

Impact of Deforestation of the Mau Forest Complex on the Economic Performance of The Tea Industry: A case study of James Finlay (K) Ltd Kericho, Kenya

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J. agric. pure appl. sci. technol. 6, 34-41 (2010); received October, 02/ Novemeber 06, 2010

The major objective of this study was to investigate the correlation between the deforestation of the Mau forest and the effect on the economic performance of the tea industry particularly, James Finlays (Kenya) Limited. It was found that some of the major causes of deforestation are illegal logging, human settlement, fires, illegal charcoal burning, and conversion of natural forests into agricultural land. Deforestation has a negative economic impact on tea business not only in James Finlay (Kenya) Limited but in the rest of the tea industries in Kenya. The tea industry relies heavily on rainfall which incidentally is influenced by the Mau forest. The depletion of the Mau forest has led to prolonged droughts in the recent past and caused unpredictable rainfall patterns. This has affected the crop production, the health of the tea bushes, occasional deaths of the tea bushes and therefore high cost of production leading to low profit margins. The Mau forest is one of the five water towers in Kenya on which the rivers flowing through James Finlay (Kenya) Limited depend on in many ways among them is the hydro power generation. This has forced the company to use diesel generators and purchase electricity from Kenya Power and Lighting Company at higher rates hence negating the policy on low cost of production.

The study revealed that the economic survival of James Finlay (Kenya) Limited depends on the health of the Mau forest. It was therefore recommended that the deforestation of the Mau forest be stopped and reforestation programmes be started immediately. Kenya's forests particularly, the Mau forest, are rapidly being depleted due to pressure from increased population and illegal logging. The net effect of this deforestation has reduced forest cover to about 2% of the land mass against the average international standard of about 10%. The dwindling forest cover has had a severe effect on rainfall pattern and distribution, agriculture, wildlife, rivers and human settlement.

Research has shown that there are a number of economic activities supported by forests which include but not limited to, pulp and paper industry, saw milling and plywood production, wood carvings, wildlife sanctuary, herbal medicine, honey and beeswax. It has been proved by geographers and environmentalists that forests aid in rain formation worldwide. It therefore means that uncontrolled deforestation without sustainable reforestation programmes will affect the equilibrium of the aforesaid economic activities and distort the rainfall patterns.

The tea business depends entirely on adequate and reliable rainfall for its economic survival. James Finlay (Kenya) Limited for instance owes its existence to the Mau forest complex which is not only the source of rainfall but also the water catchment area on which the rivers and streams flow through the company come from. Scanty and unpredictable rainfall is a major threat to the tea industry and general agriculture not only in the Mau forest region but also in the country.

Key words: Impact of Deforestation, Economic Performance, Mau Forest Complex and James Finlay (K) Ltd

Introduction

The Mau forest Complex is one of the five water towers in Kenya and is the biggest of them all and is more or less equal to Mt Kenya and Aberdares compined. It stretches from Nakuru on the northern part through to Narok on the eastern part and all the way to Bomet and Kericho on the southern and western parts respectively. It was originally estimated to have been about 390,000 hectares of indigenous forest in 1950s but has since been reduced with time to between 150,000 and 200,000 hectares as at 2005. This rapid reduction on forest cover can be attributed to human activities such as logging, farming activities, wood fuel, excision of forest land for political gains and wild fires. Mau forest is a large water shed, tank-like sponge where rivers like Mara, Uwaso Nyiro, Nyando, Sondu, Nzoia, Kiptenden, Kiptigat, Saosa, Chemamul, Njoro, Molo among others spring from. Some of these rivers feed Lakes Victoria, Nakuru, Baringo, Naivasha, Bogoria, and Natron. These rivers serve the tea industry in Kericho, Bomet, Bureti districts and Masai Mara game reserve and about 5 million people in the region. Mau forest is also a home of thousands of millions of wildlife, which attracts tourism activities. This age old forest is faced with the threat of depletion and concern amongst the tourism and agricultural sectors of the Kenyan economy.

James Finlay (Kenya) Limited is an expansive agribusiness company founded in 1925 within the larger Kericho District and lies along South Western Mau Forest Complex on an altitude of about 2000 meters above sea level with an average annual rainfall of between 1600 mm and 2300 mm and atmospheric temperatures of between 15° C and 28°C . The original objective of James Finlay (k) Ltd was to grow and manufacture tea for domestic and export markets and provide employment opportunities to the local communities. In the process it has created opportunities for employment for about 15,000 people who together with their dependants numbering about 45,000 are settled within the company property. James Finlay (Kenya) Limited has about 6,000hectares of tea, 3,000 hectares commercial forestry, 93hectares of cut flowers and 3,000hectares of indigenous forest and other use.

Currently the core business of James Finlay (Kenya) Limited is tea growing and manufacture, cut flowers, commercial forestry and hydro power generation. It has also diversified its services to medical and engineering services.

James Finlay (Kenya) Limited is located in Kericho and Bureti districts and largely benefits from the streams and rivers coming out of Mau Forest Complex. Some of the rivers are used for hydro power generation and water supply for factories and domestic use by employees. With its vast employees and dependants population James Finlay (K) Ltd serves as a huge market for agribusiness from the local suppliers for example maize, milk, vegetable and other services like road transport and shopping centres. The company also provides social and educational services to the employees and their dependants. It buys farm inputs for example fertilizers, chemicals, factory machinery, implements, motor vehicles and spare parts from outside and inside the country. The local community also supplies transport services for tea products, fertilizer, medicine, and construction industry and construction materials among others. Most importantly the company's annual contribution to the economy through the sales of tea products, forestry products and cut flowers is about **Ksh.3 billion**. This by any standards is a very important economic activity which needs to be supported and sustained for posterity.

From the foregoing it can be argued that there is a direct linkage between Mau Forest Complex and the economic activities of James Finlay (Kenya) Limited in particular and other agribusinesses in general. To the extent that the company depends on the Mau forest for rainfall and water supply for its survival and prosperity, this is reason enough for there to be a concerted and sustained effort by all the stakeholders, to preserve and conserve the Mau forest complex.

The economic impact of deforestation on James Finlay (K) Ltd

From the available primary data on the number of employees, James Finlay (Kenya) Limited tea estates alone has a total of about 12,000 employees with a total dependants of about 36,000. Therefore the total population in James Finlay (Kenya) Limited tea estates is about 48,000 people and they depend on the tea business for their livelihood, education, medical and other socio-economic developments. From the study, it is apparent that the effects of drought has not only affected the company but has seriously affected the employees and their dependants too, as indicated on the daily green leaf production on the same date in 2006,2005 and 2004, (Table1.0).

Table 1.0 : Total green leaf produced on the same date in different years

Date	2006	2005	2004
21 January	94,225	432,234	416,683
17 February	77,459	337,689	308,050
Total Plucking rate	171,685 5.44	769,923 5.44	724,732 5.03
Total earnings by pluckers	933,961.00	4,188,381.00	3,645,402.00
Divide by 12000 employees (Ksh. per employee in 2 days)	Sh.78.00	Sh.349.00	Sh.304.00

From **Table 1.0** above, employees lost an opportunity of earning about Ksh.3.2million in only two days in 2006 compared to the same dates in 2005. This is attributed to the low rainfall in early 2006 compared to same time in 2005 and 2004 as indicated in the rainfall data.

Table 2.0: Total Kilograms of green leaf produced in January and up to 14th day of February in 2006,2005 and2004

Month	2006	2005	2004
January	4,169,836	10,797,710	9,974,573
February (14 Feb)	1,405,760	4,378,337	4,538,400

From the above findings it can be deduced that there was loss of revenue as a result of drought in January 2006 compared to January 2005. Liikewise in February, employees lost in January 2006,

$(10,797,710 - 4,169,836\text{kgs green leaf}) = 6,627,874\text{kgs green leaf} \times \text{Sh.5.44 (rate per Kg)} = \text{Ksh.36,055,635.00.}$

During this period James Finlay (k) Ltd lost significant amount of revenue which would have accrued from the sale of 6.6million kilograms of tea in January 2006 alone. Assuming each kilogram of green leaf of tea would have been sold at a net price of 10.00shillings, the total lost revenue for the company was 66.0 million Kenya Shillings. Drought of 2006 considerably reduced employees and James Finlays (k) Ltd earnings, increased poverty and reduced money circulation within business circles around Kericho and its environs. The Company also experienced serious under utilization of factory capacity, capital invested and human resource.

Materials and Methods

Research Questions

This study was set out to address the relationship between the forests and the human settlement, the economic relationship between James Finlay (Kenya) Limited and Mau forest complex, the effect of deforestation of Mau forest on the economic performance of James Finlay (Kenya) Limited, the strategic efforts being made by James Finlay (Kenya) Limited to address the problem, and the role of the Kenya government in this situation.

Since this study was an investigation of the impact of deforestation of Mau forest complex on the economic performance of James Finlay (Kenya) Limited. The study focused on the population living in and around the Mau Forest Complex covering Kericho, Bureti and Bomet districts. According to the 1999 national population census the three districts had approximately **3 million** people. Because of the constraints of time and resources it was not possible to access everyone in the population however representative sample was selected.

The investigation involved standard sampling procedure through collection of primary data from selected respondents by way of interviews and observations. The secondary data was collected from production records and available monthly rainfall figures covering over 20 years by taking a mean average covering several rainfall recording stations. Aerial photographs on the state of the Mau forest were also taken to provide evidence on the causes of deforestation. This provided a strong case with a view to making recommendations on how to alleviate problems associated to deforestation of Mau forest complex.

Results and Discussions

Causes of Deforestation

Many writers and environmentalists have different views on the causes of deforestation. The variations perhaps, have contributed to the misunderstanding of the interventions on forest management. However they seem to agree on some common causes of deforestation. Chief among these causes include but not limited to illegal human settlement, establishment of agribusiness for example cattle rearing, cash and food crops, uncontrolled logging, forest excisions through government notices and gazettements, destruction by fires, corruption such as illegal allocation of forest land. Construction activities for example roads, public utilities, and mining activities such as quarries and minerals, climatic changes, possibly through global warming effect and floods on low lying regions such as Kano plains of Nyando District in Nyanza province. Illegal grazing which destroys under cover vegetation causing uncontrolled soil erosion and firewood collection for subsistence and other income generating activities from forest products. Generally deforestation can be associated to human activities as attested by research findings and other scholarly works.

Effects of Deforestation

James Finlay (K) Ltd like all other tea growers in the region lies around the Mau forest complex on which tea farmers depend for rainfall. The unpredictable fluctuations in rainfall pattern around this region affect the ability of tea growers to plan their activities properly. The occasional long dry spells do not support the growth of tea and therefore lead to low production and hence poor profitability. From the study the fluctuation of rainfall is probably caused by deforestation of the Mau forest among other factors (**Fig. 2.0**)

Fig. 2.0 Rainfall distribution / made tea yield from 1986 to 2005

YEAR	JAN	FEB.	MAR.	APR	MAY	JUN.	JUL,	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL	Ave	Yield/ ha
1986	39	52	114	341	271	121	134	206	184	87	98	104	1750	146	3370
1987	71	153	221	240	264	286	143	170	100	182	219	38	2087	174	3551
1988	233	69	132	387	291	190	157	365	308	217	184	23	2556	213	3439
1989	35	160	246	269	254	90	136	168	205	224	105	179	2070	173	3357
1990	78	206	256	333	228	112	99	154	129	146	121	89	1951	163	3464
1991	156	156	141	217	267	208	78	222	131	208	93	44	1920	160	3728
1992	20	103	61	233	227	238	199	178	155	208	103	89	1815	151	3625
1993	138	125	57	135	297	190	103	133	91	116	109	92	1584	132	4115
1994	46	126	236	308	418	186	157	175	117	133	271	35	2207	184	3514
1995	37	159	205	223	279	214	131	107	160	156	204	105	1978	165	3944
1996	120	167	217	230	249	120	191	146	225	154	198	45	2063	172	4099
1997	82	1	68	334	141	150	139	172	35	235	411	251	2018	168	2793
1998	237	108	60	255	246	186	128	124	172	229	142	27	1915	160	3964
1999	114	8	296	201	248	126	137	188	171	202	92	43	1824	152	3046
2000	17	37	126	157	194	144	156	144	142	176	153	180	1626	135	2960
2001	343	68	124	280	248	263	178	142	227	189	153	24	2237	186	3782
2002	140	37	186	229	304	119	88	155	88	129	183	198	1855	155	3859
2003	52	17	126	229	293	157	134	187	163	178	88	132	1687	146	3362
2004	118	118	130	229	192	82	129	186	179	128	156	116	1762	147	4159
2005	154	85	198	164	318	229	137	169	155	110	64	16	1783	150	4124
TOTAL	2230	1953	3198	4992	5229	3410	2754	3488	3139	3408	3148	1828	38689	1935	
KEY															
	Above 401 MM of rainfall														
	Between 301-400 MM of rainfall														
	Between 100-200 of rainfall														
	Below 100MM of rainfall														
	Between 201-300MM of rainfall														

Rainfall Pattern and Tea Production

From the rainfall and tea production data (**Fig. 2.0**), it is quite clear that it is not the cumulative annual rainfall which is critical to tea growing but it is the rainfall distribution which is very important. The period between November 1996 and March 1997 was very dry and this affected the yields of 1997. The heavy rains of 1997 April at 333.5mm and November 411.3mm though high was not beneficial to yields. This implies that it is not the amount of rainfall but the distribution which is beneficial in the long run. It is apparent that the tea yield per hectare is largely influenced by the rainfall distribution rather than total rainfall in the year. For example total rainfall in 1996 was 2062.6mm and the yield was 4099kg made tea per hectare

compared to 1997 rainfall of 2018.2mm but the yield was only 2773kgs made tea per hectare. Generally December, January, February, and March have low rainfall with February recording the lowest rainfall of them all. However when there is very low rainfall in February, for example in the years 2003, 2000, 1999, 1997, 1988 and 1986, the tea yields are seriously affected. When there are significant amounts of rainfall during December, January, and February there are high possibilities of higher yields. For example in 2005, 2004, 1998, 1996, 1995 and 1993, the yields recorded were 4124, 4159, 4099, 3944, and 4115kgs made tea per hectare respectively. The rainfall recorded for 2004 was only 1762mm but because of even distribution the yield recorded was the

highest at 4159kgs made tea per hectare

The total rainfall for the period 1986 to 1995 (10 years) is 19918.8mm, which gives an annual average rainfall of 1991.9mm while from the period 1996 to 2005 (10 years) is a total of 18770.3mm which gives an annual average of 1877.0mm. The period between 1986 and 1995 had a higher average rainfall of 1991.88mm compared to the period 1996 to 2005. This may imply that the average cumulative rainfall is declining and this may be because of deforestation. The increase in yields over time relates to new yielding clones which are maturing rather than the rainfall pattern. The yields in the period 1986 to 1995 were fairly consistent with the highest being 1993 at 4115kgs made tea per hectare while the lowest being 1989 at 3357kgs giving a difference of 758kgs made tea per hectare. However in the period between 1996 and 2005 the highest crop yield was in 2004 with 4159kgs made tea per hectare while the lowest was in 1997 with a yield of only 2793kgs made tea per hectare. The difference is very alarming at 1366kgs made tea per hectare. This is significantly high and by all means should cause economic concern to all stakeholders.

Conclusion

There is enough evidence to conclude that the deforestation of Mau forest over the last 20 years has affected the amount of rainfall, the distribution pattern and subsequently the tea production in the tea industry and in particular the James Finlay (Kenya) Limited. With a decline in the amount and distribution of rainfall there has been a decline on productivity per unit area under. Poor rainfall distribution has a negative effect on tea production on both large tea growers like James Finlay (Kenya) Limited and small scale tea farmers supplying tea to Kenya Tea Development Authority (KTDA). The following data represent the drought impact on tea production both in terms of quality and the earnings from tea business. In our view James Finlay (Kenya) Limited activities rely heavily on the Rain Fed Agriculture. However deforestation of Mau forest has affected the rainfall patterns and distribution around the Mau forest region and this has also negatively affected the economic activities of James Finlay (Kenya) Limited. James Finlay (Kenya) Limited environment though a very good example on environmental management and Good Agricultural Practices (GAP), is a subset of the bigger external environment, the Mau forest Complex being one of them. The tea industry, like other rain fed agricultural industries suffer heavily during prolonged drought periods. The cost of doing business becomes very costly per unit of tea produced which leads to loss of revenue to the company, employees, government, county council and all stakeholders like suppliers and transporters directly or indirectly.

Acknowledgement

The authors acknowledge the valuable information and support from The Kenya Tea Development Agency, The Tea Research Foundation of Kenya, James Finlay (K) Ltd, The Ministry of Agriculture, The Ministry of Forestry and Natural Resources. The employees of the Tea Industry, The Kenya Tea Growers Association and all Stakeholders around the Mau Complex. Special appreciation goes to Mr Richard Muir of FOMAWA, Prof. Erck Koech, Deputy Principal Kabiana University College for the support rendered to this study.

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