporting features in place, may not result in economic development for developing countries, even where the product has a pre-existing reputation. However, considering that some producers are already benefitting from specialty coffee and tea trade, there is opportunity for more coordinated collective reputation and hence higher prices to producers in a given region through the exclusive rights accorded by GI protection.

Collective participation in protecting these characteristics by all value chain actors would increase ownership as well as ensure that the producers, on the supply end of the chain, consciously protect the environment and characteristics that contribute to the unique product qualities (Winfree & McCluskey, 2005). The government would benefit from strengthening the

laws that enhance the collective participation through sustainable production of the coffee and tea and hence ensure longevity and/or sustained income from exports benefiting the producers. The supply chain actors would all benefit through assured quality of the products and hence reputation in the product market.

In addition, it is important to combine assessment of the product uniqueness with an understanding of institutional factors that would influence the success of a GI registration (Giovannucci et al., 2009; Bramley & Biénabe, 2013).

Coffee and tea are similar in as far as they are produced by both large- and small-scale farmers, with some level of collective action among the latter, especially in the organisation of the factories to which they deliver their harvest. The small-scale producers are required to register with a cooperative society (for coffee) or factory (for tea) as a means of marketing their produce (GoK, 2013b). Each of the two products also has distinct characteristics, institutions and stakeholders, providing a good case for evaluating the role of geographical indications as IP in international trade. The producers' experience and attitudes created over time through the marketing of the two commodities would mould their expectation regarding benefits of effectiveness of GI protection of the products. Unlike consumers whose preferences can quickly change in the short term, a producer's decision to engage in geographical indication protection has long-term effects on their production decisions based on the profit maximising behaviour.

This paper aims at identifying producers' awareness of and attitudes towards the territorial uniqueness of the two export-market commodities, and the influence of these perceptions on profits received from the commodities. The paper tests the hypothesis that producers' perceptions of the uniqueness of their products influence profits they currently receive. The

results of the study would contribute to the debate on the potential of geographical indications as IP in the protection of internationally traded commodities from Kenya.

Perceptions and general awareness provide indications of producers' subjective assessment of the reputation and market interventions they view as important for their respective products. It is these attitudes that appreciate or depreciate the pre-existing reputation of a product in the market. The products of focus in the study and the production regions with perceived uniqueness are coffee produced in Murang'a County and tea produced in Kirinyaga County, both in Central Kenya. The regions lie at the foot of the Aberdare Ranges (coffee) and Mt. Kenya (both coffee and tea) catchments.

5.3.2 Methodology

5.3.2.1 Theoretical considerations

Assessment of producer attitudes and perceptions is founded on the theories of profit maximisation as well as planned behaviour. According to the theory of planned behaviour, an individual's intentions and actions are shaped by his attitudes towards a situation, his subjective norms and perceived ability to perform the action, relating to the level of control they have (Ajzen, 2005). Behaviour and attitudes of agri-food producers towards the environment and its management determine whether they will engage in decisions that either increase or decrease environment quality (Gifford & Sussman, 2012). According to the theory, perceived behaviour can influence actions indirectly, and hence be used to predict the actual decisions the individual would take (Ajzen, 2005).

5.3.2.2 Model specification

Since individuals tend to over-report perceptions, use of a 5-point Likert scale questions provided a firm basis for eliciting attitudes and perception data. In some instances, awareness and attitudes are necessary steps towards predicting producer decision in adopting an environmentally related component (Floress et al., 2017).

Using commodity specific attributes, questions aimed at eliciting producer perceptions towards the geographical link, market structure, role of policies and institutions in the respective export market. The factors were summarised based on the following matrix equation specification following Jolliffe (2002) and Pennings and Leuthold (2000):

$$F = \Lambda L + \delta \quad (1)$$

Where F is a $qx1$ vector of observed variables; Λ is a qxn matrix of regression coefficients (factor loadings) to be estimated; L is a $nx1$ vector of latent variables (factors) that are estimated along with coefficients; and δ is a $qx1$ vector of specific error terms corresponding to the variables to be observed.

The Eigen value for a given factor measured the variance in all the variables accounted for by that factor. Only those factors with an Eigen value greater than one were retained (Field 2013; Kaiser 1960). The factors were then renamed based on the variables loading on each of them.

Factor scores were generated using the Bartlett's method, which produces unbiased estimates that have a mean of zero (0) and a standard deviation of one (1). These factor scores were then used as predictor or dependent variables in subsequent profit regression equations in order to

examine their relationship with the profit for each commodity through linear regression (DiStefano et al., 2009; Howley & Dillon, 2012; Field, 2013). The linear regression was specified as:

$$\sum_{i=1}^I \pi_i = \beta'X + \gamma'W + \varepsilon_i \quad (2)$$

Where π_i stands for the gross margin (representing profit) of the i^{th} product (gross margin = *Total revenue – Total variable costs*); I is the total number of respondents in each study site; X is a vector of explanatory variables relating to the respondent; W is a vector of factor scores as explanatory variables for each of the respondents; β' and γ' are vectors of regression parameters to be estimated and the ε_i are vectors of disturbance terms in the regression.

The aim of conducting the analysis was to determine whether the current profits that the producers receive are significantly related to their perceptions regarding product uniqueness. Since the producers are only active on the supply end, their perceptions also provide their view of the effectiveness of the rest of the supply chain in the marketing of their respective products.

5.3.2.3 Study site and sampling

The study sites were selected based on the results of a characterisation study that ranked the two products as important and potential GI products (Maina et al. 2018). The random sample comprised 135 respondents from Murang'a County coffee growing (upper and middle) regions and 134 from three tea production regions of Kirinyaga County (Figure 5.3-1).

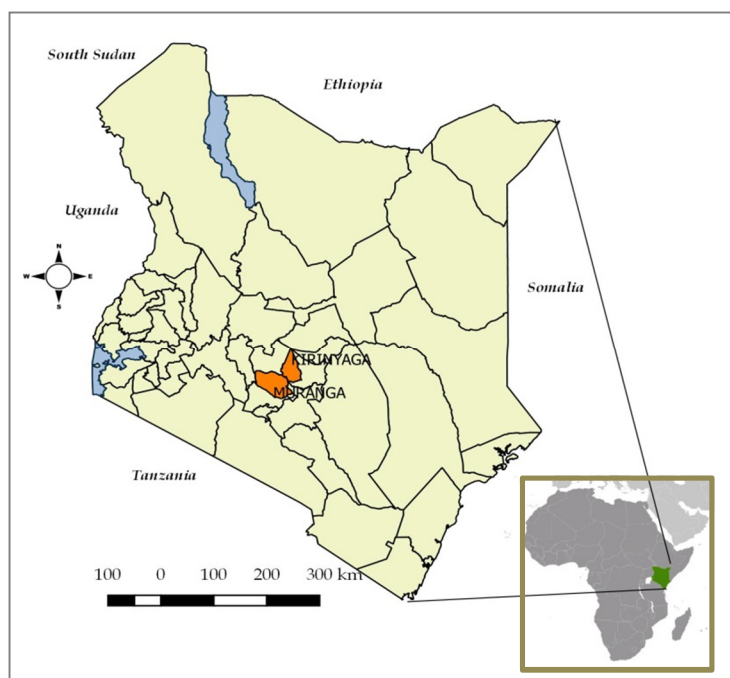


Figure 5.3-1: Map of Kenya depicting the two study counties (Murang'a and Kirinyaga)
(Inset: Map of Africa showing position of Kenya)

5.3.2.4 Data collection

A semi-structured questionnaire was used to gather qualitative and quantitative primary data from the two study counties. Data was collected on: (i) household demographics; (ii) farm and production related information; (iii) costs of production, output quantities and prices; as well as (iv) producer perceptions relating to the geographical linkage, market dynamics, and policy and institutional support. The survey was conducted between June and August 2015.

5.3.2.5 Data analysis, factor retention, and adequacy of sampling size

Data entry and analysis was done using SPSS v24. Factors were extracted using principal component method with varimax rotation. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was greater than 0.5 in both cases, indicating the appropriateness of factor

analysis in yielding distinct and reliable factors from the analysis (Field, 2013). To determine the adequacy of the sample size, communalities (shared variance) of the variables that were greater than 0.5 were considered sufficient (MacCallum et al., 1999; Field, 2013). The factor loadings retained are those that had values greater than 0.4 (Stevens, 2002).

5.3.2.6 Description of variables used in regression analysis

Table 5.3-1: Description of producer related variables influencing income

Explanatory variables	Variable type/coding	Coffee (n=135)	Tea (n=134)
Zone	Dummy (1=Upper region/Kimunye, 2=lower region)	47% in lower region	34% from Kimunye catchment
% of producers who perceive county govt support as important	Dummy (0,1: 1=Yes)	81%	
% of producers who perceive coffee directorate support as important	Dummy (0,1: 1=Yes)	46% support	
% of producers who perceive coffee millers support as important	Dummy (0,1: 1=Yes)	35% support	
Mean total land size (acres)	Number		1.4 acres
Average years farming in region	Number	30 years	
Willingness to contribute for protection	Dummy (0,1: 1=Yes)	82% willing to contribute	78% willing to contribute
Member of producer association	Dummy (0,1: 1=Yes)	76% are members	
Average size of household	Number	4 members	4 members

Calculation of producer gross margins for each product was based on the production and sales data for the year 2014. The resulting gross margins were used as a proxy for profit in the regression equation. The explanatory variables for the regression analysis comprised producer-related variables and attitudes related to potential stakeholder involvement in GI protection of the respective products (Table 5.3-1). The factor scores obtained from each of the factor analysis were also part of the explanatory variables.

5.3.3 Results and discussion

5.3.3.1 Producer awareness of product uniqueness

The producers in the two counties generally perceived their respective products to be unique. A lower proportion of coffee producers (68%) than that for tea producers (82%) perceived their products to possess unique territorial-based attributes (Figure 5.3-2). During focus group discussions, producers in the coffee and tea growing regions attributed the quality of their products more to individual on-farm management practices than to characteristics of the production region.

Approximately 25% of the respondents were aware of some form of free riding on the reputation of their respective products (Figure 5.3-2). The characteristics of the marketing channels for each of the products may contribute to producers' perception on free riding. Coffee and tea have clearly defined marketing chains that require attribution of the commodity to a specific factor or society of origin. Free riding is often associated with decreased incomes accruing to the actual producers, as the market quality (hence reputation) is not always assured.

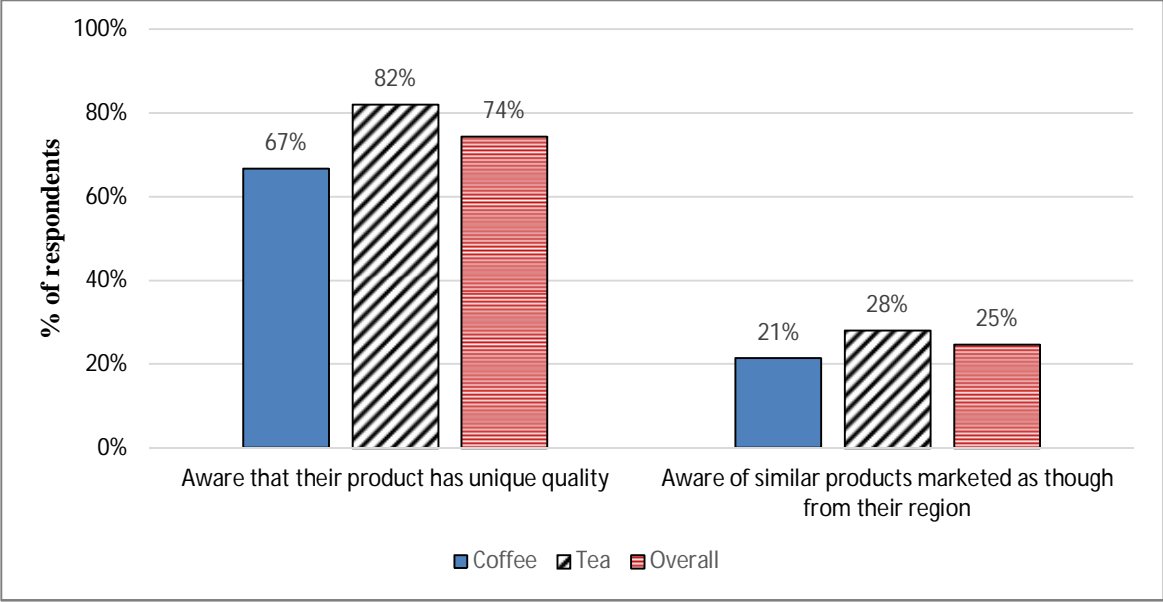


Figure 5.3-2: Producers’ awareness of the uniqueness of their respective products

Taste of final product was the single most common characteristic associated with the product uniqueness cited by at least 80% of respondents in each study area. The source of the uniqueness was attributed mainly to the soil characteristics and weather (temperature and rainfall) for both crops. Between 5% and 8% of the producers of both crops attributed the uniqueness to management of the factories and processing activities (

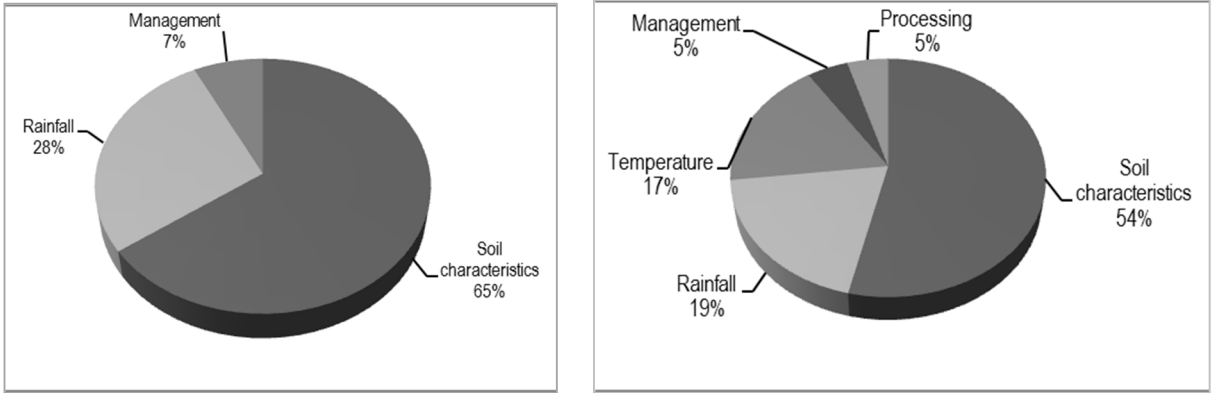
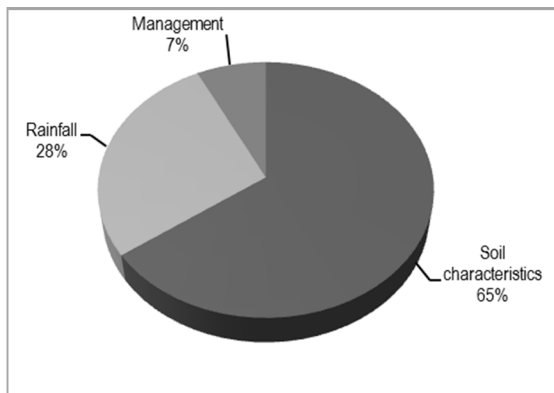


Figure 5.3-3). There were no traditional knowledge/cultural practices identified by the producers as being a source of the unique characteristics. Both products were introduced into the country in

the 20th century and were previously not grown by the natives. Further, local consumption accounts for less than 20% of marketed volumes for both products. The presence (or lack) of traditional knowledge in production of the unique products is important in development of national policies on protection of geographical indications as discussed by (Dagne, 2015).

(a) Coffee



(b) Tea

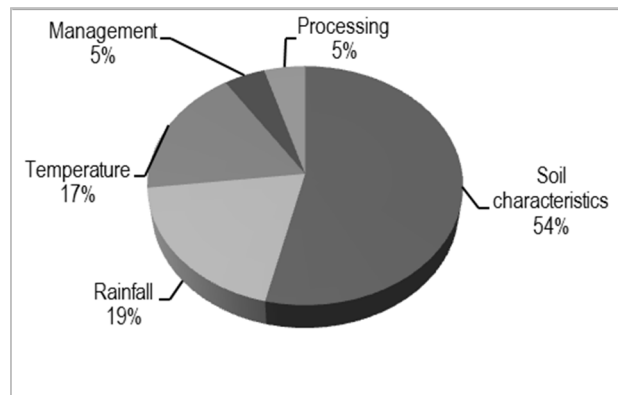


Figure 5.3-3: Producer perceptions on the sources of uniqueness for coffee and tea as potential GI products

5.3.3.2 Factor analysis of producers' perceptions of geographical indication-related attributes of their products

Using Kaiser's criterion, six factors were retained for each of the commodities accounting for between 62.7% and 70.2% of the variance in the original variables for tea and coffee respectively (Table 5.3-2). The factors covering market access were retained for both commodities while importance of microclimate was retained for coffee.

Table 5.3-2: Factor analysis of producer perceptions of coffee and tea as potential geographical indication

COFFEE			TEA	
Factor No.	Factor description and Variable Importance of ...	Explained variance and factor loading	Factor description and Variable Importance of ...	Explained variance and factor loading
1	<i>Private sector and extension ($\alpha=0.73$)</i>	<i>Exp $\sigma^2=12.88$</i>	<i>Producer association ($\alpha=0.46$)</i>	<i>Exp $\sigma^2=9.70$</i>
	Private sector participation	0.77	Being member of producer association	0.75
	Extension services	0.77	Devolve to include producers more	0.58
	Zone of production	0.63	Private sector participation	0.55
	Being member of producer association	0.59		
2	<i>Micro-climate ($\alpha=0.62$)</i>	<i>Exp $\sigma^2=10.61$</i>	<i>Micro-climate in the region</i>	<i>Exp $\sigma^2=7.11$</i>
	Micro-climate in the region	0.81	Microclimate in the region	0.87
	Current management practices	0.70		
	Ancestral involvement in coffee production	0.65		
3	<i>Market prices and access ($\alpha=0.74$)</i>	<i>Exp $\sigma^2=10.21$</i>	<i>Market price and access ($\alpha=0.60$)</i>	<i>Exp $\sigma^2=11.65$</i>
	GI protection and better market prices	0.87	GI protection and better market prices	0.75
	GI protection and better market access	0.83	GI protection and better market access	0.69
			Rainfall and seasonal patterns	0.65
4	<i>Rules and policies ($\alpha=0.64$)</i>	<i>Exp $\sigma^2=9.71$</i>	<i>Policies and rules ($\alpha=0.53$)</i>	<i>Exp $\sigma^2=10.55$</i>
	Having rules regarding quality	0.84	Support from the state policies	0.82
	Increased support from the state policies	0.80	Having rules regarding quality	0.74
5	<i>Minimum guaranteed returns ($\alpha=0.57$)</i>	<i>Exp $\sigma^2=9.69$</i>	<i>Price information ($\alpha=0.70$)</i>	<i>Exp $\sigma^2=13.00$</i>
	Minimum guaranteed returns	0.83	Information on expected prices	0.83
	Coffee protection by region	0.76	Minimum guaranteed price	0.83
	Cost of GI	0.75	Protection of commodity as a GI	0.78
	Receiving information on prices	0.64		

COFFEE			TEA	
Factor No.	Factor description and Variable Importance of ...	Explained variance and factor loading	Factor description and Variable Importance of ...	Explained variance and factor loading
6	<i>County government support</i> ($\alpha=0.46$)	<i>Exp</i> $\sigma^2=8.70$	<i>County government support</i> ($\alpha=0.54$)	<i>Exp</i> $\sigma^2=10.73$
	Support from governor's office	0.82	Support from governor's office	0.78
	Support from administrative office	0.74	Support from administrative office	0.75
			Extension services	0.47
	Total variance explained	=70.2%		=62.7%
	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	=0.614		=0.608
	Bartlett's Test of Sphericity Chi-Square (degrees of freedom)	525.6*** (136)		=368.6*** (120)

***Chi-square test is significant at less than 1% probability; *Exp* σ^2 = Explained variance; α =Cronbach's alpha
 Factors extracted using principal component analysis, Varimax rotation with Kaiser normalization;
 Source: Household survey June – August 2015

Market dynamics (especially access to markets and prices) are important in shaping the producers' behaviour while micro-climate emphasises the coffee producer link between the microclimate and manifestation of the unique characteristics (Van Huylenbroeck et al., 2009).

In the coffee analysis, perceptions on the role of private sector and extension services loaded on the first factor while perceptions on market access, and policies and rules loaded on the third and fourth factors respectively. As noted by Bagal et al. (2013), the private sector plays a major role in processing and marketing of coffee in Kenya, following liberalisation and the collapse Kenya Planters Cooperative Union (KPCU). Beyond the wet-milling factories run by small-scale producer associations, the private sector conducts almost all other functions, including selling and remitting payment back to the factories. It is worth noting that although the producers cited low prices, minimum guaranteed returns loaded on the fifth factor, meaning it accounted for much lower variance. The producers indicated that having minimum guaranteed returns might deny them higher prices brought about by competition and specialty in the coffee market. In other words, whereas minimum guaranteed returns give the producers an assurance of expected prices, in the event the buyers are willing to pay a premium for the coffee, if not well negotiated, the producers may only receive the minimum guaranteed price, while the rest of the margin is retained by the traders beyond the farm.

Factor analysis results for tea differed from that of coffee, depicting the difference in management of the two commodities' markets. Importance of information on prices as well as market prices and access loaded on the first two factors for tea production respectively. Tea production by small-scale producers is managed under the Kenya Tea Development Agency

(KTDA) unlike coffee where different factories have different millers and marketers for their berries

Although participation in producer association was among the variables retained, collective marketing was not retained for any of the two export products. Collective action is of importance for the success of GI registration (Bramley et al., 2009; Giovannucci et al., 2009; Vandecandelaere et al., 2010; Bramley & Biénabe, 2013). This therefore poses a capacity building need to enable the producers successfully work together for sustainability of the product qualities and reputation.

As expected, producers are driven by the activities along the supply chain and the success of registration of potential GI will be determined by the efficiency of the activities thereof. Therefore, for there to be success in enhancing environmental sustainability through GI registration of potential products, there is need to streamline the activities beyond the farm gate.

5.3.3.3 Regression analysis of factors influencing producers' perceptions

The producers' profit, derived from gross margin for tea and coffee produced in year 2014, was regressed against the producers' socio-economic variables (Table 5.3-1) as well as the factor scores obtained from the respective analysis (Table 5.3-2). The region of production had a significant relationship with profit for both crops (Table 5.3-3 and Table 5.3-4). This confirms that within the same County, producers received different commodity price based on the zone.

Table 5.3-3: Regression parameter estimates for coffee producers' profit

Explanatory variables	Parameter estimates	Std. error
(Constant)	12,471.3	13,667.9
Zone	-9,830.6**	4,540.9
Coffee directorate support	-9,471.7*	5,095.5
Coffee millers support	19,880.4***	5,221.8
Years farming in region	273.0*	152.0
Willingness to contribute for protection	-10,724.2*	6,343.0
Member of producer association	14,075.7**	5,431.7
Size of household	-2,877.4***	1,061.7
Factor score 1 – Role of private sector and extension	-1,383.4	2,179.5
Factor score 2 – Micro-climate	-226.6	2,246.9
Factor score 3 – Market access and prices	6,393.8***	2,435.4
Factor score 4 – Rules and policies	-1,975.6	2,365.0
Factor score 5 – minimum guaranteed returns	-818.6	2,247.9
Factor score 6 – Public sector support	6,445.5***	2,285.1
N	128	
R squared	0.303	
F-statistic	3.243***	

Factor scores on market prices (FS3) and county government support (FS6) had a significant relationship with profit for coffee production. Interestingly, profit from tea production had a negative relationship with perception on the importance of county government and administrative office support (FS3). The regression analysis gave low R^2 values, agreeing with literature that states that in studies trying to predict human behaviour, the R^2 values are bound to be low. This is mainly due to heterogeneity in individuals' attitudes, actions and behaviours (Pindyck & Rubinfeld, 1991).

Among coffee producers, awareness of uniqueness of the product traits as well as willingness to contribute towards GI protection both had a negative significant relationship with profit. On the other hand, tea producers' willingness to contribute for protection was positively related with the profit derived from tea production (Table 5.3-4). Coffee producers who already receive high prices may not see the additional benefits that would accrue from the protection.

Table 5.3-4: Regression parameter estimates for tea producers' profit

Explanatory variables	Parameter estimates	Std. error
(Constant)	74,594.8	27,878.4
Zone	-64,480.1***	16,839.7
Total land size	43,607.2***	7,467.0
Years farming in region		
Willingness to contribute for protection	51,041.6***	19,392.7
Member of producer association		
Size of household	-10,669.1**	4,729.2
Factor score 1 – Price information	3,537.5	9,390.0
Factor score 2 – Market price and access	-1,411.4	7,978.4
Factor score 3 – Public sector support	-16,775.8**	7,968.8
Factor score 4 – Policies and rules	-1,267.9	7,503.5
Factor score 5 – Producer association and private sector	-5,883.1	7,858.2
Factor score 6 – Micro-climate	3,815.3	8,054.8
N	112	
R squared	0.361	
F-statistic	5.715***	

5.3.4 Conclusion and policy implication

Knowledge of product uniqueness by coffee producers did not have a significant relationship with profits received. This underscores the fact that the unique attributes in a product are not a panacea to marketing challenges (Josling, 2006; Giovannucci et al., 2009). The steadfast and effective support by the state, county governments, supply chain actors e.t.c. is needed in the two value chains to assure producers. As profit maximising individuals, producers will rarely invest in a venture that does not contribute positively to their profits.

In the analysis, perceptions of producers relating to protecting their unique products as GI were summarised in six factors. The initial, almost similar variables, yielded different summaries using factor analysis thus showing the dynamics within each of the study products, although somehow similar in their organisation. The role of the private sector was important in coffee production while accessing market price information was important in tea production.

The analysis presented implies that producers of export tea and coffee are aware of the dynamics that would influence the success of the products as GIs. Policies and rules were not nearly as important as market access and prices in both sub-sectors, and the role of private sector in coffee production. The producers, being the custodians of the coffee and tea biodiversity in the value chain, identify the importance of coordination between different actors at market, extension and production levels. Dagne (2015) emphasizes the importance of establishing institutional, legal and organisational framework to the success of a functional GI system.

From the regression analysis, not all perceptions influence producers' incomes currently and this could be attributed to the gap between the international prices received for the raw products and

the actual prices producers receive due to the product uniqueness (Bagal et al., 2013). The differences in the two sub-sectors emphasises the importance of having a country *sui generis* GI law as an IP, which provides uniform guidance on the actions required to ensure collective reputation of a product as well as define the exclusivity of the benefit sharing. The law should provide guidance on interaction of the stakeholders in each sub-sector, to enhance the collective reputation.

The analysis shows that currently producers view GI as a means to overcome current challenges in management and enforcement of institutional arrangements. The first step for each of the commodities would be to ensure enforcement of policies and regulatory frameworks that would govern the markets and institutions within each sub-sector. This would then provide the producers the initial assurance needed in order to take the next step of differentiating the products using legal mechanisms like GI. In Kenya, the codes of practice that govern the Kenya Coffee and Kenya Tea certification marks provide for this need. However, not all producer cooperatives adhere to these standards. The Agriculture and Food Authority are increasing efforts towards effective enforcement and monitoring. The certification mark applies to all coffee or tea production regions, regardless of place-based quality traits.

The study focused on producer perceptions, as they are the ones who make long-term investment in ensuring consistency in product quality. Further studies are required to determine the consumer perceptions relating to protecting Kenya coffee and tea as geographical indications. Considering only a small proportion (<20%) of both commodities is consumed locally, the consumer study should target the international coffee and tea market.

CHAPTER 6: ESTIMATION OF PRODUCER ECONOMIC VALUE OF ORIGIN PRODUCTS WITH GEOGRAPHICAL INDICATIONS POTENTIAL

6.1 Background

This Chapter presents producer preferences and valuation attributes that would enhance GI protection. It presents the producers' willingness to pay to protect their unique products as geographical indications. Although covering one objective, the chapter is divided in two for ease of presentation of analysis. Section 6.2 presents the producer valuation and willingness to pay for protection of products from semi-arid regions (goats and mangoes) with geographical indications, while Section 6.3 addresses the producer valuation and willingness to pay to register export products (tea and coffee) as GIs. Although already labelled at national level as Certification Marks, key informant interviews show the potential for further differentiating coffee and tea based on place based characteristics.

6.2 Producers' valuation of geographical indications-related attributes of agri-food products from semi-arid lands in Kenya ⁷

Abstract

Arid and semi-arid lands comprise 84% of Kenya's land, characterised by low and erratic rainfall, and increasing human and animal population. The study sought to determine producers'

⁷ Revised paper submitted to the *Heliyon* journal as: Maina FW, J Mburu, C. Ackello-Oguturu and H Egelyng. *Producers' valuation of geographical indications-related attributes of agri-food products from semi-arid lands in Kenya*

willingness to pay for protection of unique *terroir-based* (*terroir – complete natural environment that gives taste e.t.c. qualities to a product*) agri-food products from semi-arid lands as geographical indications. The sample products comprised two commodities: mangoes from lower Eastern region of Kenya and goats from Baringo in the North Rift region. Using random parameters logit model specification, choice experiments were used to elicit the producers' willingness to pay for attributes related to design of geographical indications (GI) for agricultural products in Kenya. Mango producers attached greater value to having minimum guaranteed payments for their products and receiving price information before the start of the season. Goat producers attached higher value to where to sell the produce as well as use of collective marketing. The producers therefore view GIs as a means to reduce market failures. As a club good, GIs can enhance collective participation of producers in the semi-arid regions, but the voluntary nature requires effective coordination and governance through GI framework that can limit parallel protection groups of the same product in the same region.

Keywords: Choice experiment; geographical indications; producer valuation; Random parameters logit; Semi-arid lands; Willingness-to-pay;

6.2.1 Introduction

Unlike high and medium potential agricultural lands where intensive production can result in increased productivity, semi-arid lands are fragile ecosystems, characterised by low and often erratic rainfall. At least 84% of Kenya is comprised by arid and semi-arid lands with limited cultivation of crops (GoK, 2010a). Considering they constitute the bulk of agricultural land, and with increased pressure on and subdivision of the high and medium potential lands, management of the semi-arid lands is of importance to food security as well as economic development of the

country. Sustainable agriculture from these regions needs to emanate from carefully selected high value products.

The Agricultural Sector Development Strategy (2010-2020) underscores the fact that although the semi-arid lands are fragile, the potential of the existing crops and livestock sub-sectors in the regions remains hugely untapped, thereby subjecting the producers to low productivity and prices, and consequently low incomes and poor livelihoods (GoK, 2010a). The regions do have products that derive their unique qualities from the geographical regions of production and, in some cases, the cultural way of the people (for example the Baringo goats). Producers have the opportunity to exploit these *terroir*-based characteristics through use of geographical indications (GI). These can in turn provide them with additional economic, social and ecological benefits contributing to sustainable environmental management that ensures the longevity of the quality and reputation. It is this quality and reputation that consumers are increasingly seeking information about and willing to pay a premium to access (Tregear & Giraud, 2011).

Apple mangoes from the lower Eastern region of Kenya are reputed to be sweeter and juicier due to the interaction of the existing geographical and climatic conditions. Makueni County is the largest producer of apple mangoes in the country (ABD, 2011). Whereas these mangoes do not necessarily attract higher prices in the local and urban markets, traders usually mix them with those from other regions and sell them as though they are all from lower Eastern – hence consumers are not always assured of the quality and source of the mangoes. Goats from specific regions in Baringo County are reputed to be naturally salty. These tend to attract higher prices than those from other regions. According to a focus group discussion, cattle and goat producers

from other regions in the same County often take their livestock to this region to lick the natural salt deposits and feed on the herbs and shrubs for increased immunity and better meat quality.

In seeking quality and reputation, consumers are not *per se* interested in the geographical region of origin as they are in the geographical attribute present in the commodity of preference (Menapace & Moschini, 2012). The study by Menapace and Moschini (2012) shows that GI certification improves the producers' ability to use reputation as a means of assuring consumers of product quality. This reduces the cost of reputation building as consumers receive more information on the product and the producers are aware of what the consumers seek and are willing to pay. Since the mango and goats described above already have pre-existing reputation, additional costs would mainly be on establishing and enforcing the rules governing participation, production, marketing and management of the ecosystem providing the desired geographical attribute. All producers in the production region would be eligible to join with little or no rivalry existing – a club-good characteristic (Benavente, 2010).

Buchanan (1965) introduced the theory of clubs, also calling it the theory of collective membership. Buchanan argues that the utility an individual derives from a good is dependent on the number of people sharing in the benefits. Therefore, the aspect of size of group is an important consideration when determining the utility derived. The theory of clubs, also called the theory of optimal exclusion and of inclusion, further cautions of the problem of free-riding, and hence raising the question of cost of membership and of exclusion. If individuals perceive that they can benefit without being members, they will be more reluctant to pay for the good or service. Geographical indications possess public good characteristics, in as far as the quality of the good is determined by the unique characteristics of the geographical region of production.

However, GI have club good characteristics due its collective nature and the restriction of the production region.

Just like club goods, GIs provide collective membership in ownership of the reputation of the product. There is little or no rivalry and participation is voluntary. However, whereas club goods imply finite membership (congestible), with those not able to join being able to form a similar club, geographical indications, as described, encompass all members within the production region that exhibits the described quality in a product, on condition that the members adhere to the jointly developed codes-of-practice. This relates to the infinitely large membership, characteristic of public goods making GI semi-public goods or common poor resources as described by Saunders (2014). However, unlike club goods, having different groups of producers in the same region registering the same product with GI separately is not possible. If allowed, having one unique product registered by several groups in the same region would introduce anti-competition practices and rivalry. This hence leaves the option of GI protection with congestion (Benavente, 2010).

As more producers join the GI protection, without careful and intentional monitoring, the congestion is likely to lead to decreased prices, and possibly quality of the product, as described in the club theory (Buchanan, 1965; Saunders, 2014). How this aspect of exclusion and finiteness of membership is handled is important and especially in semi-arid regions where land is already supporting increasingly large human and animal populations. In these regions, poverty levels are high, and due to the prevailing weather conditions, there is the additional challenge of high product perishability.

The codes of practice, and the new marketing structure, should therefore provide producers with an opportunity to benefit from GI protection without over-exploiting the fragile ecosystem. Effective development and enforcement of the sustainable codes of practice are also necessary to provide guidance and restrictions of population and practices in goat management (Baringo) and apple mango trees management (Makueni). The assumed natural outcome would be controlled goats population and number of apple mangoes trees, in a way that is environmentally sustainable. In addition to this enforcement, the producers can hence derive greater benefits by providing near complete quality information and homogenous products to the consumers who are willing to pay a premium price for the products.

The other distinction of GI protection that is important for the semi-arid lands arises from the fact that unique products pre-exist before their registration, complete with commercial relations and distribution channels. However, for most small-scale products, the producers are price takers and hence benefit the least from the consumer prices. GI protection has the capacity to provide producers more power in setting the price and collective reputation of the product, which in turn could distort the existing channels or the characteristics of the relationships (Rangnekar, 2004). It is therefore imperative that such protection should provide extra benefits to the producers worth the shift in the distribution channels and the effort in creating or adapting new trust relationships. It should also provide near-seamless resolving of any collective action problems that may arise, especially considering that collective marketing has not been strong among both the mango and goat producers.

Another important consideration revolves around the voluntary nature of GIs, another characteristic of club goods. Since participation is voluntary, the GI protection would need to be

specific on the behaviour of producers not willing to join in providing the collective reputation of the product (Benavente, 2010). Can such producers still produce the same product, away from (or within) the given codes of practice and sell it outside the production region? The codes of practice provide minimum quality standards but do not necessarily serve as a barrier to entry (Rouviere & Soubeyran, 2008). In the event that producers do not derive sufficient value from a GI protection, it is likely they may opt out of the protection, but still find alternative ways to free-ride on the reputation of the GI products.

GI protection in Kenya is provided for under the Trademarks Act (GoK, 2012b). No products have yet been registered yet. The potential for exploitation of GI protection has been on the increase not only in Kenya but also in Africa. Several products have been registered including Rooibos tea (South Africa Trademark), Harrar and Yirgacheffe coffee (Ethiopia Trademarks), Oku white honey (Cameroon GI), Argane oil (Morocco GI) and Zanzibar cloves as GI. The potential is growing, providing Kenyan producers an opportunity to exploit the natural occurring geographical conditions for their benefit.

In light of these arguments governing protection of *terroir-based* unique products from semi-arid lands with GIs, the objective of the study was to determine agricultural producers' willingness to pay for geographical indications-attributes in Kenya. The study was based on choice experiments and was conducted among producers of two different products primarily grown in ASAL regions and are characterised with having unique taste qualities that are perceived to be linked to the region of production. These are Baringo Goats, reputed to be naturally salty, and Makueni Apple mangoes, reputed to be sweeter than other apple mangoes grown in other regions in the country, as described earlier. These products are important sources of livelihood among the study

population (Musungu, 2008). The production potential in both the livestock and fruit subsectors remains hugely unexploited with producers mainly selling raw products to the market.

6.2.2 Methodology

6.2.2.1 Empirical approach – Application of choice experiments

Geographical indications are an intangible asset. As an intellectual property right, GI is a non-monetary resource, not physical in nature but having special rights and privileges attached to it, claimed legally only in the future. Due to their non-monetary nature and the fact that the concept is relatively new in Kenya, use of choice experiments was considered appropriate to estimate value that would accrue to producers if they registered and marketed their unique products as geographical indications.

The theoretical framework of choice modelling is based on the Lancaster consumer theory (Lancaster, 1966) and is consistent with the random utility maximisation theory (McFadden & Zarembka, 1974; Hanley et al., 2001; Louviere et al., 2003). The theory states that utility is the satisfaction an individual derives from choices made based on characteristics that goods possess rather than the entire good *per se* (Lancaster, 1966; Louviere et al., 2003).

To model the heterogeneity that exists among the sampled producers for each study site, the random parameters logit model was used (Revelt & Train, 1998; Hensher et al., 2015; Greene, 2016). This can be empirically demonstrated as follows:

An individual i ($i=1, 2 \dots I$) faces a choice amongst j alternatives in each of T choice scenarios and is assumed to choose the alternative with the highest utility, having considered a full set of

presented alternatives in the choice scenario t . The mixed logit model hence takes the following formulation:

$$U_{ijt} = \alpha_j + \beta_i' x_{ijt} + \gamma' z_{it} + \varepsilon_{ijt} \quad (1)$$

Where β_i are individual random specific utility parameters; γ are individual parameters, which are fixed for all individuals within a choice set; ε_{ijt} is a parameter vector that is randomly distributed across individuals, i.e. unobserved random disturbances that result in unobserved heterogeneity.

Following Louviere et al., (2003), the probability that an individual chooses alternative j is given by:

$$Prob[choice j|i, t, \beta_i] = \frac{\exp(\alpha_j + \beta_i' x_{ijt} + \gamma' z_{it})}{\sum_{j=1}^{J_t} \exp(\alpha_j + \beta_i' x_{ijt} + \gamma' z_{it})} \quad (2)$$

The mixed logit analysis estimates the impact of the selected attributes on the producers' preference formation following Hensher et al. (2015). The cost variable was the normalising variable to determine the WTP while McFadden's ρ^2 measured the overall fit of the model (Louviere et al., 2003; Birol, Smale et al., 2006; Greene, 2016). The parameter estimates of each of the attributes (β_x) and the estimates of the cost attribute (β_y) were used to derive the producers economic value in terms of monetary value the farmers' are willing to pay to register their products as GIs. The following formulation was used to derive the producer willingness to pay value (W):

$$W = - (\beta_x / \beta_y) \quad (3)$$

6.2.2.2 Choice experiment design

The choice experiments were part of a detailed household survey, where sampling was random at population level. The attributes and their levels (Table 6.2-1) were determined through literature search, focus group discussions and key informant interviews (Oh et al., 2005; Ruto & Garrod, 2009; Otieno et al., 2011). Attributes were identified and classified as either compulsory or optional for the respective product value chain to be registered as a geographical indication. Producers can only make their choice based on those that are optional. Therefore, attributes related to environmentally sustainable practices, good agricultural practices, animal health, were not included as part of the choice experiments. The attributes used in the choice experiments were therefore (Table 6.2-1).

Among the goat producers, the maximum cost is equivalent to the amount the producers pay to access various services, when need be. The amount, KES 1,200 (USD 12) is the price of one kid. Among the mango producers, the maximum cost KES 200 (USD 2) is equivalent to the amount they pay for group subscription or access to value addition services. Each choice set had three alternatives comprising a pairwise combination of the orthogonal profiles (related to different levels of GI related attributes), and an opt-out alternative, which represented the status quo. The individuals were required to make a choice based on the first two alternatives, and if none was preferred, they opted for the status quo (which was the reference alternative) (Rose et al., 2014). Two alternatives reduce the problem of information overabundance that would influence respondents choice when faced by too many alternatives (Chung et al., 2011).

Table 6.2-1: Attributes and levels for choice experiment for the two study products

Attribute	Levels assumed for each attribute	Products for which attribute applies	
		Goats	Mango
Collective marketing (CMKT)	0=No collective marketing 1=Collective marketing	Yes	Yes
Contractual arrangements with buyers (CONTRACT) (Qualitative)	0=None/Informal/Short term contracts 1=Formal/Long term contracts	Yes	Yes
Where to sell (WhereSELL)	0=Directly to traders 1=To designated abattoirs	Yes	N/A
Preferred group size (GRPSIZE)	0=No groups (producer join association individually) 1=Small groups (less than 70 members) [Sm_GrpSize] 2=Large groups (more than 70 members) [Lg_GrpSize]	Yes	N/A
Expected price information received at beginning of season (ExPRICE)	0=No prior expected price information received [NoExPrice] 1=Information on expected prices received prior to sale [ExPriceSell] 2= Information on expected prices received beginning of season [ExPriceSeas]	N/A	Yes
Minimum guaranteed return (MGR)	0=No minimum guaranteed price (rely on markets) 1=Minimum guaranteed price received	N/A	Yes
Preferred level of GI protection (PrLEV)	0=No protection (Retain current) [CurrentPrtLvl] 1=County level [CountyPrtLvl] 2=Regional level [RegPrtLvl]	N/A	Yes
Cost of maintaining the Protection (COST) (KES/HH/year)	Kenya Shillings (KES) to be paid by each household each year [100 KES appx ≈ 1USD]	100 500 1200	50 100 200

Following Rose et al. (2014), thirty six orthogonal choice sets organised in six blocks of six (6) sets each were developed using NGENE 1.1.2 software. Each set had three alternatives. A block

of the orthogonal sets was administered to each of 36 randomly selected respondents in each study area. Using NLOGIT 5, coefficients for the attributes in each of the studies were determined and used to develop 24 efficient choice sets in the NGENE 1.1.2 software, with a d-error of 0.14 and 0.07 for goats and mangoes respectively.

The efficient choice sets were organised in six blocks of four (4) sets each, and J=3 alternatives (scenarios). Each respondent in the study was presented with a series of T=4 efficient choice sets. Table 6.2-2 provides an example of a choice scenario presented to respondents in the goat production region of Baringo County

Table 6.2-2: An example of a choice set presented to respondents in Baringo County

(Block 6, Scenario 4)

Attribute	Alternative A	Alternative B	Alternative C (Status quo)
Where to sell goat meat	Directly to traders	To designated abattoirs	Directly to traders
Mode of market access	Each producer sells on their own	Collective marketing	Each producer sells on their own
Preferred size of group to join GI producer association	Large groups (more than 70 members)	Small-medium groups (15-70 members)	No group (producer joins on their own)
Contracts with buyers	Formal/long term contracts	No contracts/informal/short-term contracts	No contracts/informal/short-term contracts
Cost of registering/maintaining the GI (KES/HH/year)	KES.500	KES.1200	KES.100
I prefer alternative:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.2.2.3 Study sites and sample size

The study was conducted in semi-arid regions of two counties within Kenya, Baringo for goat production (n=135) and Makueni for mango production (n=137). Apple mangoes were specifically selected for this study based on feedback from traders, although geographical indications are about the region of production and not the variety. The semi-arid regions are characterised by fragile ecosystems, low rainfall and crop productivity. Whereas the export market for Kenyan goat meat prefers meat from young goats, producers in Baringo do not sell their goats young. Characterised by strong cultural linkages, they keep the goats as a sign of wealth and only sell them when in financial need or in case of a severe drought. In Makueni, mango production season lasts between November and March, starting as early as September in some parts of the County where irrigation is practiced. The short harvesting season, with peak production lasting between late December and February, is characterised by low producer prices and low bargaining power due to lack of effective collective action (USAID-KAVES, 2014). These study sites and potential GI products were selected based on a criteria compiled from different literature sources (Giovannucci et al., 2009; Vandecandelaere et al., 2010; Bramley & Biénabe, 2013).

Collective action is low among the goat producers, with most of it revolving around setting the selling price. Current regulations relate to grazing and prices, the latter of which many producers do not enforce especially since they sell the goats when in financial need. The goats browse on communal fields covered with various herbs and shrubs and the soils provide natural salt licks all of which combine to give the unique taste in the goat meat.

Among mango producers, collective action at the time of study was strong in relation to production and weak in marketing. The Horticultural Crops Directorate and the Ministry of Agriculture provide advice on good agricultural practices governing mango production. The establishment of a mango-processing factory in the County is deemed to contribute to improved collective marketing. However, there still exists the fresh fruit market in urban regions, which brokers often use to exploit the producers.

6.2.2.4 Data collection and analysis

The choice experiment and household survey were conducted between June and August 2015. Based on the results of literature review and key informant interviews, GIS mapping was used to delineate the goat and mango production regions. A sampling frame comprising the respective commodity producers was developed and sampling was randomly done within each sub-county. The producers were mainly small scale in nature. Data was analysed using Limdep/Nlogit version 6.0. The utility parameters for all the attributes presented to the respondents were defined as random parameters with an assumed normal distribution. The cost attribute was specified as fixed in the random parameter model specification to enable derivation of the WTP distribution (Revelt & Train, 1998). The models were estimated using maximum simulated likelihood procedures of the random parameters logit with 100 Halton draws for the simulations following Hensher et al. (2015).

6.2.3 Results and discussions

6.2.3.1 *Socio-economic characteristics of the households*

The mean ages of the household heads were approximately 46 years and 52 years among goat and mango producers respectively, with at least 85% of the households being male-headed. The average number of years spent in formal education was between 9.5 years in Baringo and 10.7 years in Makueni counties respectively (Table 6.2-3).

Table 6.2-3: Socio-economic characteristics of the household heads (HHH)

Socio-economic characteristic	Goats	Apple mango
Age of HHH (in years)	46.4	52.4
(sd in brackets)	(16.7)	(14.0)
Male headed households	91%	85%
Household accessing extension services	47%	68%
Aware of their products uniqueness	93%	85%
HHH formal education (in years)	9.5	10.7
(sd in brackets)	(10.3)	(4.4)

On understanding the concept, at least 84% of the producers in both study counties indicated their willingness to contribute for GI protection. At least 45% of all producers were accessing extension services at the time of the study, which were providing a credible source of information.

6.2.3.2 *Random parameter model estimates*

The maximum likelihood estimates for the mixed logit models for each of the potential GI commodities are presented on Table 6.2-4a and Table 6.2-4b. The cost attributes for all

commodities had the expected negative sign that was also significant. Further, the standard deviation of at least four and two of the coefficients for mango and goat analyses were significant, thus giving evidence of preference heterogeneity around the mean for the parameters at 95% confidence level (Johns et al., 2008).

Table 6.2-4a: Coefficients and distributions of random parameter logit estimates for the utility functions of mango

Parameters	<i>Coefficient</i>	<i>Std. Dev. of coeff</i>
Receive expected price beginning of season	2.472*** (0.807)	1.162 (0.720)
Receive expected price at selling time	1.835 (1.294)	2.289* (1.211)
Minimum guaranteed return	2.264*** (0.477)	1.860*** (0.540)
County level protection	2.440*** (0.875)	1.944* (1.168)
Regional level protection	0.289 (0.726)	2.698*** (0.649)
Collective marketing	2.043*** (0.386)	1.317*** (0.411)
Contracts	0.677** (0.327)	2.450*** (0.135)
COST	-0.006*** (0.002)	
McFadden R ² adjusted	0.429	
Log-likelihood	-313.4	
Chi square	471.8***	

***, **, * denotes significance at 1%, 5%, 10% level.

(standard error in brackets)

Receiving price information at the beginning of the season, having a county level protection and having a minimum guaranteed return were the variables that had the most significant influence on mango producers' choices. Having contracts with traders was the least considered attribute when the respondents were making their choices (Table 6.2-4a).

Table 6.2-4b: Estimates and distributions of random parameter logit utility function for the goats

Parameters	Coefficient	Std. Dev. of coeff
Collective marketing	0.499*** (0.154)	0.100 (0.262)
Contracts	0.625*** (0.149)	0.403 (0.258)
Small group size	0.195 (0.232)	0.958** (0.463)
Large group size	0.496** (0.227)	1.827*** (0.337)
Sell to abattoir	0.847*** (0.167)	0.682*** (0.187)
COST	-0.002*** (0.000)	
McFadden R ² adjusted		0.168
Log-likelihood		-497.5
Chi square		200.3***

***, **, * denotes significance at 1%, 5%, 10% level.

(standard error in brackets)

The RPL model coefficients for goat meat producers were significant with the exception of small group size as a preferred mode of organisation under GI protection. The attributes relating to group size and selling to abattoir were sources of heterogeneity among the producers. During the

focus group discussions, it was evident that most of the goat keepers preferred not being in groups. However, although not a requirement for GI protection, enforcement of the registration and providing collective reputation to the market requires there to be collective action among the producers. In this case, the goat producers preferred to be organised in large groups of more than 70 persons. Selling the goats to an abattoir (where to sell) as well as having contracts with buyers were the attributes that influenced the goat producers' choices most (Table 6.2-4b).

6.2.3.3 Producers' valuation (willingness to pay) for GI related attributes

The producers' willingness-to-pay results are based on the WALD test using Delta method and they show the significance of the WTP based on the Z-statistics. The mango producers had a higher willingness to pay for price related variables compared to those related to the region of protection and collective action (Table 6.2-5).

Goat producers attached most value to being able to sell their goats at an abattoir (where to sell) followed by having contracts with the buyers of goat meat. During the focused group discussions, the goat producers indicated that goats are a sign of wealth and they only sell when in need of finances and they do not engage in selling young goats. Due to over-supply during peak selling seasons, the prices drop. Having contracts would ensure that the prices are stabilised. On the downside, contracts could also deny producers higher prices in future time that is still within the contract period. However, the contracts as well as formalised selling point increase excludability for the unique potential GI product.

Table 6.2-5: Producers' willingness to pay for GI attributes for the two commodities

Parameters/Attributes	Mango	Goats
Receive price info beginning of season	399.3*** (122-676)	
Receive price info at selling	296.4 (-80 – 673)	
Minimum guaranteed return	365.8*** (98 – 633)	
County level protection	394.2* (-19 – 808)	
Regional level protection	46.6 (-197 – 290)	
Collective marketing	330.0*** (93 – 567)	207.3*** (86.2 – 328.3)
Contracts with buyers	109.3* (-4 – 223)	259.6*** (125.2 – 394.0)
GI registration through small groups		80.9 (104 – 266)
GI registration through large groups		206.1** (16.6 – 395.6)
Sell to abattoir		351.7*** (208-495)
Total WTP	1,598.6	1,024.7

*** , *** - significant at 95% and 99% level of significance*

Blank sells indicate the attribute was not included in respective product analysis

When asked how much the producers would willingly contribute towards protection of their unique products with GI, the total WTP derived for the attributes on Table 6.2-5 is higher than what some of the producers were individually willing to pay. This therefore points to the fact that

GI protection and its voluntary nature can lead to exclusion of producers within the study region. The disadvantage this poses is that traders and consumers are able to access the unique product from within the study region but a lower price from the non-participating producers. This is especially so if there is no distinguishing characteristic of the products and the value/benefits that accrue to members of the GI protection do not equal or exceed the membership payments (Thiedig & Sylvander, 2000). The region of production provides a public good and not a private good, hence any producer in the region is capable of having the same quality product.

From the analysis, producers' willingness to pay for collective marketing for both products was KES 330 (USD 3.3) and KES 207 (USD 2.07) for mango and goat respectively (Table 6.2-5). Collective action is a major aspect for the success of GI protection (Barjolle & Sylvander, 2002; Reviron & Chappuis, 2011). By engaging in collective marketing, the producers present a joint product to the market, hence establishing exclusion and exclusion costs restricted to the production region, making it a private good. Collective marketing will affect the current supply chain and, if successful, it is likely to provide the producers an advantage in setting the price and ensuring lasting reputation of the product.

Receiving expected price at the beginning of the season and having minimum guaranteed return/price were the two most valued attributes among the mango producers that would motivate them to participate in GI protection. In Kibwezi East sub-county in the mango study region, the producers were able to get at least USD 0.6 (KES.60) per piece of mango sold to exporters compared to USD 0.05 (KES 3) when selling to traders from the local markets. Having the price information at the beginning of the season (combined with contracting) is an incentive to producers to manage the product and its reputation sustainably. A GI registration would

ensure little or no rivalry of prices within the production region. However, if membership increases due to the absence of rivalry, production is likely to increase and this could in turn result in reduced prices for the members in the long-term.

6.2.4 Conclusion

The study undertook to determine the producers' willingness to pay for registration and protection of different unique products in semi-arid regions of Kenya with geographical indications. The producers valued market-related attributes higher compared to those related to protection of their products. The protection should necessarily provide the market related attributes considered important by the producers. These assure the producers of defined markets and prices that have a level of guarantee over time. Using geographical indications protection would provide the producers with an opportunity to increase value derived from their products, while at the same time providing consumers with information needed to make the choice of purchasing the product. In a study determining producer perceptions towards GI protection, the producers of goat meat highlighted the importance of environmental and institutional attributes. These included managing the environment for sustainability, having better market access and prices as well as the role of policies and institutions in ensuring the success of the registration, hence informing their willingness to pay.

The apple mango producers exhibited strong preference for price related attributes while goat producers exhibited strong preference for attributes related to the mode of selling (i.e. where to sell, contracts with traders and collective marketing). Goat producers revealed strong preference for the mode of sell of the GI product as well as how (contract marketing).

As opposed to protecting the products with collective marks, where an individual or group owns the mark, geographical indications give collective rights to all producers in the region. The attributes in the analysis could apply in the possibility of protection using either collective or certification trademarks. However, collective marks would serve like a club good, as it has exclusivity on attaining the maximum number of participants. Certification mark on the other hand, especially where owned by a State department, would provide an effective way of enforcing the codes of practice. However, although all three are associated with protection of reputation as well as market distinctiveness (da Silva & Peralta, 2011), certification and collective trademarks would not necessarily attribute the product quality to the characteristics of a given production region, the essence of geographical indication protection. Especially considering the fact that the producers are mainly small-scale, a *sui generis* geographical indications law in Kenya would hence be a more appropriate protection compared to the current use of trademarks.

6.3 Producer valuation of Geographical Indications-related attributes of export crops in Kenya: A choice experiment analysis⁸

Abstract

Globally, there is an increase in the protection of unique products as geographical indications (GI) for environmental sustainability and income generation for the producers. Geographical indications provide consumers with information on the quality of the products, hence reducing information asymmetry and creating opportunities for increased proportion of consumer prices that get to the producers. Raw undifferentiated products reduce competitiveness in the export market, as producers are not able to negotiate better prices. Differentiating products based on characteristics of the production region is evident in the export market of beverage crops. Promotion of high value commodities as GIs would therefore be dependent on, among others, the products comparative advantage, producer preferences and market demand. This can generate considerable surplus to the agricultural export commodity producers in specific geographical regions. The objective of the study was to determine agricultural producers' valuation of attributes related to protection of export commodities as geographical indication in Kenya. The study focused on coffee from Murang'a county (n=135), and tea from Kirinyaga county (n=137), both reputed to draw preference from consumers due to their unique territorial-based qualities. Choice experiment modelling based on Lancaster's consumer theory and econometric basis in the random utility maximisation theory was applied. Producers were given efficient choice sets with different market and institutional attributes developed using focus group discussion,

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literature review and key informant interviews. From the analysis, coffee producers were found to be more likely to register their commodities as geographical indications protected at regional level and having a minimum guaranteed return. Tea producers also valued minimum guaranteed return most but preferred protection at factory level. Tea producers were less likely to protect their products as geographical indications as compared to coffee producers, who have higher variability in coffee management and prices. Protection of export commodities as geographical indications may provide an additional solution to reducing marketing and pricing challenges to producers. However, as shown by the tea analysis, it may not be the only solution. Efficient field and factory management should also be evident.

Key words: Choice experiment; export commodities; geographical indications; producers; Willingness-to-pay

6.3.1 Introduction

Globally, there is an increase in the protection of unique products with geographical indications (GI), with a perceived view to environmental sustainability and income generation for the producers. In Kenya's Vision 2030, the Agricultural Sector Development Strategy (ASDS) is expected to transform agricultural production from subsistence to a commercially-oriented sector, which is key for growth in the country's economy (GoK, 2010a). Some of the identified strategies to increase production and hence food security include improving productivity and access to markets as well as value addition for national, regional, and international markets.

According to the ASDS (2010 – 2020) (GoK, 2010a), small scale producers account for 75% of total agricultural output and 70% of marketed produce. Specifically, small-scale farmers produce

at least 65% of coffee and 50% of tea and, with exception of maize, wheat and sugar, almost 100% of all other crops. Most of the products are sold raw with little or no value added. Raw undifferentiated products reduce competitiveness in the export market as producers are not able to negotiate better prices for the bulky produce (GoK, 2010a, 2013a). Furthermore, the export market is characterised by stringent codes of practice that producers have to adhere to in order for the commodities to access the market.

When producer prices fail to offset the cost of production, the producers will often compromise on the input use or engage in unsustainable land use systems that are detrimental to the environmental sustainability of a rural landscape in the long run. This trade-off between environmental quality and profits is a delicate one. Use of price-based incentives can spur behavioural change among land users to ensure sustainable management of the production resources (Birol & Koundouri, 2008). Evident in tea producing regions of Kenya, it is possible for producers to increase production in order to benefit from the price-based incentives, while conserving the environment and ecosystem, thus influencing the livelihoods of the rural communities positively (World Bank, 2012; GGBP, 2014).

Understanding the value of environmental sustainability and integrating the information in the policy-making process can therefore set the delicate balance between profits and environmental quality to a sustainable level. Studies have associated geographical indications (GI) with positive effects on sustainable rural development through ecological, economic and social benefits (Babcock & Clemens, 2004; Williams & Penker, 2009).

The basis of GI registration is that consumers value certain qualities of a product that are essentially attributable to the geographical characteristics of the production region. Producers on

the other hand register and protect these unique qualities and document the codes of practice that govern the protection. Producers' decision to register such unique agricultural products, especially those already traded in the export market as GIs, would be dependent on the extent of demand for the qualities by consumers, as well as the composition and development of the market, both locally and internationally (Hansen, 2013; Vats, 2016). Furthermore, the producers' experience with the existing institutional and market environments are hypothesised to also influence their perception of incremental value that would accrue to them from investing in such a protection (Ruto & Garrod, 2009).

Differentiating products based on characteristics of the production region is evident in the export market of beverage crops, with different prices received by the producers. In Kenya, export prices for tea are known to differ depending on the source garden (factory) of the tea. This is attributed to characteristics of the production region and the field and factory management. The resulting quality and its consistency influence taste preference of consumer, some of whom are willing to pay premium prices for the higher grades and classes of tea. Whereas grades are based on the characteristic of the tea grain, the classes are determined by the organoleptic characteristics, a major consideration for some of the international consumers who pay a premium price to access the beverage. Coffee buyers as well attribute different prices to the consumers' preference for coffee quality, which is dependent on attributes in specific regions of production (Gichovi, 2011; Blakeney & Mengistie, 2012; Bagal et al., 2013; Melli, 2015).

The codes of conduct associated with such protection, if conditional on being environmentally sustainable, accord the society a range of benefits as well. These include enhanced rural landscape, improved water quality, better soil and water conservation, and future production due

to biodiversity preservation, amongst others. Promotion of such high value commodities as GIs would therefore be dependent on, among others, the products comparative advantage, producer preferences and market demand (Blakeney et al., 2012). Geographical indications, therefore, have potential to generate considerable surplus in form of economic and non-economic benefits to the agricultural export commodity producers in specific geographical regions, a reward for their long-term investment in building the reputation of the product (Herrmann & Teuber, 2010; Oana et al., 2011).

The objective of this study was to determine agricultural producers' valuation of attributes related to potential protection of export commodities as geographical indication in Kenya. Specifically, the study aimed to (i) determine the attributes the producers would value as being important for marketing unique origin export commodities with geographical indications, and (ii) establish presence of heterogeneity in preferences among the producers.

The study focused on two export commodities perceived to have territorial based uniqueness that consumers prefer. These are Murang'a coffee and Kirinyaga tea, both produced in the highlands of Central Kenya, and described under the study site section.

6.3.2 Methodology

6.3.2.1 Model estimation – Application of choice experiments

The study was based on choice experiments, a non-market valuation technique. Since most of the attributes that producers consider in making production decisions are not traded in the market, non-market valuation was preferred to determine producers' preference. Whereas consumers consider attributes related to the quality of the good, including taste, colour among others, the

attributes considered by producers tend to focus on enabling environment and institutions. These include access to market, suitability of production region, characteristics of value chain actors, and enabling organisations, amongst others. These influence the cost of production as well as the revenue and hence profits that the producers receive, and consequently influence the producers' production decisions.

Choice experiments are effective mechanisms for evaluating preferences for environmental policy. The theoretical framework of choice experiment modelling is based on the Lancaster consumer theory (Lancaster, 1966) with an econometric basis in the random utility maximisation (RUM) theory (McFadden & Zarembka, 1974; Hanley et al., 2001; Louviere et al., 2003). The consumer theory defines utility as the satisfaction an individual derives from characteristics that goods possess rather than from the entire good *per se* (Lancaster, 1966; Louviere et al., 2003). According to the authors, consumer utility is not derived from the good but from characteristics that the goods possess, whether used singly or in combination, to produce the desired utility. Different consumers can hence derive different levels of utility from the same good.

Choice experiments help to assess the monetary value the respondents would attach to hypothetical changes made in the attributes of their good, and especially the non-monetary attributes (Dachary-Bernard, 2008). In reaching a final decision, the respondent is assumed to have and use all relevant information and is willing to trade-off one attribute for another in the decision making process (Louviere et al., 2003).

The random utility maximising model assumes that while the individual knows his preferences with certainty and does not consider them stochastic, the researcher is not able to observe all the components and hence treats the unobservable as random (Hanemann & Kanninen, 2001).

According to this framework, the indirect utility function (U_{ij}) for each respondent i can be decomposed into two parts: (i) a deterministic element, which is specified as X_{ij} (characteristics of individual i presented with different alternatives j in the choice set) with parameter vector β ; and (ii) a stochastic element, error term e_{ij} , which represents unobservable influences on individual producer choices (Hoffman & Duncan, 1988; Hanley et al., 2001; Kosenius, 2013).

The utility function is illustrated by Equation 1:

$$U_{ij} = \beta X_{ij} + e_{ij} \quad (1)$$

In their choice of production options, producers have preferences not only about productivity and profitability, but also about the various attributes of the good or service being valued (Jæck & Lifran, 2014). Therefore, based on Equation (1), producer i chooses the alternative g if the utility derived from that alternative exceeds the utility from alternative q (Equation (2)).

$$U_g \geq U_q, \forall q, g \neq q \quad (2)$$

In this study, the model was specified as a random parameters logit model. Whereas the multinomial logit assumes homogenous preferences across individuals, the random parameters logit model appreciates that heterogeneity exists among producers, and therefore extends the basic multinomial logit model by allowing the parameters associated with each observed variable to be random (Revelt & Train, 1998). The mixed logit model relaxes the assumption of ‘*independence of irrelevant alternatives*’ (IIA), which stipulates that the ratio of the probabilities of choosing any two options will be unaffected by the attributes or availability of other options. Further, where individual respondents make repeated choices, as was the case in this study,

estimation is more efficient using mixed logit (Revelt & Train, 1998; Hensher et al., 2015; Greene, 2016).

In the mixed logit random utility model, an individual ($i=1, 2 \dots I$) faces a choice amongst $j=1, 2, \dots, J$ alternatives in each of T choice scenarios. Individual i is therefore assumed to choose the alternative with the highest utility, having considered a full set of presented alternatives in each choice scenario t . Whereas heterogeneity could originate from other individual specific attributes or alternative specific constants, the model specification in this paper did not include any socio-demographic or attitudinal characteristics of the respondents nor a constant term. Since the study objective was to explore the producers' valuation of GI-related attributes by assessing the trade-offs between the attributes, the choice was expressed solely as a function of the attributes, in absence of more complex relationships (Louviere et al., 2003; Campbell et al., 2008).

The mixed logit model hence takes the following formulation:

$$U_{ijt} = \beta_i' x_{ijt} + \alpha_i' z_{ijt} + \varepsilon_{ijt} \quad (3)$$

Where $\beta_i X_{ijt}$ is the vector for the non-monetary attributes defined as random parameters and assumed to be normally distributed, while $\alpha_i y_{ijt}$ represents the (random) cost attribute in the equation, specified as non-stochastic (variance equals zero) following (Hensher et al., 2015); β_i and α_i are individual random specific utility parameters; x_{ijt} is a vector of observed variables for individual i selecting an alternative j in choice set t ; y_{ijt} is the vector for the cost variable for individual i for alternative j in choice set t . ε_{ijt} is a parameter vector that is randomly distributed across individuals (unobserved random disturbances that result in unobserved heterogeneity).

Therefore, in the random parameters logit model, the probability that an individual chooses alternative j is given by:

$$Prob[choice\ j|i, t, \beta_i] = \frac{\exp(\beta_i'x_{ijt} + \alpha_i'y_{ijt})}{\sum_{j=1}^{Jt} \exp(\beta_i'x_{ijt} + \alpha_i'y_{ijt})} \quad (4)$$

Based on the choice made, the mixed logit analysis estimates the impact on the producers' preference formation (of different attributes) resulting from the given change in cost of GI registration (following Hensher et al., (2015)). The cost variable was the normalising variable to determine the WTP while McFadden's ρ^2 was used to measure the overall fit of the model (Louviere et al., 2003; Birol, Smale et al., 2006; Greene, 2016). The producers' economic value (willingness to pay) for each attribute was derived from parameter estimates of each of the attributes β_x and the estimates of the cost attribute β_y . The willingness-to-pay value for each attribute represents the proportion of the monetary value that the producers would pay in order to adopt an attribute. It gives the monetary value of the utility coming from an extra unit of the specific attribute. The willingness to pay value (W) was derived as:

$$W = -\frac{\beta_x}{\alpha_y} \quad (5)$$

6.3.2.2 Study site selection and description

The study was conducted in two counties within Kenya where two export crops, Tea and Coffee, are grown and are reputed to have unique characteristics based on the region of production. These were Murang'a County for coffee production [n=135]) and Kirinyaga County for tea production [n=134]) (Figure 6.3-2). The characteristics that qualify the two origin products are summarised on Figure 6.3-1, based on a criteria compiled from different literature sources

(Barjolle & Sylvander, 2002; Giovannucci et al., 2009; Vandecandelaere et al., 2010; Bramley & Biénabe, 2013).

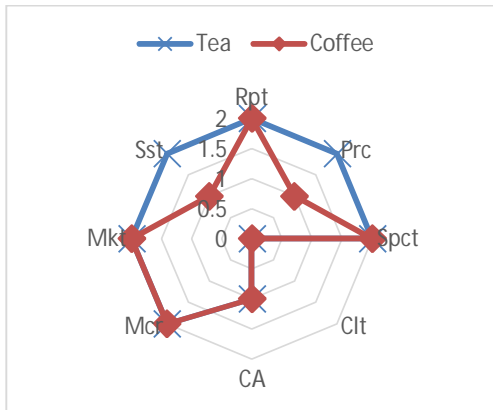


Figure 6.3-1: Characterisation scoring criteria for the selected potential GI products

Key: **Rpt**=Reputation, **Prc**=Premium price, **Spct**=Specificity/Uniqueness, **Clt**=Cultural aspects/linkages, **CA**=Collective action and institutions, **Mcr**=Macro institutions recognition and support, **Mkt**=Market attractiveness and scope of market, **Sst**=Environmental impact and sustainability

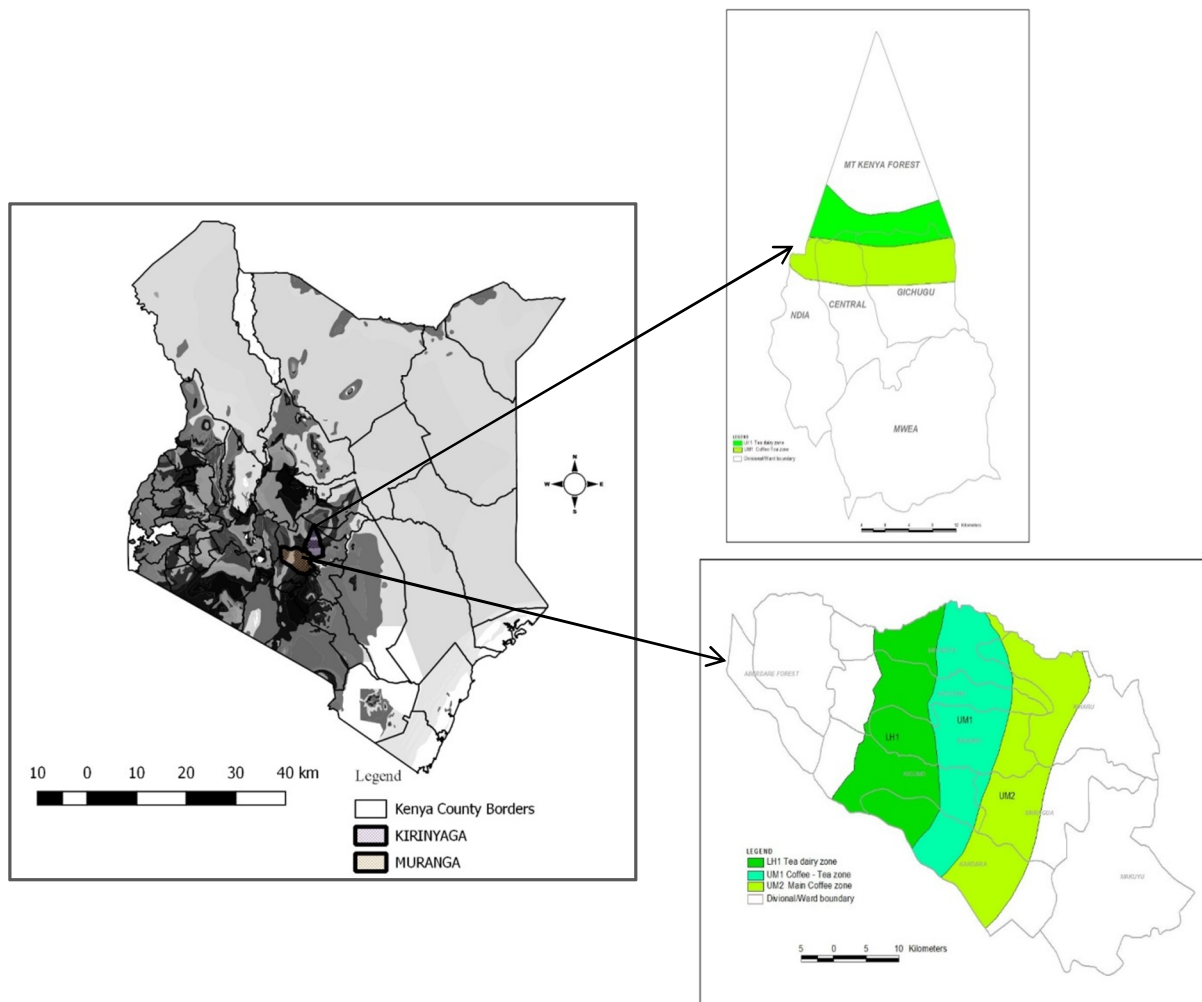


Figure 6.3-2: Map of Kenya showing study counties and agro-ecological regions

Murang'a County has three distinct coffee producing zones starting from the high altitude tea/dairy zone, the coffee/tea zone (both with one coffee season per year) to the main coffee zone on UM2 (with two coffee seasons in each year). Part of the coffee zones fall under the Mt. Kenya zone while the rest is more on the Aberdare ranges. Coffee from Murang'a and the bordering Nyeri Counties is said to have distinct taste that consumers are willing to pay a premium for. However, in most Coffee Societies, producers rarely benefit from the higher prices paid for their coffee. GI registration, if successful, would not only enhance the chances of producers accessing

the higher prices, but would improve information flow between the producers and consumers. However, this has to exist within the prevailing value chain structure).

Tea production in Kirinyaga County is done on the Tea-Dairy zones and the Coffee-Tea zones. Whereas tea from the county generally attracts high prices due to place based attributes known to the consumers, the producers are not fully aware of the link between region of production and price. Tea production under the Kenya Tea Development Agency is characterised by clear environmental management practices going beyond tea production. Further, fertilizer is the only external input added to the Kenyan tea, hence reducing challenges related to residue levels as well as improving environmental management.

6.3.2.3 Design of choice experiments and data collection

The choice experiments were unique to each of the identified products. Focus group discussions and key informant interviews were held to develop and ascertain the attributes used in the choice experiments and the levels for each attribute (Table 6.3-1). Literature search was used to identify the attributes based on similar studies (Oh et al., 2005; Birol, Smale et al., 2006; Ruto & Garrod, 2009; Otieno et al., 2011).

NGENE 1.1.2 software (Rose et al., 2014) was used to develop the orthogonal design that had 36 choice sets. The orthogonal design was used as the test experiment. Each choice set had three alternatives comprising a pairwise combination of the orthogonal profiles and a status quo option, based on the current situation. These choice sets were organised in six blocks of six (6) sets each. Thirty-six (36) randomly selected respondents in each study area were presented with one block of choices. The results of the test experiments were analysed using NLOGIT 5. The

resulting parameter estimates were used as the priors to generate the efficient choice sets in NGENE 1.1.2 software.

Twenty-four efficient choice sets were designed, organised in six blocks of four (4) sets each. Each respondent in the study was randomly assigned with a series of T=4 efficient choice sets (1 block). In each choice set, the respondent made a choice from J=3 alternatives (scenarios), the third comprising attributes level for the status quo. An example of a choice scenario presented to respondents is shown on Table 6.3-2.

Table 6.3-1: Attributes and levels for choice experiment for the study products

Attribute	Levels assumed for each attribute	Products for which attribute applies	
		Coffee	Tea
Expected price information received at beginning of season (ExPRICE)	0=No prior expected price information received [NoExPrice] 1=Information on expected prices received prior to sale [ExPriceSell] 2= Information on expected prices received beginning of season [ExPriceSeas]	Yes	Yes
Minimum guaranteed return (MGR)	0=No minimum guaranteed price (rely on markets) 1=Minimum guaranteed price received	Yes	Yes
Preferred level of GI protection (PrLEV)	0=No protection (Retain current) [FactoryPrtLvl] 1=County level [CountyPrtLvl] 2=Regional level [RegPrtLvl]	Yes	Yes
Cost of maintaining the Protection (COST) KES/HH/year	Kenya Shillings (KES) to be paid by each household each year [100 KES appx ≈ 1USD]	75 100 200	100 200 400

The choice experiments were conducted between June and August 2015. The sampling frame comprised the respective commodity small-scale producers within the region specified as having unique and differentiating qualities of the product. The data was analysed using Limdep/Nlogit version 6.0 (Greene, 2016). The models were estimated using maximum simulated likelihood procedures of the random parameters logit with 100 Halton draws for the simulations (Hensher et al., 2015).

Table 6.3-2: An example of a choice set presented to respondents in Kirinyaga County

Block 2, Scenario 2

Attribute	Alternative A	Alternative B	Alternative C
Time expected price information received	Expected price information received just before sale of tea	Expected price information received just before sale of tea	No expected price information received before sale
Minimum guaranteed price of tea	No minimum guaranteed price	No minimum guaranteed price	No minimum guaranteed price
Preferred protection of tea as a GI	Mt. Kenya level protection	County (Kirinyaga) protection	Factory level protection
Cost of registering and maintaining the GI (KES/HH/year)	KES.200	KES.200	KES.100
I prefer alternative:			

6.3.3 Results and discussions

6.3.3.1 Random parameter model estimates

The maximum likelihood estimates for the mixed logit models for each of the potential GI commodities are presented on (Table 6.3-3). The log-likelihood at convergence was -234.3 and -290.4 for coffee and tea models respectively. Both models were found to be statistically significant with a X^2 statistic of 717.9 and 526.7 respectively for the coffee and tea models. The cost attributes for both commodities had the expected negative signs and were statistically significant at 1% level.

In the coffee model results, all estimated coefficients were significant at 1% and 5% levels. In the tea model results, only three coefficients were statistically significant at 1% and 5% levels. These were coefficients for receiving expected price information at the beginning of the tea picking season, having a minimum guaranteed price and protecting products at factory prices. The cost coefficient was also significant. Receiving price information at the beginning of the season increases the likelihood of coffee producers to choose GI registration by at least 3.4 compared to 4.7 as a result of receiving information just before selling. Having minimum guaranteed returns and a regional level GI protection would have the greatest impact (7.7 and 7.1 respectively) on the producer's choice. The coefficients are much lower for the tea analysis suggesting that, based on the selected attributes, coffee producers would derive more value from GI protection compared to the tea producers (Table 6.3-3).

Further, there was evidence of preference heterogeneity around the mean for at least 3 attributes in each of the coffee and tea models at 95% confidence level as depicted by the significant

standard deviation of the coefficients (Table 6.3-3). The standard deviation measures the magnitude of differences in respondents' preferences for the attribute (Johns et al., 2008).

Table 6.3-3: Coefficients and distributions of random parameter logit estimates for the utility functions of the export crop commodities

Attributes	Coffee		Tea	
	Coeff	Std Dev of coeff	Coeff	Std Dev of coeff
Price info at beginning of season	3.393*** (1.465)	2.751* (1.626)	1.492*** (0.547)	1.714*** (0.497)
Price info just before selling	4.752*** (1.615)	3.289*** (1.291)	0.762 (0.494)	0.671 (0.815)
Minimum guaranteed return	7.685*** (2.456)	5.098*** (1.832)	3.472*** (0.610)	2.507*** (0.543)
Factory level protection			0.976** (0.403)	1.642*** (0.377)
County level protection	2.628*** (1.016)	2.300* (1.289)	0.213 (0.435)	0.911 (0.732)
Regional level protection	7.129*** (2.330)	3.346** (1.346)		
COST	-0.013** (0.003)		-0.004*** (0.001)	
McFadden R² adjusted	0.605		0.476	
Log-likelihood	-234.3		-290.4	
Chi square	717.9***		526.7***	

***, **, * denotes significance at 1%, 5%, 10% level; standard error in brackets

Shaded cells denote that the attribute was not part of the analysis for the product

6.3.3.2 Producers' valuation (willingness to pay) for GI related attributes

The producers' valuation, assessed through the willingness to pay, is based on the WALD test using Delta method and shows the significance based on the Z-statistic (Table 6.3-4). Coffee producers are willing to pay more in order to have a minimum guaranteed return (KES 609.7)

(minimum expected price) for the coffee delivered at the factory, followed by having a regional level of protection (KES 564.9). From the results, we can derive that the coffee producers are willing to pay on average KES 1,444 (appx USD 13.5) for a regional GI level protection that assures the producers of receiving approximate price information at the beginning of the season and have a minimum guaranteed return.

The attribute valued most by the tea producers was having a minimum guaranteed return, for which they were willing to pay KES 922 (appx USD 8.8). Having a factory level protection (status quo) was the second valued attribute by the producers. Price variations among KTDA run factories within the same region explain the producers' preference for factory rather than regional protection level. Overall, from the two significantly valued attributes, tea producers are willing to pay on average KES.1,181 (appx USD.11.25) to protect their tea as a factory-level geographical indication with minimum guaranteed return. During the focus group discussions with the producers, there was concern regarding the fluctuation of tea prices across years, yet labour costs remained fixed, implying a decrease in their profits. The producers also expressed concern that a regional rather than factory level protection may eliminate competition within the same study region and probably compromise the quality of tea. This would further explain their preference for factory level protection. However, GI protection would in essence provide a codes-of-practice that would fit in the current factory organisation and accord producers' prices based on their level of adherence to the laid down codes.

Table 6.3-4: Producers’ willingness to pay for GI attributes for tea and coffee

Attributes	Coffee		Tea	
	WTP Estimates	95% confidence interval	WTP Estimates	95% confidence interval
Price info beginning of season	268.9**	(63 – 474)	396.2*	(-74 – 867)
Price info just before selling	376.5***	(146 – 607)	202.3	(-131 – 535)
Minimum guaranteed returns	609.7***	(225 – 995)	922.0***	(246 – 1598)
Factory level protection			259.3***	(108 – 411)
County level GI protection	208.2**	(34 – 382)	56.7	(-167 – 280)
Regional level GI protection	564.9***	(221 – 909)		

*** , *** - significant at 95% and 99% level of significance*

6.3.4 Conclusion

At least 80% of Kenya’s coffee and tea are traded in the export market, either through direct sales or through the auction coordinated by the respective Directorates (Coffee Directorate and Tea Directorate). The WTP analysis infers an implied preference by producers for the attributes for each of the commodities. The results indicate the incentives that producers perceive as important for the successful registration of their unique products as geographical indications. The higher the WTP value for each attribute, the more its importance is to the producers.

The attributes related to minimum guaranteed returns ranked highly for both export commodities. How much of the product premium prices actually accrue to the producers would not only impact their livelihoods but also the protection of the environment and biodiversity associated with each product. The results indicate that coffee producers would derive higher value from GI protection compared to tea producers. It is likely that the coffee producers view GI protection, as explained to them, as a means to reduce market failures associated with inadequate access to information and low prices, among others. This is an important consideration when making the policy guidelines that will accompany the GI bill, when formulated.

In tea production, the differences in prices associated with factories within the same production region imply that other than geographical characteristics in the region of production, farmer and factory management factors are important attributes to the quality of the tea in the cup. Efforts on how to streamline the field and processing management in order to ensure that quality of tea attained is similar in a production region would strengthen the producers' interest for a regional level protection. Having more volumes with consistent quality and presence of geographical-related characteristics in the final product would earn the producers a greater stake in attracting consistent and better prices for their produce. Whereas current structure of the tea value chain accords the producers in the study region high prices, protection and marketing of the tea based on the *terroir*-based characteristics would provide more information to consumers and probably provide producers with higher bargaining power for consistent prices for their products.

CHAPTER 7: ANALYSIS OF POLICY AND INSTITUTIONAL INCENTIVES INFLUENCING EVOLVEMENT AND DEVELOPMENT OF POTENTIAL GEOGRAPHICAL INDICATIONS

7.1 Background

This Chapter presents producer preferences and valuation attributes that would enhance GI protection. It presents the producers willingness to pay to protect their unique products as geographical indications. The chapter is presented in two papers submitted to journals for review. Section 6.2 presents the producer valuation and willingness to pay to protect products from semi-arid regions (goats and mangoes), while Section 6.3 addresses the producer valuation and willingness to pay to register export products (tea and coffee) as GIs. Although already labelled at national level as Certification Marks, key informant interviews show the potential for further differentiating coffee and tea based on place based characteristics.

7.2 Policy and institutional incentives for the evolution and development of geographical indications in Kenya⁹

Abstract

Promotion of adaptable value chains with high returns per unit area is one on the strategic objectives of Kenya's Agricultural Sector Development Strategy. Protecting agri-food products with geographical indications is a value addition strategy for products with uniqueness linked to the characteristics of the geographical region of production. Built on the Institutional Analysis

⁹ Paper submitted to *Journal of Rural Studies* as: Maina FW, H Egelyng and J. Mburu. *Policy and institutional incentives for the evolution and development of geographical indications in Kenya*

and Development framework (IAD), the paper assesses the policy and institutional incentives by answering four broad themes suggested from literature. These include (i) the organizational and institutional structures; (ii) level of equitable participation; (iii) strength of market partners; and (iv) the effectiveness of existing legal protection that would provide incentives or disincentives for protection of agri-food products with geographical indications. Focusing on four products, Mt. Kenya Coffee, Mt. Kenya Tea, Baringo goats and Mangoes from Lower Eastern region of Kenya, the study concludes organizational and institutional structures exist in each of the product value chains, the longer the length, the less the incentives for successful protection with geographical indications. The strength of small scale producers in market participation is weak in most of the value chains and hence need for them to collectively develop strategies that would strengthen their participation as they respond to consumer demand. One such option is the use of geographical indications.

Keywords: Agri-food products, equitable participation; geographical indications; institutional analysis development;

7.2.1 Introduction

Promotion of adaptable value chains with high returns per unit area is one on the strategic objectives of Kenya's Agricultural Sector Development Strategy (ASDS) 2010-2020. Such value chains include tea, coffee, mangoes, and local goats which have already been identified as commodities with potential for Geographical Indications (GI) labelling in Kenya. Development of these value chains would not only help in fighting poverty and food insecurity but also in enhancing sustainable environmental management by transforming the agriculture from being majorly subsistence to a commercial and competitive sector. Among the key success factors

needed for successful development of these value chains include need for value addition as well as strong multi-sectoral coordination mechanisms involving both private and public stakeholders.

The development of GI often involves product differentiation and value addition initiatives. An increasing number of initiatives foster the use of geographical indications (GI) as intellectual property rights that provide a successful form of differentiation, giving the producers in a specific production region comparative advantage over similar products in the market (Giovannucci et al., 2009). GI institutionalises the physical, cultural, processing and other characteristics of a production region, which jointly essentially contribute to the uniqueness of the product. Whereas this has the opportunity of increasing income to the relevant producers, the effects of the economic laws of demand and supply may also come into play, based on the characteristics of the sub-sector. Higher producer prices in a competitive market would result in increased production. Increased production could result in long-term decline in prices, as well as over-exploitation of the environment, hence hampering the sustainability of the intervention. To curb this, GI registration is governed by codes of practice that define the production and management practices, while ensuring environmental and social sustainability (Vandecastelaere et al., 2010). Ideally, these potential outcomes of GI should lead to growth of the rural and national economy.

The role of state, public and private sector players remains important in achieving sustained success of GI registration (Vandecastelaere et al., 2010; Barjolle et al., 2017; Chabrol et al., 2017). There exist countries where producers have established GI protection of their unique products with strong collective action but have not been successful without state participation. This is because the increased incomes associated with GI protection bring with them challenges

revolving around free-riding, fraud and usurpation which would be dealt with more easily through state participation (Marie-Vivien et al., 2015; Chabrol et al., 2017).

It is therefore apparent that GI require a high degree of integration of institutions. Hence, the nature of current institutions, decision-making and actor operations have implications on applicability and sustainability of the GI development. Research on incentives created by such institutions to support GI protection (especially for developing countries) is not much advanced. As argued by FAO (2001) and Saint Ville et al (2017b), the nature of the existing institutions, which are formal and informal rules and laws and enforcement mechanisms that make up the institutional arrangements and environment (North, 1989, 1990), and their incentives, should be understood in order to shed light on conditions required for successful GI registration, within the cultural context of a given country. Further, the consequences of institutions, whether good or bad, cannot be ignored in economic development. Institutions shape the behaviour of the actors in the economy and also affect the economy (Brousseau & Glachant, 2008), creating a dichotomy of endogeneity and exogeneity.

In Kenya, although a *sui generis* GI law does not exist as yet, products identified by a given quality, reputation, or other characteristics essentially attributable to the geographical origin, can be registered as a collective or service mark under the Trademarks law (GoK, 2012b). There is growing public and private interest in establishing this form of product differentiation for food and non-food products (IPI & KIPI, 2009; Blakeney & Mengistie, 2012; Mwangi, 2012; Bagal et al., 2013). However, all existing unique potential GI products are already being exchanged in the market, complete with actors, institutions and structures, either as standard goods or unique goods. There is need to understand how the existing institutions and management structures

would enhance or inhibit protection of GI products, especially for agri-food products and also identify gaps that would be needed to efficiently and effectively facilitate the process (Galtier et al., 2013). The institutions also influence how rents will be created from a GI development process and how the forces of competition are likely to enhance or erode the rents sought (Kerr, 2006).

This study therefore sets to understand the institutional environment and resultant incentives that would likely affect implementation of GI protection for agri-food products in Kenya. Specifically, the paper identifies the policy and institutional incentives and conditions prevailing in four agri-product value chains namely goat, coffee, tea and mango. It specifically describes the market conditions and actors, and the existing legal frameworks governing each value chain that would also influence their protection with GI. The study builds on past studies that conclude that external pressures and lack of effective coordination among local stakeholders are some of the biggest threats to the process of developing the origin-based GI product cycles (see for example Vandecandelaere et al (2010)).

7.2.2 Theoretical and conceptual underpinnings

Assessing the institutional incentives that influence the evolution and development of geographical indications is based on institutional theory, which is founded on the tenet that institutions matter in accounting for social behaviour. Institutions, being the rules of the game, reduce uncertainty by providing structure to everyday life (North, 1990). North states that institutions, which can either be formal (statute law, common law, regulations) or informal, include any form of constraint that human beings devise to shape human interaction and the enforcement characteristics of the constraints. Formal institutions are embodied in constitutions,

laws, policies and regulations enforced by different arms of a government, bureaucracy, among others, and they provide frameworks to curtail impersonal contracts and rent-seeking behaviour by the private sector, politicians etc. Informal institutions are the conventions, norms of behaviour, self-imposed (*by a group or society*) codes of conduct, historical traditions etc. that are enforced by custom or habit (Behera & Engel, 2006; Ménard & Shirley, 2008).

Institutions and institutional structures and agreements are incentives that are capable of contributing to competitiveness by reducing transaction and information costs and improving collective action along the supply chain (Stein, 1995). They reduce uncertainty, and hence transaction costs along the supply chain, by setting up a stable (even though not necessarily efficient) human interaction structure (North, 1990). Use of the institutional analysis development (IAD) framework (Polski & Ostrom, 1999) (Figure 7.2-1) among other frameworks, has provided a systematic approach for analysing institutions and rules in a given situation and examining the underlying structure in diverse action situations of an institutional arrangement (Raheem, 2014).

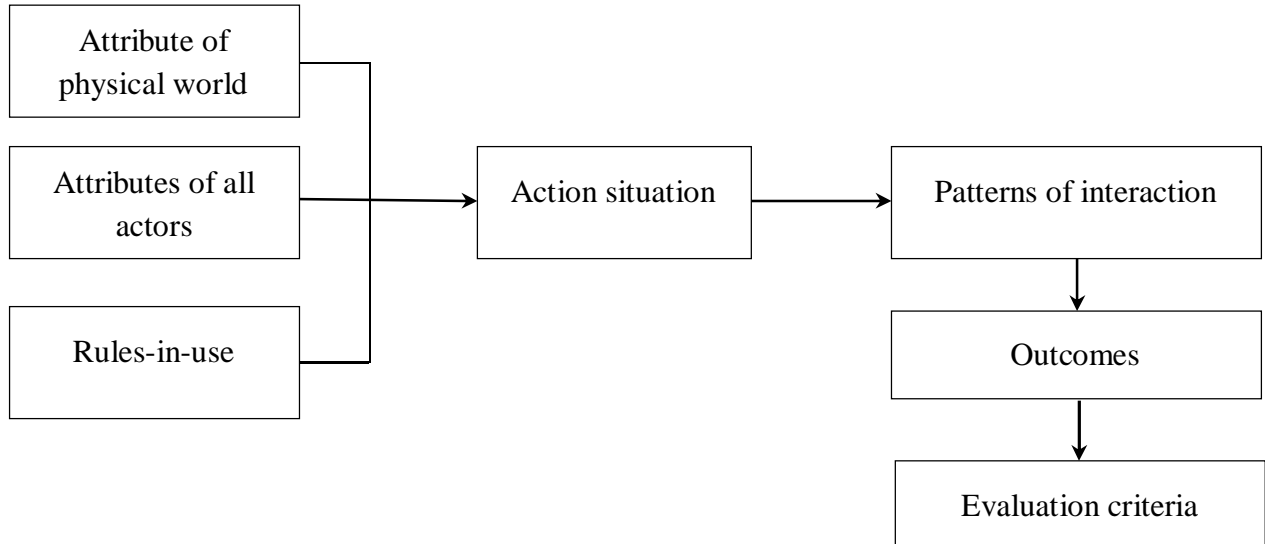


Figure 7.2-1: Institutional Analysis and Development (IAD) framework

Adapted from Ostrom et al (2006); Polski & Ostrom (1999);

The attributes of the physical world and the actors as well as the rules-in-use formed the basis for identification of potential GI products (*previous publication*). The action situation and patterns of interactions often form the background for assessing the policy and institution incentives likely to lead the outcome of having producers register their products with GI. To systematically address all other institutional attributes related to potential of registering products as GI, four key essential elements provided by Giovannucci et al (2009) were assessed. These include:

- i) Organisational and institutional structures in place – this refers to the (i) existing standards and rules; and the (ii) long term commitment of the local institutions and management structures in enhancing participation. For GI to be developed and maintained sustainably locally, the existing organisational and institutional structures should evolve guaranteeing participation and equity of all participants involved

- (Giovannucci et al., 2009). In the agri-food industry in Kenya, different formal and local arrangements exist for different products (GoK, 2010a).
- ii) Level of equitable participation – this assesses the participating community’s attributes, their beliefs and level of involvement in control and decision making. Equitable participation is here defined as the participating residents of a potential GI region sharing reasonably in not only costs and benefits but also in the control and decisions regarding their public assets (Giovannucci et al., 2009). Agri-food production in Kenya is conducted by both large and small scale growers, with small scale producers being the majority (GoK, 2010a).
 - iii) Strength of the market partners – Assesses the existing business relations and patterns of interaction along the supply chain and how would they contribute to effective market positioning and commercialisation of the protection. GI protection thrives in the presence of mutually beneficial business relations along the entire value chain that lead to long-term market presence
 - iv) Legal protection in place and its effectiveness – what are the modalities for effective monitoring and enforcing the GI legislation to reduce likelihood of fraud and free-riding? The legal protection system should help producer improve their income without jeopardising the product trade (EU, 2013).

Thus, the types of incentives of importance based on the four selected value chains are the ability of the existing structures in empowering producer participation in protecting and marketing their products with geographical indications.

7.2.3 Methodology

To determine the status of GI policy and institutional incentives present in Kenya, a qualitative research design was used. Thus qualitative data was gathered through literature review, key informant interviews and focus group discussions (Table 7.2-1). Identification of interviewees was made through snowballing. Starting at the Ministry of Agriculture and Irrigation, and to the respective commodity directorates, the respective regions were identified (Maina et al. 2018). Producer focus groups were constituted with the assistance of the local administration office, the County Agricultural extension staff and producer representatives. An equal representation of gender was sought in the focus group discussions. Traders were randomly identified in the respective commodity markets and butcheries (for goat meat), based on where the producers market their products. The total number of interviewees for each value chain differed based on the supply chain characteristics.

Table 7.2-1: Stakeholders interviewed on policy and institutional incentives for each product

Coffee	Tea	Goats	Mango	Cross cutting
<p>Focus group discussions (3)</p> <p><i>Individual farmers in Nyeri</i> (2)</p> <p>Large scale coffee producer in Nyeri (1)</p> <p><i>Coffee society managers</i> (5)</p> <p>Coffee millers (Sasini, Kofinaf)</p> <p><i>Nairobi Coffee Exchange</i> buyers</p> <p>Coffee collectives</p> <p><i>Coffee Research Institute</i></p> <p>Coffee directorate of AFA</p> <p><i>Nairobi Coffee Exchange</i></p> <p>Ministry of Agriculture</p>	<p>Two focus group discussions</p> <p><i>Kenya Tea Development Agency</i> factories (4)</p> <p>Tea Research Institute</p> <p><i>Extension staff</i></p> <p>KTDA head office</p>	<p>Focus group discussions (2)</p> <p><i>Individual goat keepers with cultural knowledge</i></p> <p>Kenya Meat Commission</p> <p>Butchers in Nakuru, Nairobi and Marigat</p> <p><i>State Dept of Livestock production</i> (National and County)</p> <p>Kimose Sheep and Goat Station</p> <p>University of Nairobi (Livestock Production)</p> <p>County dept of Trade</p> <p>Agricultural Sector Development Support Program (ASDSP)</p>	<p>Two focus group discussions</p> <p><i>Individual mango farmers</i> (Makueni, Machakos)</p> <p>Kongowea market</p> <p><i>Nairobi markets</i> (3)</p> <p>Green grocers in Nairobi</p> <p><i>Ministry of Agriculture</i> Horticultural Crops Directorate</p> <p><i>Agribusiness Development</i> (AGBD, Makueni)</p> <p>FPEAK, Makueni</p>	<p>Kenya Industrial Property Institute (KIPI)</p> <p><i>Kenya Bureau of Standards</i> (KeBS)</p> <p>Ministry of Agriculture and Irrigation</p> <p>University of Nairobi (<i>Food Science Dept</i>)</p>

7.2.4 Results and discussion

7.2.4.1 Organizational and institutional structures

The Agriculture and Food Authority (AFA) administers the Crops Act (GoK, 2013b), which covers all three crops of interest in this study (coffee, tea and mangoes). The Crops Act consolidates all statutes related to agricultural crop production in the country, hence reducing overlaps, and provides opportunity for more targeted development of local, national and international trade. The AFA (hereafter referred to as The Authority) *'promotes best practices in, and regulates, the production, processing, marketing, grading, storage, collection, transportation and warehousing of agricultural products'* under the Act. It builds capacity on conformity to international standards including traceability and labelling, under which geographical indications would benefit.

The Authority works in consultation with the national and county governments. The County governments are currently responsible for all agricultural and fisheries activities in the respective counties. The Ministry of Agriculture and Irrigation provides the guidelines and standards for agricultural extension and advisory services, managed by the county governments. County governments, established under the Constitution of Kenya (GoK, 2010c), are responsible for regulation, advocacy and facilitating the agricultural extension offices at the County level. If run efficiently, County governments would provide an opportunity for differentiation of County specific unique products as well as a system for legislation of products whose unique geographical region spans beyond the administrative boundaries.

The organisational and institutional structures are further discussed for each of the four identified products:

7.2.4.1.1 Coffee

Small scale coffee producers are organised as coffee cooperatives comprising several factories, managed under the Cooperative Societies Act Cap 490 (Revised 2012) (GoK, 2012a). The Coffee General Regulations (2018) (GoK, 2018a) provide the formal rules that regulate production, processing and marketing of Coffee. This includes formation of coffee association, coffee branding and certification, registration in coffee cooperatives and organisation in factories among others. The Coffee Directorate of the Agricultural and Food Authority (AFA) regulates trade related to specialty coffee and is also the custodian of the Coffee Kenya Mark of Origin certification mark. The certification mark provides the codes of practice that would be instrumental in protection of coffee with geographical indications. According to the rules that govern the industry, coffee from small scale producers can only be wet-milled at the factory while dry milling and marketing are done by other actors along the value chain (Bagal et al., 2013). This predisposes the producers to exploitation by the actors along the chain, more so since coordination at the supply end is often poor and marred by inefficiencies.

In marketing, the Nairobi Coffee Exchange (NCE) Rules (2018) (developed under the Capital Markets Act) govern the auction of coffee (GoK, 2018b). The NCE Board of directors comprises of representatives from the entire Coffee value chain and respective ministries. NCE is in charge of receiving registration fees payable by millers, traders and roasters and provides for the distribution of buying price along the value chain, with the largest proportion going to the producers. However, as alluded to by farmers, during the focus group discussions, the deductions made on the farmers income at factory level, as well as high management costs and low

prevailing prices occasioned by low quality coffee in many factories, has resulted in very little of the income getting to the farmers.

The Kenya Coffee Traders Association (KCTA) is an umbrella body for industry stakeholders involved in milling and marketing coffee. It comprises coffee equipment suppliers, millers, coffee marketing agents, warehousemen, dealers and roasters. Working in collaboration with the Kenya Coffee Producers Association (KCPA), these two associations provide an important channel for advocacy of marketing options like use of geographical indications.

Although guided by formal rules provided by the Coffee Directorate and Cooperatives Act, the election process is still a product of informal relations and lobbying efforts of the most influential within the coffee growing region. Informal rules mainly guide decision making among producers in terms of who is elected into management of the factories and societies. Lots of lobbying goes into the election process. Consequently each coffee factory and Society performance is to a great extent influenced by the management in place, in addition to the market prices. The long chain of actors who handle coffee from the farm to the auction could serve as a disincentive in coffee marketing generally.

7.2.4.1.2 Tea

The Tea industry regulations, which are still in draft form, provide for guidelines and coordination within the industry relating to production, processing and marketing. All small scale tea producers must be registered with one of the factories under the Kenya Tea Development Agency (KTDA), based on the farm location. The KTDA is registered under the Companies Act (2015) as a private tea management agency that manages production, processing and marketing

of small scale tea. Unlike in the coffee value chain, each tea factory under KTDA is responsible for marketing the tea they produce at the auction, thus providing an opportunity for differentiating the teas based on region of production. The factories are hence more in control of the quality they provide to the buyer. The teas fetch different prices based on the consumer preference and quality of final cup. AFA through the Tea Directorate regulates the industry including selling of specialty tea, and is the custodian of the Kenya Tea Certification Mark. In addition, KTDA together with the Tea Directorate have been involved in establishing the origin-link in tea production from the different catchments.

Informal rules in tea industry also dictate the election process when identifying the buying centre officials as well as the farmers who represent the producers at the respective factory management committees. According to the focus group discussion with tea farmers, this is mainly through lobbying and the influence of individuals in community.

The short supply chain that is characteristic of small-scale tea production is an incentive towards development and management of geographical indications in target regions. That KTDA and the Tea Directorate acknowledge the uniqueness of tea based on geographical region characteristics and are already working towards identifying these characteristics, is an added incentive towards success of Mt. Kenya tea as a geographical indication.

7.2.4.1.3 Mangoes

The Horticultural Crops Directorate (HCD) of AFA promotes, develops and coordinates horticultural production and marketing in the country. HCD conducts farm inspection to ensure compliance to good agricultural practices and issues a certificate for export to the producers. The

inspection provides an entry point for geographical indications, where producers in a specific region are able to register their codes of practice that differentiate their unique products and the HCD certification assures consumers of the quality of the product. A gap exists in enforcement of the rules for horticultural products designated for the local/national market.

At the local level, various government and non-governmental organisations have facilitated producers in the formation of associations related to production and marketing of horticultural products, including mangoes. The production groups have in the past been more successful than the marketing groups, leaving producers vulnerable to exploitation by middlemen. However, the establishment of a mango processing factory in Makueni County, the largest producer of apple mangoes in the country, provides an opportunity for collective action in marketing.

Since mango production and marketing are usually organised at individual farmer level, the role of informal rules is more evident in the sub-sector. Informal rules influence the leaders selected for the different production and marketing groups established and how they relate with buyers and middlemen. The middlemen serve as conduits between the buyer (investor) and the producers. One challenge that has in the past influenced mango prices especially in the local market is the high perishability of the product and the short marketing season (usually between November/December and March). In the absence of a processing factory, mango marketing was characterised by high perishability, and despite efforts to establish minimum prices, traders were able to negotiate much lower prices with farmers whose fruits risked rotting on the farm.

Incentives in the mango value chain therefore include the involvement of the County government in processing and marketing aspects. The region has advantage of having naturally sweet

mangoes. The county is able to spearhead the discussion with other counties in lower Eastern region on enacting legislation for protection of the unique mangoes.

7.2.4.1.4 Goat production

Livestock production is governed and regulated under the State Department for Livestock, within the Ministry of Agriculture and Irrigation in collaboration with the County governments. The National Livestock Policy revised in 2014 was developed to facilitate enhanced and sustainable growth of the livestock sector, including more intentional activities covering the sheep and goats sub-sector (GOK, 2014). The Policy provides guidance to both National and County governments on all aspects relating to livestock, including the organisations and actors mandated with various activities in the sector. The policy document however points out major weaknesses in the legal and institutional framework on livestock in the country, as well as lack of effective coordination among the various actors in regulation, research, the private sector, etc., thus calling for a livestock development law.

Formal and informal rules are prevalent in goat production in Baringo County. Producer groups do not exist among the goat keepers according to the two focus group discussions held. However, per kilogram prices are set collectively, together with the extension staff, and these prices then guide how each individual sells their goats to the buyers. An individual producer is not able to increase prices; but the traders are able to negotiate lower prices, especially when the producers are selling their goats to meet an urgent financial need. No rules exist restricting free riding on the reputation of the goat meat quality, and most of the goats are sold live. In this case, the producers in the region cannot establish whether the goats are finally sold as Baringo goats, and neither can the consumers be assured that all the goats sold live are from the specific

production region indicated due to problems of moral hazard and free-riding. As an informal rule, unique ear notching identifies the goats belonging to specific clans, especially since the goats feed under free-range conditions. Informal rules are governed by producers through cultural beliefs that act as a source of security, while formal rules are maintained in collaboration with the County livestock extension office, and the administration office together with the community security committee.

The informal and formal rules in place are an incentive towards potential GI protection of the goat meat. The annual auction and the price setting system in the county also provide opportunity to pursue protection of the Baringo goat with geographical indications.

7.2.4.1.5 Cross cutting organisational and institutional structures

The formal institutions related to the four products considered in this study are all governed by the Ministry of Agriculture and Irrigation. Although the ministry has undergone various changes over time in its organisation and mandate, the current structure provides an opportunity for the ease of implementing regulations that would enhance protection and marketing of unique origin-based agri-food products as geographical indications.

The Ministry of Industry, Trade and Cooperatives governs trade, and is also the parent ministry to state corporations involved in establishing and enforcing standards and marketing of Kenyan products abroad. The Kenya Industrial Property Institute (KIPI) provides all industrial property regulations, while the Kenya Bureau of Standards (KeBS) provides and enforces standards for various consumer products. Brand Kenya Board builds, and rallies the citizens behind, the country's image and national identity. The Export Promotion Council is the country's focal point

for export development and promotion. The Kenya Accreditation Service (KENAS) carries out accreditation based on regional directives, relevant statutes and government regulations, environmental protection, health and safety requirements, among others. The ministry is also responsible for the implementation of the Competition Act of Kenya, which provides for protection of interests acquired through trademarks, copyrights, etc. (GoK, 2010b).

As various studies point out, the formal and informal institutions influence the ability to register, maintain, market and monitor a GI at the local level (Giovannucci et al., 2009; Vandecandelaere et al., 2010). The effectiveness in enforcing the formal and informal rules will greatly affect the success and long term cooperation of agri-food GI producers. Having all agri-food sub-sectors governed under one ministry provides for an opportunity to coordinate rules and regulations. It also provides an avenue for the linkages with other relevant legal arms required for GI registration as will be discussed in subsection 3.4. The Ministry of Industry, Trade and Cooperatives also provides a wide umbrella for regulation and enforcement of GI related policies and frameworks.

7.2.4.2 Equitable participation

In the four value chains identified, large scale producers have the advantage of economies of scale and small scale producers are often not able to compete individually with them due to volumes. Participation even within the same sub-sector is different as the medium and large scale producers are more sophisticated in their operations, able to process, export, leverage on technology, and access credit and training opportunities, better than the small scale producers. The small scale producers, on the other hand, are more flexible and can easily adapt to new initiatives faster. Collectively, output from small scale producers is much higher than that from

the large scale producers. For example, small scale tea production accounts for 50% of all agri-food production volumes and small scale producers generally account for 70% of all marketed agricultural produce. However, they also tend to over-exploit the environment due to the size of their operations (GoK, 2010a).

Due to the individual small quantities, small scale producers, unless engaged in collective action in both production and marketing, lack individual bargaining power in the respective industries. In tea and coffee production, the factories and cooperatives provide a forum for collective action, but mainly of an entrepreneurship form of capitalism characterised by principal/agent relationship between the factory managers and the producers (Reviron et al., 2009), provided for by the formal rules under the AFA. The producers are required to deliver the tea leaves to the buying centres, where the factories organise for collection and are responsible for processing and marketing. They get monthly payments to cater for labour costs but have to wait until the end of the year for the rest of the payment. Coffee producers deliver the cherry beans to the respective factories, which then do wet processing and deliver to millers and marketers for the dry processing and marketing. The producers wait until the products are sold before receiving the actual payment for the products, which in the case of coffee, can take months based on the Society. This is in a way responsible for the respective informal institutions described earlier and loss of individual decision-making power. Towards a geographical indication protection, a more collective and controlled trust between partners would enable the producers (especially the small scale) to benefit from economies of scale that come with factory management, without necessarily losing their individual decision-making power (Reviron & Chappuis, 2011).

However, due to the limited capacity to leverage on technology and improvements in agricultural sector, small scale producers are more likely to adapt to protection of unique products as geographical indications, if they perceive potential for economic and non-economic benefits. They are more likely to preserve cultural traditions related to agricultural production compared to large scale producers. Large scale producers, especially those involved in the export trade, are more likely to be run as companies, and some listed on the stock exchange and registered as trademarks. Therefore where production of a unique origin product is done by both small and large scale producers, geographical indications may face the challenge of balancing the two levels of operation. In coffee and tea production, for example, one of the contributors to the quality of the products is the fact that the coffee berries and tea leaves are hand-harvested. This allows the pickers to selectively harvest the berries and leaves at the right stage. With increased mechanisation of tea harvesting among large scale producers, brought about by the high labour cost of manual picking, this aspect of quality is compromised. However, ultimately, the participation power of the small scale producers is governed by the factory (and society for coffee) management.

Among the mango producers, large scale producers are better able to market their produce through short-term contracts with buyers. The perennial nature of the mango trees also makes it difficult for the producers to quickly change from mango production. It takes at least eighteen (18) months before the producers can get the first harvest, and then about two years before production can reach its peak so that the producers can reap from their investment. Where the individual producer adheres to the good management practices prescribed by the Horticultural Directorate, they are able to benefit even more from the (limited) opportunities existing in the export market as well as the high end grocery stores in urban areas. However, due to low

production volumes and capacity, the small scale producers are only able to access these markets through middle men or other investors in the sub-sector. Their bargaining power is also low.

During the study period, the mango export market came early in the season (Late August to November) and mainly benefited the producers who practiced irrigation. Average prices of up to KES.60 per fruit (USD.0.6) were received for the export quality mangoes, especially in Kibwezi sub-county. However, this window of opportunity to export the mangoes is very limited. According to the Makueni FPEAK representative at Kibwezi and the County Monitoring and evaluation officer, it takes a month to transport mangoes to United Arab Emirates by sea, as mangoes are too bulky to be transported by air. By the end of the month, the mangoes from other nearer countries and from the UAE are already being harvested, hence closing the export opportunity for mangoes from East Africa. Therefore, most of the mangoes are sold in the Kenya local and national market.

With a mean of 240 trees (ranging from 10 to 1125 trees) most of the producers sold their fruits to traders, who bulked and transported them to urban centres. Collective marketing, though desired by the producers, was not followed strictly thus resulting in low prices. On the other hand, the producers were also not able to access the urban markets due to barriers to entry.

In Baringo County, goat production is more of a cultural activity with economic benefits. Each individual keeps their own goats, as a sign of prestige. They are sold when one has a financial need. Each goat keeper is hence able to participate in production and marketing of the goats, based on the guiding price collectively agreed upon. Decision making is done by community committees together with the local administrative office and the State department of livestock

production. Through informal rules, the more influential members of the public tend to participate more in decision making processes.

Although the previous section showed strong government participation in the production process for the four products considered, equitable participation of the producers is not always guaranteed, and especially for small scale producers. Due to their scale of operation, small scale producers are more likely to replace the current production if the returns in the long run are not attractive. This has been evident in the cutting down of coffee and tea bushes in regions where prevailing prices have been low over a period of time. In mango production regions, the trees serve as agro-forestry trees as well and where prices are low over time, producers tend to respond more by neglecting some management practices, including pest and disease control, as opposed to cutting down the trees. For goat production, where producers keep the goats for cultural prestige, changing the enterprise is not easy. It is more embedded in culture than in the economic returns.

The participation of the small scale producers in the same space as the large scale dominant producers is an incentive to develop strategies that hone in on their strengths, including the ability to provide an individual touch to the produce (Mancini, 2013). The incentive would involve targeting consumer demand of quality linked to region of production.

7.2.4.3 Strength of market partners

The marketing strategies and segmentation that producers would engage in for protection with geographical indications are not different from those of other products in the market. Potential GI products develop reputation as they exist in markets complete with different actors who

comprise the supply chain (Mancini, 2013). Agricultural and food markets are characterised by asymmetries in information and market power, as discussed as early as 1983 (Perloff & Rauser, 1983; Saitone & Sexton, 2010). Some of the influential partners in some agricultural markets may not be directly involved in the production or distribution of the products; they may be local or non-local, individual or collective in nature. Their outcome of this influence on producer participation may be manipulative (not preferred), instrumental or empowering (most preferred) (Jones et al., 2014).

In the small-scale agro-food industry in Kenya, the producers form the majority of actors along the value chain. However, since they are often not involved in collective action, they tend to have the least 'power' in influencing the market prices, manipulated by most market players.

Among export beverage crops, producers' collective action is provided for by the industry rules. A producer can only deliver their coffee or tea to the specific factory where they are registered, in a principal-agent kind of arrangement. The producers' input often ends at production and delivery to the factory, beyond which the factory manages the processing and decisions on marketing of the resulting product. The producers' importance in determining the quality of the final product (based on the delivery to the factory) is therefore high. However, their influence in the process of determining prices and is low.

According to the Agricultural Sector Development Strategy (2010-2020), the livestock sub-sector, especially in the rangelands, is characterised by unsustainable practices as well as overstocking. In Baringo County, the producers mainly sell their goats live, and hence have little or no knowledge on the final market destination of their produce. With few privately owned abattoirs, and none communally owned, traceability of the goat meat produce beyond the local

market is not easy. The buyers have an upper hand in negotiating for the goat prices, as well as in determining the final market destination based on prevailing prices. The extension services had high influence in providing regulation of the goat industry (pricing, disease control, livestock movement e.t.c.). The community security and the buyers have higher influence in the market. The buyers and the producers are all important in determining the quality of the product delivered to the market. The buyers are capable of combining goats from different regions and selling them as though from one region. The extension officers are responsible for ensuring formal rules on goat production are adhered to. They are able to influence producers to some extent to change breeds to improved breeds, and hence they are important in maintaining GI markets for goats.

For the four agricultural and livestock products discussed above, the actors beyond producers in the supply chain have an upper hand in terms of the decision making and price setting. They are more knowledgeable on where demand for the products is and the various market outlets. Considering their level of influence, eliminating them from the supply chain would not be beneficial for the producers, but at the same time, their current strength would jeopardise producers' efforts towards protecting their products as geographical indications.

According to Oana et al (2011), GI with shorter supply chains and relatively low added value tend to capture higher price premium on average compared with those with existing alternative means of branding. In the case of the four sampled products, a GI registration for Goats and mangoes would be easier to establish compared to Coffee and Tea. However, the lack of structure and active producer participation in the goat and mango markets coupled by imperfect competition leaves the producers vulnerable to the market side participants.

Another challenge to producer participation in the marketing chain arose due to the fact that most investors (wholesalers, supermarkets) preferred to deal with the brokers/middlemen as opposed to producers. This is because the middlemen are better able to aggregate products, especially mangoes from different sources, hence ensuring continuous supply during the months of low production in one region. The same notion affected the goat market, with most traders in Nairobi preferring to purchase goats from other regions when prices for Baringo goats were higher. This influenced the low prices that buyers bargained for with the Baringo goat producers in order to access the markets, especially when the producers were in financial crisis.

7.2.4.4 Effective legal protection

The TRIPS Agreement on Geographical Indications does not dictate how a member country approaches GI protection. This is left to the discretion of the member country. The European Union, which also has the largest number of protected products, has a *sui generis* GI protection complete with a multilateral register found online as the DOOR Database (European Union, 2016). Other countries like the United States of America and South Africa provide protection under existing intellectual property frameworks like Trade Marks (Bramley et al., 2009). Protection has to first be recognized nationally before venturing internationally, where some countries have applied (*e.g. Argane oil from Morocco*), with some already registered (*e.g. Darjeeling tea from India and Café de Colombia*), for protection under the EU DOOR Database.

The legal protection that the country chooses should enable producers benefit from the protection based on the existing organisation and institutions arrangements, equitable participation and the power distribution of the market partners (Barjolle & Sylvander, 2002).

Currently in Kenya, GI protection is achieved through the Trade Mark Act, Cap 506 revised in 2012. Under Collective Trademarks 40A (5), the Act says, “*Geographical names or other indications of geographical origin may be registered as collective trade marks or service marks*” (GoK, 2012b). A trademark in this case is just a unique sign that a firm uses to identify itself and its products or services to consumers. The downside of protecting GI under the current trademarks Act is that trademarks do not exclusively refer to geographical origin names and neither do they protect against use of geographical names that are unrelated to the product’s region of origin (Vandecandelaere et al., 2010). This is therefore quite minimalist, as is the TRIPS definition of GI, and the protection does not provide for any provision beyond the recognition and protection of the origin products.

In the light of this, the Kenya Industrial Property Institute (KIPI) has facilitated several stakeholder interactions to draw the drafting instructions towards a Geographical Indications Bill. This would provide for a more prescriptive approach to GI as a quality standard that would not only provide information to consumers and economic benefits to the producers, but also social and biodiversity impacts in the region of production (Thevénod-Mottet, 2010).

Careful consideration is required to ensure that the system of GI protection factors in the periodic monitoring, updating and enforcement, and/or resolution of arising conflict in all relevant markets (Giovannucci et al., 2009). Therefore, having the legal protection in itself is important but not an end. The legal protection should spell out the important generic institutional structures and conditions that each industry would require for successful and effective protection. It should also ensure broad and equitable distribution of any GI value among all participating stakeholders, not limited to the producers alone.

In Kenya currently, the use of a place name as a trademark is allowed, without necessarily having any geographical links between the product and the trademark name, e.g. the term Koriema meat or Koriema goats has been used as a trademark by butcheries, whether they source their meat from Baringo or not. Use of such names, without the required link, can be misleading to consumers. Formal rules and policies governing GI registration would provide guidance on how to deal with such names. The rules (both formal and informal) would also provide for how to deal with imitators, usurpers and free-riders, both within and outside the territory, who are bound to misuse the GI protection, thereby endangering the reputation (Vandecandelaere et al., 2010). Considering that there is evidence of usurping, imitation and free-riding in the Kenyan market, and there is little monitoring of products in local market to ascertain the origin, a *sui generis* GI law and the policies are prerequisite tools for effective regulation.

7.2.5 Conclusion

The existing organisational and institutional structures in each of the four agri-food sub-sectors considered provide both incentives and disincentives to GI protection benefiting the producers. The small holder producers identified for the study were mainly price takers. Although there existed some level of bargaining with the traders, due to the nature of the products presented to the markets and high perishability, producers did not have an upper hand in determining prices, yet they comprise the largest proportion of actors in each value chain. Their participation can therefore be said to vary from manipulative (coffee, mangoes) to instrumental (goats, tea and coffee to some extent).

The analysis implies that there is a key role to be played by the public sector in efforts towards protection of origin agri-food products as geographical indications. However, the role of the

public sector and state as currently structured is hampered by irregular implementation of policies within the different sub-sectors as well as insufficient coordination. Effective GI protection would require consistent monitoring and enforcing of rules and regulations, both formal and informal, across the sub-sectors. Lots of stakeholder sensitisation and collective action are required for there to be success in the implementation. Insufficient coordination and inequitable participation in the GI registration process could result in negative unintended outcomes as noted by (Saint Ville et al., 2017b, 2017a).

CHAPTER 8: SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

8.1 Summary

The thesis sought to determine, perceptions, economic value and institutional incentives that would accrue to producers from protection of origin agri-food products as potential geographical indications (GI). Explicitly, the study sought to (i) identify and characterise origin products with potential to be registered as geographical indications in Kenya; (ii) determine the producer awareness and perceptions of territorial qualities in origin products; (iii) estimate the producer economic value of origin products as potential GI; and (iv) describe the policy and institutional incentives influencing evolution and development of potential geographical indications.

Through a scoping study, the characterisation and scoring approach gave at least 11 products, from which the four highest-ranking were selected for the detailed study in the rest of the thesis. The selection criteria developed from several literature sources provided an avenue to evaluate agri-food and forest products as potential GI, in the absence of actual protection of geographical indications in the country. Baringo goats ranked highest, followed by Kirinyaga tea, Murang'a coffee and Makueni mangoes. All the four have reputation in the market as having unique *terroir*-based qualities with a link to environmental sustainability. Only Baringo goats had cultural linkages while collective action among producers varied. Baringo goats from a specific belt in the region are reputed to be naturally salty due to salt deposits and the herbs and shrubs they forage on. Kirinyaga tea and Muranga coffee attract premium prices in the international market due to their unique taste. However, the high prices do not always accrue to the producers. Makueni mangoes are also reputed to be sweeter and juicier than those from other regions outside lower Eastern.

Most producers and other key informants were not familiar with the term geographical indications. They were, however, aware of the concept of different quality of similar products based on region of protection. The respondents were also able to describe the unique characteristics inherent in the products as well as the likely geographical and human sources of the uniqueness. The perceptions summarised for each of the products re-emphasise the importance of having rules and policies related to protection of origin products. Having market prices and information, and the strength/involvement of producer organisations and private sector were important factors across the commodities value chains.

Geographical indications can be applied as intellectual property rights. They can be applied within the theory of collective action and reputation to bring producers in each sub-sector together towards presenting a 'homogenous' product to the export market. The differentiated export products have previously benefited the traders and not necessarily the producers. Collective action would hence help producers build and maintain the products' reputation in the market, and reap economic and non-economic benefits. In the two ASAL study sites, producer perceptions point to market prices and access as well as state policies as being important considerations for successful GI registration. Environmental sustainability was the most important factor among goat producers while the role of policies and rules contributed highest variance for the mango producers.

Products already on the export market attracted a high producer willingness to pay for protection with geographical indications. Specialty markets already exist for coffee and tea, and prices are differentiated based on place of origin. Minimum guaranteed returns (coffee and tea) and a regional level of GI protection (coffee) were the most considered attributes by coffee and tea

producers when making their choices. Goat and mango, the products produced in the ASAL regions, are mainly sold in the respective local markets for onward transportation to the urban markets where demand was higher. The attributes on receiving prices at the beginning of the season and having a country level GI protection contributed most to the choices made by the mango producers. Goat producers considered attributes related to selling to an abattoir and having contracts with buyers when making their choices. Whereas the mango producers' perceived annual cost of GI protection per household was much lower than that perceived by goat producers, their total willingness to pay was higher.

Analysing policy and institutional incentives identified gaps that would pose a challenge to GI registration in Kenya, by increasing the costs of setting up the structures as well as regulation and monitoring, as cautioned by Giovannucci et al (2009) and Josling (2006). The long term commitment to collective action has been on the increase and more evident in tea production than in the other three commodity markets. The power and influence of the private sector, especially in coffee and mango production, cannot be ignored, while lack of collective action especially in marketing of goats and mangoes has resulted in exploitation by traders. The public sector also plays a key role especially in providing formal regulations and rules in each of the four commodity sub-sectors. Enforcement, however, remains weak and hence a disincentive for GI protection.

Specifically, increasing producer participation in decision-making regarding pricing, as has been the case in tea production, would increase the sense of ownership and sustainability of the process. Strength of most producers in the market is low, with buyers and middlemen in the private sector being the major decision makers and influencers of the prices. Whereas there are

countries where GI protection has been achieved without support of the State, the prevailing conditions in Kenya may require active participation of and enforcement by the public sector in order to ensure that producers are not exploited and have greater influence in the marketing process. Collective action mechanisms in each of the four agri-food sub-sectors built on formal and informal rules are required for the actors to manage the local resources consistently while the State focuses on collective action aspects at the macro level.

8.2 Conclusions

The study showed that there are some products that have potential for geographical indications protection in Kenya. The four products used in the detailed study all exhibited unique *terroir*-based qualities based on the perceptions of the key informants and the producers. Each of the products had a positive willingness to pay, leading to the conclusion that producers would be willing to engage in protection of their products with geographical indications. However, the policy and institutional environment point to gaps that would serve as a disincentive to GI protection in Kenya.

The study has shown that GI is a possible product differentiation alternative in the study regions. Although there are several options that producers with unique products can use to access markets, geographical indications provide inclusion of all producers in the region, and hence can contribute to rural development. However, considering the heterogeneity that exists in the perceptions of the producers in the study regions, the problems of free-riding and moral hazard may arise. Since participation in GI protection is voluntary, and the characteristics that provide the uniqueness to the product give ‘semi-public’ rights within the production region, the *sui generis* law and subsequent policies need to provide guidance on what non-participating

producers can engage in and what they cannot. This can then be reinforced through the product specific codes of practice.

A major opportunity exists from the fact that all crops are governed by Directorates under the Agriculture and Food Authority of the Ministry of Agriculture and Irrigation. The Directorates can hence work together to provide sub-sector specific guidelines and enforcement as has been evident with other such standards. Analysis of institutional incentives around coffee and tea as potential GIs pointed to the opportunities that exist for each of the products since they all have reputation, specificity and typicity based on the region of production. However, the weak bargaining power of the producers in the supply chain and the fact that most of the buyers are international requires active State involvement for a successful GI protection, involving all actors and maintaining the relationships.

The study also concludes that GI protection, while important to the producers (shown by their significant willingness to pay), needs to operate within existing relationships along the supply chain. The relationships exist due to the different roles each actor plays, and therefore GI protection should enhance the beneficial relationships and cut-back on the detrimental ones, taking care not to ruin the supply chain for the producers.

The assessment concludes the importance of having an effectively enforced *sui generis* GI law in enhancing benefits that would accrue to rural populations, including social inclusion, economic benefits and environmental sustainability. Overall, the study findings indicate that there is potential for GI protection in the country. As a starting point, having rules and laws that would essentially provide codes of practice for each sub-sector is of importance before the GI bill is in

place. Collective action should be emphasised to the producers as those in the mango and goat sub-sector had not been successful especially in the marketing aspect.

8.3 Policy implications

The study points to a weakness in enforcement of policies and regulations with respect to agri-food production, and this influences producer perceptions and decision choices. Producers are willing to pay for GI protection in order to have price guarantees as well as collective action. However, from their perceptions, the role of state policies and rules is of importance, as is the inter-relations between various actors in the value chain, ranging from producer associations, private sector, governor's office, administration and extension offices. The various commodity directorates would benefit producers by working together to develop the guidelines and also support the process of having the draft GI bill enacted through advocacy activities. However, due to the collective nature of GIs, all activities should be done in a participatory process with the producers as much as possible, since also they are the custodians of the environment in which the unique products are produced.

8.4 Suggestions for further studies

This study focused on producer perceptions since it is producers who make long term investment toward providing quality products to other supply chain actors and eventually to the consumers. Having determined that there is potential for GI protection of agri-food products in Kenya, the study suggests two further detailed studies to follow:

- a) A detailed analysis of the actual link between the products and place of origin – this will require a multi-disciplinary team. This would also provide an indication of how much rent is likely to accrue to the country from GI protection.
- b) Consumer studies to determine their willingness to pay for geographical indications of Kenya agri-food products.

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APPENDICES

Appendix 1: Checklist for focus group discussion

The focus group discussions will comprise a small group of at least 6-12 producers of coffee and goat from Murang'a and Baringo counties, respectively.

Sub-County _____

Location _____

Sub-location _____

Date _____

A. Baringo Goats

- 1) How many households keep goats in this location? (Number or proportion)
- 2) How many engage in selling their live goats or goat products?
- 3) How is trade conducted? Individually or are there collectively set rules/guidelines?
- 4) Who are the main determinants of price in goat trade?
- 5) How easy is it for a producer to access the market and sell his goat produce?
- 6) Do you consider the goat meat from this region unique? In what ways are they unique?
- 7) What do you think is the source of the uniqueness?
- 8) Do the goats fetch the same market price/kg as goats from other regions? If no, what is the reason for the difference?
- 9) Are there any formal or informal rules that guide goat production in this region?
- 10) If yes, how is monitoring of the same done?
- 11) Are some producer groups or cooperatives already organized and active on quality attributes in production, processing or marketing?

- 12) If yes to (11), is their area of coverage within (or the same as) the area of the production of goats with the features described above?
- 13) Which typology of actors interacts with the goat producers? Are they private or public actors? What are their interests and needs? What help do they provide to the system?
- 14) Are you satisfied with the trading opportunities of the “unique” goat meat?
- 15) Suppose the goat meat from this region was all protected under a law to help reduce misuse of the regional name, what features would you like included in the protection?
- 16) Of the features mentioned above, which ones would you like to be made compulsory for all to adhere to?
- 17) Which ones would you want made optional?
- 18) Did you include the following:
- a. Market information support
 - b. Flexibility in implementing codes of practice
 - c. Cost of registering GI
 - d. Collective action
 - e. Monitoring of GI registration
 - f. Contractual arrangements
- 19) For each of the features, what are the possible levels that should be attached to each?
- 20) What would be the greatest challenge in enforcing such protection of the goat products from this region?
- 21) What are the major input costs for goat production? What are the other costs?

Thank you for your participation!

B. Murang'a Coffee

- 1) How many households in this sub-location observe good management practices on their coffee production?
- 2) Are there collectively set rules/guidelines on coffee production in the region?
- 3) If yes, how is the monitoring conducted
- 4) Where is the coffee sold once you deliver it to the factory?
- 5) Who are the main determinants of price in coffee trade?
- 6) How easy is it for a producer to access the market and sell his produce?
- 7) Do you consider the coffee from this region/county unique from other counties? Where do you draw the boundary?
- 8) What do you think is the source of the uniqueness?
- 9) Does the coffee from this sub-location fetch the same prices as that from other (a) sub-locations? (b) Counties?
- 10) What is the determining factor for the prices?
- 11) Are you satisfied with the trading opportunities of the “unique” coffee?
- 12) Are there any formal or informal rules that guide goat production in this region?
- 13) If yes, how is monitoring of the same done?
- 14) Which typology of actors interacts with the coffee producers? Are they private or public actors? What are their interests and needs? What help do they provide to the system?
- 15) Suppose the coffee from this region was protected under a law to help reduce misuse of the regional name, what features would you like included in the protection?

16) Of the features mentioned above, which would you like to be made compulsory for all to adhere to?

17) Which ones would you want made optional?

18) Did you include the following:

- a. Market information support
- b. Flexibility in implementing codes of practice
- c. Cost of registering GI
- d. Collective action
- e. Monitoring of GI registration
- f. Contractual arrangements

19) For each of the features, what are the possible levels that should be attached to each?

20) What would be the greatest challenge in enforcing such protection of the coffee as a product from this region?

21) What are the major input costs for coffee production? What are the other costs?

Thank you for your participation!

Appendix 2: Questionnaire for household survey

VALOR-UON HOUSEHOLD SURVEY QUESTIONNAIRE:

This survey will be conducted on sampled agricultural producers in coffee growing regions of Murang'a County between July and August 2015. The information will be used for academic research purposes.

SECTION A: Identifying variables

Date of survey (dd/mm/yyyy) ____/____/2015 Time Started _____ HHID _____

Enumerator (*Full Name*) _____

County _____ Sub-County _____

Ward _____ Location _____

Sub-location _____ Village _____

Respondents Name _____

(The respondent should be household head or the spouse)

GPS coordinates:

Longitude: _____ (1=North 2=South) (_____)

Latitude: _____ East (_____)

- 1.7. If yes, how much land do you rent in for coffee production? _____ acres AND _____ coffee bushes
- 1.8. How much do you pay for the land rented per acre per year? KES. _____/year
- 1.9. Including coffee, which are the priority **agricultural enterprises** (*both crop and livestock*) that you practice and what is the average income you receive from each of them in a normal year?

** Enumerator should ensure that coffee is captured for coffee growers. If coffee is among the first five, stop at five. Otherwise continue til you capture coffee*

Agricultural enterprises	Rank (start with most important)	Average gross income from agricultural enterprise in a normal year

SECTION C: Coffee production and territorial attributes

2. Coffee production

2.1. How many years have you practiced coffee farming? _____ years

2.2. What is the area under coffee production on your farm? _____ acres AND _____ coffee bushes

2.3. Which coffee varieties do you grow?

1= SL28 2=SL34 3=Ruiru 11 4=Batian 5=KSL27 6=Other (*specify*) _____

2.4. Is the coffee on your farm currently in production (*i.e. are you still harvesting*)?

0=No 1=Yes

2.5. If not, when was it last harvested? (*Year*) _____

2.6. Specify the inputs (type, quantity and price) you apply to your coffee farm in a normal production year

Inputs: <i>(excluding labour)</i>	Type	Total Quantity per year <i>(kg <u>OR</u> litres)</i>	Unit price <i>(per kg)</i>	Total cost	Major constraint to accessing the input (CODE B: below)
Inorganic fertilizer	1.				
	2.				
	3.				
Organic fertilizer	1.				
	2.				
	3.				
Pesticide	1.				
	2.				
	3.				
Herbicide	1.				
	2.				
	3.				
Foliar feed	1.				
	2.				
<i>Other (specify below)</i>					

<u>CODE B: (Code for constraints to input access)</u>	
1. No constraint	6. Lack of access to inputs at the right time (lateness)
2. High prices/Affordability	7. Ineffectiveness of inputs e.g. AI services
3. Unavailability of inputs	8. Adulteration of inputs
4. Distance to input market,	9. Lack of access of the desired brand/type of input
5. Lack of access of inputs in right packaging/dosage	

2.7. Do you work on your coffee farm with your family or you hire in labour?

1=Family labour 2=Hired casual labour 3=Hired permanent labour 4=Family labour and mainly hired casual

5=Family labour and mainly hired permanent labour

2.8. What are the average labour requirements and costs for coffee production in a normal production year?

Activity for which labour is required		Type of labour (1=family; 2= hired; 3=family and hired)	Number of labourers	Unit price (KES/person)	Total cost (KES)
Weeding	1.				
	2.				
	3.				

Activity for which labour is required		Type of labour (1= <i>family</i> ; 2= <i>hired</i> ; 3= <i>family and hired</i>)	Number of labourers	Unit price (KES/person)	Total cost (KES)
Pruning	1.				
	2.				
Harvesting	1.				
	2.				
Pesticide application	1.				
	2.				
	3.				
Inorganic fertilizer application	1.				
	2.				
	3.				
Organic fertilizer application	1.				
	2.				
	3.				

SECTION D: Producer awareness and perceptions

3. Producer awareness of territorial attributes in coffee

3.1. Are you aware that coffee grown in your region has unique characteristics that come from the geographical region (and not management efforts)? _____

0=No; (If no, move to Question 3.6) 1=Yes

3.2. If aware, what are some of the characteristics that you know of in the coffee and what (in your opinion) is the source of these characteristics?

Unique product characteristic (CODE C:)	Main source of the characteristic (CODE D:)
<p><u>CODE C:</u> <u>Characteristic</u> 1=Taste of final product 2=Colour of final product 3=Size of final product 4=Higher yield (production per tree) 5=Uniformity of the produce 6=Other (specify)</p>	<p><u>CODE D:</u> <u>Source of characteristic</u> 1=The soils 2=Rainfall patterns and quantity 3=Number of coffee harvesting seasons per year 4=Traditional processing method 5=The culture of the people 6=Other (<i>please specify</i>)</p>

3.3. In your knowledge, what is the boundary of geographical region that results in the coffee characteristic given above?

1=Location (*specify*) _____ 2=Sub-county (*specify*) _____ 3=County

4=Across counties (*give description of the area*) _____

5=Other (*please specify*) _____

3.4. How do the characteristics influence the market prices that the farmers (producers) receive for coffee? _____

0=No change (*proceed to Question 3.6*) 1=Better prices than other areas with different characteristics

2=Lower prices than other regions 3=Not aware (*proceed to Question 3.6*)

3.5. Approximately what is the difference (in KES.) between the price **normally** received and that which is received by producers in other areas with different characteristics?

KES. _____ more/less

3.6. Are you aware of protection of coffee as a geographical indication? (*Enumerator to explain the concept (paraphrased) as “a name which identifies a product originating in a specific place, region or country whose given quality, reputation or other characteristic is essentially attributable to its geographical origin*)

0=No 1=Yes

3.7. Do you think it is a good idea to have such a protection?

0=No 1=Yes

3.8. If yes, do you think it should be done?

0=No

1=Yes

3.9. Would you be interested to be part of such a process?

0=No

1=Yes

3.10. If yes, how do you think you would benefit?

1=Better market access

2=Higher prices per kg of coffee

3=Stable prices per kg

3.11. If yes, would you be willing to contribute to the protection of the coffee from this region protected as a GI by paying some money (*so that no one else can use the name of the region in selling their products*)?

0=No

1=Yes

3.12. If yes, how much would you be willing to pay (*contribute*) over and above your other coffee production costs?

KES. _____/year

3.13. Have you ever heard of coffee from other regions within the country that is marketed as though it originates from your region?

0=No

1=Yes

3.14. If yes, what are you (as a region) doing about it?

1=Nothing

2=Talking to county government

3=Efforts to label product

4=Collective marketing of the product

5=Other (*specify*) _____

3.15. Have you ever heard of other coffee that have the qualities of a geographical indication in Kenya

0=No

1=Yes

3.16. If yes, where? _____

4. Producer perceptions of territorial qualities found in their coffee as a potential GI

4.1. Please select the comment below that best describes your perception of the source of the uniqueness of coffee in your production area

Statement	Comment 1=Strongly disagree; 2=disagree; 3=undecided; 4=agree; 5=strongly agree
1. The soil characteristics in this region greatly contribute to the unique quality of the coffee produced	
2. The rainfall patterns in this region contribute greatly to the unique quality of the coffee produced	
3. The quality of coffee in this region is better because it is harvested once in a year (<i>upper Murang'a</i>)	
4. The quality of coffee in this region is better because it is harvested twice in a year (<i>lower Murang'a</i>)	
5. Coffee production has been practiced by ancestors and therefore it is a traditional crop in the area and therefore this contributes to the quality	
6. The micro-climate in this region (<i>ridges, mountains, forests etc.</i>) contributes to the unique quality of the coffee	

4.2. The uniqueness of the geographical region that influences the quality of my coffee is likely to diminish over time under current management practices

1=Strongly disagree; 2=Disagree; 3=Undecided; 4=Agree; 5=Strongly agree

4.3. How important are the following institutional aspects in ensuring sustainability of the protection?

Statement	Comment
	1=Not important at all; 2=Of little importance 3=Of average importance 4=Very important 5=Absolutely essential
1. Labelling of coffee as a GI for better marketing	
2. Support from administrative office (chiefs, sub-chiefs etc.)	
3. Support from governor's office	
4. Being a member of a producer association	
5. Having rules regarding quality throughout the value chain	
6. Increased extension services	
7. Increased support from the state policies to ensure compliance (strict regulation) and reduce misuse of GI name by others	
8. More participation of the private sector in coffee marketing	
9. Organisational structure – devolvement of more coffee decision making to the farmers	

4.4. Are there any cultural taboos and/or norms that are important in coffee production to ensure quality?

0=No

1=Yes

4.5. If yes, name two of them

4.6. Please select the comments below that best describe your perceptions of the likely benefits of protection of coffee in your region as a geographical indication

4.6.1. Protection will result in higher selling price per kg

1=Strongly disagree; 2=disagree; 3=undecided; 4=agree; 5=strongly agree

4.6.2. Protection will result in better access to market by having our coffee sold quickly

1=Strongly disagree; 2=disagree; 3=undecided; 4=agree; 5=strongly agree

4.7. Do you think producers (farmers) would benefit (*monetary value*) most from protection of coffee as a geographical indication compared to other actors in the value chain (*Enumerator to explain what a value chain is; from agro-dealers to consumers*)

0=No

1=Yes

4.8. If no, who do you think would benefit most?

1=Agro-dealers

2=The coffee factory/society

3=The dry miller

4=The marketer

5=The buyer

6=Consumers

5. Give your perceptions on the actors involved in the coffee value chain

5.1. Who are the government main actors in the coffee value chain?

Government actors	Would they support farmers in GI coffee (CODE E:)	What would the support entail (CODE F:)	Effect of the support (CODE G:)	Would you establish contracts with them? (CODE H:)
1=Coffee directorate				
2=Coffee Research Institute				
3=Ministry of Industrialisation and enterprise development (cooperatives directorate)				
4=County government				
5=State department of agriculture				
6=Kenya bureau of standards				
7=Pest control and produce board				
	<u>CODE E:</u>	<u>CODE F:</u>	<u>CODE G:</u>	<u>CODE H:</u>

Government actors	Would they support farmers in GI coffee (CODE E:)	What would the support entail (CODE F:)	Effect of the support (CODE G:)	Would you establish contracts with them? (CODE H:)
	0=No 1=Yes	1=Ensuring compliance 2=Audit of process 3=Financial assistance 4=Technical assistance 5=Better infrastructure	1=Increased compliance 2=Producer confidence hence increased production 3=Better market access 4=Better producer prices	0=No 1=Yes

5.2. Who are the main non-government actors (NGO) in the coffee value chain and what would be the effect of their support

NGO actors	Would they support farmers in GI coffee (CODE I:)	What would the support entail (CODE J:)	Effect of the support (CODE K:)	Would you establish contracts with them? (CODE L:)
1=Kenya National Farmers Federation				
2=Technoserve				
	CODE I: 0=No 1=Yes	CODE J: 1=Ensuring compliance 2=Audit of process	CODE K: 1=Increased compliance 2=Producer confidence	CODE L: 0=No 1=Yes

NGO actors	Would they support farmers in GI coffee (CODE I:)	What would the support entail (CODE J:)	Effect of the support (CODE K:)	Would you establish contracts with them? (CODE L:)
		3=Financial assistance 4=Technical assistance 5=Better infrastructure	hence increased production 3=Better market access 4=Better producer prices	

5.3. Who are the main private sector actors in the coffee value chain and how would their influence contribute to the potential protection of coffee as a geographical indication?

Private sector actors	Would they support farmers in GI coffee (CODE M:)	What would the support entail (CODE N:)	Effect of the support (CODE O:)	Would you establish contracts with them? (CODE P:)
1=Coffee factory				
2=Coffee Society				
3=Coffee millers				
4=Coffee marketers				
5=Agro-dealers				
6=Certification bodies (e.g. UTZ, Rainforest alliance etc.)				

Private sector actors	Would they support farmers in GI coffee (CODE M:)	What would the support entail (CODE N:)	Effect of the support (CODE O:)	Would you establish contracts with them? (CODE P:)
7=				
8=				
9=				
	<u>CODE M:</u> 0=No 1=Yes	<u>CODE N:</u> 1=Ensuring compliance 2=Audit of process 3=Financial assistance 4=Technical assistance 5=	<u>CODE O:</u> 1=Increased compliance 2=Producer confidence hence increased production 3=Better market access 4=Better producer prices	<u>CODE P:</u> 0=No 1=Yes

SECTION E: Collective action and access to services, infrastructure and information

6. Access to services and infrastructure

6.1. Provide the following details regarding access to services and infrastructure

	Service/Infrastructure	Name/Where	Distance from home (km)	Main Mode of access (see CODE Q: below)
1	Nearest sub-county town		[____]	[____]
2	Main agricultural input market accessed		[____]	[____]
3	Main agricultural output market accessed		[____]	[____]
4	Coffee input market		[____]	[____]
5	Source of coffee seedlings		[____]	[____]
6	Coffee processing factory		[____]	[____]
7	Main source of piped water for household use		[____]	[____]
8	Main source of non-piped water for household use		[____]	[____]
9	Main source of water for agricultural use			

	Service/Infrastructure	Name/Where	Distance from home (km)	Main Mode of access (see CODE Q: below)
10	All weather road		[____]	[____]
11	Agricultural extension services		[____]	[____]
12	Coffee extension services		[____]	[____]
13	Agricultural credit		[____]	[____]
				<u>CODE Q:</u> 1=Walking 2=Public transport 3=Bicycle 4=Motorcycle 5=Personal transport 6=Other (<i>specify</i>) _____

7. Coffee marketing

7.1. What prices did you receive for the coffee you delivered over the last three years?

Year	Quantity of cherry sold (kg)	Price per kg of cherry sold (KES.)	Quantity of mbuni sold (kg)	Price per kg of mbuni sold (KES)
2014				
2013				
2012				

7.2. In what form is coffee **mainly** sold from your farm? _____

1=Dried (Mbuni), 2=Fresh (Cherry), 3=Semi-processed (specify) 4=Other (*please specify*)

7.3. If you want to increase the value of your coffee from the current, in which form would you sell it?

1=Dried (Mbuni), 2=Fresh (Cherry), 3=Semi-processed (specify)

7.4. By how much is the value likely to increase per kg of coffee sold? KES _____/kg

7.5. Who sets the price that you receive as a producer?

1=Coffee factory/society 2=Coffee dry miller 3=Coffee auction 4=Coffee Directorate (*former coffee board*)

5=Not aware 6=Other (*please specify*) _____

7.6. Do you have any influence on the price you receive per kg?

0=No 1=Yes

7.7. If yes, what influence?

1=Hoard until prices are better 2=Give a minimum price accepted 3=

7.8. Does quality of the coffee influence the price you receive per kg?

0=No 1=Yes

7.9. Explain your response above (*whether yes or no*)

1=Higher grades of coffee fetch better prices 2=Some regions fetch higher coffee prices irrespective of quality

3=The buyers dictate the final product price 4=The sellers (farmers) set the minimum price they prefer for their coffee

7.10. Does the region where coffee is produced influence the price you receive per kg?

0=No

1=Yes

7.11. Do you know who the end users of the coffee are?

0=No

1=Yes

7.12. Who are they and where are they from?

7.13. Are you usually aware of the prices the end-users offer for your coffee?

0=No

1=Yes

7.14. If yes, is this the price that is desirable or is it different?

1=The desired price

2=It's higher than desired

3=Lower than desired

7.15. How much was the price per kg in 2014?

1=The desired price

2=It's higher than desired

3=Lower than desired

8. Membership in producer association or group

8.1. Are you a member of any association or group?

0=No

1=Yes

8.2. If yes, in how many groups are you a member? 7.2.1 Formal groups _____ 7.2.2. Informal groups _____

8.3. Are any of the groups related to coffee?

0=No (*Move to 8.5*)

1=Yes

8.4. If yes, provide the following information for coffee-related groups you are a member of:

Name of group	In which year was the group formed	Is the group registered CODE R:	What services are given (CODE S:)	Is the fee paid monthly or annually (CODE T:)	What amount is the fee (KES)	Who established the group/assoc
		CODE R: 0=No 1=Yes	CODE S: 1=Production information 2=Marketing information 3=Loan for input access 4=Marketing services	CODE T: 1=Monthly 2=Annually		Specify whether farmers or other organisation

8.5. If not a member of any coffee-related group, what are the reasons? (*is this relevant*)

1=there are no producer groups in the region

2= Not interested in groups 3=No perceived benefits

4=Other reason (*please specify*)

9.5. Is the information sufficient to enable you make your production decisions relating to coffee in any given year?

0=No 1=Yes

10. Access to extension services

10.1. Do you receive any agricultural extension services?

0=No 1=Yes

10.2. If yes, how many times in a year? _____

10.3. If extension services were received, did it include coffee extension services?

0=No 1=Yes

10.4. How many times do you receive the coffee services in a normal year? _____

10.5. Who is your main provider of the coffee extension services in a normal year?

1= Government officer_____ 2= From Cooperative
3=Private provider e.g., Non-Government Organizations, private companies or individuals_____

10.6. What extension services do you receive?

1=Agronomic (Production and harvesting) 2=Value addition 3=Marketing 4=Health and Safety

10.7. On average, how many times does the extension service provider visit your farm in a normal year?

_____times/year

10.8. How many times did you visit the extension service provider's office in a normal year? _____times/year

10.9. What are your **other** sources of information for coffee production?

1=Radio/Television _____

2=Newspaper _____

3=Internet _____

5=Traders _____

6=Mobile phone service

7=Other (please specify) _____

11. Use of credit

11.1. Did you use agricultural credit in the last 3 years

0=No

1=Yes

11.2. If credit was used, did it include credit for coffee production and marketing purposes?

0=No (*go to question 11.8*)

1=Yes

11.3. If yes, what were the sources of credit?

1=Bank 2=Micro-finance institution 3=Farmer cooperative/association (*Specify*) _____

4=Other (non-farmer) cooperative 5=Farmer group (Table banking)

6=Other (*please specify*) _____

11.4. What type of credit did you receive?

1=Inputs (to be recovered at selling) 2=Emergency loan for non-coffee related activities

3=Cash to purchase coffee-related inputs 4=Other (*please specify*) _____

11.5. Was the credit sufficient for the purpose you got it?

0=No

1=Yes

11.6. Were there any challenges associated with using and/or repaying the credit?

0=No

1=Yes

11.7. If yes, what were the challenges?

1=Insufficient

2=Other urgent needs arose

3=High interest rate

4=Other (*please specify*)_____

11.8. If you have not use credit, what are the reasons?

1=Does not have collateral

2=Does not have need for credit

3=No place to access credit

4=Not completed repaying previous loan

SECTION F: The Choice Experiments

12. The enumerator should explain this section to the respondent before asking the questions)

Suppose the Coffee from this region is to be protected under a bill that ensures that coffee from other geographical regions are not sold as though they are from this region, in order to protect the quality attributes. The protection would be an initiative of the coffee farmers and societies in the region with the support of the Coffee directorate. Application of the GI protection would require that the certain regulations be applied and a fee be paid to ensure the protection. Several maintenance of protection will be presented at varying costs.

12.1. How important would these features be if the Coffee in your area were to be protected?

Feature/Characteristic	Brief explanation	Relative importance (<i>tick where appropriate</i>)		
		1=Not important	2=Somewhat important	3=Very important
Receive expected coffee price information before production	<i>The time that they get to know what price they are likely to receive for the coffee delivered</i>			
Protection of coffee as a geographical indication	<i>Protecting coffee from a region due to its uniqueness</i>			
Cost of maintaining the protection	<i>The additional fee the producers contribute per year so as to have their coffee protected</i>			

Feature/Characteristic	Brief explanation	Relative importance (<i>tick where appropriate</i>)		
		1=Not important	2=Somewhat important	3=Very important
Minimum guaranteed price per kg of coffee delivered	<i>The lowest price that farmers can receive per kg of coffee sold.</i>			

Now I will show you different combinations to facilitate GI labelling and protection made from these features. Please compare the different combinations shown each time and select ONE which you prefer.

The enumerator now presents the four choice sets to the respondent and for each set, **ONLY ONE** alternative should be selected

12.2. Which option would you choose in each of the alternatives shown?

Block Number (1 - 6)	Choice scenario number (1-24)	Alternative selected		
		Alternative A	Alternative B	Alternative C

SECTION G: Household Demographics

13. General information:

13.1. What is the household size _____ persons

(Household refers to all whose daily livelihoods depend on the HHH)

13.2. Provide the demographic characteristics of household members (Include students, but don't include employed children not residing or depending on the household)

A household is a group of people who cook together and eat together and drawing food from a common source – share resources together. Family members who work away or are not dependent on the household for at least 6 month are excluded.(

For this purpose, household members are not necessarily the same as family members)

Fill the table each column downwards before moving to the next column

ID	Full Name of household member (Start with household head)	Year of birth (e.g. 1948)	Sex of this person? (1=Male 2=Female)	Relationship to current HHH (CODE Y:)	Highest level of education completed (CODE Z:)	Primary occupation (only one) (CODE AA:)
1			[__]	[__]	[__]	[__]
2			[__]	[__]	[__]	[__]
3			[__]	[__]	[__]	[__]
4			[__]	[__]	[__]	[__]

ID	Full Name of household member (Start with household head)	Year of birth (e.g. 1948)	Sex of this person? (1=Male 2=Female)	Relationship to current HHH (CODE Y:)	Highest level of education completed (CODE Z:)	Primary occupation (only one) (CODE AA:)
5			[__]	[__]	[__]	[__]
6			[__]	[__]	[__]	[__]
7			[__]	[__]	[__]	[__]
8			[__]	[__]	[__]	[__]
9			[__]	[__]	[__]	[__]
10			[__]	[__]	[__]	[__]
11			[__]	[__]	[__]	[__]

CODES:

CODE Y: (RELATIONSHIP TO HHH)	CODE Z: (HIGHEST EDUCATION)	CODE AA: (PRIMARY OCCUPATION)
1. Head	1. None	1. Crop farming (incl. food & cash crops; feed & fodder; gardening/vegetable and fruit production)
2. Spouse 1	2. Standard 1	2. Livestock keeping (incl. camel, cattle, sheep & goat and renting out livestock for draft power/breeding)
3. Spouse 2	3. Standard 2	3. Poultry keeping
4. Spouse 3	4. Standard 3	4. Mixed farming
5. Spouse 4	5. Standard 4	5. Livestock and livestock product trading
6. Parent	6. Standard 5	6. Trading in non-livestock agricultural products (e.g. groundnuts)
7. In laws	7. Standard 6	7. Formal salaried employment (incl. civil servant, private
8. Child	8. Standard 7	
9. Grandchild	9. Standard 8	
10. Employee	10. Form 1	

<u>CODE Y: (RELATIONSHIP TO HHH)</u>	<u>CODE Z: (HIGHEST EDUCATION)</u>	<u>CODE AA: (PRIMARY OCCUPATION)</u>
11. Other	11. Form 2 12. Form 3 13. Form 4 14. Form 5 15. Form 6 16. Craft/vocational/ Certificate 17. Diploma 18. Higher National Diploma 19. University	sector employee, non-farming labourer, domestic work in external house) 8. Livestock herder 9. Self-employed business - trade (non-ag., e.g. small shop owner, includes natural products - charcoal, firewood, water, roadside grass etc.) 10. Self-employed business – services (non-ag., e.g. carpentry, barber, healer, dress-making, etc.) 11. Farm labourer on other farm 12. Farm worker on household farm 13. Mining (quarry, minerals etc..) 14. Fisherman 15. Fish trading 16. Old/Retired /Pensioner 17. Domestic work in own home 18. Not working/unemployed 19. Infant \ child < 7 years 20. Student/ pupil

13.3. What are your main sources of income in order of priority (*Ensure coffee is captured in the listing*)?

	Income activity	Annual average income in a normal year (KES)
1	Total farm income	[_ _ _ _ _]
2	Salaried employment (household head and spouse)	[_ _ _ _ _]
3	Pension Income	[_ _ _ _ _]
4	Social protection	[_ _ _ _ _]
5	Business	[_ _ _ _ _]
6	Remittances (from relatives from outside household)	[_ _ _ _ _]

Thank you for your participation!

Time ended: _____