Assessing the Viability and Benefits of Tobacco Production to Smallholder Farmers
(Studied in Mutasa District, Zimbabwe)

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Abstract: Those benefiting have managed to acquire capital items and afford a decent lifestyle. About 86.4% of the farmers are deriving benefits from tobacco farming. Results from the study show that farmers are willing to pay for firewood though in varied amounts. It is recommended that the government embark on a pricing policy in the use of forest fuelwood for the curing of tobacco and promote planting and conservation of the indigenous trees. Similarly, a certain cost should be levied to tobacco farmers who use indigenous forests for the curing of their golden leaf.

Keywords: Conservation, miombo woodlands, smallholder farmers, viability, willingness to pay.

1. Introduction
Tobacco plays a significant role in the economics of many countries. It is a vital crop and not all countries produce tobacco due to many factors including quality and cost of production. According to Myers (1994), world tobacco production is shifting towards developing countries. Tobacco is grown in more than 130 countries in the world (Pain et al. 2012). Collectively tobacco growing countries have a total area of arable land of 1,286 million hectares of which tobacco cultivation only accounts for 0.3% of this land (FAO, 2009). The leading tobacco producers are China, United States, India, Indonesia, Brazil, Turkey, Kenya, Malawi, and Zimbabwe.

The products from tobacco are consumed worldwide and most of them through smoking, with China accounting for 30% of the world’s production and consumption of cigarettes by volume, representing one third of the world’s production (FAO, 2009). The second largest producer is Brazil with 446361 hectares of land under cultivation in 2010 (12% of the land) compared to 274098 hectares in 1990 (UNITAB-FETRATAB, 2012). About 85% of the production consists of flue-cured and fire-cured tobacco, and 15% burley and oriental tobacco. Geist, (1998) says that tobacco production shifted into the tropics and subtropics around 1940. In 1971, production of tobacco leaf increased by 40%,
during which 4.2 million tonnes of the leaf were produced and in 1997, about 5.9 million tonnes of the leaf were produced (FAO, 2003). Malawi, Tanzania, Kenya and Zimbabwe are the most active countries in Africa involved in tobacco production. The countries produce tobacco mainly for export although there is growing concern for a move towards production and processing. Geist (1998) noted that 90% of tobacco in Africa is generated from countries covered with miombo woodlands.

A study by Ochola & Kosura (2007) noted that social and economic benefits are derived from tobacco production vis-a-vis the commercial crops. During the year 2000, the fast track land reform changed production economics and peoples’ livelihoods in rural areas and brought about challenges, costs, benefits and new opportunities (Mavedzenge et al. 2008; Scoones et al. 2010). Shumba & Whingwiri (2006) indicated that the move to commercialise small-scale production and integrating black indigenous farmers into the national economy is the best approach to increase productivity. The new farmers now occupy the majority of the land used for agriculture in Zimbabwe and are thus key players in enhancing tobacco production.

Smallholder farmers as defined by Ellis (1988) are rural producers in developing countries, farming using mainly family labour where the farm is the main source of income but in Zimbabwe they are the indigenous black farmers. According to Masvongo et al. (2013), the new agrarian structure in Zimbabwe, requires that the smallholder farmers diversify and start growing high value crops like tobacco, soyabeans among others. Muir-Leresche (2006) points out that Zimbabwe became the world’s leading exporter of flue-cured tobacco, accounting for around 40% of its foreign earnings and contributing approximately 10% of country’s Gross Domestic Product (GDP) by 1991.

The supply of coal has been erratic over the past few years due to the collapse of the country’s railway system, and this has promoted the unsustainable harvesting of trees for the tobacco curing (Mutenje & Mango, 2019). This has threatened the country’s indigenous and commercial forest woodlands. Woodlands on tobacco production farms have very high stump mortality than horticultural or maize woodland sites (Katsvanga et al. 2008). Due to high population increase in Zimbabwe, land is becoming less thus impacting on resources such as fuelwood and water.

Tobacco generates employment more than any other crop in the country. It directly employs over a million people, and many more in the downstream industries (Masvongo et al. 2013). Studies reveal that tobacco farmers often receive subsidies, loans, inputs, technical, or other support from governments or the industry, that make tobacco an attractive crop even when prices fall (World Bank, 2003). Tobacco is one of the most profitable cash crops for both large-scale and small scale farmers and provides for good financial returns (Keyser, 2002). It follows that smallholder farmers are assured of cash every season.

Tobacco production has received pressure from various facets of the economy. The public health efforts to reduce demand are offset by aggressive tobacco marketing; rising population and income as well as the strong addictive effects of nicotine (Lecours et al. 2012). This is a benefit to the farmers as they are assured of a market. Dramatic changes in prices and yield are unlikely in the near future and tobacco production would remain relatively profitable. From studies done by the Institute for Natural Resources and Technology Studies (INRS) in Kenya tobacco has the lowest economic return per acre compared to other commercial crops, including passion fruit, watermelon, soyabeans, pineapples, and peppers (Ochola & Kosura, 2007). The study also indicated that, the Kuria district in the Nyanza province produces the largest amount of tobacco and is also the poorest district in the country.

Lemieux (2001) describes the benefits of tobacco, as the sum of consumer surplus (the value that consumers receive over and above what they pay or tobacco) and producer surpluses (the profit producers earn over and above the minimum remuneration to factors of production). These are offset by direct and indirect morbidity and mortality costs from tobacco use.

2. Benefits derived from tobacco production in Zimbabwe

Zimbabwe is the largest producer of tobacco leaf in Africa and the world’s fourth-largest producer of flue-cured tobacco, after China, Brazil and the United States of America. Since tobacco production in Zimbabwe is on a small scale, the major activities in the tobacco industry are the growing, curing and subsequent handling and distribution of tobacco leaf. The country does not have a large tobacco manufacturing industry and produces enough tobacco to supply domestic demand and
provide some volumes for export (Maravanyika, 1998b). Therefore 98 percent of all tobacco production is exported abroad. Tobacco production makes an important contribution to GDP and to export revenue, and plays a major role in the national economy. The crop normally accounts for more than 50 percent of agricultural exports, 30 percent of total exports and nearly 10 percent of GDP. All tobacco grown in Zimbabwe is sold on the auction floors in Harare as unprocessed brown leaf. Tobacco sold through the auctions then undergoes further processing by merchant companies to remove stems and tips from the leaf, before being shipped abroad (Maravanyika, 1998a; Scoones et al. 2010). This adds 30 percent to 50 percent to the crop’s final export value.

Tobacco exports in 2017 rose to 184.2 million kg from 164.5 million kg achieved in 2016 (Tobacco Industry and Marketing Board (TIMB), 2017). The total 2017 export proceeds amounted to $904.4 million averaging $4.96/kg compared to 2016’s tobacco exports, which amounted to $933.7 million at $5.67/kg. Far East (China, Netherlands and Macau) dominated 2017 exports by 48% followed by Africa (21%) and European Union (17%). Tobacco imports increased, recording a total of 6.9 million kg in 2017 compared to 4.9 million kg in 2016, and Zambia contributed the bulk of tobacco exports to Zimbabwe (TIMB, 2017). In 2018 tobacco exports rose to 184.2 million kg from 182.4 million kg achieved in 2017 (TIMB, 2018). The total 2018 export proceeds amounted to $914.3 million while $904.4 million was realised from 2017 exports. The export average price remained at $4.96/kg for 2017 and 2018 (TIMB, 2018). Far East dominated the 2018 exports by 47% followed by Africa (24%) and European Union (13%). Tobacco imports increased to 12.2 million kg from 5.8 million kg in 2017. More than 50% of the total 2018 imports came from Zambia.

Tobacco cultivation provides a significant (40–80%) proportion of household income and is the most reliable source of income for the majority of tobacco growers (FAO, 2003). Tobacco also plays a pivotal role in many small scale farming communities as they begin with, and revolve around, tobacco production. Other crops are grown in rotation with tobacco, either to generate cash or as food for on-farm consumption (food security). Tobacco is one of the most profitable enterprises in commercial agriculture and is the primary reason for the existence of both small scale and commercial farms. Although other cash crops, including cotton and even maize, are more important for most communal and resettlement farmers, tobacco still offers smallholder growers a unique opportunity for exceptionally high producer profits and excellent rates of return (Lemieux, 2001; Van der Merwe, 1998). Thus, tobacco production has provided an economic base for farmers to develop other production opportunities.

Tobacco production generates considerable rural employment. It was estimated that about 170 000 workers were engaged in tobacco production directly in 1998, in which large commercial tobacco farms hired about 117 000 long-term employees while 55 000 smallholder tobacco farmers operated largely on family labour (FAO-ILO-IUF, 2005). There were about 30 000 workers involved in tobacco research, marketing, service and manufacturing industry. In addition, short-term hirings by the large commercial farms and smallholder farms involved around 100 000 workers. Thus, full-time employment directly and indirectly would be around 250 000, roughly equal to 5 percent of Zimbabwe’s total labour force and perhaps 25 percent of formal employment. Many other jobs also depend on forward and backward linkages between tobacco and other parts of the economy, including input supply, transportation services, coal mining, and hospitality during the auction season and other consumer services (Maravanyika, 1997). To the extent that tobacco workers send remittances to family members on communal farms, the crop also helps to sustain agricultural production in these areas as well.

Tobacco is also an important source of government revenue through taxes. A levy system in which growers and buyers both pay a fixed percentage on the value of crop sales generates several millions of dollars annually.

The use of pesticides that accompanies tobacco production causes environmental pollution that reduces animal and plant biodiversity and damages farmers’ health (Lecours et al. 2012). Limited knowledge on the correct use of fertilisers, chemicals, coupled with the lack of protective clothing may also result in cases of ill health. Poor farming and pest management practices may pollute water sources near the production area. Extension services and market support for tobacco exceeds that of all other crops. Shocks both external (drought) and household (death and illness) can have damaging welfare
and food security effects on farmers (WHO, 2004). In addition, child labour is also more prevalent in developing countries. Tobacco production also impacts on deforestation of the already dwindled natural forests (Mutenje & Mango, 2019). However, tobacco is a demanding crop with high labour demand, input and management costs, but is felt to have a good market and high income potential in comparison with other agricultural crops.

3. Research Problem

Since 2000 there has been a sharp increase in tobacco production in Zimbabwe, mainly from the smallholder farmers who were the beneficiaries of the fast-track land reform programme. The majority of the smallholder farmers completely rely on firewood to cure their tobacco and cannot access coal and petroleum as alternative sources of energy. Looking with a futuristic eye on the sustainability of tobacco production as well as the critical need for the conservation of indigenous trees, there is insufficient evidence to draw firm conclusions on the business viability. This study aims to contribute to the literature on the viability of expanded tobacco production on forest degradation in Zimbabwe. The findings of this study are expected to contribute towards an understanding and perhaps help close this information gap. The results from the study will help policy makers to evaluate the current fuelwood, land use and forest conservation policies so as to streamline them with the current trends. This study will also equip tobacco farmers with the working knowledge and awareness of appropriate farming practices that are sustainable.

Smallholder farmers are only marginally involved in the tobacco sector. Although there are roughly eight times as many smallholder tobacco growers as commercial farmers, these account for less than 1.5 percent of all smallholder households (FAO, 2003). Certainly, the importance of tobacco as a high profit crop with fully developed market outlets cannot be overlooked, but it should also be noted that maize, cotton and groundnuts are all more important for smallholder farmers in most farming communities.

4. Materials and Methods

4.1 Study area

The study area is situated in ward 23 of Mutasa District in Manicaland Province, Zimbabwe. The study area is made up of two old farm areas; Grange and Laverstock (32°34’E; 18°52’S). Grange farm is located 20km from the city of Mutare and Laverstock is 5km from Mutare-Nyanga highway road. Grange resettlement area is located at an elevation of 1140 metres and Laverstock resettlement is 1169 metres above sea level. Ward 23 was selected for the study because it contained the research interest. It is in this ward where most farmers settled in 2000/1 during the fast track land reform programme. The ward has infrastructure in the form of tobacco barns, canals and dams for irrigation. The main economic activity of Mutasa District is farming, and mining activity mainly in the Penhalonga area.

Soil types in Grange and Laverstock range from sandy loams to clay soils. Loam soils dominate the areas and are most suitable for tobacco production. Some isolated pockets of red soils are found particularly on the eastern part of Grange. The Grange area is located in the dryer farming region IIb with mean annual rainfall of 400 mm and Laverstock area is in the farming region II with mean annual rainfall of 600mm. Annual temperatures range from 18-21°C in winter and 27-30°C in summer. The climate is suitable for dairy farming forestry, tobacco, tea, coffee, fruit, beef and maize production (FAO, 2009). The farmers also keep cattle, pigs, goats and poultry.

The district is rich in miombo woodlands which provide a good source of firewood for the tobacco curing process and occur on well-drained slopes. These woodlands vary from closed to open and are dominated by the deciduous tree species. It is a mixture of Brachystegia spiciformis, B. tamarinodoide, Julbenardia globiflora and Uapaca kirkiana (Shumba, 2001). The trees are fairly small at higher altitudes and bigger at lower altitudes. Acacia and Brachystegia spiciformis species are common at lower altitudes.

4.2 Research Design

The research followed a cross sectional design. It is a quantitative, descriptive and interpretive case study analysed through quantitative methods.
4.3 Sampling Procedure and sample size
Household heads were chosen from a list of beneficiaries of the land reform programme from the Ministry of Lands and Agriculture. The households were stratified according to resettlement schemes, consisting of 112 smallholder farmers and 1479 large scale commercial farmers. Forty households were selected randomly from a list of 112 smallholder farmers engaged in tobacco farming. Household heads of all the selected households were interviewed at their homesteads. In the absence of the household head an elderly member of the household was interviewed. In the event that there were no people on the day of the survey at the selected household, a return visit was organized for the interview.

4.4 Data collection and analysis
To assess the viability of tobacco production, a structured questionnaire was used to solicit for information on the benefits realized from growing tobacco, and the willingness of farmers to pay for the firewood used in the curing process. To assist determine the viability of tobacco production to smallholder farmers; a gross margin analysis was carried out to determine business viability. Percentages of sample size were calculated to determine farmers' willingness to pay.

5. Results
5.1 The viability and benefits realised from tobacco production
From the study, 43.2% of the respondents showed that they are socially benefiting, while 24.3% through capital gain and 18.9% benefited financially (Figure 1). The highest percentage of farmers (43.0%) indicated that they now live in good houses and can also send their children to school. Those who are married have managed to pay lobola hence meeting a social requirement. There is however a few (13.5%) who indicated to have benefited technically in terms of skill and knowledge from the tobacco production.

![Figure 1: Benefits derived from growing tobacco](image)

The results from the study show that an average gross margin of US$1 733, 17 per hectare is obtained by farmers from an average gross income of $3418.89 per hectare with the total average costs at US$1685.71 (Table 1). This data suggests that it makes sense to invest in infrastructure and woodlots. Gross margin is the difference between revenue and cost of goods sold (COGS), and it is calculated as the gross income of an item, less the cost of goods sold (e.g. production or acquisition costs). Thus gross margin can be obtained as follows:

Gross margin = Gross income - (Firewood cost + other variable costs)
TABLE 1: Gross Income, Variable Costs and Gross Margin Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Average Cost ($)</th>
<th>Standard Deviation ($)</th>
<th>Lowest value ($)</th>
<th>Highest value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Income</td>
<td>3418.89</td>
<td>210.80</td>
<td>800</td>
<td>10000</td>
</tr>
<tr>
<td>Total variable costs</td>
<td>1685.71</td>
<td>109.12</td>
<td>900</td>
<td>5000</td>
</tr>
<tr>
<td>Gross margin</td>
<td>1733.17</td>
<td>177.21</td>
<td>-749</td>
<td>5500</td>
</tr>
</tbody>
</table>

Figure 2 below illustrates that the higher the investment cost the more farmers realise the returns from tobacco production.

**Figure 2:** Scatter diagram showing the relationship between Gross Margin and investment cost

Smallholder farmers’ willingness to pay (WTP) for firewood used in the curing of tobacco

Farmers were asked to value the amount of money they were willing to pay for using firewood from the natural forest as their source of energy in the curing of tobacco. About 26.0% of the respondents were willing to pay US$4 per scotch cart full of firewood while 34.0% were willing to pay US$5, 17.9% to pay US$6 and 5.6% to pay US$1 per scotch cart (Figure 3). Figure 3 illustrates that 8.5% of the respondents were willing to pay more US$6 while 8.0% of the respondents indicated a negative willingness to pay value.

**Figure 3:** Amount of money farmers are willing to pay per scotch cart of wood

Most farmers indicated an average of 11 to 15 scotch carts of firewood they may need to cure a one hectare of tobacco (Table 2). This translates to a value between US$55 and US$75 per hectare.
From a Gross Margin Analysis point of view it means that the farmers were willing to pay a cost between US$55 and US$75. Table 2 shows that 55.0% of the respondents would go for the indigenous tree species despite presumed high cost while 45.0% of the respondents noted that exotic tree species are of higher heating capacity than indigenous trees. This shows that about 55.0% of the respondents agreed to pay more on indigenous wood for the same quantity of exotic wood.

### Table 2: Number of scotch carts and amount of wood required for the curing of tobacco

<table>
<thead>
<tr>
<th>Number of scotch carts needed (ha)</th>
<th>Frequency</th>
<th>Amount/ scotch cart (US$)</th>
<th>Type of wood required (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – 10</td>
<td>8</td>
<td>5</td>
<td>Indigenous: 10.0, Exotic: 7.5</td>
</tr>
<tr>
<td>11 – 15</td>
<td>27</td>
<td>5</td>
<td>Indigenous: 30.0, Exotic: 25.0</td>
</tr>
<tr>
<td>16 – 20</td>
<td>5</td>
<td>5</td>
<td>Indigenous: 15.0, Exotic: 12.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>5</td>
<td>Indigenous: 55.0, Exotic: 45.0</td>
</tr>
</tbody>
</table>

6. Discussion

Financial benefits are those benefits from which cash is derived to fund other activities while capital benefits include items such as vehicles, houses, farm machinery, farm equipment, cattle and fences. Social benefits are those which have to do with customs and norms. According to the research findings, tobacco production is viable but not all the farmers in Mutasa District are highly benefiting from the enterprise. Some gross margins are negative. Since tobacco prices are based on quality, the gross margin is different because some could not produce the tobacco of a higher quality. The gross margins for the smallholder farmers are generally high as they do not factor in the cost of firewood and family labour. Firewood is obtained locally and deemed free. According to Malaiyandi et al. (2010) family labour constitutes 17% and firewood 15% of the variable costs. This means that the farmers are saving 32% of the variable costs. The variable costs incurred were in a range indicating that some farmers used more inputs than others. The gross margins also varied. This may be attributed to differences in experiences and variation in input addition. Some farmers having been growing tobacco for more years than others could have learnt cost serving techniques which new farmers did not have (Keyser, 2002). The farmers indicated that they had no proper records and information provided was based on what they remember.

The farmers also benefitted from the technical support and cheaper inputs from the government and contracting companies. This is in agreement with a study by the World Health Organisation, (2004) which found out that tobacco farmers often receive subsides, loans, inputs and technical support from the central government or contracting companies. This makes the business production more attractive despite the hidden costs such as the health cost.

From the results of the Gross Margin Analysis, the farmers were on average willing to pay a value between US$55 and US$75 for firewood per hectare of tobacco. The gross margin without the inclusion of firewood cost would reflect a low level of willingness to pay. Even if the cost of firewood is included the farmers would still benefit and willing to pay (Chivuraise, 2011). The results from the study show that farmers would pay the amount which those farmers without firewood are paying to the suppliers. The survey showed that a greater percentage of farmers were willing to pay a value greater than US$5 per scotch cart of firewood. The fact that the farmers were harvesting from the natural forest and that they preferred the indigenous wood species, they gave it a monetary value. The value was however given with fear that they would be asked to pay for the wood.

7. Conclusions

The results show that a significant percentage of farmers are benefiting from tobacco production while a few are enjoying negative gross margins. Most farmers are benefiting financially with attractive gross margins. Smallholder farmers are also enjoying some social benefits derived from tobacco production. The higher the investment cost in tobacco production the more the gross margin the farmers realise. However, most farmers are willing to pay for fuelwood they intend to use in the curing of tobacco and this will impact positively in the conservation of indigenous trees.
8. Acknowledgements
We would like to thank all Agricultural, Technical and Extension Services (AGRITEX) staff of Ward 23, Mutasa District for all the support in contacting the tobacco farmers. We are also indebted to the hospitality and co-operation we got from smallholder farmers for their co-operation to make this study a success. Special thanks to Mr Mazhakata, a local resident smallholder farmer who would always accompany us during the study.

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