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# 4th ICAAAE 2013

SEPTEMBER 22-25,  
Hammamet Tunisia  
4th International Conference of the  
African Association of Agricultural Economists  
aaae-africa.org

**Unravelling the potential of neglected tree species for income generation: The case of *Catha edulis* in West Shewa zone of Ethiopia**

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*Invited paper presented at the 4<sup>th</sup> International Conference of the African Association of Agricultural Economists, September 22-25, 2013, Hammamet, Tunisia*

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**175- Unravelling the potential of neglected tree species for income generation: The case of *Catha edulis* in West Shewa zone of Ethiopia**

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# **Unravelling the potential of neglected tree species for income generation and poverty alleviation: The case of *Catha edulis* in West Shewa zone of Ethiopia**

## **Abstract**

Agriculture is an important part of Ethiopia's economy constituting a significant proportion of Gross Domestic Product (GDP) and total export. The method of agricultural production in Ethiopia has resulted in increasing deforestation and degradation. Among others, Agroforestry has been considered as a potential alternative to address the increasing deforestation and degradation. Khat (*Catha edulis*), an indigenous shrub species offers the potential to be intercropped with other food crops in an agroforestry system. The aim of this article is to assess the competitiveness of Khat production as a complementary source of income for farmers in the West Shaw region of Ethiopia. Three focus group discussions (FGD) with 14 Khat producers per FGD were conducted in 3 villages in West Shewa and East Wollega zones in the Oromia region of Ethiopia. In addition, key informant interviews with traders were conducted to obtain further information about Khat production and marketing. Data was analyzed using Porters' five forces framework. The results indicate that demand exceeds its current supply and farmers have power to determine the price. However, there is high level of competition among traders in sourcing from the farmers leading to price war among traders. The agro ecological suitability for Khat production in the area indicates that more farmers can produce it if the awareness of its market potential is built. However, with the high level of demand and existence of export market, supply can be absorbed. We conclude that Khat can be promoted as a profitable crop for agroforestry practice in Ethiopia.

**Keywords:** Agroforestry, market analysis, competitiveness Porter's five forces

## **Introduction**

Agriculture is an important part of Ethiopia's economy constituting more than 40% of its Gross domestic Product (GDP) and more than 90% of total export (Franzel and Houton, 1992). The method of agricultural production in Ethiopia has resulted in increasing deforestation and degradation of forest, land and other natural resources. Agroforestry may be considered as a potential alternative to some of the wasteful land-use practices such as slash and burn and intensive monocropping which characterize many farming systems in Africa including Ethiopia. Agroforestry is defined as a dynamic, ecologically based, natural resources management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels (World Agroforestry Centre (ICRAF), 2003). These practices enable producers to enjoy the dual benefits of generating income from the production of a wide range of products while protecting and conserving soil, water and other natural resource at the same time (Gold *et al*, 2004).

In the West Shawe zone of Ethiopia, many different tree species have been identified as ecologically suitable for agroforestry practices and farmers have expressed the willingness to plant these in an agroforestry system (Field research, 2012/2013). One of the priority species according to focus group discussions and key informant surveys carried out by ICRAF scientists in 2013 is *Catha edulis* commonly called Khat in Ethiopia. It is a slow growing flowering plant (Shrub or tree) which can reach the height of between 1.4 m and 3.1 m tall, depending on region and rainfall. It has a green leaf of 5–10 cm long which is the part that is usually masticated or dried and use as a tea. It grows at an altitude of 1600 – 2600 metres and adapts to a range of soil and climatic conditions. It is often cultivated on terraces built on hillsides where the trees grow in rows and can be combined sometimes with other crops (Peters, 1952; Brooke, 1960; Getahun and Krikorian, 1973). The Khat tree is not often affected by diseases and can live up to 75 – 100 years if taken care of properly (Peters, 1952; Brooke, 1960; Kennedy, 1987). One important

reason for the expansion of Khat production is that when intercropped with other food crops, productivity and earning per unit land area is improved. For instance, the Khat–maize intercropping system has been found to be 2.7 times more profitable per hectare than maize monocropping. In addition, Khat production is also less risky to grow than cereals and coffee because it is less vulnerable to drought (Feyisa and Aune, 2003). According to Survey of Ethiopian Economy-II carried in 2005, Khat is planted and masticated for different purposes, and occupies the second place among export commodities after coffee..In Ethiopia, 85 – 90% of the Khat produced is exported (Lemessa, 2001) and thus makes a very significant contribution to the country’s foreign exchange earnings. Belwal and Teshome (2010) argued that despite the economic and social importance of Khat, existing studies have often concentrated on its history, botany, sociology and medicinal properties. Up to now, not much has been done on assessing the market potential of Khat and its competitiveness. Belwal and Teshome (2010) contributed to the literature on Khat in Ethiopia by assessing the opportunities and dilemmas associated with its production and marketing. Despite these efforts, some knowledge gaps still remain. In particular, to the best of our knowledge, there is no study that addresses the industry-wide competitiveness of Khat production as a potential income source for farmers. This study aims to fill this lacuna in the literature by assessing the competitiveness of Khat production as a complementary industry for farmers in the West Shawe region of Ethiopia. This study is expected to provide recommendations for the promotion of Khat in agroforestry systems in the study area.

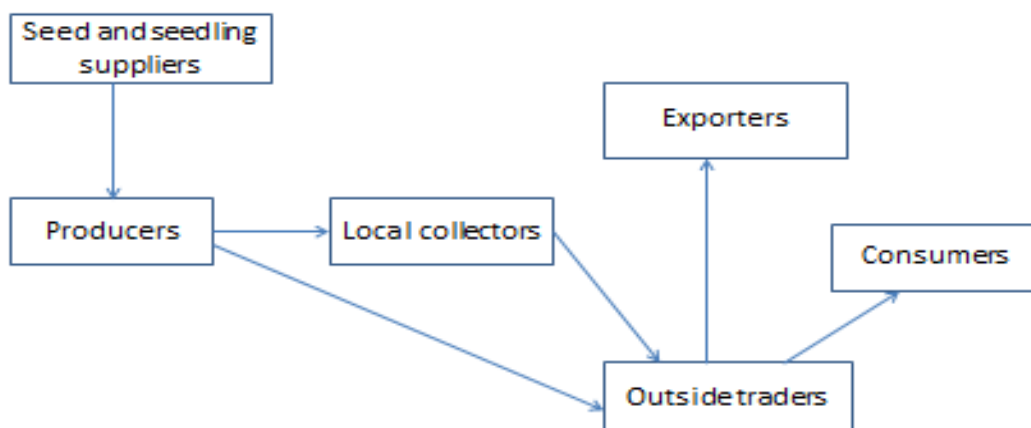
Porters’ five forces model is used as a framework for analysis since it offers a robust approach to examine the efficiency of under-developed markets like the Khat in Ethiopia. The model can assist smallholders who want to participate in the market by helping them to understand market characteristics and strategies to market the product they want to produce (Gold *et al.* 2004, Porter 2008). This is particularly important as some producers may be reluctant to produce Khat in the absence of readily available market information, which is important for the production of special products (Gold *et al.* 2006).

The remaining sections of the article are organized as follows: First, we provide a brief overview of Khat production and the supply chain. Next, the conceptual framework, which is the Porter’s five forces model, is presented and is followed with data collection and analysis. Results are then

presented. The article is concluded with recommendations for the promotion of Khat in agroforestry systems in the study area.

### *1. Description of the supply chain*

The main actors involved in the Khat supply chain are the seed and seedling suppliers, producers, local collectors, traders from outside and exporters. Farmers obtain germplasm from either their own source or buy from the market. Farmers either sell the Khat leaves directly to the traders from the nearby towns or sell through local collectors who subsequently sell to the traders. Traders may sell directly to consumers and in some cases also to exporters who are either individuals or cooperatives (Belwal and Tesome, 2011).



**Figure 1: Map of the supply chain of Chat**

## **Conceptual framework**

The competitiveness of Khat production is assessed using the Porter's five forces model in combination with the analysis of the external environment which affects its production and marketing. The Porter's five forces model is presented below:

### ***Porter's five forces review***

Before investing in activities or even considering a level of competition that leads to profitability, any business or firm should first of all evaluate its internal attractiveness and market potential. Michael Porter's five forces is a model used to explore the environment in which a product or company operates to generate competitive advantage. According to Bechdol *et al.* (2010), the potential profitability of farmers is influenced in part by the economic characteristics of the industry which can be examined using Porter's five forces model. This model suggests that the key economic features of any industry can be identified by examining how rivalry among existing competitors, threat of entry, power of suppliers, power of buyers, and the threat of substitutes affect it. Porter's five forces of competitive market forces provides a structure for examining competition applicable to all industries and business sectors (Perdana *et al.*, 2012) but configuration of the five forces may differ by industry (Porter, 2008). The concept of this approach is that the greater the weakness of the five forces that affect the firms, the greater the expected profitability in the industry. The main dimensions of the five forces are elaborated below:

#### *i. Rivalry amongst existing competitors*

The degree of rivalry determines the extent to which the value created by an industry is dissipated through head-to-head competition (Tavitiyaman *et al.*, 2011). According to Porter (2008), high rivalry limits the profitability of an industry. The degree to which rivalry drives down an industry's profit potential depends on the intensity with which companies compete and on the basis on which they compete. Competition increases as rivals' competitive goals increasingly congregate or intersect. This happens when rivals coincide in using similar competitive strategies as competitive advantage, envisioning similar target markets, or an increase of similarity occurs in business plans.



### *Threat of entry*

Both potential and existing competitors influence average industry profitability. Any new entry to an industry brings about a new capacity and desire to gain market share, this should bring about pressure on prices, costs and investment rates necessary to compete. The threat of entry influences the profitability of the industry and when the threat is high, existing firms must hold down their prices or boost investment to discourage new competitors (Porter, 2008). There also are some entry barriers whenever it is difficult or not economically feasible for an outsider to replicate the existing firms' position. Apart from some intrinsic physical or legal obstacles, the common forms of entry barriers are the scale and the investment required to enter an industry as an efficient competitor (Karagiannopoulos *et al.*, 2005).

### *Power of suppliers*

Suppliers, if powerful can exert an influence on the producing industry, such as selling raw materials at a high price, limiting quality or services, or shifting costs to industry participants in order to capture some of the industry's profits. A supplier becomes powerful if: it is more concentrated than the industry it sells to, it does not heavily depend on the industry for its revenue, industry participants face switching costs in changing suppliers, suppliers offer products that are differentiated, there is no substitute for what the supplier group provides and the supplier group can credibly threaten to integrate forward into the industry (Porter, 2008).

### *Power of buyers*

The power of buyers is the impact that customers have on a producing industry. Buyers with bargaining power can extract excess profit from an industry by putting downward pressure on prices, demanding better quality products or services, and play industry participants off against one another (Porter, 2008). According to Karagiannopoulos *et al.* (2005), the determinants of buyer power are the size and the concentration of customers, the extent to which the buyers are informed and the concentration or differentiation of the competitors.

### *Threat of substitutes*

Substitutes perform the same or similar functions as an industry's product by a different means. The threat that substitute products pose to an industry's profitability depends on the relative price-to-performance ratios of the different types of products or services to which customers can turn to satisfy the same basic need. The threat of substitution is also affected by switching costs; these are costs in areas such as retraining, retooling and redesigning that are incurred when a customer switches to a different type of product or service (Karagiannopoulos *et al.*, 2005).

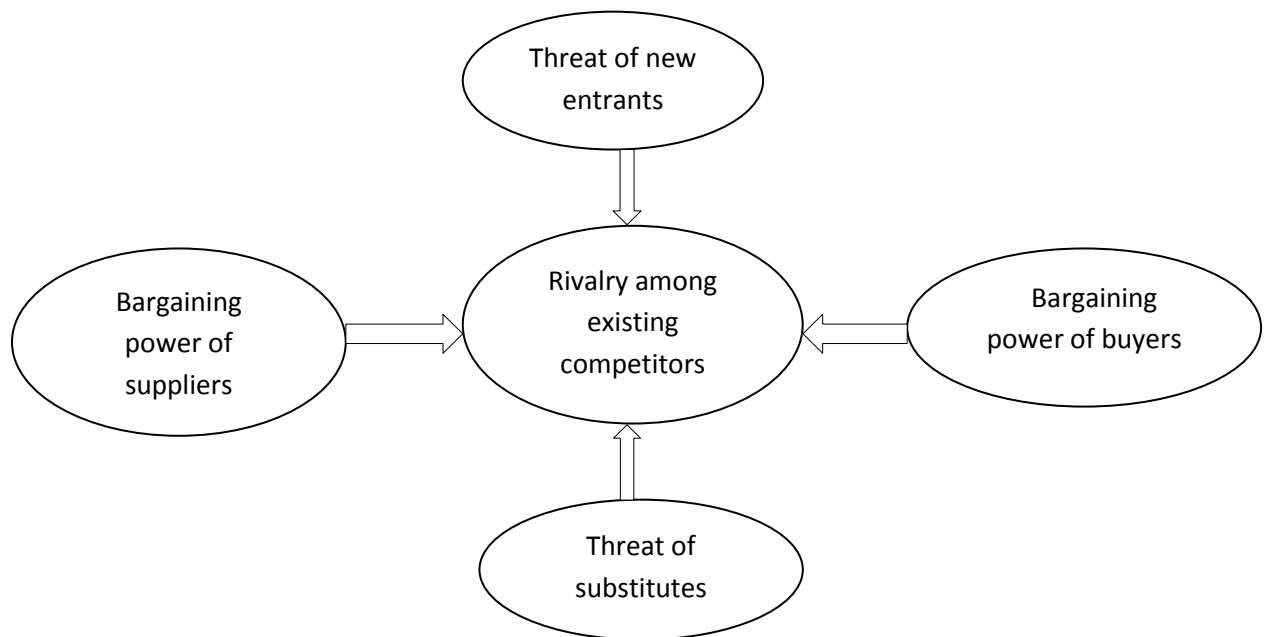


Figure 2: Porter's five forces model

Source: Porter (2008)

## Methodology

### Study area

West Shewa is a zone in the Oromia Region of Ethiopia and takes its name from the kingdom of Shewa. It is bordered on the southwest by Jimma, on the west by MisraqWelega, on the northwest by HoroGudru Welega, on the north by the Amhara Region, on the northeast by Semien Shewa, and on the east by Oromia Special Zone Surrounding Finfinne.

It has a rugged landscape and terrain of mountains, hills and valleys. Depending on the topography, agro-ecologies vary, but many of the administrative zones are dominantly sub-humid: kola-warm lowland (orange in legend) and waynadega – tepid mid highlands (greenish yellow in legend) (Figure 3). Some areas with gorges of rivers have more warm moist lowland climates, while toward higher altitudes tepid humid/moist climates are prevalent (ICRAF field observation, 2012/2013). According to the Central Statistical Agency of Ethiopia (CSA), this Zone had a total population of 2,058,676, in the year 2007.

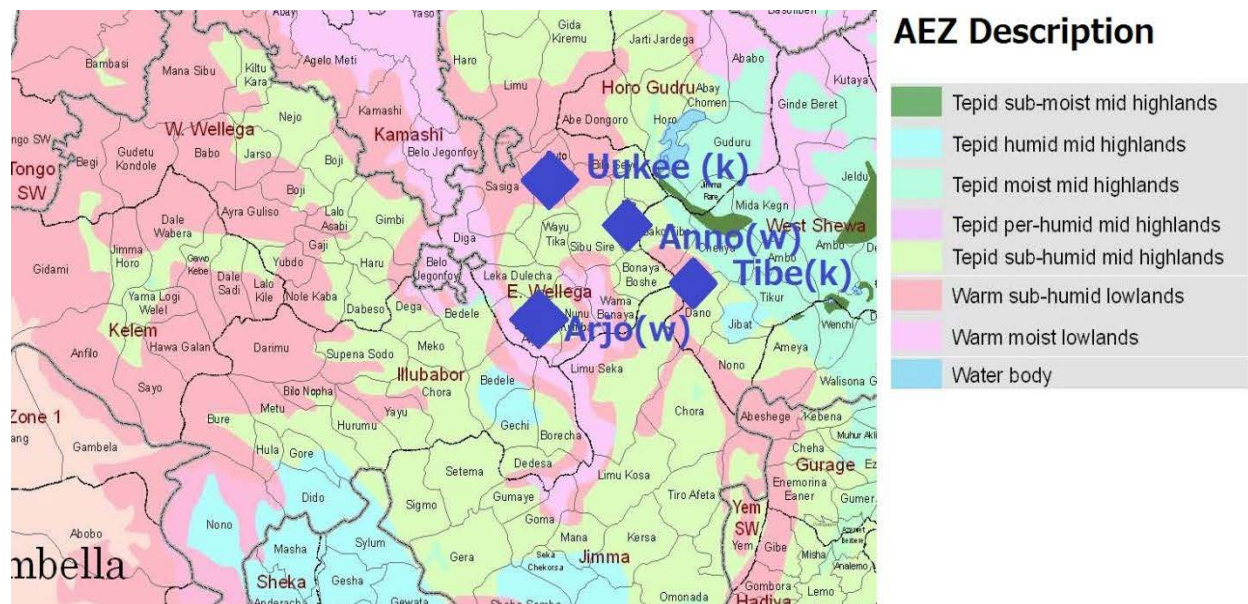


Figure 3: Map of the study area

Source: Field survey 2012/2013 (ICRAF)

### ***Data collection***

A qualitative research method involving focus group discussions (FGD) and key informant surveys was used for collecting the data. In view of the limitations of traditional quantitative bases for knowledge (Goulding, 1998; Somogyi *et al*, 2009), the qualitative research approach which is adopted for this study is quite relevant. Three FGD were conducted with 14 farmers each in the villages of Arjo, Ukee and Bako in the West Shewa region in January 2013. In addition, Khat traders in these villages and the nearby market centres in Nekemte were also interviewed using an interview guide with set of questions of interest. Questions asked included how prices are determined between producers and traders, their relative power in the business, level of competition among producers and traders, threat of substitutes and other external environmental factors, such as regulations and policies, that influence the production and marketing. In addition, social demographic characteristics of the respondents and information about their farming practices were sought. The interviews were conducted in Aramaic language and the responses were translated into English.

### **Results and discussions**

#### ***1. Khat farm and farmers' characteristics in Ethiopia***

Most Khat producers involved in the focus group discussions were male and over 25 years of age. All the farmers produced food crops particularly cereals like maize, teff and sorghum. Farming was the primary occupation of all the participants, although all of them had a secondary source of income from activities like involvement in local brewery, casual labour, cereal trading, and livestock trading, local trading such as operating a kiosk, weaving and pottery. Average land holding ranged between 0.25- 3.00ha and Khat was planted as a cash crop on marginal lands occupying less than 10% of total land holding. Khat was ranked by all the groups as one of the priority species for agroforestry because of its high market potential in addition to coffee and eucalyptus.

## ***2. External environment for the production and marketing of Khat***

Khat also called Arabian tea or qat is a shrub that contains cathinone, which is an amphetamine-like stimulant, which is said to cause excitement and loss of appetite, hence can be consumed to control hunger. In Ethiopia, there seems to be no specific government policy that promotes production of Khat compared to other tree crops such as coffee where the market is regulated and production inputs are sometimes supplied. Khat as a cash crop experiences some form of double taxation from regional and federal Governments and these taxes are not collected from other cash crops (Belwal, 2003). Despite the fact that some countries like Germany, Canada and the United states have considered Khat as a drug, no ban has been placed on it by the Ethiopian Government and it obtained the status of a cash crop in 2003. The chewing of Khat is widely practised in East Africa and parts of the Middle East, such as The Yemen where it performs a deep-rooted social and cultural function (Drake, 1988). Its production, sale and consumption are legal in other nations, including Djibouti, Ethiopia, Somalia and Yemen. Gebissa (2004) mentions that there has been an increase in the trade and export of Khat as a result of the construction of rail and road transport between Ethiopia and Djibouti after the Second World War. Gebissa observed that in decades after the Second World War, large amount of land in Ethiopia was dedicated and converted to Khat production. Khat-chewing, which used to be mostly in the Harar region is now common in other parts of Ethiopia. Al-Hebshi and Skaug (2005) estimated the prevalence rate of Khat chewing to be 30, 50 and 31.7% respectively for the years 1996, 1999 and 2000. Data from a survey conducted in 1996 in Addis Ababa and 24 towns across Ethiopia showed that Khat usage has been increasing and that it has become popular among all segments of the population (Selassie & Gebre, 1996) indicating that the market for Khat is expanding.

## ***3. Competitive analysis of Khat production***

### *Rivalry and threat of new entrants among farmers*

This variable in the Porter's model describes the degree of competition among existing businesses in the same market especially when there is little opportunity for growth in the market (Gold *et al.*, 2004). In the Khat industry, there is no rivalry among producers, as each producer produces its own Khat and there is enough demand. Most sales are done on spot markets and

producers do not see themselves as competing with one another. A focus group discussant in Arjo opined that:

*“We don’t see ourselves as competing with one another since there are enough traders to buy our Khat. We rather try to link each other to a trader if we cannot have enough to supply to them”*

A trader of Khat from Nekemte who was probed about the possibility of rivalry among his suppliers had this to say:

*“I don’t think they (farmers) see each other as business rivals. They rather see themselves even sometimes as families and they sometimes lead me to buy from another farmer if I don’t get enough from them”*

The agro ecological suitability of Khat indicates that farmers can easily convert part of their land to its production. However, the quantity can be constrained by the size of land available since farmers have to divide the land among the various agricultural enterprises which they are involved in. Despite the low entry costs, farmers generally do not see the possibility of new entrants as a threat. This is against the background that farmers think there is still adequate demand from traders. Besides, Khat has regional and international market which can be exploited if production is increased. This indicates that Khat has a greater potential to be promoted in agroforestry systems in the West Shewa region of Ethiopia.

Moreover, there is no large capital requirement which will serve as a constraint for its production implying that there is little barrier to entry by prospective producers. However, in view of the fact that demand hugely exceeds supply of the Khat in the market coupled with large export markets implies that industry wide profit will not be eroded with new entrants. This may explain why there seem to be no rivalry among the producers. Gold *et al.* (2006) have argued that rivalry within an industry depends on many factors including the number of competitors, the size distribution of the competitors, the homogeneity of the products, the level of fixed investments and the volatility of market demand. Since there is no direct competition and rivalry, Khat producers will be expected to work together to pursue common interest. This is in line with observation by Gold *et al.* (2006) who observed that in the face of less competition like hazelnuts (*Corylus avellana*) or non-native chestnut (*Castanea spp.*) in the Pacific Northwest,

rivalry among producers was not a factor and market participants worked together to further the demand for their products and increase profitability for all participants.

#### *Power of buyers*

In the study area, there seem to be less buyer power as producers are the price makers especially during the period of shortages. Demand of Khat exceeds the current level of supply and buyers are often forced to accept the terms and conditions offered by the producers. Although the general mode of trading is spot market, some producers mentioned that traders sometimes provide advance payment when the product is not yet harvested to ensure supply. Producers generally sell to the highest bidder and they argue that there is often price war among traders in an effort to secure the supply of the Khat.

*“ I give my Khat to the person who gives the highest price unless it has been paid in advance before harvest”* is a comment from a Khat producer.

A Khat trader commented that *“ we have to walk between 3-10 kilometres to look for Khat and you often go and meet many other traders especially on Saturdays when the producers bring the products to the roadside”*

*“it is difficult to find supply especially during the dry season and we have to pay high price to secure what ever is available”*

Since producers are price makers in the market, there is the potential for them to improve or sustain the earnings from the sale of Khat.

#### *Power of suppliers*

According to Porter (2008), suppliers' bargaining power will be high if there are fewer large suppliers selling to large number of producers, when there are no alternative source of supply and when switching cost to a new supplier is high. All these conditions seem not to prevail in connection with the supply of input for Khat production. The main input used in the Khat is the seed and seedlings. Most producers use their own source with limited purchase from the market, so seedlings are affordable and readily available. Unlike other tree crops like coffee and to some

extent mango, there is no supply of germplasm from the ministry of agriculture to the farmers. Supply of germplasm from the market is available although farmers contend that there could be improved planting materials if the government has shown interest in the production of Khat. There is no supplier power that can influence the production of Khat in the study area. A producer mentioned that

*“ planting materials are from our own sources and sometimes we can buy it very cheap from the market”* another mentioned that *“there is no supply of germplasm from the ministry or the research institutes... the research institutes could provide better planting material...”*

#### *Threat of substitutes*

Substitute products can replace other products with little or no lost value to the consumer. This implies that if the price of a close substitute product increases, consumers might reduce their demand for that product and shift their attention to the purchase of the substitute. As a result, close substitutes can have an effect on market prices by providing an option to consumers when prices fluctuate. A threat of substitutes exists when there are products which provide similar benefits or uses as Khat in the market. In lieu of this, farmers and traders were asked if there are known substitutes for Khat. According to Belwal *et al* (2011), Khat is chewed in occasional events such as social meetings, prayers, wedding and funeral ceremonies, and during wake keeping for the dead (Gebissa, 2004). It is also served in welcoming and entertaining guests, mourning, weddings, circumcision ceremonies, and in collective labour works (Lemessa, 2001). According to farmers although there may be other products which can be used to for some of these social events as substitutes, these may not be seen as a direct substitute to Khat since it has its own properties when it is masticated. This was supported by a statement by a trader who sells Khat:

*“ I don't think we have a direct substitute in the market for Khat. ... Khat is Khat and cannot be replaced ... the feelings cannot be obtained from using other leaves, may be not that I am aware of”*

Producer of Khat argued that *“ ... well, Khat has its own uniqueness and as such I don't think there are substitutes. There are many different types of Khat and sometimes a particular type can be substituted for another but not substituting another product for Khat”*



Since there are no known substitutes for Khat in terms of its mastication properties, it has the potential to remain competitive as a source of income for farmers.

### **Conclusions and recommendations**

An analysis of the Khat industry in Ethiopia using the Porter's Five Forces model indicates that increased productivity will continue to be a critical driver for the profitability of the Khat industry. Although seedling supplier power, rivalry and competition among producers are not important factors that may influence the profitability of the Khat industry, the relative ease of entry into its production may have a long-term effects on the profitability and competitiveness of production. This notwithstanding, there is constraint on the size of land available to farmers and hence may continue to regulate the quantity of Khat that can be supplied to the market.

Based on the findings described above, number recommendations can be made.

First, it is recommended that for the producers to continue to have control over the price of Khat, some form of collective action and cooperative will be needed. This will ensure that producers are able to market their Khat as a group even in the face of increasing production and new entrants. Farmers working together as a group will also be able to secure the necessary recognition by Government and the national authorities, and can then agitate to have some form of assistance such as planting materials which is offered to other tree based products like coffee and mango in the study area.

Secondly, there is also the need for stakeholders along the value chain to device strategies to prolong the shelf life of Khat after it is harvested. This is because, farmers and traders complaint that Khat has a very short shelf life and hence are sometimes forced to sell at low price after harvesting. With increasing productivity there will be the need for improved shelf life so as to make the product's market continually competitive.

In addition, most rural producers of Khat do not have adequate market information especially upstream the supply chain and the export market. One consequence is that Khat may be harvested when traders are not ready to purchase. This can be relevant especially when there is increased productivity. Furthermore, many farmers are of the perception that middle men reap greater part of the industry wide margin. Hence, promoting effective market information and

market intelligence for Khat can help to improve producers' understanding of the market which will enable them to make right marketing decision on if and when to harvest and market.

Government must also play a role in enhancing the competitiveness of Khat as an income source for farmers. For instance there is currently no government incentive to promote the cultivation of Khat although statistics show that it is one of the important export crops in Ethiopia. Government's interventions may include provision of improved germplasm for Khat, improving extension education for the production and marketing, promotion of technologies to increase productivity per land area as well as regulating the industry as is the case for coffee.

Finally, it is important to note that whilst this paper attempted to throw light on the potential of Khat as an important source of income, there could be legality and ethical issues concerning its consumption in certain countries. Some studies have reported on the health hazards associated with Khat consumptions and others have labelled it as a narcotic. However, some countries like Ethiopia recognize it as a cash crop. This therefore implies that its promotion must be in tandem with the specificities of the country. It is believed that where Khat can be promoted, the Government will also have a role to regulate its consumption in order to avoid its abuse.

### ***Disclaimer***

Views expressed in this paper is the sole responsibility of the author and not that of the financiers or the World Agroforestry Centre

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