



## Biofuel Production in Tanzania: Local Communities' Perceptions

### LA PRODUCTION DE BIOCARBURANTS EN TANZANIE: LES PERCEPTIONS DES COMMUNAUTES LOCALES

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#### Abstract

This article presents the case study on how communities in the two districts of Tanzania (i.e. Kilwa and Bagamoyo) perceive investments in biofuel to their livelihoods in the respective areas. Based on the results from this study, the potentials of biofuel production in the wealth creation for poverty alleviation is very low. The case study noted that biofuel production in Tanzania is established in areas where the residents are poor, and the approach used by investors is likely to solidify the state of dependency where people will stay waiting for the investors to come and provide everything to them. In order to have any meaningful gains from biofuel investments to the communities, lessons from similar initiatives in Tanzania and elsewhere in the world should be learned and their strengths and shortcomings be assessed to establish a more useful schemes. There is a need for the government to have good knowledge of benefits and costs emerging from investing in Biofuel production and also have the communities well prepared to participate and use such investments as an opportunity to get out of poverty.

**Key words:** Biofuel production; Tanzania; Local communities' perceptions

#### Résumé

Cet article présente l'étude de cas sur la façon dont les communautés dans les deux districts de Tanzanie (ie Kilwa et Bagamoyo) perçoivent des investissements dans les biocarburants à leurs moyens de subsistance dans les zones respectives. Sur la base des résultats de cette étude,

les potentiels de production de biocarburants dans la création de richesse pour la réduction de la pauvreté est très faible. L'étude de cas fait remarquer que la production de biocarburants en Tanzanie est établi dans les zones où les habitants sont pauvres, et l'approche utilisée par les investisseurs est susceptible de consolider l'état de dépendance où les gens vont rester en attente pour les investisseurs à venir et donner tout pour eux. Afin d'avoir des gains significatifs d'investissements de biocarburants pour les communautés, les leçons tirées des initiatives similaires en Tanzanie et ailleurs dans le monde doivent être apprises et leurs lacunes et renforcé être évaluée pour établir un schémas plus utile. Il ya une nécessité pour le gouvernement d'avoir une bonne connaissance des avantages et des coûts émergents d'investir dans la production de biocarburants et aussi les communautés bien préparée à participer et utiliser ces investissements comme une opportunité pour sortir de la pauvreté.

**Mots-clés:** La production de biocarburants; Tanzanie; Perceptions des communautés locales

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#### INTRODUCTION

Liquid biofuels have for quite sometime attracted increasing interest among many countries in the World including Tanzania. Biofuels are promoted as the best substitute for conventional fossil fuels. Their reduced carbon emissions compared to fossil fuels, their positive impact on rural development, together with the escalating oil prices from \$64 per barrel in 2006 to over \$140 in June 2008 are the driving forces behind

their market development Worldwide As the industry grows, so does the debate over the merits and demerits of biofuels. Contentious issues include the ability of biofuels to mitigate climate change effectively, the role of biofuels in recent food price hikes, and the threat of biofuel production to natural ecosystems. A number of major reviews in recent years have provided detailed and balanced analyses of the likely impacts of biofuels on local and global economies, society and environment. Food security is highlighted as a major concern.

The situation in Tanzania is not encouraging as explained in the literature there is currently no biofuels policy. Although the process is now underway to formulate National biofuels policy, a considerable number of projects are already operational and it is unclear as what would happen to them when the policy is in place. Investors are able to receive necessary investment, land and environmental approvals to start plantations without any concrete government policy. Yet the exiting guidelines on biofuels consist of issues to be desired. Understandably, foreign investment in Tanzanian biofuels is being encouraged as it has the potential to aid rural development and local livelihoods, improve energy security and reduce oil imports.

The energy policy states that energy is a critical input in the development process. There cannot be sustainable development and satisfaction of basic needs of society without sufficient and efficient supply and use of energy. The policy also provide input into the development process of the county through encouraging the establishment of an efficient energy production, procurement, transportation, distribution and end- use in an environmentally sound manner with due regard to gender issues.

Tanzania is buying-in into biofuel production initiative and land for large scale biofuel production has been allocated to investors in various places across the country. Kilwa and Bagamoyo Districts which are the focus of the present paper, land is already allocated to the "investors" for biofuel production. Despite these developments, little is known on the current status of the potentials of the biofuel production on wealth generation for poverty alleviation.

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## METHODOLOGY

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### Case Study Approach

This study used a case study approach and was conducted in two coastal districts of Bagamoyo and Kilwa in Tanzania. Bagamoyo is located in Coast region and Kilwa is found Lindi Region the study was carried out between July 2009 and June 2010.

### Bagamoyo

Bagamoyo is one of the 6 districts of the Coast Region of Tanzania. It is bordered to the North by the Tanga Region,

to the West by the Morogoro Region, to the East by the Indian Ocean and to the South by the Kibaha District. The district capital is at Bagamoyo. Based on 2002 Tanzania National Census, the district has a population 230,164. The main economic activities in Bagamoyo District are fishing, agriculture, pastoralism, mining as well as tourism.

### Kilwa

Kilwa is one of the 6 districts of the Lindi Region. It is bordered to the North by the Coast Region, to the East by the Indian Ocean, to the South by the Lindi Rural District and to the West by the Liwale District. The district includes the island of Kilwa Kisiwani in the Indian Ocean. Although small-scale fishing is a relatively common source of livelihood, more than 90% of the District's population relies on subsistence agriculture to support their households. An average of 63% of the people is marginalized, with illiteracy levels of around 43%. Moreover, more than 95% of the people surveyed were living in sub-standard housing and approximately 62% were experiencing food insecurity.

### Data Collection Methods

Key informants including District Land and Natural Resources Officers, District Planning Officers, District Agriculture and Livestock Officers were interviewed. Others involved chairpersons and Executive Secretaries of the selected villages in the two districts. Focus Group Discussions meetings were conducted in the selected villages where participants from village government council as well as representatives of smallholder farmers and livestock keepers were brought together. In-depth interviews were conducted with heads of households using a structured questionnaire with both open- and close-ended questions. A total of four villages, two in Bagamoyo and two in Kilwa district were surveyed and in each village a total of 50 household representatives were interviewed making up a sample size of 200 respondents. The sample involved 50% of farmers who are working as casual laborers in Biofuel production companies and the other 50% were smallholder farmers who are not working as casual laborers. The aim of targeting these two groups was to establish income variations and assess the contribution of casual employment generated by Biofuel production companies to the incomes of the people in the respective areas. Most of the qualitative data collected were analyzed using content analysis. Descriptive statistics were also used in analyzing quantitative information collected during in-depth interviews from the structured questionnaire.

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## RESULTS AND DISCUSSION

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### The First Case Study: Bagamoyo District

#### Characteristics of the Respondents in the Case Study

**Areas**

Respondents were interviewed based on gender, education status, main economic activities and income levels which assisted in making comparison between people who are working on the biofuel investments and those working in the crop production sector.

**Gender**

Of those interviewed 56% were males and 44% were females. Involvement of both male and females in interviews and discussions was important in obtaining information in balanced way and capture views and opinions from both males and females.

**Education Status in the Study Area**

Results as presented in Table 1 showed that the majority (74%) of the respondents has acquired primary education and only 16% had secondary education. Some 8% have never been to school and the remaining 2% acquired tertiary education. The observation of having the highest percentage with low level of education supports the fact that land-using persons in tropical and subtropical regions are often very poorly educated and that they can easily be exploited. In addition to the local communities being easily exploited, the easiness to be attracted by any emerging income-generating activity without clearly understanding its costs and benefits is apparent and this explains why a significant number of people and especially youth have been recruited to work in the sugarcane trial farm as casual laborers.

**Table 1**  
**Characteristics of the Respondents in Bagamoyo Case Study Area**

Characteristics	Percentage
Gender	
Male	56
Female	44
Education level	
No formal education	8
Primary	74
Secondary	16
Tertiary	2
Economic activities	
Farming	68
Casual laborers at SEKAB	32

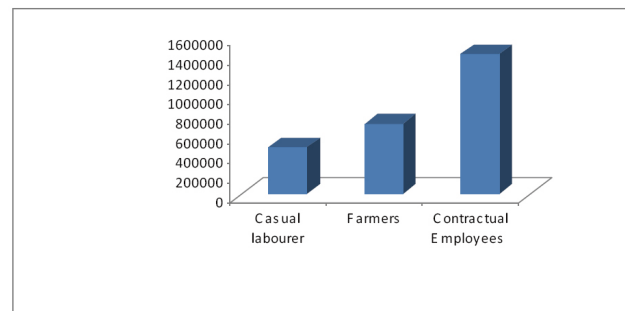
**Main Economic Activities**

Of all the respondents interviewed in Bagamoyo District about 68% reported that they depend on smallholder farming as their main economic activity, 32% work as casual laborers at the company's (SEKAB) sugarcane trial farm. If the company's plan of establishing over 20,000 ha of sugarcane plantation had to materialize and looking at the data showing the current involvement of the community in the company's activities, there would be a high possibility of having more people recruited into sugarcane cultivation which would have affects on the production of other food crops as the majority of the

population in the area will be absorbed to work in this investment.

**Income Levels from Different Livelihood Activities: Comparative Analysis**

As people in the area have indicated to have a number of income generating activities, comparison of incomes generated from wages and salaries against income generated from other livelihood activities was carried out in the present study. The results revealed that a person employed by the company at the monthly salary of Tshs. 120,000 which is the maximum amount paid by the company, would earn Tshs. 1,440,000 per year, an average farmer earns Tshs. 720,000 per year upon selling his/her farm produces while the casual laborer earn Tshs. 480,000 per annum (Fig.1).



**Figure 1**  
**Communities Average Annual Income Levels from Different Activities In Bagamoyo**

The results (figure 1) indicates that comparing to the rest of the activities, farming is a more beneficial income-earning activity that if improved can significantly contribute to improving people's livelihoods when compared to casual labour. This observation stems from the fact that the ones who earn higher incomes are those who are employed and work on contract basis and they are very few and yet many of them come from far afield while the casual laborers are the majority whose incomes are far less than what farmers and contact workers earn. Additionally, the respondents reported that beside low wages, casual laborers experience problems such as delayed payments, longer working hours, lack of health services and harassment.

**Communities' Perception on Biofuel Production in Relation to Their Livelihoods Improvement**

Interviews and discussions with key informants both at district and village levels revealed that people perceived biofuel production as an important avenue towards improving people's livelihoods through generation of incomes both directly and indirectly. At the district level officials were optimistic that biofuel production would contribute significantly to the development process in their respective districts. In Bagamoyo district, the District Land Officer indicated that much of the land in Bagamoyo

is not in use, hence using it for biofuel production could be a wise use of the land resources.

However, as indicated from the findings obtained from the household surveys, the majority (98%) of respondents indicated that they were not benefiting anyhow from the project. This is contrary to the community general perception captured during key informant interviews and Focus Group Discussions. This situation is due to the fact that although the project activities began a while ago there had been no significant progress recorded in terms of establishing sugarcane plantation and the factory that would enable many people to secure job opportunities and access numerous services as outlined above.

At Makurunge village the village leaders noted that through meetings with the investor and District Government officials, people were informed that many benefits would be secured including capacity building (paying school fees for children) whose parents will be working in the biofuel farms, social services such as schools, clinics, as well as provision of skills and technical know how on sugarcane cultivation. Villagers were also informed that there would be an opportunity for out-growers that apart from being imparted with the knowledge on sugarcane cultivation, they would also be allowed to sell what they harvest from their farms to the company. Information from the Focus Group Discussions revealed that there were plans that farmers whose farms are within six kilometers just after the boarder of the RAZABA farm would be involved in the out-grower schemes and that the investor would help farmers in farm preparations, seedlings and water for irrigation and in turn the out-growers would sell the final product to the company and the company would just deduct the costs involved in the preparation of the farms and other services. Based on such information people' hopes were very much raised and that they were sure of getting out of poverty in the area. On the production plan it was indicated that the production would have started in 2008 in the area.

The communications further indicated that the investor was in the process of identifying additional land to allow the company reaches about 20000ha of sugarcane which would allow setting aside land for biodiversity conservation and give enough land to secure loans from financial institutions. Of all the interviewed community representatives, about 37% reported that more than two years have gone since SEKAB established its activities in the area but there seem to be no any progress on implementing series of activities as outlined in the company's plan and therefore they had a feeling that the project was dying. About 22% of the respondents complained about delayed payments to the casual labourers, some 14% of the respondents reported that casual labourers are not being treated well in some cases, and 18% had it that the project does not contribute to the improvement of livelihoods. Whereas 6% said the project

will lead into food shortage in their villages only 3% had a feeling that the project help to improve communities' livelihoods.

Results suggest that the project seem to be of more disadvantage than benefits to the communities. Experience from similar projects within the country (i.e. Mtibwa Sugar) and outside there are indications that unless vigorous improvement is made the project would not benefit local communities who are the majority but the investors and few individuals who in most cases will not come from where the project is located.

**Table 2**  
**Communities' Perception on Biofuel Production in Relation to their Livelihoods Improvement**

Perception	Percentage response
No progress observed on the investment	37
There are delays in payments for casual laborers	22
Project does not contribute to the improvement of communities livelihoods	18
Poor treatments/harassments of the casual laborers	14
Investment will lead into food insecurity	6
Project will contribute to the improvement of the livelihoods of the community	3

### Out Grower Opportunities

Through various communications to the District and Village Governments it was indicated that the investor intended to develop an ambitious programme to encourage small and large-scale farmers to become contracted producers of sugarcane. It is indicated that the out-growers would be incorporated into the overall logistical plan for planting and harvesting. Development of opportunities for active participation of the out growers and income generation have been indicated by the investor to be one of the key pillars in achieving good and positive development in collaboration with communities.

### Local Community Involvement

Results from this study shows that majority (77%) of the villagers was aware of the presence of the biofuel company investing in sugarcane plantation and 23% reported that they were not aware about the company. Such levels of awareness suggest that communities were involved. The respondents listed various ways through which they were involved by the project. As indicated in Table 3, about 61% of the respondents indicated their involvement to be through securing positions to work with the company as casual labourers, some 37% indicated to have participated in village meetings when the project was introduced in the village and the rest (2%) indicated to have received letters informing them about the project, its objectives and expected outcomes.

### The Second Case Study: Kilwa District

In Kilwa district, the investor in biofuel production is BIOSHAPE Tanzania Ltd. biofuel crop being planted in this area is *Jatropha carcus* (Mibono). Just like in Bagamoyo District, biofuel production in Kilwa District

is perceived as an important investment that could help improve welfare of the communities in places where plantations have been and will be established.

**Main Economic Activities and Gender**

Of all respondents, 70% were male and 30% female. As showed in table 4, over a half (57%) of the respondents in Mavuji and Migeregere villages in Kilwa District reported that they depend on smallholder farming as their main economic activity. About 37% work with the Bioshape Company as casual labourers and contract employees while the remaining 6% reported to be government employees such as teachers and extension officers.

**Table 3**  
**Awareness and Involvement of Local Communities in the Biofuel Production**

Awareness and ways of involvement	Percentage response
Awareness	
Aware on the existence of biofuel investment	77
Not aware	23
Ways of involvement	
Through letters from the village government	2
Participated in the public meeting	37
Involved as casual laborer	61

**Table 4**  
**Characteristics of Respondents in Kilwa Case Study**

Characteristics	Percentage
Gender	
Male	70
Female	30
Education level	
No formal	8
Primary	78
Secondary	14
Economic activities	
Farming	57
Casual laborers at Bioshape	37
Government employees	6

**Table 5**  
**Awareness and Involvement of Local Communities in the Biofuel Production in Kilwa**

Awareness and ways of involvement	Percentage response
Awareness	
Aware on the existence of biofuel investment	98
Not aware	2
Ways of involvement	
Participated in the public meeting	85
Involved as casual laborer	15

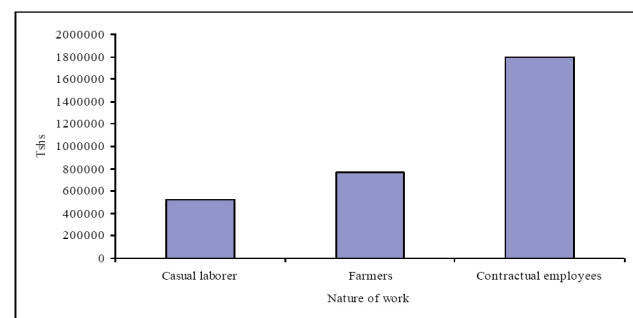
**Education Status in the Study Area**

In this area, the majority (78%) of the respondents acquired primary education. Whereas 13% have acquired secondary education, the rest (8%) of the respondents interviewed did not have any formal education. Given the type of economic activity that the majority depends on and the attained levels of education, people would be easily attracted by any emerging income-generating

activity and this explains why a significant number of people and especially youth have been recruited to work in the trial jatropa farm as casual labourers. As per the findings some 37% of the respondents in Mavuji and Migeregere (which were the case study villages in Kilwa) villages work as labourers.

**Income Levels from Working Different Livelihood Activities: Comparative Analysis**

Results indicate a similar trend as that reported for Bagamoyo whereby individuals working as a contractual employees to the company who are few, are the ones who earned more money per annum followed by those who are engaged in farming activities and the casual laborers were the least earners (Fig.2). Such income levels indicates that although working as casual laborer to the company may help in getting quick money, the money earned is not as sustainable as the one that could be obtained through farming activities. Moreover the calculations on the income from farming activities was based on the amount of the crops that farmers in the area mentioned to have sold, thus including the amount that has been consumed by the households, thus, farming seem to be more paying than working for the company.



**Figure 2**  
**Communities Average Annual Income Levels from Different Activities in Kilwa**

**Communities' Participation and Involvement in Biofuel Production**

Participation and involvement of relevant stakeholders from the time when the project was introduced in the District is regarded as good by District officials and village leaders. This is clearly explained by the level of awareness that was recorded from individual respondents during household survey. The result shows that the majority (98%) of the respondents reported to be aware of the existence of biofuel Production Company in the area. Findings show that about 85% of respondents came to know about the project through village general meetings when the project was being introduced. The remaining 15% of the respondents said they know about the project as they worked with the project either as casual labourers or contract employees.

**Benefits and Opportunities**

Although currently there are no substantial tangible benefits and opportunities to the communities and the District at large attributed to investments put in place by the company in Kilwa District, rapid assessment showed that some benefits are being realized at the community level and appreciated by the District Government. Results from the household survey indicate that about 70% of the respondents perceive the project as beneficial and 30% of the respondents feel the opposite. Compensation payments of TZS 800,000,000 million (\$ 571,428) are among the perceived benefits as it was used to facilitate implementation of some developmental initiatives. In Mavuji village where a trial farm was established respondents reported a range of benefits. Over half (54%) of the respondents mentioned construction of the village office building, secondary school building, market building and purchased a lorry which is regularly hired to businessmen and generate incomes to the village. Providing funds for lunch for school children at the village school which resulted into raising level of school attendance was also mentioned as one of the benefits.

In Migeregere village a compensation payment of TZS 170,284,000 (\$121,630) was disbursed to the village bank account. The money was used to construct village office, meeting room; and five houses for teachers and village clinical officers and also a purchase of a power tiller.

#### **Employment Opportunities and Incomes**

According to the Bioshape Tanzania Ltd management, at Mavuji village 100 workers were employed on a contract basis and worked at different capacities namely drivers, operators, supervisors, cooks, gardeners and watch men. Over 250 casual laborers were also recruited; majority of who came from Mavuji locality. However, during field visit, it was reported that the casual laborers were uncalled-for due to the impact of Global economic crisis which also affected the company (Bioshape). Availability of employment opportunities was confirmed by the respondents during household survey where about 42% of the respondents noted that they secured jobs at the company mainly at the established trial farm at Mavuji village. The monthly salary for those working on contract positions range from TZS 100,000 to 120,000/-; while daily wage for the casual laborers is TZS 3,000/- Fringe benefits attached to this package include health insurance for the workers/laborers and their families contribution of 10% to the National Social Security Fund (NSSF) and PPF for the workers who are in the contract.

#### **CONCLUSIONS AND RECOMMENDATIONS**

In general findings reported in this case study, show that community in the two districts (i.e. Kilwa and Bagamoyo) perceive investment in biofuel production as an important undertaking which would be beneficial to the adjacent communities and improve socio-economic status of the

people in the respective areas. While benefits and the down-side of investing in biofuel production have been recorded in the study areas, the existing situation suggest that much more work is needed and indeed it is important to have a mechanism in place that would ensure that more tangible and long term benefits and opportunities are created for the participating communities to subsequently improve people's welfare. Based on the results from this study, the potentials of biofuel production in the wealth creation for poverty alleviation is very low. In order to have any meaningful gains from biofuel investments to the communities, lessons from similar initiatives in Tanzania and particularly the experience from Mtibwa Out-growers Scheme should be learned, their strengths and shortcomings assessed to establish a more useful schemes. The case study noted that biofuel production is established in areas where the residents are poor, and the approach used by investors is likely to solidify the state of dependency where people will stay waiting for the investors to come and provide everything to them. There is a need for the government to have good knowledge of benefits and costs emerging from investing in Biofuel production and also have the communities well prepared to participate and use such investments as an opportunity to get out of poverty. As the time this article is produced, in all the two case studies, the two projects were no longer in operation which means that all expectations that communities in these areas had built to these investments have not been realized.

#### **ACKNOWLEDGEMENTS**

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