

# PREPARING, APPRAISING AND EVALUATING LOAN PACKAGES: INSIGHTS FROM A TANZANIAN CASE STUDY (\*)

J.K. Johnson  
University of Bradford

---

## 1. Introduction

Much of the literature relating to project planning in Developing Countries is concerned with project appraisal, using stylised forms of cost-benefit analysis. Comparatively little case study material is available upon approaches to the identification, specification and ex-post evaluation of individual projects. Further, there are few studies that attempt to relate ex-post assessments to institutional procedures, or to consider the cost-effectiveness of the project planning process. The paper takes material from a loan appraisal report produced by the Tanzanian Rural Development Bank in 1978 and analyzes it in the light of the subsequent performance of the debtor enterprises. The project has a simple structure, but its failure raises a number of issues on the selection of appropriate loan appraisal procedures, and the inter-dependence of the activity sets in the project planning sequence that may be of interest to trainers and practitioners alike.

In 1978 applications for loans were made to the Tanzanian Rural Development Bank, by three Ujamaa villages (Msoiwa, Sonjo and Kitete) and one private outgrower (Sanje Estate) to facilitate the purchase of tractors, trailers and implements, worth a total of 867,852 Tanzanian shillings, for the cultivation and transportation of sugar cane under contract to the Kilombero Sugar Company. The appraisal report prepared by the TRDB showed that each enterprise held assets worth more than TShs. 500,000 in 1977-78, and that their net profits in the same year varied between 153,000 and 423,000 Tanzanian shillings. The total area under sugar cane in the four enterprises was estimated at about 2,537 acres in 1977-78 and it was forecast to rise to around 3,228 acres by 1982-83, given the availability of adequate equipment. With such favourable background circumstances, it is not surprising that the TRDB approved a loan package with an overall value of TShs. 550,000.

Looking back to this decision at the end of 1982, it appears to have been made in error. Only one of the four enterprises has repaid its loan, and the total area under cane now stands at about 2,182 acres, of which only 500 acres is regularly harvested.

---

\* The author is indebted to the Tanzanian Rural Development Bank for the release of the report upon which the articles is based. Thanks are also due to Mr. C.E.G. Ludlam, at the Project Planning Centre, University of Bradford, for the contribution of data and advice. The available information has been re-worked to provide a concise and internally consistent case study. It follows that the author accepts full responsibility for any errors, omissions and misjudgements on points of fact.

---

The reasons for this state of affairs are complex, and a brief, and necessarily somewhat limited and subjective interpretation will be offered here. However, the main purpose of this paper is not to enumerate the shortfalls in implementation for each enterprise, but rather to look back at the appraisal phase to highlight information that could have guided the planners towards a better allocation of resources.

The first section of the paper sketches the background to the project. Unfortunately for the purposes of this ex-post evaluation, but understandably in view of the small scale of the loans, the initial TRDB appraisal report is somewhat lacking in detail. It has, therefore, been necessary to deduce or add data at certain points to extend the illustrative value of the case study. This is apparent in the second section of the paper which deals with alternative approaches to the appraisal of the loans in 1978. Three methods are reviewed, namely: the assessment of credit worthiness; the construction of investment cost models; and the preparation of discounted cash flow analyses. The third part of the study examines the factors responsible for the poor results obtained by outgrowers between 1978 and 1982. Fourthly, with the benefit of hindsight, some observations and constructive comments are offered on the TRDB's loan appraisal procedures. These are then set in the general context of the idealised relationship postulated for the appraisal, monitoring and evaluation stages of the project planning sequence.

## **2. The background to the project**

The flood plain of the Great Ruaha River at Kilombero provides excellent natural conditions for agriculture. The alluvial soils are fertile and vary from clayey to sandy loams. The average rainfall is about 1,250 millimetres per annum, most of which is received between November and March. Droughts are rare. The rainfall is generally sufficient for rain-fed agriculture, but supplementary irrigation is possible from the Great Ruaha and its tributaries. In 1962 an integrated sugar project (KI) consisting of an estate and central factory at Msolwa, commenced operation. In 1976 work began on a second factory at nearby Ruembe (KII), but its effective operation dates from September 1977. The total processing capacity of the two factories is about 800,000 tons of cane with an expected yield of about 85,000 tons of refined sugar per year. The Kilombero Sugar Company, which operates the factories, also runs the two associated estates covering 7,900 and 8,900 acres respectively. This land supplied 70 per cent of the cane processed in 1977-78.

---

Yields on the Company estates averaged about 33 tons of cane per acre in 1977. An estate area of about 24,000 acres would therefore have been required to make the factories self-sufficient for cane at full capacity. From the outset then, the plans for the Kilombero project assigned an important role to outgrowers. These fall into four categories: small private estates; public estates (e.g. that run by MODECO); ordinary villages where the cane is grown on a « bega kwa bega » basis; and, Ujamaa villages where it is grown as a collective enterprise. In 1977-78 about 630,000 tons of cane were processed by the factories, a figure which fell well short of their combined capacity. Efforts were therefore required to increase the overall supply of cane. One immediate priority was the prevention of losses due to transport shortages. It is estimated that more than 40 percent of the cane produced by outgrowers in 1977-78 did not reach the factories, either as a result of rot induced by excessively heavy rain, or by the inadequacy of the delivery system run by the Company. In the longer term, it was clear that steps were needed to encourage outgrowers to improve yields and extend their cane acreages.

Encouraged by the Kilombero Sugar Company, three Ujamaa villages and one private estate owner applied to the Tanzanian Rural Development Bank for loan finance in 1978. Table 1 details the overall investment package, which consists simply of five tractors with associated implements. The loans were to meet 75 per cent of the delivered cost of the equipment. Standard TRDB terms were offered covering the repayment of the principal in four equal annual instalments, plus interest at 7.5 per cent on outstanding balances. Through an arrangement with the KSC, the payments were debited against the value of cane deliveries made to the factories. Assistance with the maintenance of the machinery was also to be provided by the Company. From the Bank's viewpoint, the investment package offered an opportunity to meet its objectives with regard to the strengthening of the management capabilities of rural communities, the promotion of coordinated rural development and the establishment of price and supply stability for key agricultural commodities.

The TRDB appraisal report emphasised the benefits that were expected to accrue from providing the enterprises with their own means of transporting cane to the factories. Tractors were preferred to lorries on two grounds. First, they perform better in the muddy conditions that prevail in the fields and tracks during the milling season. Secondly, they are more adaptable and can be diverted to field crop operations like the ploughing and harrowing of cane, rice, maize and legumes on either an enterprise or

**Table 1**  
THE INVESTMENT PACKAGE

	Msolwa		Sonjo		Kitete		Sanje Estate	
	No.	Value (shs)	No.	Value (shs)	No.	Value(shs)	No.	Value (shs)
Tractor MF 185	1	130,800	—	—	—	—	—	—
Tractor MF 165	—	—	1	116,500	1	116,500	2	233,000
3 Disc Ploughs	1	12,000	1	12,000	1	12,000	—	—
16 Disc Harrow	1	21,400	1	21,400	1	21,400	—	—
6 Ton Trailer (non-tipping)	1	20,500	1	20,500	1	20,500	—	—
Trailer hitch with draw bar	1	6,485	1	6,485	1	6,485	—	—
Delivery charges	—	2,000	—	2,000	—	2,000	—	4,000
DSM - Kilombero	—	—	—	—	—	—	—	—
Tractor Shed	—	—	1	500	1	500	—	—
Contingency (10%)	—	19,319	—	17,939	—	17,939	—	23,700
		212,504		197,324		197,324		260,700

contract basis, at other times of the year. No consideration is given to the use of ox-drawn implements which appear to have been unacceptable to the outgrowers.

The TRDB report also suggested that the acquisition of tractors and implements by the enterprises would be likely to encourage them to expand the area planted to productive cane. Sugar cane is a giant grass-like plant that will continue to shoot from old roots over a number of years. The standard Tanzanian cultivation practice is to establish a "plant" crop which is harvested within a year. Subsequent "ratoon" crops are then harvested in successive years. As the rootstocks age, yields decline, and agronomists recommend a five year cycle, followed by the establishment of a new plant crop. Since yields do continue, albeit at a lower level, over a longer period, the acreage devoted to the crop is not necessarily a good guide to productivity. It is estimated that about 683 acres out of a total of about 2,537 acres of cane on the four enterprises was over five years old, and therefore in need of replacement, at the end of 1977. The appraisal report envisages the planting of about 3,228 acres of new cane over the five years from 1978-79 to 1982-83, a net gain in productive cane of 1,374 acres overall.

---

The potential for the redevelopment and extension of the area devoted to cane depends upon several factors. In the first place labour has to be made available to plant, weed and cut the cane. These operations can absorb between 70 and 100 man-days per acre depending upon the productivity of the labour. Cane cutting is a particularly arduous task which is often delegated to seasonal labourers even by the villages. The demands of competing crops like bananas, rice, maize and fruit must also be taken into account. Ideally then a full labour supply-demand balance should be drawn up for each enterprise to identify binding constraints at particular times of the year. Secondly, the availability of land must be assessed. If the new land is developed by clearing bush, a significant cost will be incurred, equivalent to about 110 man-days of labour per acre. On the other hand, if cane replaces an existing subsistence or cash crop, the loss of net farm income from this source must be evaluated. Finally, from a wider viewpoint the allocation of land and labour between competing crops will depend upon their relative returns to human and physical capital. This in turn will depend to some degree on the storability and transportability of the commodity, and the level and trend of producer prices.

### 3. **Alternative approaches to appraisal**

#### 3.1. *What are we appraising and for whom?*

##### a) *The Enterprise Viewpoint*

The direct benefits likely to be associated with the proposed equipment purchases fall into four categories at the farm level:

- i) the savings on transport rate payments and spoilage losses on existing sources of cane, resulting from the operation of owner-occupied cane delivery capacity.
  - ii) the incremental net farm income arising on the pre-project area devoted to cane and other subsistence and cash crops, as a result of the availability of tractors and implements for field operations.
  - iii) the net value of any contract work undertaken with the equipment.
  - iv) the incremental net farm income, associated with the production and delivery of cane or other crops, from land that would have remained unutilised in the absence of the equipment.
-

---

Enterprise operators would be most unlikely to perform a detailed assessment of benefits against costs, using the categories defined above.

Their approach in reality was probably, "yes, all in all, we can certainly use another tractor if the finance is made available". However, it is clear that a full economic appraisal of the project would have to identify the *sources* of possible increments to enterprise income.

b) *The Bank's Viewpoint*

As a Development Bank, the TRDB would have been primarily concerned to ensure that the loans could be repaid. This could be done by either assessing the credit worthiness of the enterprise or appraising the expected cash flow associated with the investment. In the former case, reference would be made to old repayment histories, balance sheets and profit and loss accounts, and the presence or absence of security for the loans. This is the usual practice in Developed Countries where medium-term loans are granted at the discretion of local bank managers. In a Developing Country, particularly where collective ownership is concerned, the problems associated with isolating saleable assets might make it necessary to undertake a financial appraisal of the proposed investment. The TRDB appraisal appears to have fallen somewhat between the two approaches.

c) *The Sugar Company's Viewpoint*

The main benefit expected by the KSC was the net value of the throughput generated by an additional 1,350 acres of cane land. At the time of the loan requests, throughput at the two factories was averaging about 78 per cent of capacity. According to the project report, a further 22,167 tons of cane were expected to become available by 1982-83. This would have raised capacity utilisation by a further 2.5 per cent. It seems reasonable to assume that the marginal cost of processing the additional cane would have been small, leaving significant profits for the Company. The value of this "external economy" should be included in a comprehensive economic appraisal.

d) *The National Viewpoint*

From the national viewpoint all relevant direct and indirect benefits and costs must be appraised. At this scale, differences in the economic structure and technical efficiency of the four enterprises become less relevant and the investment package can be presented as a single project. The possible sources of benefits to be included in an economic appraisal have already been discussed under a) and c). The loan disbursement and repayments are of course treated as transfers. The results of an

---

---

appraisal of resource flows in constant market price terms are likely to bear on key policy issues such as the viability of cane farm expansion and cane farm mechanisation in Tanzania. For a full exploration of these issues, the application of Social Cost Benefit Analysis techniques might be required.

The requirements of these different levels of analysis should be borne in mind in the review that follows of three alternative approaches to the appraisal of the loan requests.

### 3.2. *The assessment of credit worthiness*

Standard accounts consisting of year-long Income and Expenditure statements, and years-end Balance Sheets were available for the four enterprises in 1978. They are presented in Tables 2 and 3. This form of data is often all that is available to banks for the appraisal of requests for medium term credit. The investment and development proposals of each enterprise will now be discussed in turn, in the light of their accounts.

#### i) *Msolwa*

Income from cane appears to have risen steadily between 1975-76 and 1977-78. However, reference to Table 4, which details output in weight rather than value terms, indicates that production was relatively stagnant. It is also apparent from Table 5, which presents the structure of existing plantings at the end of 1977, that the cane fields were reaching the end of their productive lives. Over the three years to 1977-78, village income from sources other than cane increased more than six-fold.

Turning to the village balance sheet, it appears that nearly 90 per cent of the enterprise assets consisted of standing cane at the end of 1977-78. Considerable cash liabilities are obvious. These relate to loans incurred to a private company and the National Bank of Commerce for the purchase of a 10 ton Scania truck, to a loan from the Tanzania Housing Bank for the construction of 25 houses, and to debts incurred to the Kilombero Sugar Company for the establishment of new can plantings which eventually totalled 1,465 acres by the end of 1978.

From investigations made by the TRDB, it appears that the village manager was well-educated and that proper accounts were kept, though these were not fully up-to-date when the bank officials made their visit. Msolwa had been awarded first prize in 1976 as the best village in the Region. In 1978 it was running a rice trials farm,

**Table 2**

INCOME AND EXPENDITURE ACCOUNTS FOR THE ENTERPRISES 1975-76 TO 1977-78

1975/1976	Msolwa	Sonjo	Kitete	Sanje Estate
INCOME (SHS)				
(i) From Cane	117,248	91,417	96,038	905,007
(ii) From Other Sources	82,792	222,829	No Records	—
Less Expenditure (Shs)				
(i) On Cane *	8,765	190,955	22,064	864,806
(ii) On Others	84,535	112,002	No Records	—
NET PROFIT	106,740	11,289	74,024	40,201
1976/1977				
INCOME (SHS)				
(i) From Cane	186,569	275,344	181,471	1,105,630
(ii) From Others	313,431	No Records	No Records	—
Less Expenditure (Shs)				
(i) On Cane *	112,125	185,600	223,566	1,009,443
(ii) On Others	207,876	No Records	No Records	—
NET PROFIT	179,999	89,744	(42,095)	96,187
1977/1978				
INCOME (SHS)				
(i) From Cane	227,158	526,672	166,056	879,036
(ii) From Others	522,842	No Records	No Records	—
Less Expenditure (Shs)				
(i) On Cane *	17,472	93,681	12,702	720,154
(ii) On Others	442,528	No Records	No Records	—
NET PROFIT	290,000	422,991	153,354	158,882

\* Expenditure by villages relates to the charges made by the Kilombero Sugar Company for operations on village land.

a shop, a maize mill, a carpentry unit and a tractor, all of which contributed revenue. A telephone had been installed in the spacious village office. From appearances then, Msolwa appeared to be a good prospect for further development.

Table 3

## ENTERPRISE BALANCE SHEETS, 1977-78

	Msolwa	Sonjo	Kitete	Sanje Estate
<b>ASSETS</b>				
Cash in Hand and Bank	33,190	11,000	76,956	60,000
Debtors	17,500	49,159	—	160,000
Livestock	7,600	—	2,625	—
Standing Crop	1,000,000	750,000	700,000	150,000
Existing Tractors	50,000	—	—	130,350
Others: Equipment and Facilities	25,000	—	7,000	257,875
<b>TOTAL</b>	<b>1,133,290</b>	<b>810,159</b>	<b>786,581</b>	<b>758,225</b>
<b>Less LIABILITIES:</b>				
Creditors - N.B.C.	217,000	—	—	—
T.H.B.	245,000	—	—	—
Other (incl. KSC loans)	102,581	271,766	181,537	210,000
<b>TOTAL</b>	<b>564,581</b>	<b>271,766</b>	<b>—</b>	<b>—</b>
<b>NET WORTH</b>	<b>568,709</b>	<b>538,393</b>	<b>605,044</b>	<b>548,225</b>

However, some underlying problems are evident if the accounts are related to the village workforce statistics. In 1977 the total number of male workers was 185, down from 210 in 1976. The fall in the availability of labour due to migration and disenchantment with the Ujamaa system was a worrying trend. One of the reasons for this state of affairs can be deduced by relating net profits to the number of working males. Although a net profit of TShs. 290,000 for the enterprise in 1977-78 appears large, it is only TShs. 1,568 per worker per year. This compares unfavourably with the salary of TShs. 4,500 per year earned by a tractor driver, and is even less than could be earned by casual labourers hired at TShs. 15 per day.

The loan application refers to the purchase of a MF 185 tractor, a three disc plough, a 16 disc set of harrows, and a trailer with draw bar and hitch, costing a total of TShs. 212,504 delivered. With a 75 per cent loan, TShs. 53,126 would be required as an equity contribution. This could not be found from current assets. The maximum repayment under the terms of the loan would occur one year after the equipment purchase, and would consist of TShs. 39,845 to discharge one quarter of the debt, and

**Table 4**CANE PRODUCTION: ACTUAL TO 1977-78, PLANNED AND REALISED TO 1982-83  
(thousands of tons)

Year	Msolwa	Sonjo	Kitete	Sanje
1. Actual pre-project				
1974-75	2.5	3.0	2.2	10.1
1975-76	2.2	1.9	1.9	8.5
1976-77	2.0	3.1	2.1	8.6
1977-78	2.5	5.9	1.9	6.6
2. Planned				
1978-79	17.1	9.2	4.4	9.9
1979-80	20.0	9.1	6.0	12.6
1980-81	19.4	9.6	6.6	14.0
1981-82	20.8	12.0	8.0	15.2
1982-83	24.6	13.0	9.2	16.0
3. Realised *				
1978-79	12.0			8.0
1979-80	10.0		very low	9.0
1980-81	7.0			10.0
1981-82	11.0	0.0	0.0	12.0
1982-83	N.A.	0.0	0.0	N.A.

\* Rough estimates by KSC extension staff.

TShs. 11,953 in interest charges. Again, these payments could only be made from the proceeds of cane sales.

As previously mentioned, the KSC developed a total of 1,465 acres of plant cane for the village in 1977 and 1978. This was at variance with the plan reported in the TRDB appraisal, as detailed in Table 6. However, both sets of development proposals appear to bear little relationship to the purchase of the equipment. The maximum cane area that can be serviced for cane deliveries by a tractor and trailer is under 200 acres. Inherent in the acreage expansion plans, therefore is the assumption that the KSC will continue to provide most of the required transportation capacity. The new plantings

**Table 5**

CANE PLANTINGS: BASELINE SITUATION END 1977, AND PLANNED PLANTINGS 1978-79 TO 1982-83 (acres)

	Msolwa	Sonjo	Kitete	Sanje
1. Situation at end 1977				
Plant crop	430	—	81	27
Ratoon 1	320	426	140	84
Ratoon 2	—	17	—	96
Ratoon 3	—	—	—	77
Ratoon 4	—	—	—	156
Aged Cane	—	542	81	60
TOTAL	750	985	302	500
2. Planned Plantings 1978-79 to 1982-83				
1978-79	50	40	50	261
1979-80	50	40	50	157
1980-81	50	57	50	176
1981-82	370	466	190	164
1982-83	712	40	131	124
TOTAL for 5 years	1232	643	471	882

appear to have been undertaken at the KSC's initiative and expense. Clearly, faced with the need to find additional cane supplies rapidly, the presence of unutilised land at Msolwa was a considerable attraction to the Company. So much so that it was prepared to forego interest charges on the establishment costs, and leave the repayment of the principal to annual negotiations with the village on a "gentleman's agreement" basis.

In summary, much can be deduced from the imaginative application of accountancy data. However, we must remember that Msolwa was widely regarded as a model village in 1978, with a progressive spirit and a good loan repayment history. It is not surprising then that the loan was granted.

**Table 6**

COST MODEL FOR THE PURCHASE AND OPERATION OF A TRACTOR (TShs.)

Item	Year 0	1	2	3	4	5
<i>Benefits</i>						
a. 1,000 hours @ 87 shs/hour	87,000	87,000	87,000	87,000	87,000	
b. Salvage value of tractor						37,372
c. Salvage value of implements						40,850
Total Benefits	87,000	87,000	87,000	87,000	87,000	78,222
<i>Costs</i>						
a. Investment	197,324					
b. Driver's wages	5,400	5,400	5,400	5,400	5,400	
c. Fuel	20,638	20,638	20,638	20,638	20,638	
d. Oil and Filters	4,128	4,128	4,128	4,128	4,128	
e. Tyres and Tubes	4,675	4,675	4,675	4,675	4,675	
f. Service and Repairs		9,866	13,813	17,759	21,706	
Total Costs	232,165	44,707	48,654	52,600	56,547	
Net Surplus/Deficit	(145,165)	42,293	38,346	34,400	30,453	78,222
Cumulative Surplus/Deficit	(145,165)	(102,872)	(64,526)	(30,126)	327	78,549

ii) *Sonjo and Kitete*

Much that has been said above also applies to Sonjo and Kitete, with the exception that neither village could claim a successful history of co-operative development. Sonjo's liquidity appears to have depended heavily on the sale of cane from ageing fields. Cane was the only crop produced under Ujamaa principles, and there was a feeling in the village that the accounts were not being kept properly. Although the profits on cane averaged TShs. 2,286 per male worker in 1977-78, this is still low when compared to the opportunity cost of labour. The KSC's claim of half of the proceeds of cane sales against establishment costs in 1978, suggests that either a dispute had developed between the village and the Company, or that the latter's recovery procedures were sometimes erratic and discouraging. The proposed establishment

---

programme is again out of alignment with the cane delivery capacity of the equipment requested.

As far as Kitete is concerned, little information appears to be available on the management of the village. In 1978 there were 302 acres under cane, 384 acres under rice and 384 acres under maize. It appears that these alternative crops were becoming predominant. Net profit per male worker from cane sales in 1977-78 was only TShs. 807 for the year. However, as with Sonjo, there appears to be adequate collateral for the loans in the form of the standing cane, and some potential for repayment from cane sales. Although loans were granted in both instances, it is doubtful that evidence of sufficient quality or quantity was collected for the proper appraisal of the requests.

iii) *Sanje Estate*

The Sanje Estate is owned by a Tanzanian national. In 1978 he employed a resident estate manager and 13 full-time employees, including a tractor driver and a mechanic. The accounts of this enterprise can be assessed in standard business terms. Despite the fact that cane sales fell between 1975 and 1978, the ratio relating Net Profit to Equity rose from 6.5 per cent in 1975, to 19.7 per cent in 1976 and up again to 26.6 per cent in 1977. It appears therefore that the level of technical efficiency was high. Audited accounts are kept and the estate owner has placed the title to his land under mortgage to the National Bank of Commerce, who make regular overdrafts available for the harvest season. The equity held by the owner provides adequate collateral. It is interesting that a low valuation is attached to the standing crop in the accounts, possibly for tax purposes. This contrasts with the treatment of the same item in the village accounts. All in all, Sanje Estate returns present a picture of a thriving and well managed business.

The loan request is for assistance with the purchase of two MF 165 tractors. The estate was successfully operating a MF 185 tractor in 1978, and trailers and auto-loaders had been constructed at its workshops. The estate covers 882 acres of land. About 350 acres of this land is swampy and cannot be utilised without drainage and reclamation. Referring to Table 6, it can be seen that all the available land was devoted to cane in 1978, and that unlike the villages, the enterprise had a regular programme for the replacement of aged ratoons. The proposals placed before the TRDB suggested that, given the availability of 2 additional tractors, the entire estate could be brought under cultivation. This appears to have been a deceit aimed at securing the loan finance, and it should be a matter for some satisfaction that TRDB only advanced funds for the purchase of a single tractor.

---

---

From the discussions presented of the accounts of the 4 enterprises, it can be seen that a considerable range of inference can be drawn relating to past performance and future prospects. However, it is also clear that financial data should always be interpreted in the light of a sound knowledge of the technical aspects of production. That the appraisal report recommended the granting of 85 per cent of the total sum requested does not seem surprising. From a banker's viewpoint, the loans appeared relatively sound. Bankers are concerned with the assessment of risk rather than development prospects, and they cannot afford to waste management resources in considering all the whys and wherefores of requests for small medium-term loans. Bearing this in mind, attention will now be turned to some of the central agro-economic issues raised by the proposals.

### 3.3. *Basic Investment Issues: The model approach*

#### 3.3.1. *Was the equipment an attractive investment per se?*

An immediate question worth asking about the project proposals is: "would it have paid to operate the purchased machinery on a contract basis in 1978?" To answer this question, we must construct a realistic cost model for contract operations. Table 6 summarises the relevant data. It is assumed that the tractor would have been hired for an average of 1,000 paid hours per year at a rate charge of HShs. 87 per hour. To gain 1,000 working hours per year from a tractor in Tanzania would require good management, good supporting services and open access to fuel and necessary spare parts. The charge of TShs. 87 per hour has been calculated on the assumption that two thirds of the contracted time would be for ploughing at TShs. 100 per acre, and that the remaining third would be for harrowing at TShs. 60 per acre. It is estimated that one acre can be ploughed and 2 acres can be harrowed per hour. An alternative estimate of contract hourly rates can be derived from the knowledge that KSC charged outgrowers TShs. 1.35 per ton kilometer to transport their cane. Assuming that the trailers have a capacity of 6 tons and that the average speed of travel is 9 kilometres per hour, this is equivalent to a charge of TShs. 73 per hour. Since this was almost certainly a preferential rate, it relates fairly directly to the central estimate. The salvage values are calculated on a straight line basis assuming a 7 year life for the tractor and 10 years<sup>8</sup> of life for the implements.

The investment consists of a MF 165 tractor, a 3 disc plough, a 16 disc set of harrows, a 6 ton trailer with draw bar, a tractor shed and associated delivery and contingency

---

charges. The driver's wage is put at 450 shillings per month. Fuel costs are calculated on the following formula:

$$\frac{\text{BHP}}{10} \times 2.54/- \times \text{running hours}$$

assuming a total of 1250 running hours per year. Oil and filter costs are assessed at 20 per cent of fuel costs. Tyres and tube replacements are given at 14,025 shillings per year. Service and repair costs are estimated at zero in the first year of operation rising to 5 per cent, 7 per cent, 9 per cent and 11 per cent of capital costs in successive years. The investment is appraised over a five year period to facilitate subsequent comparisons.

The results of the appraisal indicate that a return of about 15 per cent on total capital could be realised by a contractor, on the assumptions outlined. This would not be sufficient to repay a loan over 4 years, with interest at 7.5 per cent on the outstanding balance without a substantial overdraft. Given the uncertainties surrounding the operation and maintenance of tractors in Tanzania, the return may be considered poor. Equally though, from the farmers' viewpoint, the cane collection service offered by the KSC is seen to be a highly attractive proposition. Provided the Company could continue to make adequate transport facilities available for outgrowers' cane, there was little incentive for the farmers to purchase and run their own delivery equipment.

### 3.3.2. *Did it pay to develop new cane land?*

Table 7 summarises the information required for the economic appraisal of a proposal to develop 200 acres of sugar cane under conventional practices in the Kilombero district in 1978. The following yield profile is assumed:

Year	Crop	Tons per acre	
		Basic	Adjusted for Fire Loss
0	Plant	20	16.0
1	Ratoon 1	21	16.8
2	Ratoon 2	19	15.2
3	Ratoon 3	17	13.6
4	Ratoon 4	16	12.8
	<i>Average</i>	18.6	14.9

The cane is valued at TShs. 90 per ton at the factory gate.

The initial cost of clearing the land has been estimated from comparative data relating to other agricultural development projects in Tanzania, and is put at TShs. 1667 per acre. In view of the fact that the clearance of the fourth ratoon crop at the end of the production sequence is a difficult operation, it cannot be assumed that land development costs will be recovered in year 5 as a residual value. A 50 per cent "salvage" value has therefore been adopted. Ploughing and harrowing operations are costed at the contract rates of TShs. 100 and TShs. 60 per acre respectively. Seed cane requirements are 3 tons per acre valued at TShs. 130 per ton. Weeding and cutting operations by manual labour are costed at TShs. 15 per man-day. Cane transport is hired at the contract rate of TShs. 1.35 per ton kilometre and it is assumed that the cane fields are 10 kilometres from the factory.

**Table 7**

COST MODEL FOR THE CULTIVATION OF 200 ACRES OF SUGAR CANE

	Year 0	1	2	3	4	5
<i>Benefits</i>						
Cane Sales @ 90 shs/ton	288,000	302,400	273,600	244,800	230,400	
b. Residual value of cleared land						166,678
<b>Total Benefits</b>	<b>288,000</b>	<b>302,400</b>	<b>273,600</b>	<b>244,800</b>	<b>230,400</b>	<b>166,678</b>
<i>Costs</i>						
a. Land clearance	333,335					
b. Ploughing & Harrowing	32,000					
c. Planting labour	24,000					
d. Seed Cane	78,000					
e. Cutting labour	16,000	16,800	15,200	13,600	12,800	
f. Weeding etc.	7,500	7,500	7,500	7,500	7,500	
g. Cane Transport	43,200	45,360	41,040	36,720	34,560	
<b>Total Costs</b>	<b>534,035</b>	<b>69,660</b>	<b>63,740</b>	<b>57,820</b>	<b>54,860</b>	
<b>Net Surplus/Deficit</b>	<b>(246,035)</b>	<b>232,740</b>	<b>209,860</b>	<b>186,980</b>	<b>175,540</b>	<b>166,678</b>
<b>Cumulative Surplus/Deficit</b>	<b>(246,035)</b>	<b>(13,295)</b>	<b>196,565</b>	<b>383,545</b>	<b>559,085</b>	<b>725,763</b>

The results of the exercise suggest that cane outgrowing was a very attractive enterprise in 1978/79. In project terms, the internal rate of return is well over 50 per cent.

Given the data, it is also a relatively simple matter to determine a crop budget for a notional one acre of cane. This is given below:

Item	TShs./acre	
	Crop developed on cleared land	Costs including land clearing
Average annual Gross Value of Output	1339.2	1339.2
Average annual Variable Costs	312.8	312.8
Average annual Gross Margin	1026.4	1026.4
Fixed Cost Allocations:		
Land Clearance	—	500.0
Preparation & Planting	201.0	201.0
Residual Value Allocation	—	(166.7)
<i>Average annual Net Farm Income</i>	825.4	492.1
Costs as Proportion of Gross Value of Output (%)	38.4	63.3

The calculation of the average annual Gross Margin for the crop is straightforward. Average annual variable costs are subtracted from average annual revenues. The Fixed Cost elements relate to land preparation and land clearing. The annual values of these items can be assessed by considering two charges; interest payments and depreciation. It is assumed that the opportunity cost of capital can be expressed as an interest rate of 10 per cent per annum. In the case of land preparation, an investment of TShs. 670 per acre is required in the first year. The interest that could be earned on this sum on an annual basis is therefore TShs. 67. As far as depreciation is concerned, we are forced to write off the investment over a 5 year period at TShs. 134 per year. This gives a total annual charge of TShs. 201 per acre for land preparation. The same principle has been utilised with regard to the assessment of the fixed costs attributable to land clearance, though here an allowance has to be made for the residual value of the cane land in the fifth year. The results confirm that cane was a highly profitable crop generating a Net Farm Income of between TShs. 492 and TShs. 825 per acre, even allowing for the resource cost of all labour inputs. With the crop budget approach

---

we are able to make immediate comparisons between crops. Unfortunately, in this instance, we lack the necessary data for alternative crops, though the utility of the procedure has been demonstrated.

In one respect the static picture provided by the crop budget approach can be misleading, particularly for perennial crops. Development and establishment costs are incurred in the early part of the production cycle that have to be recouped from successive harvests. Credit is therefore required to finance the initial investment. As Table 7 indicates a substantial loss is incurred on cane establishment in the first year. This goes far to explaining the dependence of the village outgrowers on the KSC for land development and cane planting.

### 3.3.3. *How much cane could be transported with the equipment?*

The TRDB appraisal report implies that none of the 4 enterprises would have undertaken to expand the area devoted to cane production, in the absence of support to obtain owner-operated cane delivery facilities. A direct causative link is therefore postulated between the transport capacity and the cane area commanded by an enterprise. It is therefore desirable to appraise the capacity of the equipment proposed for purchase, and to relate this estimate to the land development plans outlined by the enterprises.

A simple model of equipment capacity can be drawn up using technical coefficients. The typical investment shown in Table 1 consists of a MF 165 tractor and a 6 ton trailer. If we assume that the loaded speed of the equipment is 9 kilometres per hour and that a representative delivery distance is 12 kilometres, it follows that 1.33 working hours would be required to deliver one load. If we allow 0.75 hours per trip for loading and unloading, and 0.66 hours for the empty return journey, we arrive at a total requirement of 2.75 hours per load. This suggests that an average of 3 loads per day could be carried. Taking account of loading shortfall, an average load would be likely to consist of 5 tons of cane. This gives a total capacity of 15 tons of cane per working day.

The cane season stretches over 200 working days between June and March. In this period, a tractor and trailer unit could deliver 3,000 tons of cane to the factories. Assuming an average yield of 15 tons per acre, this is equivalent to the harvest from 200 acres of land. It also implies that, even taking account of some dead time at unloading, the tractor would be accumulating some 1,500 working hours per year.

---

Referring to section 3.3.1, it was assumed that a contractor might reasonably expect to obtain 1,000 paid hours per year from a tractor, with a margin perhaps of a further 250 hours per year in unpaid travel time. On this basis, it appears that an estimated requirement of one tractor per 200 acres of cane is somewhat low. A figure of 167 acres per unit might be nearer the mark. Returning to Table 5, it can be seen that 4 enterprises commanded a total 2537 acres of cane in 1977/78, requiring as many as 15 tractors for transportation purposes. A further 4 tractors would have been required to cope with planned plantings up to 1982-83. Clearly then there is little correspondence between the proposed purchases and the apparent needs of the outgrowers.

### 3.4. *The Project Appraisal Approach to Loan Assessment*

#### 3.4.1. *A financial appraisal of the Sanje Estate Developments*

To extend the analysis further, a representative financial appraisal has been prepared for the proposed developments at the Sanje Estate. Following standard practice, this relates to the incremental benefits and costs associated with the equipment purchases. It is assumed that the land developments proposed for the 382 acres of swampy land on the estate are practicable, but that they will only be put in train if loans are granted for the acquisition of 2 MF 185 tractors worth a total of TShs. 260,700 (see Table 1). Since we are concerned with the output of newly developed land, it is necessary to derive a land reclamation and planting schedule from table. This is given overleaf.

	Plant Crop	1	Acres Cropped Ratoons			Total
			2	3	4	
1978-79	161					161
1979-80	57	161				218
1980-81	76	57	161			294
1981-82	64	76	57	161		358
1982-83	24	64	76	57	161	382

---

Given this information, and the fire-adjusted yield profile detailed in section 3.3.2, it thus becomes possible to estimate the value of cane sales at TShs. 90 per ton. This item forms the first entry in the Profit and Loss Account given in Table 8.

If it is assumed that one tractor and trailer unit is needed for every 167 acres of cane, it is apparent that, with the purchase of 2 tractors, there would be excess capacity until the fourth year of the development. The contract value of the unallocated working hours is credited to the investment at TShs. 87 per hour. For the convenience it is assumed that one of the tractors will be fully utilised in catering for the 161 acres developed in 1978-79, throughout the 5 year appraisal period. A salvage value is attributed to the tractors, and the associated equipment, in 1983-84, on the assumption of a 7 year life for the tractors and a 10 year life span for the trailers. In developing and planting 382 acres of cane, the estate owner is obviously creating a substantial asset. For the purposes of the financial appraisal, the standing cane in 1983 is given a value of TShs. 300 per acre, as assessed in the Estate accounts summarised in Table 3. As previously indicated, this figure is very low and would not compare to a valuation based on the sale of the estate as a going concern. Nevertheless, it is clear from Table 8 that the project creates immediate and substantial contributions to revenue.

The principle operating cost relates to the clearing, preparation and planting of the new cane fields at TShs. 2,337 per acre. It is assumed that this work would be undertaken by the estate operator and not by the Kilombero Sugar Company. The figures for tractor operating costs and seasonal labour requirements are drawn from sections 3.3.1 and 3.3.2, respectively. It is estimated that the developments would demand the addition of 2 members to the estate's permanent staff at a total annual cost of TShs. 10,000. A small but rising contribution to overheads has also been attributed to the project. As can be seen from Table 8, a trading profit is realised in all years but the first. When allowances are debited for the straight-line depreciation of the equipment, and the interest element of repayments to the TRDB, it becomes possible to assess the estate's liability to Corporation Tax at 45 per cent per year and calculate profits after tax.

Table 9 relates fund sources to fund applications. The applications include both the purchase of the 2 tractors and the cost of the necessary trailers, on the assumption that the latter would be financed from equity. It is immediately apparent that the land reclamation and development proposals call for a substantial capital contribution from the estate's owner. A sum of TShs. 340,851 is indicated. The post-tax return on this

---

investment is just under 12 per cent per year on the figures presented. In the absence of the necessary funds, the owner would be forced to either incur an additional overdraft from the National Bank of Commerce, or request the Kilombero Sugar Company to develop the land on his behalf. The advantages of the KSC's interest-free

**Table 8****PROPOSED DEVELOPMENTS AT SANJE ESTATE: PROFIT AND LOSS ACCOUNT**

	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84
<i>Revenue</i>						
1. Cane Sales	231,840	325,512	415,872	482,112	490,536	—
2. Equipment Hire	87,000	57,305	17,713	—	—	—
3. Value of Standing Cane	—	—	—	—	—	114,600
4. Salvage on Equipment	—	—	—	—	—	156,444
<b>A. TOTAL REVENUES</b>	<b>318,840</b>	<b>382,817</b>	<b>433,585</b>	<b>482,112</b>	<b>490,536</b>	<b>271,044</b>
<i>Operating Costs</i>						
1. Land Development	376,257	133,209	177,612	149,568	56,088	
2. Tractors	69,682	89,414	97,308	105,200	113,094	
3. Permanent Labour	10,000	10,000	10,000	10,000	10,000	
4. Seasonal Labour	18,032	24,416	32,928	40,096	42,784	
5. Cane Transport	—	—	—	5,123	10,469	
6. Overheads	2,000	4,000	6,000	8,000	10,000	
<b>B. TOTAL OPERATING COSTS</b>	<b>475,971</b>	<b>261,039</b>	<b>323,848</b>	<b>317,987</b>	<b>242,435</b>	
<b>C. TRADING PROFIT</b>	<b>(157,131)</b>	<b>121,778</b>	<b>109,737</b>	<b>164,125</b>	<b>248,101</b>	<b>271,044</b>
<b>D. DEPRECIATION ALLOWANCES</b>	<b>37,243</b>	<b>37,243</b>	<b>37,243</b>	<b>37,243</b>	<b>37,243</b>	
<b>E. INTEREST PAYMENTS</b>	<b>14,664</b>	<b>10,998</b>	<b>7,332</b>	<b>3,666</b>		
<b>F. PROFIT BEFORE TAX</b>	<b>(209,038)</b>	<b>73,537</b>	<b>65,162</b>	<b>123,216</b>	<b>210,850</b>	<b>271,044</b>
<b>G. PROFIT AFTER TAX</b>		<b>73,537</b>	<b>65,162</b>	<b>91,558</b>	<b>115,968</b>	<b>149,074</b>

**Table 9**

## PROPOSED DEVELOPMENTS AT SANJE ESTATE: FINANCIAL CASH FLOW

	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84
<i>Sources of Funds</i>						
1. Equity	340,851					
2. Loan	195,525					
3. Trading Profit		121,778	109,737	164,125	248,101	
Total Sources	536,376	121,778	109,737	164,125	248,101	271,044
<i>Applications</i>						
1. Tractor purchases	260,700					
2. Equipment purchases	55,000					
3. Deficit on Land Development	157,131					
4. Repayment of Loan	48,881	48,881	48,881	48,881		
5. Loan Interest	14,664	10,998	7,332	3,666		
6. Tax Payments	—	—	—	31,658	94,882	121,970
Total Applications	536,376	59,879	56,213	84,205	94,882	121,970
Sources Less Applications	—	61,899	53,524	79,920	153,219	149,074
Cumulative Cash Balance	—	61,899	115,423	195,343	348,562	497,636

terms now become obvious. Two further points may be noted. First, the calculations assume constant rather than current prices. In 1978 inflation was running at about 10 per cent in Tanzania. This would have increased the attractions of fixed term loan finance. Secondly, it should be remembered that there is no evidence that the 382 acres could have been developed at a reasonable cost. Bearing this in mind, together with the low financial return and considerable risk associated with the expansion programme, it should not be surprising that the sub-project failed to materialise.

---

### 3.4.2. *An Economic Appraisal for the total Investment and Development Package*

For the sake of completeness, an economic appraisal has been prepared for the entire investment and development package, as summarised in Table 10. This has been drawn up on the assumption that the purchase of 5 tractors and associated equipment worth a total of TShs. 986,620, would cause or act as the catalyst for the development of an additional 691 acres of cane on the 4 enterprises. The cost of the equipment is somewhat higher than shown in Table 1, and reflects the additional expenditure that would be incurred by the Sanje Estate in acquiring trailers and implements for its 2 new tractors. It is assumed that the incremental cane land is developed in 5 equal tranches of 138.2 acres per year. Revenue and cost data for the cane fields has been derived on the principles detailed in sections 3.3.2 and 3.4.1. The estimated operating costs for the equipment relate back to Table 6. All data are presented in constant market prices.

As previously discussed (see section 3.1) 5 categories of possible benefits can be identified with the proposed developments, taking a national viewpoint. These will be considered in order of magnitude:

- (i) *Value of Incremental Cane Sales.* These are valued at the farmgate price of TShs. 90 per ton, with output rising from 2,211 tons in 1978-79 to a maximum of around 10,282 tons in 1982-83. The residual value of the standing cane in 1983-84 has been derived by calculating the present values (at a 10% discount rate) of the unrealised elements of the yield profiles of the 5 tranches of land. No allowance is therefore made for the value of reclaimed or cleared land.
- (ii) *Value of Contract Work with the Equipment.* Assuming a model relationship of 1 tractor to every 167 acres of cane, it can be seen that opportunities would arise to either undertake contract work at TShs. 87 per working hour, or put the equipment to work elsewhere on the enterprise, at the same opportunity cost. The total number of hours available (from a total of 5,000 working hours) is assessed as follows:

1978-79	-	4,172
1979-80	-	3,345
1980-81	-	2,517
1981-82	-	1,690
1982-83	-	862

---

- 
- (iii) *Value of Transport Services on Existing Cane Sources.* In section 3.3.1 it is demonstrated that the owner-operators of the new equipment would have been unlikely to have gained any direct savings on transport charges, due to the fact that the KSC contract rates were highly competitive and possibly contained an element of subsidy. However, it is possible that owner operation might have reduced spoilage losses on late deliveries. If it is assumed that this might amount to 20 per cent of the cane carried from existing fields, a rough assessment can be made of the order of magnitude of these benefits. Assuming that 80 per cent of the unallocated hours detailed above were available for the movement of cane, and that 15 tons can be delivered in an 8 hour period by one unit, savings might, for example, have been realised on 1,251.6 tons worth TShs. 112,644 in 1978-79.
- (iv) *Value of Cultivation on Existing Farm Land.* Under most circumstances, it is reasonable to assume that the payments made for contract services are a fair guide to their value to the farmer. However, it is possible that gains to Net Farm Income might arise as a result of an increase in productivity due to the adoption of mechanised rather than manual cultivation practices. If it is assumed that the average return on one acre of cultivated land in the Kilombero District in 1978 was TShs. 800 per year, and that a gain of TShs. 50 per acre could have been realised with the use of a tractor, it becomes possible to make a rough assessment of the value of possible benefits from this source.
- (v) *Value of Increased Factory Throughput.* To complete Table 10, it is desirable to add an estimate of the benefits that might arise at the factory on the incremental throughput made available by the project. This could either be related to the 1,374 acres of new and rehabilitated cane, or the net gain in the area devoted to cane of 691 acres. For the purposes of the appraisal, the smaller area has been adopted. Little evidence is available on the marginal cost of processing, though it is known that the KSC incurred a net loss of around TShs. 18,600,000 in 1976-77. The national entry of a saving of TShs. 3 on every ton of cane processed is therefore generous.

It is now possible to draw some general conclusions about the proposals, on the assumptions outlined. The internal rate of return on the capital investment is well over 50 per cent. Most of the net benefits can be attributed to the sale of cane from the newly developed areas. It appears that this alone would be sufficient to justify the investment package. Of course, the provision *on the assumptions outlined* is critical.

---

**Table 10****BASIC RESOURCE FLOWS FOR THE TOTAL INVESTMENT AND DEVELOPMENT PACKAGE**

Item	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84
<i>Benefits</i>						
<i>A. Pre-Project Cultivated Land</i>						
1. On Cane Transport	112,644	90,315	67,959	45,630	23,274	
2. On Crop Cultivation	20,860	16,725	12,585	8,450	4,310	
<i>B. Incremental</i>						
3. On Contract Work	362,964	291,015	218,979	147,030	74,994	
4. Of New Area Cane Sales	199,008	407,966	597,024	766,181	925,387	
5. On Factory Throughput	6,634	13,599	19,901	25,539	30,846	
<i>C. Residual</i>						
6. On Equipment						391,110
7. On Standing Cane						1,550,759
<b>Total Benefits</b>	<b>702,110</b>	<b>819,620</b>	<b>916,448</b>	<b>992,830</b>	<b>1,058,811</b>	<b>1,941,869</b>
<i>Costs</i>						
<i>A. Capital</i>						
1. Equipment	986,620					
2. Land Development	322,928	322,928	322,928	322,928	322,928	
<i>B. Operating</i>						
1. Equipment	174,205	223,535	243,270	263,000	282,735	
2. Cane Cultivation	16,239	33,030	48,716	63,296	77,323	
<b>Total Costs</b>	<b>1,499,992</b>	<b>579,493</b>	<b>614,914</b>	<b>649,224</b>	<b>682,986</b>	

The statement of benefits and costs assumes that the equipment purchases will trigger the development on an additional 691 acres of land. In the absence of this causative link, the basic rate of return would be about 15 per cent, as detailed in section 3.3.1, buoyed by whatever external economies could be attributed to the investment from savings in cane spoilage and increased on-farm productivity.

Two further issues are worth considering. First, without undertaking the calculations, we can deduce the probable effects of recasting the appraisal in a Social Cost Benefit Analysis format. Tanzania is not an efficient producer of sugar in world terms, and the

---

domestic price was nearly 25 per cent greater than the cost of imports in 1975-76. This suggests that the benefits associated with the project are overvalued in Table 10. However, similar downward adjustments might be made to the cost items, reflecting either the lower opportunity cost of unskilled labour or the need to deduct substantial tax elements from the market prices of machinery, spare parts and fuels. Taken all in all then, it is unlikely that a full Social Cost Benefit Analysis would alter the conclusions already drawn. Secondly, it is interesting to reflect yet again on the vulnerability of all forms of discounted cash flow analysis to logical flaws. Summary tables can obscure more than they illuminate. Unless causes are accurately linked to effects, even the most intricate appraisal becomes an exercise in wishful thinking.

#### 4. Ex-Post Considerations

##### 4.1. *What actually happened?*

The TRDB appraisal report was, as has been explained, cursory and somewhat lacking in clarity. Nevertheless, it made a reasonable case for the approval of the loans. The Bank approved support for all the elements in the package, with the exception of one of the two tractors requested on behalf of the Sanje Estate. The equipment was delivered and is still in situ at the 4 enterprises (1982). However, it has not generated the anticipated increases in sugar cane output. As Table 4 illustrates cane production has collapsed at Sonjo and Kitete and stagnated at Msolwa. At the Sanje Estate the cultivated area has remained unchanged since 1978, but output has expanded as a result of the improvement in average yields from 16 tons per acre to 24 tons per acre over the 5 year period. These yields compare to an average of under 7 tons per acre for Msolwa. Only tre tractor delivered to the Sanje Estate is still in operation; the remaining tractors stand idle for the want of spare parts and mechanical skills. There is therefore a considerable contrast between the progress made on the private estate and the low productivity of the 3 Ujamaa villages.

Two sets of factors are put forward to justify the poor record of the villages. These will be considered in turn:

(i) *Problems with the Kilombero Sugar Company.*

The difficulties experienced by KSC in commissioning the Ruembe (KII) factory proved to be only a foretaste of the problems affecting the company. Due to

---

---

mismanagement and lack of spare parts, factory closures became relatively common. In some cases these led to the loss of the villagers' cane without compensation. The auditors also put pressure on the company to recover its bad debts to improve its liquidity position. This led in turn to pressure on the villagers to repay the cost of land developments undertaken with company plant. In the case of Msolwa, where repayments were outstanding for the preparation and planting of 1,465 acres, the villagers saw little advantage in working on the fields until the company had taken sufficient cane to discharge the debt.

The problems of the KSC also led it to re-assess the value of outgrown cane. Currently the company has embarked on a survival plan under the strict financial supervision of the IBRD and the Dutch and Danish Aid Agencies. Over the next 3 years, output is expected to average about 55,000 tons of refined sugar, derived from around 524,000 tons of cane. This level of output is within the compass of the 16,800 acres of the KSC's estates. The outlook has therefore changed for the outgrowers. In 1978 they were viewed as a critical source of cane to boost throughput of the factories to their 800,000 ton capacity. Villages were offered highly preferential development packages largely because they could provide land. As the company began to collapse it looked increasingly to its own estates and naturally favoured its own cane when shortages of transport and labour arose. The villages near to the factories seem to have assumed that they held a strong bargaining hand, and their unwillingness to bear the full cost of harvesting and transportation has become a point of contention with the management of the KSC. This has led recently to the institution of a flat rate of TShs. 60 per ton for contract cane deliveries regardless of distance. This is clearly designed to encourage more distant growers and discriminate against villages like Msolwa and Kitete.

(ii) *Attractions of Alternative Crops.*

Although sugar cane is a relatively simple crop to grow, it has certain characteristics that count against it. First, it requires a massive input of labour during the harvest season. Between 1978 and 1982, the working populations of the villages appear to have declined, and it has become more difficult to motivate people to work in a co-operative fashion. Cane is best grown in large pure stands and is therefore unsuited to production by independent farmers. As the Ujamaa system has become sullied by mismanagement and misappropriation, there has been a natural movement to traditional crops. It is also worth noting that the availability of seasonal labour from the Iringa and Mbeya regions is declining, and

---

---

that current payments to cane cutters are at least 50 per cent above the national basic wage.

Secondly, it is said that the return on cane has deteriorated due to low producer prices. This certainly appears to be true for the period 1975 to 1979 when the farmgate price of cane remained constant at TShs. 90 per ton. However, it rose to TShs. 105 per ton in 1980, to TShs. 137 per ton in 1981, and to TShs. 170 per ton for the 1982-83 season. Currently cane is probably a reasonably attractive crop for those who specialise in it. From the individual farmers' viewpoint, though, it suffers from 2 important disadvantages; it cannot be stored, and it cannot be traded since all sales must pass through the factory. An acre yielding 15 tons of cane realises a farmgate return of TShs. 2550 per year. An acre yielding  $8\frac{1}{2}$  ninety-kilogram bags of paddy rice realises TShs 2,720 at the official price and absorbs more labour. The big difference is that the rice can be stored and sold at the black market price of 600 rather than 320 shillings per bag. Similar arguments apply for bananas.

Thirdly, it is evident that the villages have paid little attention to the need to match labour needs to labour availability. While enterprise and farm budgets would be required to identify specific shortfalls, the point can be established by considering the situation at Msolwa. Here the sugar acreage went from virtually nothing to 1,465 acres in two years. It is obvious that other crops would have had to suffer to accommodate the acquisition of nearly 8 acres of cane for every working man in the village. Table 6 also illustrates the irregularity of plantings in the villages. From a technical viewpoint, it is desirable to break plantings into 5 tranches following successive yield sequences to stagger the cost of re-establishing plant crops. Only the Sanje Estate appears to follow this management rule.

In some ways, the situation at the Sanje Estate sheds additional light on the arguments recounted above. The Estate works closely with the company and has managed to weather factory closures and transport shortages. Sensibly, it has restricted its operations to the best 500 acres of land and acquired facilities to deliver most if not all of its output. The problems associated with poor producer prices and rising labour costs have been offset by increases in productivity consequent upon the use of fertilisers and improved cultivation practices. The estate has ignored the potential offered by other crops. It does not have the permanent labour to cultivate them and it is too visible to engage in black marketeering. Its specialised but relatively simple operations favour the devolution of day-to-day affairs to a farm manager, leaving finance and strategy in the hands of the owner. That the estate has prospered

---

producing cane, while the villages appear to have failed, is not necessarily an argument for capitalism. It is much more a reflection that certain types of agro-industries are best run on an integrated basis. Essentially the Sange Estate is a functional unit of the Kilombero Sugar Company. Though it may be desirable from a national viewpoint to instil a similar level of discipline and dependence on the Ujamaa villages, it is clear that the management problems associated with collective farms militate against their success as outgrowers.

#### 4.2. *Lessons for the TRDB and KSC*

The TRDB made a conscientious attempt to appraise the loan requests and cannot be blamed for their poor developmental impact. Too much faith was placed in the value of tractors as a triggering agent for the expansion and intensification of production. However, it may well be that the equipment supplied to the villages covered its overall costs undertaking general cultivation and transport duties. A low level of loan recovery is typical of rural areas in Africa, though it is also clear that Ujamaa villages pose particular problems so far as the identification and expropriation of collateral is concerned. This relates in part to the political influence of the villages. If balance sheets are used to identify credit worthiness, greater emphasis should be placed on current assets, excluding the value of standing crops.

The KSC has obviously been preoccupied with managing its own affairs, and its policies towards village outgrowers have been misguided and erratic. In 1977-78, the company was prepared to let the villages act as landlords for the cane fields that it developed for them. This proved expensive and ineffective. Currently, the KSC is content to ignore the outgrowers while it tackles its own problems. However, the time is likely to come when it again wishes to expand production to the ceiling set by factory capacity. Isolated investments are obviously not the answer. A co-ordinated development programme will be required which emphasises payments for work completed, possibly through the issue of profit shares to individual farmers.

#### 4.3. *General Conclusions*

Like many project preparation exercises, the TRDB appraisal failed to ask many of the key questions relating to the developmental impact of the proposals. Among these we may note the following:

- (i) How could the production of cane by outgrowers be best increased?

- 
- (ii) How could the transportation of the output be best organised?
  - (iii) What impact was the acquisition of tractors and implements by outgrowers likely to have on productivity, in the absence of additional credit and extension support?
  - (iv) How many tractors would be required to meet current and expected cane delivery demands?
  - (v) How might 4 imported tractors be used to best advantage to promote rural development in the Kilombero District?
  - (vi) How might transport equipment valued at about TShs. 500,000 be best employed to boost KSC factory throughput?
  - (vii) How best could the management structures, and labour and material resources of the 4 enterprises be mobilised to promote rural development?

By applying a variety of appraisal methods, it has been demonstrated that answers to some, if not all, of these questions could have been inferred in 1978. First, under the preferential rates levied by the KSC for cane transportation there was no incentive for growers to acquire their own transport equipment. Secondly, since one tractor and trailer unit is limited to the carriage of cane from between 167 and 200 acres, there was little reason to expect that the investment would trigger an increase in cane cultivation. Thirdly, bearing in mind the high cost of developing land and establishing cane, it is not surprising that the overall acreage stagnated in the absence of direct intervention by the KSC, or the provision of adequate credit and extension support. Finally, the insights gained from the relationship of enterprise accounts to management structures and the availability of labour and material resources, suggests that very different rural development roles should have been assigned to the Ujamaa villages and the private estate. Nevertheless, these observations are made with the benefit of hindsight, and refer to a small and fairly insignificant project. Although this review has provided further evidence of the general problems associated with agro-industrial developments in Tanzania, its main value lies in the methodological approaches that it demonstrates.

In reality project planning is much more about applying logic and common sense to questions of cause and effect in the project preparation phase, than it is about following idealised appraisal procedures. Often more useful inferences can be drawn from background research, fieldwork, experience and cost models than can be derived from intricate and stylised discounted cash flow analyses. As the retrospective appraisals derived for the project illustrate, it is desirable to explore issues from a

---

number of viewpoints to gain a rounded picture. These insights should then be tested against reality at the evaluation phase of the project sequence. Only by matching foresight to feedback can we make progress in developing our own expertise, and furthering a wider understanding of the process of development.

## **PREPARATION, EVALUATION ET JUGEMENT D'UN ENSEMBLE DE PROJETS: ELEMENTS DE REFLEXION D'UNE EXPERIENCE EN TANZANIE**

### **RESUME**

*Un simple exemple tiré d'un rapport de la Banque de développement rural de la Tanzanie (T.R.D.B.) sur l'évaluation d'un prêt nous permet de souligner de nombreux problèmes méthodologiques concernant les différentes phases de la planification des projets. On espère que cette analyse sera utile aux instructeurs et aux experts du secteur de la planification des projets et constituera un exemple des problèmes rencontrés dans l'analyse des effets prévus dans l'ensemble des investissements.*

*En 1978 la T.R.D.B. reçut des demandes similaires de prêts provenant de trois villages Ujamaa et d'une exploitation agricole privée dans le district de Kilombero pour l'achat de tracteurs, de moyens de transport et de différents instruments. L'objectif déclaré de ces prêts était de fournir à chaque producteur l'équipement nécessaire pour transporter la canne à sucre aux sucreries de la Kilombero Sugar Company. On avait aussi envisagé que la disponibilité de moyens de transport et de machines agricoles aurait pu stimuler de nouvelles plantations et l'extension de surfaces destinées à la canne à sucre. Normalement les prêts étaient accordés selon les demandes. A partir de 1982, il apparut évident que le projet avait manqué ses objectifs. Seulement une des entreprises — l'exploitation privée — avait remboursé ses prêts et la surface destinée à la canne à sucre avait diminué.*

*Cet article veut reconstruire les éléments essentiels pour l'élaboration et l'évaluation de l'ensemble des prêts. Trois approches différentes mais potentiellement complémentaires sont examinées pour pouvoir juger les demandes de prêts: l'analyse des données de la comptabilité, la construction des modèles du coût de l'investissement, la préparation d'analyse « discounted cash-flow » des coûts et des avantages.*

---

---

*L'examen des comptes des entreprises permet de déduire de nombreuses conclusions sur les résultats passés et sur les perspectives d'avenir. Il permet ensuite de mettre en lumière combien sont difficiles les comparaisons des résultats entre des exploitations communautaires de village et des entreprises commerciales.*

*Si l'on utilise le modèle du coût des investissements, on peut analyser des problèmes fondamentaux concernant la rentabilité des transports de la canne à sucre par les entreprises, l'intérêt du développement des nouvelles surfaces destinées à la culture de la canne à sucre et le lien entre les transports et l'accroissement des nouvelles terres. Les analyses montrent en premier lieu que la plantation de nouvelles cultures de canne à sucre était financièrement rentable étant donné la disponibilité de terres défrichées et une main d'œuvre suffisante. En deuxième lieu on remarque que l'achat des moyens de transport de la canne à sucre n'avait probablement qu'une influence modeste sur les décisions de maintenir et d'étendre la surface destinée à cette culture.*

*Pour compléter le réexamen des demandes de prêts, deux évaluations standardisées de projets sont présentées. La première examine la rentabilité financière de l'ensemble des investissements planifiés par l'exploitation privée. Cette analyse fait ressortir l'importance des hypothèses sous-jacentes aux prévisions de cash-flow en ce qui concerne les liens entre investissements et rendements. Elle montre ensuite les risques provenant de l'accroissement des terres destinées à de nouvelles plantations de canne à sucre. En deuxième lieu on présente pour les quatre entreprises une évaluation économique globale: on fait ressortir les sources prévues de bénéfices ainsi que l'apparition d'économies externes découlant de l'expansion de la production aux sucreries. Ensuite on se réfère aux événements de 1982.*

*Les modestes résultats des entreprises communautaires de village sont dus, soit à la concurrence des cultures alternatives, soit aux problèmes des sucreries concernant la récolte et la transformation de la canne à sucre par les sucreries. Le succès relatif des entreprises privées semble dépendre de son degré d'intégration avec le K.S.C.*

*Cet article conclut en réexaminant les éléments qui auraient pu permettre l'élaboration de projets plus adéquats. Il met en relief la nécessité d'établir des procédures rationnelles pour formuler les projets. Telles procédures devraient inclure non seulement des séries de flux de coûts et d'avantages prévus mais aussi des relations fondamentales de cause à effet sous la forme de modèles de coûts.*

---