



RESEARCH ARTICLE

TOWARDS SUSTAINABLE SUGAR CANE PRODUCTION IN SOUTH AFRICA: A CASE STUDY OF THE LOWVELD AREA, MPUMALANGA PROVINCE

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ABSTRACT

Sugarcane production is an economically important activity in South Africa. TSB Sugar is among the top three South African sugar milling companies and owns the 2 mills in Mpumalanga. The overall objective of the study was to analyze the joint venture/partnership model and its implications in sustainable sugarcane production as implemented by TSB Sugar in the Lowveld area. According to the participants, the company provides assistance to small sugar cane growers in that, farms of 5ha to 20ha are developed and given to them, it also provides financial assistance for them (small growers) to run their farms. According to the findings of the study it is seen that the land claimants (the current land owners) are not versed with the operation of the partnership agreement, which leads to delays in proper implementation of the models or approach. This is a big challenge to TSB Sugar. Increased agricultural productivity is highly dependent on the status of the natural resource base and social security is also heavily dependent on how these resources are used. As the term sustainability explains itself, it is imperative for farmers to be able to farm and produce food into the foreseeable future, without reducing the options available for the future generations.

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INTRODUCTION

Sugarcane production is an economically important activity in South Africa. According to Bezuidenhout and Schulze (2006), the sugarcane production areas are situated on the eastern shores of the country. Since these areas have a large rural population sugarcane production has become a major livelihood with about 53 000 registered sugarcane growers and it supports approximately 1 million people (SASA, 2010). The sugar industry through the production and milling is an important provider of jobs particularly in the rural areas. Most sugar cane farming takes place in Kwa-Zulu Natal, with some farms in Mpumalanga and Eastern Cape. The industry is composed of 15 sugar mills, 13 of which are scattered from the southern border of KZN to its northern border, and 2 of which are in Mpumalanga (Maloa, 2001). TSB Sugar is among the top three South African sugar milling companies and owns the 2 mills in Mpumalanga. The company is a wholly owned subsidiary of Remgro, has as its core business activity being the production of refined and raw sugar that is marketed either nationally, by Quality sugars under the Selati brand name, or exported through the South African Sugar Association (SASA). Currently the production level is sitting at 105 ton/ha on average for the two Mills (Malelane and Komati mill).

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Seemingly the two Mills are battling to accommodate all the cane of the area (Lowveld), because cane is being carried over to the next season due to incapacity of the Mills. Like the other sugar companies in South Africa the company's key challenge remains being the maintenance of competitiveness in relation to other world class producers and industries.

Overall the sustainability of sugarcane production in South Africa has been influenced by a number international and national legislations spread amongst government departments as well as other institutions outside government. International Acts include the Convention on biological diversity of 1992 and the Ramsar Convention of 1992. The provisions of acts include minimizing and mitigating the impact of sugarcane cultivation on biodiversity as well as promotion of the ideal usage of wetlands. National Acts include the Constitution Act 108 of 1996, Conservation of Agricultural Resources Act No 43 of 1983, Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, No 38 of 1947, The National Environment Management Act (NEMA), No 107 of 1998, Environment Conservation Act (ECA), No 73 of 1989, The National Water Act No 36 of 1998, Atmospheric Pollination Prevention Act 45 of 1995, National Forests Act, No 84 of 1998, Occupational Health and Safety Act, No 85 of 1993, Road traffic act 29 of 1996, National veld and Forest Fire act No. 101 of 1998. The overall provisions of the national Acts concerning sugar cane production is to ensure that all South Africans have the right to an environment that is not harmful

to their health or well being and to have the environment protected, for the benefit of present and tomorrow's generations. The Acts emphasize on the prevention of pollution and ecological degradation, support conservation, and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. Towards sustaining the industry, the South African government has recognized the need to promote diverse ownership of agricultural land under sugarcane and have a range of support instruments in place to promote the sustainability of such initiatives. According to SASA (2010) about 19% of freehold land under sugarcane has already been transferred to black owners. However, the restitution of land to disposed communities has since emerged as a fundamental determinant of the future sustainability of the sugar industry. The overall objective of the study is to analyze the joint venture/partnership model and its implications in sustainable sugarcane production as implemented by TSB Sugar in the Lowveld area.

RESEARCH METHODOLOGY

Study area

This research was based on sugar cane production in the Lowveld area (Ehlanzeni), Mpumalanga province, South Africa. The Lowveld comprises the area between the Great Escarpment and the Lebombo Mountains, about 60 miles wide and underlain almost entirely by granite. Ehlanzeni is an import source of winter vegetables.

Geographic Information

Ehlanzeni District Municipality (EDM) is bordered by Mozambique and Swaziland in the east, Gert Sibande District in the south, Mopani and Sekhukhune Districts of Limpopo in the north and Nkangala District Municipality in the west. The municipality comprises of five local municipalities namely: Thaba Chweu, Mbombela, Umjindi, Nkomazi, and Bushbuckridge local municipalities. Figure 1 shows the location of Ehlanzeni district municipality in Mpumalanga Province. EDM also comprises a District Management Area (DMA) in the southern part of Kruger National Park.

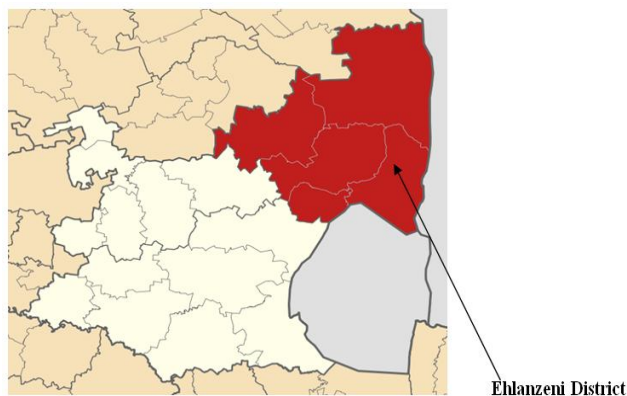


Figure 1. Location of Ehlanzeni District Municipality in Mpumalanga province (Ehlanzeni district, 2009)

With the incorporation of Bushbuckridge into Ehlanzeni the total area coverage of the district is approximately 27,895.47 km². EDM is based in Nelspruit the provincial capital of

Mpumalanga. Its main route the N4 Maputo corridor transverse the district from the east of Maputo harbour – that is in Mozambique – through Gauteng province to the North-West Province in the west; and the R40 Maputo sub-corridor transverse the district from Barberton in the south linking Swaziland to Phalaborwa that is Limpopo Province in the north.

Demographics

Ehlanzeni District Municipality has a population of 1,526,236 (Statistics SA, 2007); which is approximately 42% of the total provincial population of 3.6 million in Mpumalanga. Table 1 indicates the distribution of the population in the five local municipalities of the district of Ehlanzeni. The majority of the population in the district is of siSwati ethnic group.

Table 1. Population per Local Municipality and in Ehlanzeni District Municipality.

Ehlanzeni District Municipality	Population	Share (%) in district population
Thaba Chweu	87,547	5.7%
Mbombela	527,203	34.5%
Umjindi	60,478	3.9%
Nkomazi	338,096	22.1%
Bushbuckridge	509,964	33.4%
District Management Area	2,949	0.2%
Total	1,526,235	100%

Source: Ehlanzeni district (2009)

Socio-economic situation

The latest survey by Stats SA Community Survey, 2007 indicate that 49.2% of the households in the district did not have any income, 23.9% earned incomes between R1 to R400, and 10% earned between R 801 to R1, 600 per month. The report further states that that Ehlanzeni has 44.4% of not economically active participants in the economy. Factors that contribute to this include the increase in the population of the working groups (migrant workers, number of graduates, matriculates, school drop outs, retrenchments, etc). The level of education composition is indicates relatively low levels of schooling in the district. Only 6.7% of the population has higher education and 29.5% secondary schooling.

Climate

The Lowveld is subtropical, due to its proximity to the warm Indian Ocean and latitude. The Highveld is comparatively much cooler, due to its altitude of 2300m to 1700m above sea level. The Drakensberg Escarpment receives the most precipitation, with all other areas being moderately well-watered by mostly summer thunderstorms. The Highveld often experiences severe frost, while the Lowveld does not. Winter rainfall is not much, except for some drizzle on the escarpment. Nelspruit temperature, 29°C maximum and 19°C minimum in summer, 23°C maximum and 6°C minimum in winter and precipitation of 767 mm/annum (Ehlanzeni district, 2009). The climatic condition of the district is ideal for the cultivation of subtropical, citrus and deciduous fruits, cash crops and sugar cane.

Commercial versus Subsistence farming

Commercial farmers are widespread in the province; however, there are more commercial farmers in the Nhlantzeni region where agriculture is more intensive, due to more favorable

climatic conditions for farming in the region as compared to other regions. Most of the commercial farmers are white males. However, in the cane growing sector the number of female growers is increasing. Most of subsistence farmers are small growers who normally reside in rural areas and work in groups or clubs. A majority of them are old people or pensioners and have also lower academic qualifications. Some of these farmers are participants in the LRAD programme. The LANDCARE programme is being implemented in the district to rehabilitate degraded farmlands. There are currently six such projects in the province. It promotes awareness and develops capacity of land users in improved management of their natural resources. The farmers normally focus on vegetables, maize, poultry and lemon production and marketing is a major challenge.

Study design

This was a case study which followed the qualitative methodology. The case study was specific and concentrated in South Africa, Mpumalanga province, Lowveld area. This region is single bonded system (which is unique to other regions). The unit of analysis was individual respondents (farmers), categorized in specific operation of sugar cane farming. The study used both descriptive and explorative designs. The participants' expectations and experience play a vital role in sustainable sugar cane production. Explorative design was used to get background information of the farm operators and find new insight in sugar cane industry. Since the farm operators in the study have long service of sugar cane farming, knowledge and information of sugar cane production have been acquired precisely.

Research Instruments

The study used qualitative research. Data collected is detailed and has direct quotations capturing people's perspectives and experiences. The qualitative method of one-on-one interview and observations were used to obtain information from people dealing with daily operations on the farm. There were in-depth interview with respondents to collect accurate information on the farms. The researcher used operational definitions to interpret collected data.

Research participants

Permission was obtained to run the study from the relevant authority (General Manager) of TSB sugar (Cane Operation Division), see attached authorized letter in appendix. About 20 sugar cane farmers (research participants) in Nkomazi area which is the main sugar cane area in the Mpumalanga province were consulted in the study and only 13 farmers completed the questionnaires. The researcher chose this area because it is accessible to him. The chosen farmers have 500 hectares or more per farmer which they run. They are all commercial farmers. The population is assumed to have enough knowledge on sugar cane production and is staying on the farm in order for them to become easy to operate. Every initiative that SASA comes up with focuses to these farmers group as huge cane yields in the country come from this group.

Sampling procedure

The study was mainly focusing on commercial sugar cane growers in the Lowveld area, Mpumalanga province. A

purposive sampling was used involving various level of management. A selective sampling was done e.g. senior manager, junior manager, and supervisor. The following people participated in the study, namely, farm owner, farm manager, supervisor, section leader and production manager. The study describes the situation and the relationships of these farmers with the supportive services offered by the institutions (SASA) that monitors the sugar cane industry in South Africa. The study also involves using a mixed methods approach, which is a combination of interview and observation. A combination of the two was used for validation purposes. The sampling method used is a non-probability: purposive criteria because respondents are considered as relevant to the study topic.

Data collection

Primary data was obtained through completion of semi structured questioners by designated staff in the commercial farmers. see in appendix. The information was collected and administered by the researcher to avoid non-respondents and to assist the respondents whenever they have questions/ uncertainty about the questions asked. Secondary data was obtained in the reviewed analysis of the following government and TSB Sugar documents and records (annual report, strategic plans, management plans, national policy, and financial plans).

Questionnaire

The questionnaire was designed based on literature review. There was discussion held with the study supervisor on how to formulate the questionnaire. The questionnaire is divided into five thematic areas; identification of existing models, identification of threats surrounding the models, investigating the current and future water availability prospects, determining the current corporate social responsibilities and reviewing the existing company community partnership.

Qualitative data analysis

The researcher was able to describe the situation based on the five thematic areas as observed and reported by the farmers and the managers.

RESULTS AND DISCUSSION

Demographic characteristics of the respondents

This section presents and discusses the demographic characteristics of the sampled participants in the study area. Table 2 shows that females are scarce in sugar cane production in the study area. The findings indicate that only 15.3% of the interviewed farm operators were females while the remaining percentage were males. This can be attributed to apartheid regime where sugarcane farming was dominated by males, however with the introduction of the affirmative action programme by government the number of females involved in farming and in leadership positions is increasing (Ehlanzeni district, 2009). According to Commonwealth (2001) gender mainstreaming is the current international approach to advancing gender equality and equity in society. Therefore the government should incorporate gender perspective into all policies, plans, programmes and projects to ensure that these impact on women and men in an equitable way.

The five main issues of particular significance in agriculture are; equal access to land and water resources, and to credit and other support services; gender differences in roles and activities; gender and agricultural extension and research; gender, agricultural biodiversity and commercialization; and women's empowerment and equal access to decision-making. Concerning education 84.61% of the research participants had reached tertiary level; perhaps it is because the study targeted conducted with farm managers at TSB Sugar. The high professional level in the sugarcane production is an advantage to ensure the sustainability of the industry since nowadays farming has become highly technological. About 76.9% of the respondents were married while 15.3% and 7.6% were single and widowed, respectively.

Table 2. Demographic characteristics of the research participants

	Frequency	Percentage
Gender		
Male	11	84.61%
Females	2	15.30%
Education		
Primary level	0	0%
Secondary level	2	15.30%
Tertiary level	11	84.61%
Marital		
Married	10	76.90%
Single	2	15.30%
Widowed	1	7.60%
Age		
20 – 30	3	23%
31-40	4	30.70%
40+	6	46%

Existing sugarcane production models at TSB Sugar

TSB Sugar acknowledges that it has a role to play in revitalizing the district in order to strengthen the local economy especially with regard to the sustainability of small-scale farmers. The company has ensured that its interventions are aligned with government rural development objective of restoring social justice in rural settings. To maintain sugarcane productivity and sustainable supporting beneficiaries in the long term the company uses three models, namely; joint venture system, straight lease and company community partnership.

Joint venture system

The company (TSB Sugar) uses a 50/50 joint venture system, whereby the land claimants share 50% of profit with the company. According to the CSI Handbook, 13th edition, land reform is a key element in restoring social justice in rural settings, but research has shown that post settlement support is essential to maintaining agricultural productivity and sustainably supporting beneficiaries in the long term. In 2007, two claimant community trusts secured 6 000 hectares of TSB Sugar land and subsequently went into 50% split joint partnerships in operational companies with TSB Sugar. These operational companies lease the land from the claimant trusts and the two partners receive dividends according to the shareholding. Together, TSB Sugar and the new landowners aim to preserve their agricultural asset, build critical skills among the beneficiaries, and share related profits and opportunities with the community. About 70% of the participants admitted that the 50/50 joint venture model is functioning very well and 30% said no, it is not functioning

well. Two issues were mentioned about the implementation of the model, namely: The lifespan of the model is too short; and the land claimants are not set at management level to learn how to run a farm profitably.

Straight lease

In the straight lease agreement, TSB Sugar pays out a certain amount annually to the land owners for a certain period. According to the participants the lease period ranges from 15 years to 20 years. Most of the land claimants do not understand or have a clue of farming enterprise, particularly in the straight lease agreement, whenever they feel to stop the lease from working, they do so.

Company community partnership

The partnership agreement, the company develops the area in its costs and gives the established area to the black farmers whereby each farmer receives a certain amount monthly for his/her personal needs. After harvest the company deducts a certain amount from the income to pay back the capital spent during development. This normally takes 10 to 12 years to payback the capital expenditure. The black farmers also get grants from the government to minimize the loan.

SWOT analysis of the models

There were other cross-cutting benefits that were mentioned about the implementation of the three different models. This include the economic sustainability as a result of utilizing the land; and job creation especially because the models benefit people in the rural areas. For instance according to TSB Sugar (2010), the company formed a partnership with the Ligugulethu Co-operative, a collective of 889 small scale growers in the Nkomazi district, to form the R25 million Akwandze (we are growing) Fund. When Khula Enterprise Finance was brought on board in 2009, the Khula Akwandze Fund grew to R100 million. This financial institution provides loans to small scale growers to produce sugar cane and to render services e.g. cane cutting, weed control and security. The strengths, weaknesses, opportunities and threat of the models are summarized below as per the findings of the study:

Strengths

- Milling capacity still maintained since all sugar cane farming operations are not affected by the introduction of the joint venture system.
- Job creation to land claimants and surrounding community still happening.
- Previously disadvantaged people or land claimants are able to get income as a result of the joint venture agreement.
- Assets are owned individually and may be rolled over on a tax-deferred basis on a transfer from a parent to a child.
- Capital assets are shared, which may allow fixed costs to be spread over a larger base, lowering costs of production.
- Labour and management are shared, which permits more specialization and provides individuals with more time off than if the individuals operated sole proprietorship farms.
- Dissolution of a joint venture is simple.
- Share ratios may be changed easily between years.
- Cost to establish is low.
- Allows younger generation to develop management experience.

Weaknesses

- As with all types of farm business arrangements, there is the potential for disagreements - good communication techniques must be practiced.
- A joint venture could potentially be interpreted as a partnership with the associated negative income tax and liability implications.
- Each party does not have the freedom of independence in action and decision making as in a sole proprietorship (Gamble, 2002).

Opportunities

- According to 5% of the participants, there is an opportunity of the company to get more farms/land should these models become successfully in operation
- The participants also believe that there will be job created for the land claimants, crime rate will be lowered as land claimants will be working, milling capacity will be maintained, and land claimants will acquire farming skills.
- Long lasting business relationships can be built

Threats

According to the participants there are threats in the implementation of these systems, particularly joint venture and straight lease agreement. The following were the mentioned threats:

- The land claimants may pull out of the agreement and decide to farm on their own which can pose an insufficient cane supply to sugar mills;
- Financial disputes over dividends to land claimants which might cease the functioning of the system;
- There is no skills transfer happening to land claimants as they are not part of the management of the farms;
- Ignorance to the land claimants particularly in straight lease agreement, might lead to termination of the agreement before its expiring time;
- Changing or restructuring of board of directors irregularly may create a serious problem, as new guys will always come with new issues.

Participants recommendations

Following the SWOT analysis of the sugarcane production models used by TSB Sugar, to strengthen the models the research participants recommended the following:

- The agreement should be reviewed annually by the land claimants and the company (TSB Sugar);
- Effective communication to land claimants should be practiced;
- Awareness of any changes should be done by the land claimants' board of directors;
- The board of directors should be trained on how to run a farming enterprise profitably;
- The company should be involved in the distribution of the dividends to land claimants at the grass root level.

Sources of water and administration

About 50% of the participants use Crocodile River for sugar cane farming. Kwena dam is the water supplier to the latter

river. And 10% of the participants use Lomati River for sugar cane irrigation. This river receives its water from Driekoppies dam. Lastly 40% of the participants utilize Nkomazi River for the cane production and the water source is Maguga dam which is located in Swaziland. Figure 2 shows the proportion of the irrigation water supply in the study area (TSB Sugar). The participants mentioned that they normally get water allocation of 1l/ha/min. About 7% of the participants reported that they supplement the irrigation water with boreholes and mountain/stream water.

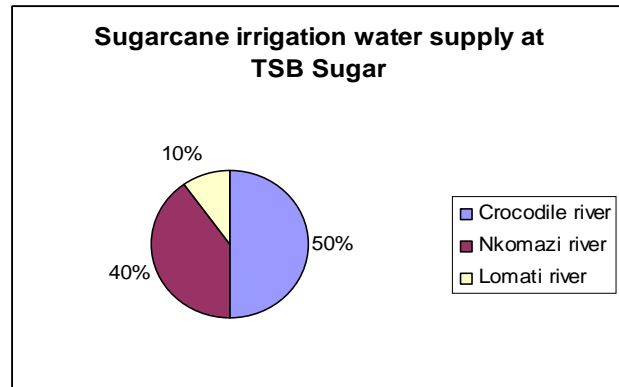


Figure 2. Proportion of irrigation water supply in the study area

Challenges to water availability

According to the participants, the given water allocation is sufficient for sugar cane production, as some of the farms installed less water consumption irrigation systems, e.g. drip irrigation. Irrigated agriculture accounts for 70% of global water withdrawals and therefore contributes substantially to global water scarcity. Based on bio fuel production projections for 2008 and 2017, it was estimated that currently around 1% of all water withdrawn for irrigation is used for the production of bio-ethanol, mainly produced from irrigated sugar cane and maize. In 2017 the amount of water to be withdrawn for bio fuel production would increase by 74% if agricultural practices remain the same.

TSB Sugar corporate social responsibilities

According to TSB Sugar, 2010, a total of 80 000 people is residing in the Nkomazi area of which 1000 people and 79 000 people residing in developed area and tribal area respectively. The company acknowledges that there is role to play in revitalizing the region. The company corporate has got social responsibilities on education, social cohesion, social transformation and skills, and creating rural entrepreneurs.

Education

In partnership with Star Schools, the company launched a learner incubator programme catering to the Malelane sub-region in Nkomazi in 2005. This programme directs R800 000 in funding annually to supporting supplementary English, maths and science classes for 150 children in grades 10 to 12. In 2009, all 55 matric learners who attended classes passed, with 74% achieving university exemption (TSB Sugar, 2010). The company provides the following assistance: 1) Building primary schools for the poor community, 2) Donating with school facilities, e.g. computers, 3) Granting bursaries to land

claimants in the study area, 4) Giving out school uniform to needy pupils, and 5) Initiated a learner ship program for the community

Social cohesion

In 2010, the Selati Super Cup, the richest amateur soccer tournament in the country, attracted 15 000 spectators from Nkomazi and surrounds who watched 188 local men's teams and 18 local women's teams competing for honours. Tsb Sugar is the main sponsor, donating R300 000 as well as in-house resources for promotion (Tsb Sugar, 2010). The company fully supports the following different sports in the area: 1) Initiated a soccer league (Selati) for the community, and 2) Hundred percent (100%) sponsor of Selati marathon competition

Social transformation and skills

According to TSB Sugar (2010), TSB Sugar's small-scale grower sustainability project, in partnership with a facilitation company called Lima, provides training to farmers in collective and democratic decision-making. The social facilitators use participatory rural appraisal techniques to guide growers through planning, implementing decisions and resolving problems. Training in the democratic rights of the individual in the discussion process is also essential in an environment where 30% or more of the group may comprise women, who do not traditionally take an assertive role. By giving them the tools to actively make decisions and take responsibility for them; TSB Sugar aims to empower these emerging black farmers to own their own success.

Creating rural entrepreneurs

Farming plays a vital role in the economy activity in rural communities. However, sustainable job creation and enterprise development are key objectives of TSB Sugar' strategy, and to this end the company has partnered with Sasol Chem City to support rural entrepreneurs. The two companies jointly launched the project with body care products, specifically glycerine soap. Three elderly women were selected from home-based care groups to join the pilot in April 2010. After the first month, one woman had opened her first bank account and another had already made a profit. TSB Sugar is funding the costs for the raw materials to help entrepreneurs get started, which range from R3000 to R6000 for a kit (TSB Sugar, 2010). According to the participants, TSB Sugar is contributing towards social assistance to the surrounding community. The participants agreed that the company is doing enough in terms of social responsibility. However, some of the participants felt that the company should increase its social responsibility by also building disabled schools as there are disabled people in the area as well. The participants also agreed that the company is taking part in environmental conservation, where alien plants are regularly eradicated and also water used from the sugar mill is reused for irrigation purposes instead of throwing it to the rivers.

Existing company community partnership

According to the participants, the company provides assistance to small sugar cane growers in that, farms of 5 ha to 20ha are developed and given to them, it also provides financial

assistance for them (small growers) to run their farms. They are also given classes on how to run their farms more productive and in a sustainable manner. Example of such partnership is Siyathuthuka project in the Kaapmuiden area, where the company established the area and gave it to seven farmers of which each owns more or less 30 hectares. The benefits out of this partnership are: 1) Small sugar growers receive income annually, 2) The company is able maintain its milling capacity with the cane coming from the small growers (good cane supply), 3) Farming skills is transferred to the small growers, and 4) Job opportunities for the surrounding community

Challenges of the company community partnerships

The participants felt that there are also challenges in the partnership which are:

- The extension officers are not enough to give fully support to all the small scale growers
- There is no assurance as to whether all the small growers will be able to run their farms more productive and in a sustainable manner.
- Training seems to be a big issue as most of the growers are old aged
- Financial management to small growers is a serious problem

According to the participants, the company should do the following solutions to address the above challenges:

- More extension officers should be employed to be able to attend all the growers whenever they need them.
- The company should also review the partnership agreement in order to rectify the deviations.
- Another alternative is to consolidate all the poor performing farms and employ one person to look after them in order to maintain a consistent cane supply to the mill.

Conclusions

This section deals with conclusion drawn based on objectives. According to the findings of the study it is seen that the land claimants (the current land owners) are not clued up with the operation of the partnership agreement, which leads to delays in proper implementation of the models or approach. Hence the company is trying its best to make the system applicable. The problem of dividends seems lying on the land claimants' board of directors as it is found that the people at the bottom level do not get enough share or full information as to how much has been brought forward to the table in that specific financial year. Water availability seems to be a serious problem in the study area as in winter the farmers are given water restrictions in order to maintain a water supply throughout the growing season. A few farms are able to access borehole water and some receive water from mountain. This forces them to apply sound irrigation scheduling in order for the sugar cane to grow vigorously. Due to low literacy of the small scale growers in the study area, the issue of irrigation scheduling might be ignored which may also lead to misuse of irrigation water. Since the company is playing a vital role in terms of corporate social responsibility in the study area, the

community benefits a lot, where crime, HIV/AIDS, etc. are minimized. The sponsorship of charity organizations in the study area promotes poverty eradication. School sponsorship promotes education in the study area. The establishment of tribal land for small scale sugar cane production empowers disadvantaged people in the area.

Recommendations

The following is recommended based on the findings on the different thematic areas of the study:

Models of sugarcane production at TSB Sugar

In order to strengthen the sustainability of the models, the following is recommended:

- As the land claimants are found not clued up of how to implement the joint venture or straight lease agreement, it is of imperative to conduct learning workshops to improve their understanding of farming business (promote effective communication).
- The company should in the beginning assist the land claimants' board of directors on how to share the dividends to the people at lower level, then with time the directors will understand the proper procedure of dividends sharing.
- Meetings regularly between the company and the land claimants can promote good relationship and understanding amongst themselves.
- The government should play a regulatory role by developing legislation that would protect land claimants and create an enabling environment for contract farming to operate (Jacobs, 2001).

Irrigation water availability

Water has become an increasingly important determinant of agricultural sustainability, especially in arid and semi-arid areas of the world. According to Labedzki, (2004) because of possible increase in water shortage in agriculture, the main actions and measures should lead to: increase of local water resources and their availability; increase in water use efficiency; decrease in water needs for crops; and intensification of irrigation. Therefore based on the above premise the following is recommended to improve water availability for sugarcane production at TSB Sugar:

- Farmers must also start considering drip irrigation system instead of overheads irrigation system which has a huge impact in water erosion due to run-off water.
- Training workshops should be conducted for small scale growers as to how much and when to apply irrigation to the sugar cane in order to save water (good irrigation scheduling).

Corporate social responsibility

Even though the findings of the study indicated that TSB Sugar was performing exceptional well in as far as social responsibility is concerned. However there still some gaps that needs to be covered; therefore the following is recommended:

- More different sports should be established not only soccer as people's preferences are differ, some like cricket or rugby.

- Sponsorship for disabled people should be developed in the study area as per the findings there is no school for disabled people in the area.

Company community partnership

The contribution of the company community partnership were highly appreciated by the research participants; therefore it is recommended that the company should extend its partnership to more communities as this may empower more business-interested people especially in the rural areas.

Importance of sustainability in agriculture

Rasul and Thapa (2004), state that a sustainable agriculture must be economically viable, ecologically sound and socially responsible. Ioris, et al., 2008, state that sustainable management of water resources, implies not only indefinite continuation of physically and biologically stable systems, but also concern for the other dimensions of sustainable development, such as the economic efficiency of water use, the equitable distribution of the costs and benefits of water resource development and participatory approaches to the policy-making and decision-making process. Increased agricultural productivity is highly dependent on the status of the natural resource base and social security is also heavily dependent on how these resources are used. As the term sustainability explains itself, it is imperative for farmers to be able to farm and produce food into the foreseeable future, without reducing the options available for the future generations. The fast growing world population makes it of high importance to pay more attention to agriculture. Farmers are argued to increase the productivity with the limited land and water resources in order to maintain food security for the community at large.

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