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Republic of Uganda  
Ministry of Industry and Technology

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**PUBLIC INDUSTRIAL ENTERPRISES SECRETARIAT**

**CALCULATION  
OF  
EFFECTIVE RATES OF PROTECTION (ERP)  
AND  
DOMESTIC RESOURCE COSTS (DRC)**

**FINAL REPORT**

79



**Community Management Services (CMS)**  
Consultants in Resources Development and Management

Kampala, Uganda

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24th September 1990

The Chief  
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(Att. Mr. Job Koloskov)

Dear Sir

UNIDO PROJECT NO BR/UGA/87/001 - PIES: CALCULATION OF ERP & DRC

We are pleased to submit herewith ten copies of our Final Report on the Calculation of Effective Rates of Protection (ERP) and Domestic Resource Cost (DRC) for the Public Industrial Enterprises Secretariat (PIES).

The Report is divided into three sections viz: The introduction; the main body and appendices. This is in accordance with the Terms of Reference, the provision of the Contract Agreement, our submission and the request from PIES to do a Pre-feasibility Study of Tororo Cement and Lime Plant.

The Draft Final Report was submitted a year ago. We did not get the expected comments from the client until end of August, 1990 when we were given a go ahead to produce the final report.

We believe that our findings are still relevant to planning of the industrial sector in Uganda.

Finally we would like to thank you for having given us the opportunity to undertake this important study. We are grateful for the cooperation extended to us by government, the firms studied and UNIDO for facilitating the execution of this study.

We look forward to working with you again in the near future.

Yours faithfully

Y B Kanyomozi  
Project Director

Encl

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INTRODUCTION

## ACRONYM AND ABBREVIATION

PIES	-	Public Industrial Enterprises Secretariat
ERP	-	Effective Rates of Protection
DRC	-	Domestic Resource Costs
NRP	-	Nominal Rates of Protection
EPC	-	Effective Protection Coefficient
LVBC	-	Lake Victoria Bottling Company
CO <sub>2</sub>	-	Carbon Dioxide
LMB	-	Lint Marketing Board
SCOUL	-	Sugar Corporation of Uganda, Lugazi
EASC	-	East African Steel Corporation
EAD	-	East African Distilleries
TUMPECO	-	The Uganda Metal Products and Enamelling Co.
UGM	-	Uganda Grain Millers
UBHM	-	Uganda Bags & Hessian Mills Limited
UCI	-	Uganda Cement Industries
AEL	-	Agricultural Enterprises Limited
ULATI	-	Uganda Leather and Tanning Industries
UBMI	-	Uganda Blankets Manufacturers Industries
JISW	-	Jubille Ice & Soda Works

Magendo Rate	-	Black Market Rate or Parallel Market Rate
$P_{border}$	-	Border Prices
$P_v$	-	World Prices
VA	-	Value Added
$VA_{cif}$	-	Value Added in World Prices (derived prices)
$VA_{dom}$	-	Value Added in domestic prices
$VA_{wp}$	-	Value Added at World Prices (under to $VA_{cif}$ )
tpy	-	Tons per Year
tpa	-	Tons per annum
tpd	-	Tons per day
UDC	-	Uganda Development Corporation
UCCU	-	Uganda Cooperative Central Union
OGL	-	Open General Licencing
OER	-	Official Exchange Rate

## ORGANIZATION AND HIGHLIGHTS OF THE REPORT

This introduction gives the format and some highlights of the report. The final report comprises of five chapters and four appendices.

The synopsis, in Chapter 1, gives the background to the study and summarizes our findings. It is found that the damage to the Ugandan economy together with the overvalued exchange rate and the paucity of data have greatly influenced the findings of the study.

The aim and objectives of the study are discussed in Chapter 2. To have meaningful interpretation, the ratios calculated had to take into account the prevailing circumstances in Uganda - social, political and economic environment under which the firms studied are operating.

Chapter 3 discusses the methodology and assumption used in the study including the theoretical basis for calculations of the economic ratios. An attempt is made to give definitions of the concepts used in the study and their interrelationship.

Because of the peculiar nature of the Ugandan economy, Chapter 4 is devoted to outlining the state of the economy and how it impinges on the calculation of ERP and DRC. The



industrial response to the political economic environment is seen to have a time lag and specific firm problems seem to be awaiting solutions from government.

The analysis of individual firm findings are presented in Chapter 5. It shows that out of 18 firm product lines - five are highly protected two are moderately protected while eleven have little or no protection. These findings, however, cannot be used alone in formulation of policy. They have to bear in mind the peculiar state of the economy.

At the request of PIES, we looked at the Tororo Cement and Lime Plant. We found that it would be prudent to renovate the existing lime plant. In case of cement we advise that the country considers establishing a new plant at Tororo rather than rehabilitating the present one.

TEXT

1.

## SYNOPSIS

- 1.1 We were invited to make calculations for the Effective Rates of Protection (ERP) and Domestic Resource Costs (DRC) for a selected number of public industrial enterprises. The aim was that these enterprises would later be subject to management audit for further analysis of their economic viability.
- 1.2 This Report is the result of field work and background research carried out in the months of June and July 1989. The results were analysed in July and reported upon in August 1989. The team studied the present and past situation obtaining in 15 public industrial enterprises. On the basis of data for one year, calculations were made for Nominal Rate of Protection (NRP), ERP and DRC.
- 1.3 The Ugandan economy has undergone extensive damage during the past two decades. This has affected the management of most of the industrial enterprises. In addition, there have been difficulties created by external factors such as the rapidly declining terms of trade. Income per capita has fallen. Social and physical infrastructure have decayed through neglect. Uncertainty has pervaded every level of society. The industrial activity was no exception to this overall retrograde picture. The combination of all these factors have resulted into a complete reversal of Uganda's position as a prosperous East African country. It is now

that efforts are slowly being put in to reverse this downward trend.

1.4 Each of the individual enterprise studied suffered from deterioration that afflicted economic activity in the country. Many were burdened by their own additional and specific problems which were partially related to the general mismanagement of the economy. Therefore, in order to give meaningful interpretation, the data obtained for purely economic analysis of each enterprise, the team has provided historical background information to give proper perspective to the "snapshot" image of the firm's performance.

1.5 The analysis of ERP and DRC show that the results of the relative performance of the industrial enterprises vary considerably as can be seen from the summary below:

#### Heavily Protected Enterprises/Product Lines

1. Nile Breweries.
2. Lake Victoria Bottling Company.
3. Jubilee Ice and Soda Works Ltd. (Carbon dioxide production).
4. Lint Marketing Board (Edible Oil).
5. Sugar Corporation of Uganda Ltd. (Sugar).

**Moderately Protected**

1. East African Steel Corporation.
2. Sugar Corporation of Uganda Ltd. (Industrial Alcohol).

**Little or no Protection**

1. Jubilee Ice Soda Works Ltd. (Soda).
2. Lint Marketing Board (Soap)
3. East African Distilleries.
4. The Uganda Metal Products and Enamelling Company.
5. Uganda Grain Millers.
6. Uganda Bags and Hessian Mills Ltd.
7. Papco Industries Ltd.
8. Uganda Cement Industry Ltd. (Tororo).
9. Agricultural Enterprises Ltd.
10. Uganda Blanket Manufacturers.
11. Uganda Leather and Tanning Industries

Government levies import duties because they are important source of revenue and can easily be imposed and collected. This however, also means higher rate of protection on such products. The higher the rate, the larger the gains that can be made by the owners of the resources used to produce highly protected products. In fact in some countries, the pursuit of effective protection has become an art, leading to the term "rentseekers". In these countries, manufacturers may spend a substantial part of their time not on increasing the efficiency of their production processes but on

the efficiency of their production processes but on obtaining special protection, which allows them to make extraordinary profits ( the 'rent'). There are "lobbies" engaged in requests for protection especially those using "infant industry" arguments.

The decision to concentrate on the highly protected enterprises, for revenue purposes, or to unify the tariff structure so that all enterprises enjoy the same degree of protection is certainly a policy matter. In any case the government will not suffer any loss in revenues since under tariff unification process some import duties may need to be lowered while some others may need to be increased. Often such a programme cannot be implemented immediately and needs to be undertaken over a period. In conclusion, therefore, ERP alone may not be a useful criterion for selecting enterprises for Management Audit Programme.

- 1.6 The study was carried out at the time when there was significant capacity under utilisation in most of the enterprises. This affects the validity and conclusions in estimation of DRC's because the value added and foreign exchange costs of production are not affected symmetrically by changes in capacity utilisation. It is hoped that when capacity utilisation rises the value added per unit of foreign exchange cost will rise significantly thus affecting the snapshot measured by DRCs. We also took

note of the fact that the current magnitude and structure of costs in various industries need to be interpreted carefully.

Managerial limitations constitute a large component that contributes to heavy local costs. On the other hand the use of DRCs to assess the efficiency of firms assumes that the general efficiency at both the micro and macro levels are already known.

Putting these shortcomings aside, the results show that the DRCs for the selected enterprises are approximately two or three times the official exchange rate. This would mean that using the international standards, most of the enterprises concerned are rather inefficient. The ranking is given in tables in Appendix II.

The concept of domestic resource cost is just another way of expressing the effective protection a domestic manufacturer enjoys. The smaller the cost of domestic resources required to save or earn one unit of foreign currency (eg US\$), the more viable and profitable is the undertaking.

Government would therefore be encouraged to promote such enterprises with lower DRCs-official exchange rate ratios (See Table II:9). Notwithstanding this recommendation, specific government social and economic plans have to take into account the limitations associated with these

calculations as outlined in the study.

From our study, the enterprises were ranked according to their economic viability and profitability as follows:

1. Uganda Blankets
2. UCI - Lime (Tororo)
3. Scoul
4. Agricultural Enterprises
5. Ulati
6. UCI - Cement (Tororo)
7. Papco
8. Uganda Bags and Hessian cloth
9. Uganda Grain Millers
10. Tumpeco
11. Nile Breweries
12. East African Distilleries
13. LMB Edible Oil and Soap
14. Jubilee Ice and Soda Works
15. East African Steel Corporation
16. Lake Victoria Bottling Company Ltd.

It should be noted that the international market prices are more of an abstract concept than a reflection of everyday economic reality. Equally an open economy is a theoretical concept. Therefore practical policy makers cannot conclude that highly protected industries should be dismantled if their ERP is very high.



It is always more advisable that decision makers and those responsible for the enterprises should strive to improve their overall economic efficiency.

- 1.7 Similarly the existence of an official and somewhat overvalued exchange rate and a parallel (black) market rate, have significant consequences for the calculation of value added for enterprises products.

Some firms procure their imported inputs by having access to foreign exchange at the official exchange rate. Others, less fortunate, are forced to have recourse to paying a much higher price by purchasing from local sources where prices are set by parallel market rates. This detracts from the usefulness of the overall measure of value added per unit of output. Both official and unofficial rates may have an influence on the same input costs for any one enterprises depending on the circumstances prevailing at the time. Thus official exchange rates may set input prices for one part of given financial year. For another, delays in obtaining foreign exchange or inadequate local cover could cause management to purchase at black market prices.

1.8 We were asked, as an extra assignment to our terms of reference, to review the options open to the Tororo Cement and Lime Plants. The team found that it would be prudent to renovate the existing facilities and add new vertical units in respect of lime production. In the case of Tororo Cement Plant rehabilitating the present plant does not seem to be very attractive and would end up as a drain on the economy because the present plant is very much dilapidated and the cost of importing spares to maintain it would be excessive. It may therefore be advisable for the country to consider establishing a new plant at Tororo rather than rehabilitating the present one as the productivity of the new plant would be far much higher than the rehabilitated one. (Appendix III)

## 2. AIM AND OBJECTIVE OF THE STUDY

2.1 The Ugandan economy has undergone extensive damage during the past two decades. In common with the rest of the economy the industrial sector has suffered considerably both at the micro and macro levels, - the past having adversely affected most enterprises. Their continued economic viability, therefore depends on improvements in their financial and managerial performance as well as the level of technology being applied.

2.2 In calling for calculation of Effective Rates of Protection (ERP) and Domestic Resources Cost (DRC), the World Bank has a need for assistance in selection of public industrial enterprises that will later be subject to management audits. Furthermore, the purpose of this exercise is also primarily to enable the Ministry of Industry and Technology to rationalise the industrial sector especially those which are currently considered as parastatals and quasi - parastatals. To this end the Public Industrial Enterprises Secretariat (PIES) has been set up with a programme for divestiture, restructuring and rehabilitating some of the parastatals.

2.3 The objective of this assignment was, then, to carry out a preliminary economic viability - screening exercise which would enable the Ministry of Industry & Technology and Government to recommend at least 10 enterprises to be subjected to management audits. The list of enterprises examined were as follows:

1. Nile Breweries Limited.
2. Lake Victoria Bottling Company Limited.
3. Jubilee Ice and Soda works.
4. East African Distilleries Limited.
5. Uganda Blankets Limited.
6. Uganda Bags and Hessian Manufacturing Limited.
7. Uganda Leather and Tanning Industries.
8. East African Steel Corporation.
9. Tumpeco.
10. Sugar Corporation of Uganda: Lugazi.
11. LMB - Edible Oil & Soap: (Iganga Industries Ltd and Nakasero Soap Works).
12. Uganda Grain Millers.
13. Agricultural Enterprises Limited.
14. Uganda Cement Corporation: Tororo.
15. Papco Industries Limited.

These enterprises were analysed in depth to obtain not only quantitative but also qualitative information.

2.4 In using the result obtained, one needs to bear in mind the particular and peculiar circumstances of the Uganda economy. There are other issues to be considered if an objective decision has to be taken regarding the future of the Ugandan industrial sector. These decisions will have to depart from the conventional economic analysis that is normally used when calculating financial and economic rates of return. This is because of the followings:

- (a) The existence of divergence between the official exchange rate and black market - "magendo" rate caused by the constraint on foreign exchange availability. This requires that an adjustment be made to take account of an implicit and imputed foreign exchange rate which is different from the official one and sets marginal prices in the economy.
- (b) Many of the enterprises are operating at very low levels of capacity because they lack inputs especially spare parts, raw materials, finance etc. Some of them have dilapidated plants and machinery. Hence, they cannot attain the necessary economies of scale in

production because their unit costs of production are still very high. Moreover, historical trends and data showing production, profits/losses etc. on their own alone, together with recent past performance cannot be considered as indicative of the future prospects of these firms.

- (c) The frequent political upheavals which have afflicted the country in the past two decades and their immediate consequences have meant that the investment climate in the country (decision making processes at the managerial level) operates under uncertainty. This discourages innovation and affects investment plans, because investors are not sure of government intentions. In turn this affects the performance of the industries in question. It makes corporate and strategic planning unattainable. Therefore stability of government is a necessary condition to improving the performance of industries. It was, therefore necessary, when carrying out calculation of these economic ratios, to bear in mind these limitations and constraints so as to accommodate factors at work in the whole economy.

### 3. ERP AND DRC CONCEPTS AND METHODOLOGY

#### 3.1 Economic efficiency and Domestic Resource Criterion:

An industrial activity is competitive at economic prices if the economic value of its output exceeds the opportunity costs of the commodities and factors of production employed in producing it.

If the full-time profile of inputs and outputs is known and a suitable time discount rate is applied to costs and benefits occurring at different points in time, the net present value of any project (actual or proposed) at economic prices provides the correct measure of its net contribution to economic welfare. In that sense, economic activities with a positive net present values are efficient. Available data, however, are not always well adapted to the application of the present value criterion. In these circumstances it is possible to employ a single-period efficiency measure based on the annual economic profitability of an industrial activity. This is expressed by the equation:

$$B_j = P_j - \sum_i^N A_{ij} P_i - \sum_s^M F_{sj} P_s$$

Unit Economic profit	=	Economic price per unit of output	-	Economic value of intermediate inputs	-	Economic Value of factor inputs
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Where  $P_j$  are shadow prices of output  
 $P_i$  are material inputs  
 $P_s$  are factor inputs  
 Used in production of  $j$  respectively;  
 and  
 $A_{ij}$  are units of material inputs  
 $F_{sj}$  are factors of production  
 required per unit of output respectively.

The activity is judged efficient if the economic value of the output is at least as great as the economic value of the intermediate and factor inputs required to produce it ( $B_j > 0$ ). If all produced inputs and outputs are assumed to be tradable, then  $(P_j - \sum_i A_{ij} P_i)$  is the annual "value added at world prices" ( $VA_{wp}$ ) which represents the annual net addition to national income evaluated at world prices.  $\sum_s F_{sj} P_s$  represents the opportunity cost of factor inputs evaluated at economic prices. When the opportunity cost of factor inputs exceeds the net addition to national income, unit economic profits are negative, and the resources employed could be more efficiently employed in their best alternative use.



Foreign exchange is an important constraint on Uganda industries which depend heavily on imported inputs and equipment.  $VA_{wp}$  is the difference between world values of output and tradable inputs and can be taken to represent the net addition to foreign exchange availability as a result of the project. If domestically supplied factors of production are evaluated at their opportunity costs equation (1) may be rewritten as the ratio of domestic factor costs evaluated at economic prices to value added at world prices thus:

$$\begin{aligned}
 \text{DRC} &= \frac{\sum_s F_{si} P_s}{P_i - \sum_c A_{cj} P_j} \quad (2) \\
 &= \frac{\text{Economic value of primary factors}}{\text{Value added at world prices}}
 \end{aligned}$$

The resulting "domestic resource cost ratio" (DRC) measures the amount of "net" foreign exchange that domestic resources can generate for the firm in question. If this rate of transformation exceeds one, the opportunity cost of domestic factors of production (in terms of foreign exchange) exceeds the addition to value added at world prices by these factors, and the net benefit criterion would turn negative. An alternative approach of the DRC criterion is to write the ratio of domestic resource costs in terms of domestic currency to value added at world prices in terms of foreign currency.

We opted to use this alternative. There is in fact no difference in substance between the former measure of DRC and that used here. Instead of comparing the resulting ratio with one we shall compare the ratio of the estimated shadow exchange rate to the official exchange rate. This is because minimizing the domestic resource cost ratio in activities producing tradable goods is equivalent to maximizing value added at world prices per unit of domestic resources employed. Thus, evaluating firms in terms of their resource cost ratio provides a measure of relative economic efficiency.

Firms with DRCs less than or equal to the official exchange rate may be classified as efficient in the sense that the domestic resources that they employ produce as much or more value added at world prices as they would in the activities from which they are drawn. Activities with resource cost ratios greater than official exchange rate are termed inefficient in the sense that the resource they use would be more productive in alternative activities.

### 3.2 EFFECTIVE RATE OF PROTECTION CRITERION

Government policies such as tariffs, indirect taxes, subsidies, quota restriction, import prohibitions, price controls and an overvalued exchange rate are customarily aimed at protecting domestic producers from comparatively more competitive products, freely traded in the world

market. Each of the mentioned policies individually provide different degrees of protection. The impact can either be on the output side (sales) or the input side - i.e production costs. Their cumulative effect, ultimately, determines the degree of protection a producer enjoys.

Variations in economic efficiency tend to reflect the structure of incentives to producers, which can be analysed by using the concept of effective protection. The effective protection coefficient (EPC) measures the ratio of domestic value added that is permitted by the structure of protection (determined by tariffs, other taxes on trade, import bans, and quantitative restrictions) to value added at world price ( $VA_{vp}$ ). The latter represents the level of value added implied by the absence of trade restrictions. If all commodities are traded, the affective protection coefficient is given by:

$$\frac{P'_i - \sum A_{ij} P'_j}{P_j - \sum A_{ij} P_j} = \frac{\text{Value added a domestic prices}}{\text{Value added at world prices}}$$

Where  $P_j$  and  $P_i$  are the domestic market prices of outputs and material inputs respectively, thus, the effective protection coefficient is the ratio of value added in domestic prices to value added at world prices. For comparability with nominal tariffs, an equivalent measure is the effective protection rate (ERP) or the percentage increase above  $VA_{vp}$  that is permitted by the structure of

protection.  $ERP = 100 (EPC - 1)$

The effective protection coefficient (EPC) and the domestic resource cost ratios (DRC) are closely related. Both have as their denomination the value added at international prices, and so the only difference is in their numerators. The EPC's numerator shows how high the level of domestic resources costs, profits and rents can be in a particular economic activity. The DRC includes in its numerator only domestic resources actually used and values them at shadow rather than market prices. The EPC thus indicates the potential for resource costs and transfers arising from the existing structure of protection; the DRC indicates the extent to which these potential costs are realized. The difference between the two depends on the structure of domestic taxes and subsidies, on the supply functions for domestic primary factors, and on the effectiveness of regulatory measures such as price controls. The other approach to these concepts is given in Appendix 1.

### 3.3 Standard Assumptions

There are certain standard assumptions that are needed to make the calculations meaningful. These include, *inter alia*, following:

- (a) Physical input coefficient taken to be invariant to price changes. For example, the quantity of malt going into a litre of beer is assumed constant as it is

technically and not economically determined.

Thus the value of the coefficient under free trade is simply the value recorded in the input/output table divided by  $(1+t_i)$

Where  $t_i$  is the tariff on that input.

Some investigators assume that for protected nations, free trade input coefficients will be similar to the coefficients of those nations having negligible protection. Among developed nations, Belgium and the Netherlands, closely approximate a free trade situation. Accordingly, the coefficients from their industrial structure are used as proxies.

We however, have not followed this practice in the study. The differences in geography, climate, relative resource endowments and industrial structure for Uganda compared to these nations would make such proxies irrelevant. We have therefore, used exclusively Uganda data based on the protected situation in our calculations.

- (b) We have assumed that foreign elasticities of supply of our imports are infinite. Consequently, the total effect of a tariff on imports is assumed to be on the price paid by domestic buyers rather than reducing

somewhat the price received by foreign suppliers.

- (c) Domestic producers usually price up to world price plus the tariff and/or other protective devices. We have taken that where firms do not price up to the tariff, our results will overstate the cut in value added, firms would face in a free trade situation.

#### 3.4 Issues in Calculating Effective Protection

In addition to standard assumptions referred to in section 3.3 special consideration was given to certain issues that influence the calculation of ERP. These are:

- (a) Non-traded inputs:

Treatment of inputs like trucking services and electricity which are not traded internationally, needs special mention. The domestic prices of these non-traded inputs are not strictly equal to their free market prices plus the tariff. The question arises whether they should be treated as ordinary inputs with zero tariff rates or with tariff rates equal to the average of the tradable inputs. Alternatively, they could be considered to be part of value added of the industry using them. Theoretically the most appealing way, perhaps is to decompose the value of non-traded input into value added and the cost of manufacturing. After completion of this decomposition

process the cost of the non-traded inputs will consist of value added and the tradable input costs. This value added can be treated as part of the primary factor inputs of the industry whose effective rate of protection is computed and the tradeable input costs can be treated like any other inputs of the industry.

(b) Exchange Rate Adjustment:

A common procedure in computing ERP has been to assume that some improvement in trade balance will occur from imposing a protective structure. This means that the entire set of effective rates must be adjusted downward to allow for the rise in international value of the domestic currency. The consequence of the revaluation will be that the positive rates at the lower end of the original set become negative rates. This implies that the combination of relative low protection plus an appreciation of the currency has had a net adverse affect on the value added of these industries.

We decided not to allow for an exchange rate change in computing ERP taking into account the Uganda economic situation.

(c) Official and parallel market rates:

Six of the enterprises studied enjoy a relatively high degree of protection especially the brewing and soft

drinks industries. The Domestic Resource Costs criteria indicates that standards are inefficient. However it should be noted that by adjusting the DRC to take into account the wide difference between the parallel market exchange rate, a new picture would emerge. Value added can be positive when the official exchange rate is used but this may not be a real measure of comparative efficiency.

In fact when the black market rate is used the value added may turn out to be negative. The reason is that an importer can obtain raw materials at the official exchange rate, by selling them after minimal transformation or processing, at prices governed by the black market rate the importer makes a very high profit. In real economic terms his contribution to wealth creation is mainly an illusion. When the black market rate is used, the same value added will be greatly reduced.

### 3.5 Negative Effective Rate of Production (ERP)

We had few cases (Two) where these were encountered. Negative ERP usually arises because of the following reasons:

- (a)  $(\text{Value Added})_{\text{cif}} > (\text{Value Added})_{\text{domestic}} > 0$ . As a result of government policies, value added in domestic prices is less than value added in world prices,



although both are positive. Protection on inputs which adversely affects  $VA_{dom}$  through higher input costs, out weighs protection on output resulting in a negative value for ERP.

- (b) (Value Added) dom  $<0$ . (Valued added) cif  $>0$ . This case is encountered when a producer is not receiving enough or any protection on his outputs. Consequently, the sale price, is not sufficient to cover incurred input costs which is reflected in ( $VA_{dom} <0$ ) - Value added domestic  $<0$
- (c) Negative ERP may also be due to measurement errors. The measurement errors can be classified into those due to inaccurate information on tariff rates and costs of intermediate inputs. These are often due to the existence of transportation costs and also due to the false assumption that input coefficients are fixed when they are not. Unfortunately, negative rates due to such measurement errors, in practice, cannot be distinguished from genuine negative rates brought about by tariff structure which genuinely taxes specific processes.

- 3.6 The basic data needed for the computation of ERP and DRC were obtained by means of a questionnaire completed by the team during direct interviews with informed and key personnel in the firms. The value and volume of both finished products and material inputs were obtained by this method. Input-Output coefficients were calculated from the costing data of the enterprises. In addition information was also gathered from other sources such as the Ministry of Industry and Technology, Ministry of Planning and Economic Development, the Customs and Excise Department of the Ministry of Finance, and Ministry of Commerce.
- 3.7 The information on cif prices for imported inputs was directly provided in the questionnaire. Other world prices were obtained from approved pro-forma invoices from Ministry of Commerce - a department originally called the Advisory Board of Trade. We also made use of commercial and official statistical sources such as Commodity and Export Projection Division of the World Bank.

#### 4. UGANDA ECONOMY: A CONTEXTUAL OVERVIEW

- 4.1 The use of measures such as Effective Rates of Protection and Domestic Resource Costs, as explained in chapter 3 on Concepts and Methodology and in Appendix I has a limited explanatory validity because of the need for explanation underlying trends affecting the economy and specific sectors of enterprises. This chapter gives the historical context without which the present state of the industrial sector and individual enterprises cannot be adequately evaluated and future prospects assessed.
- 4.2 Uganda had a total of some 850 industrial enterprises in the 1970's. These were essentially light, and import substituting industries. Their output represented a relatively small proportion of monetary GDP. Their importance, was nevertheless, significant as they produced consumer goods and, in some cases generated foreign exchange through exports. As a consequence of the so-called "Economic War" which turned out to actually be a "war on the economy" launched by the Idi Amin's regime from 1972, output of these industrial establishments fell abruptly. Operating capacity utilisation fell from 70 per cent to 30 per cent in the five years by 1977 according to estimates prepared at that time.

The reasons for this rapid decline were multiple, but included, inter alia, the following:

- (a) The enforced departure, without orderly transfer of ownership, of former owners and skilled operatives had an immediate impact on the efficiency with which enterprises were run. Repair and maintenance capability was especially badly hit and systems of managerial control became inadequate even on a day-to-day basis.
- (b) Business confidence was low. Often the new owners had no secure title to their enterprises thus creating a poor climate for investment. Prevailing tendency was for short-run profiteering which led to the progressive decapitalisation of many businesses.
- (c) A combination of external hostile reaction to the expulsion of non-citizens and the intervention of foreign governments and private firms in retaliation for the alienation of their assets led to a refusal to supply imports on credit and demands for pre-payment for needed supplies.
- (d) Overall, a drastic fall in Uganda's terms of trade compounded the problems of internal origin. These adverse effects led to scarcity of foreign exchange, inflationary pressures went on as government, faced with a fall in tax revenues, consequent upon diminished

output, imports and exports, increasingly borrowed from the banking system. Such borrowing was an unproductive use of scarce savings. Following government economic mismanagement, private individuals tended to prefer consumption rather than capital accumulation as they discounted an increasingly uncertain future at a high price.

- 4.3 A previously healthy economy, therefore, entered into a downward spiral of economic and social decline that affected every aspect of life. Roads, transport, health, education, power supply were elements of the infrastructure that could no longer be relied upon to support production and the requirements of the people both as producers and as individuals. The overthrow of Amin was accompanied by considerable material destruction and social disruption as security problems further increased the risks associated with production as opposed to speculative operations.
- 4.4 Attempts to revive the economy in general and the manufacturing sector in particular were thus difficult to achieve. The burden of the past plus the prevalent insecurity which continued to bedevil Uganda until recently led to a slow rate of improvement in performance overall. The arrival of the NRM government in January, 1986 has seen a marked improvement in law and order. A gradual revival in

the fortunes of the economy, partially reflected in improved performance of the public industrial enterprises has started. Overall GDP growth in the industrial sector was as follows, (measured in millions of 1966 shillings).

Sub-Sector	1982	1983	1984	1985	1986	1987	1988
1. Cotton ginning, coffee curing and sugar production	43	40	39	34	33	35	49
2. Manufactured food production	16	16	15	16	13	16	21
3. Miscellaneous manufacture	223	244	238	212	203	237	290
<b>Total</b>	<b>282</b>	<b>300</b>	<b>292</b>	<b>262</b>	<b>249</b>	<b>288</b>	<b>350</b>

Source: Derived from Background to the Budget 1989-90 July, 1989

4.5 The Magnitude of the rehabilitation and recovery effort needed can be gauged from the fact that output in subsector above were below the peak reached in early 1970's as can be seen below:

Sub-Sector	Peak Year	% of Peak Yr by 1988
1. Cotton ginning, coffee curing and sugar production	1970	43
2. Manufactured food production	1972	33
3. Miscellaneous Manufacturing	1974	60

The eighties saw, in general, no improvement over the performance registered in the late seventies when the downward spiral had reached its nadir. Sustained improvement is only discernible from 1987 onwards when output and capacity utilisation indices showed distinct signs of a reversal of past stagnation.

- 4.6 The degree of recovery within the manufacturing sector has been patchy. Best performers have been in the tobacco, sugar, beverages and soap subsector. Cement, metal, steel and paper industries, for their part, have been slow to respond to the improved politic-economic environment, suggesting that industries' specific problems are yet awaiting solution.

These industries are capital-intensive and are closely linked with other sectors of the economy. Their response time may well be expected to lag behind the light consumer industries, whose capacity utilisation levels exceeds 40%. The slow response subsectors have not risen above a few percentage points of capacity utilisation in the case of many individual enterprises. The survey material gathered during the field work indicated lack of rehabilitation finance as a major constraint yet to be overcome.

## 5. ANALYSIS OF INDIVIDUAL ENTERPRISES' PERFORMANCE

In analysing the performance of individual enterprise, a brief historical survey based on comments from official publications such as Development Plans and Background to the Budget papers of successive Budgets is given. These were supplemented by interviews with executives and the completion of the questionnaire. The analyses also took into account, the consultants' own knowledge of the Ugandan economy and the options open to the enterprises to compete both nationally and internationally. The review of each enterprise is given below:

### 5.1 NILE BREWERIES

#### (a) Background Information

Nile Breweries is one of the two breweries operating in Uganda. It has a current production of 100,000 hector litres per year. Government is planning to raise output by 250%. There is insufficient beer to meet demand, as imports are effectively banned. Excise revenue from breweries is important to the Treasury. The brewing industry is heavily dependent on imported inputs especially malt and hops. However brewer's barley could be grown in the country. It is feasible to effect a substitution of malt imports through contract farming in the medium term. The Breweries are trying to initiate this move.



Over the last five years, capacity utilisation has fluctuated considerably, (see Table 5 in the Appendix II). It was 44% in 1984 and 26% as of May 1989. The principal cause of these fluctuation has been the difficulty in obtaining foreign exchange and the lack of local shillings to cover the cost of foreign exchange. This in turn has made it difficult to maintain plant and machinery.

The intermittent breakdowns, have had effects on production and hence on cash flow. Compounding these difficulties is the problem of returning of empty bottles. This is now one of the main constraint even when new methods of obtaining credit advances for the purchase of foreign exchange has ameliorated.

A review of the plant and equipment is now being carried out to avoid the constant cycle of making adhoc patching-up exercises. The brewhouse is to be rehabilitated to a capacity of half a million crates (6.25 million litres). A 40% increase in supply is being planned for the plant.

(b) Result of Analysis

Product	NRP	ERP	DRC
Beer	481.5	524.5	374.81 UShs/US\$

The analysis shows that NRP of beer output is 481.5% - which is the percentage by which domestic beer prices exceed those calculated on the basis of free trade prices. In fact Nile Breweries Ltd is, comparatively, the most highly protected industry in this review with an ERP of 524.5%.

This means that the percentage increase of value added per unit of beer is the highest for Nile Breweries as a result of government protective policy being applied to the brewing industry. The DRC of 374.81 Ug.Shs. per US\$ is 2.5 times the then official exchange rate (150 Ug.sh per US dollar). This means that the industry is relatively inefficient by international standards.

## 5.2 LAKE VICTORIA BOTTLING COMPANY (LVBC)

### (a) Background Information

The company produces soft drinks (Pepsi Cola, Teem and Mirinda). In the seventies, its operations declined due to a shortage of bottles and sugar. Although the machinery in the factory is a reasonably good condition, the aforementioned constraints caused the plant to operate at only a third of installed capacity. A new plant was commissioned in October 1987 and production was switched from the old plant to the new plant at Nakawa.

The constraints earlier mentioned above continued to bog down production. Additional problems such as power failure resulted into further interruptions to production. The difficulties in obtaining bottles and crates persisted. Despite all these, the demand for soft drinks boomed. The general feeling by management is that excessive excise duties seriously reduced their ability to achieve greater market penetration. Bottles and crates are being persistently in short supply in Uganda. The company from time to time imports some from Kenya, cash flow permitting. Capacity utilisation, despite the installation of a new plant, has only reached 44.96%, on the average, for the last five years. On the basis of the combined production possibilities of both the old, and now idle plant, and newly installed one, the capacity utilisation is about 24.6%.

(b) Result of Analysis

<u>Product</u>	<u>NRP</u>	<u>ERP</u>	<u>DRC</u>
1. Mirinda	168.5%	239.9%	509.86 UShs/\$
2. Pepsi	168.5%	286.0%	578.93 "
3. Teem	168.5%	229.9%	494.85 "

The soda industry enjoys a high degree of protection, on average, 252%. The DRC is approximately 3.5 times the official exchange rate indicating that the soda industry is relatively inefficient by international standards.

### 5.3 EAST AFRICAN STEEL CORPORATION LTD (EASC)

#### (a) Background Information

EASC is the largest steelworks in Uganda. It produces rolled products, flats for hoes, round and square reinforcing bars for the construction industry, angles, nail wire and straps for bailing and binding. The plant was established in 1962 jointly by the Madhavani Group and Uganda Development Corporation with a 12 ton electric furnace using scrap metal. A strip mill was built in 1968; an oxygen plant in 1970; a wire drawing section in 1971; and a bolt plant in 1973. Installed capacity is round 20,000 tons of finished products. The economic disruption of the seventies had severe repercussions on its rate of utilisation. By the early eighties it was reported to operate at only 25% of its nominal capacity. This poor performance became worse as the mechanical condition of the important elements of the plant declined. Equally the availability of scrap, metal and transport soon became additional constraints. Capacity utilisation in the last five years reflected the virtual dereliction of the plant (see Table 5), averaging as it did only 6.2%. Such a low level of operations for an essentially capital intensive industry has been disastrous to the firm.

Recently a bilateral agreement has been concluded between the Governments of Uganda and Italy. It resulted in a new rolling mill, oxygen and nut and bolt plants being installed all of the same nominal capacity as before. The work is scheduled for completion by March 1990. All the capital equipment is being paid for under the Italian credit. The Government of Uganda is to provide the working capital.

Since 1979, the company has suffered from severe cash-flow problems, hence no remedial action could be undertaken to check the continued deterioration in the state of the plant. Raw material input could only be supplied intermittently. Fluctuating power supplies from Uganda Electricity Board made operating difficulties even worse. Any departure from continuous operation in a steelworks raises unit production costs very considerably. Eventually EASC could no longer cover even recurrent costs from product sales. It therefore suspended operations leaving the markets to importers.

(b) Results of Analysis

Product	NRP	ERP	DRC
Rolled Steel	113.7%	134.3%	1986.27 Ush/\$

The domestic price of rolled steel exceeds that calculated from free trade prices by 113.7%. The steel corporation enjoys a moderate high degree of protection of 134.3%. The

DRC is approximately 3 times the then official exchange rate. This again shows that by international standards the steel Corporation is relatively inefficient in the use of domestic resources.

#### 5.4 JUBILEE ICE AND SODA WORKS LTD.

##### (a) Background Information

The plant produces carbon dioxide and soda in small quantities. The enterprise experiences difficulties with both of its product lines. Demand for carbon dioxide is from the brewing and soft drinks industries whose revival has yet to make inroads into the supply capacity. Moreover, there is an additional complication. A small tanker is used for storing the gas which necessitates the plant being switched off once the storage limit of 25 tonnes is reached.

Customers prefer to receive supplies in cylinders but their scarcity has also been a constraint on sales. The machine to produce the gas was commissioned in 1982, and is mechanically sound. It only needs some few spare parts.

The soda producing machine is obsolete and lacking spares. Problems with the bottle washer and water treatment plant mean that even if bottles were available—which they are not— an increase in output would not be sufficient to raise

the revenue contribution of this line to a significant level. In the past, the drawbacks has been the inability to use the available capacity of the plant. This was because, being a supplier of soda to a limited, local market, caused liquidity problems. This hampered access to otherwise available foreign exchange. Record gas capacity utilisation was attained in 1987- the year on which the economic analysis has been based. In other years it merely reached a few percentage points. Similar performance typified soda production.

Loans to import machinery and spares have now been obtained in hard currency. These will be used to procure cylinders, a bottle washing machine, spares and raw materials. Gas sales are expected to rise. Soda production, although planned to increase by 300%, will still be effectively limited by the production machines shortcomings and bottles availability. Revival of production in the breweries, on the other hand, will continue and can only bring benefits to Jubilee Ice and Soda Works. Future prospects seem to indicate that the plant will be a viable enterprise if it concentrates on CO<sub>2</sub> production and abandons soda production.

## (b) Results of the Analysis

Product	NRP	ERP	DRC
Carbon dioxide	10.0%	309.3%	246.19 Ush/\$
Soda	24.5%	51.9%	91.17

The domestic prices as reflected in the NRP of carbon dioxide and soda are quite close to their respective free trade prices. Carbon dioxide production is highly protected (309.8%). Soda enjoys a relatively low protection of 51.9%. The DRC for carbon dioxide is approximately 4 times the then official exchange rate while that for soda is 1.5 times.

## 5.5 LINT MARKETING BOARD (LMB) - EDIBLE OIL AND SOAP INDUSTRY

## (a) Background Information

In the 1970's, a number of factories producing edible oils, soap and cattle feed cake as a by-product were put under the Lint Marketing Board. The four factories in question are therefore not owned by those responsible for operating them.

As a result, it is difficult to use their assets as a security against the much-needed loans. The LMB for its part has never put in any fresh equity. Therefore, the operations of these four production units are hampered by chronic under capitalisation. Production has fallen since 1984. It reached one quarter of 1984 level by 1987. The analysis in the study is based on 1987. The problems of operating under these circumstances have led to a vicious circle of low pay, low



morale and poor productivity. If the workforce's skills were upgraded, especially through the introduction of specialized technologists, productivity could increase and a constant increase in profits could then be achieved. As will be seen below the results of the analysis indicate that the business of producing soap in the conditions of restricted supply/repressed demand prevailing in Uganda has good prospects.

(b) Results of the Analysis:

Product	NRP	ERP	DRC
1. Soap	169.4%	47.9%	88.76 sh/\$
2. Edible Oil	66.7%	289.1%	233.40

The domestic price for soap is much higher than that calculated on a free trade price basis (169.4%). Edible oil production is relatively highly protected (289.1%). Soap enjoys a relatively low protection rate at 47.9% DRC for edible oil is approximately 4 times the then official exchange rate. The DRC of soap is 1.5 times. This means soap production has a better performance as a saver/user of domestic resources per unit of foreign currency.

5.6 EAST AFRICAN DISTILLERIES LTD (EAD)

(a) Background Information

East Africa Distilleries is the sole producer of spirits in Uganda. It produces a local gin/vodka spirit (waragi) and whisky using a crude alcohol obtained by a mixture of a

local raw spirit (enguli) and imported ethyl alcohol plus concentrates for flavouring. The supply of raw spirit has been a problem. Sugar which is an essential fermentation agent, has been in short supply. Recently sugar Corporation of Uganda Ltd. resumed production of sugar. This has reduced the past scarcity. In addition, it has made molasses to be available to local producers. Whisky production resumed in 1988 and has found ready consumer acceptance. Capacity utilisation of 6.6% in 1988 was the best performance for the last five years. This was a continuation of the improved performance that started in 1985.

Apart from the periodical problems associated with the supply of raw spirit and occasional difficulties in obtaining cardboard carton boxes, which sometimes have to come from Kenya, the management is confident of future prospects. Plans exist for the doubling of installed capacity by adding two production lines when demand warrants. In addition to the largely untapped national market, there are export possibilities which could greatly raise production. Unfortunately the most promising export market, that of Kenya, is not accessible. There is a ban on the importation of Ugandan-origin distilled products to that country.

## (b) Results of the Analysis

<u>Product</u>	<u>NRP</u>	<u>KRP</u>	<u>DRC</u>
Uganda Waragi	63.4%	177.8%	416.67 Ush/US\$
Mark Foyal	116.8%	151.1%	376.63 "
Q.Elizabeth Gin	75.1%	124.6%	336.90 "

The East African distilleries products enjoy a moderate degree of protection averaging about 151.2%. The DRC's are approximately 2.5 times the official exchange rate of (150 Ug.Shs per US\$). This indicates that by international standards spirit production is relatively inefficient in the use of domestic resource at the ruling exchange rate.

## 5.7 SUGAR CORPORATION OF UGANDA LIMITED (SCOUL)

## (a) Background Information

There are three sugar works in Uganda all of which had virtually ceased production by 1985. They were victims of the past mismanagement of the economy. SCOUL is a joint venture between Mehta and Government. In 1988, it commissioned a refurbished plant at Lugazi with a nominal capacity of 60,000 tons per annum. Apart from sugar, the Lugazi plant has capacity to produce 23,000 tpa of bagasse/molasses and 4.2 million litres of alcohol per annum.

The newly commissioned plant has overcome the difficulties associated with operating an aged installation. There are, however, still some short and medium term difficulties to be

surmounted. Voltage fluctuation and power failures impose a heavy cost in terms of burnt out motors and resetting motors and recalibrating instruments. Yield of sugar from crushed cane is also affected adversely by electricity supply being substandard. The yield is only 7.5% rather than 9.6%, a considerable shortfall of 2.1%. To avoid this a turbo-generator will soon come on stream. This will ensure that, as far as energy supplies are concerned, the sugar will be self sufficient. 1989 output is, for all these reasons, expected to be 47% of installed capacity.

Medium term problems are associated with cane yields per hectare and labour availability and productivity. Cane yields can only be raised marginally. The terrain, uneven, is thus precluding the use of irrigation. Rainfed yields generally are low by international standards. This difficulty is exacerbated by the problems of recruiting a labour force. Traditionally, the bulk of the estate labourers have come as migrants labour from other parts of Uganda. They have to be housed, fed and given health care and education for their children at the company's expense. The result is that the amount available for wage payments is low. There are no great incentives to high performance in harvesting cane. In Kenya, the average came out 2 tons of green and 4 tons of burnt cane. Poor wages are at the root of the problem.

In the absence of increases in productivity, however progress towards higher wages and more incentives to increase output will necessarily be slow. Demand for sugar in Uganda is not likely to be satisfied by restoring production at all three plants. In the medium term, as the problem associated with production and productivity becomes less acute, then SCOU should become more efficient. This will then justify the large amounts of capital that have been ploughed into the works rehabilitation.

Given the limitations on cane yields, however, it is unlikely that the works will rank amongst the most productive by comparison with, say, Kakira, one of the other plants in Uganda or Mumias in Kenya or the new Ethiopian works whose performances are enviable.

(b) Results of the Analysis

Product	NRP	ERP	DRC
1. Sugar	169.4%	184.1%	426.16
2. Alcohol	66.7%	56.9%	235.27

Sugar production enjoys a comparatively high degree of protection of 184.1%. Alcohol on the other hand has a protection rate of only 56.9%. The DRC for sugar is approximately 3 times at the then official exchange rate.

while that of alcohol is 1.5 times. By international standards sugar production is less efficient than alcohol production.

## 5.8 UGANDA LEATHER AND TANNING INDUSTRIES LIMITED (ULATI)

### (a) Background Information

This enterprise has experienced considerable difficulties in the years since it was commissioned. Although the plant is relatively new, it needs rehabilitation. The process of rehabilitation has proved to be slow due to technical problem over disbursement of a World Bank loan. None of the expected technical assistance from any other agency have been forthcoming to date. In the recent past, problems of shortage of raw materials and difficulties with transport have led utilisation of capacity to decline from 34% in 1983 to the 1988 low of 1%.

This spectacular fall has resulted in an unenviable shortage of working capital. This has resulted into erratic production partly due to the initial reluctance of shareholders in particular - Uganda Development Corporation (UDC) and Uganda Central Cooperative Union (UCCU) - have not helped the company to plan for any secure medium term future. In the meantime the company suffers from continuation of the past problems of supply of hides and skins. This business being essentially export-oriented.

those who obtain export licenses compete for raw materials. Smuggling is also a further cause of difficulties. The firm is not in position to compete with those engaged in smuggling activity. These pay high prices and are able to get the best hides and skins.

Despite these difficulties, once rehabilitation is completed, the management is confident that, given the necessary working capital, the enterprise can operate on a sound and sustainable basis. Foreign exchange from export revenue can now be held on retention accounts and thus imports of necessary inputs can be made as required. By securing quality hides and skins through successful price competition in the raw material market, the way will be open to process more quantities to finished leather for the shoe trade. As the process technology is capital-intensive, ULATI should be a highly profitable concern. The firm then will be in position to pay high wages to skilled technicians engaged in producing high value added products for the domestic and export markets.

(b) Results of the analysis

<u>Product</u>	<u>NRP</u>	<u>ERP</u>	<u>DRC</u>
Finished leather	278.8%	11.4%	167.18 Ush/\$

The domestic price of finished leather is higher than that of the calculated free trade price by 278.8%. The leather production has almost no protection. The DRC which is approximately equal to the then official exchange rate shows that leather production is a viable undertaking efficient in using the domestic resources required to earn or save one unit of foreign currency.

#### 5.9 THE UGANDA METAL PRODUCTS AND ENAMELLING COMPANY (TUMPECO)

##### (a) Background Information

TUMPECO has a wide range of products. It is a producer of enamelware, chevron road signs, beds, chairs, trolleys, inner spring mattresses and wooden furniture. Enamelware has a particularly good market in Uganda. This is because customer preference has moved away from plastic dishes etc, and ceramic alternatives are too costly and short lived. Beds and other metallic furniture, similarly, have easy acceptance to consumers. The only competition to TUMPECO being artesinal workshops which produce inferior products for a different market segment.

In the face of markets which are characterised by strong, unsatisfied demand, TUMPECO has failed to maximize its advantages as a medium scale producer. The underlying reason is financial. Working capital has been used up and the principal sources of finance are loans and suppliers' credits. Much of the plant and machinery need overhauling.



In some cases, complete rehabilitation is required. Fluctuations in and interruptions to the power supply are a hindrance to operating the enamelling plant on a continuous basis. Until very recently, lack of a lorry for staff transport resulted in poor morale and low productivity amongst the workforce. Necessary inputs can only be procured on the local market at the exorbitant prices. This high charge is a severe drain on resources. Notwithstanding these difficulties, management is confident that with an injection of US\$ 0.5 million, the enterprise would realize its full potential and be profitable.

(b) Results of the analysis

Product	NRE	ERP	DRC
1. Double Decker Beds	30.0%	158.5%	155.13 Ush/\$
2. Chairs	30.0%	29.9%	77.92 "
3. Number Plates	20.0%	57.8%	94.66 "
4. Patient Beds	20.0%	75.2%	105.14 "

TUMPECO products, with exception of double decker beds, enjoy a relatively low degree of protection compared to the products of other enterprises under review. DRC's range from approximately 1 to 2 times the then official exchange rate, indicating that TUMPECO is a relatively viable concern.

## 5.10 UGANDA GRAIN MILLING (UGM)

### (a) Background Information

The milling of wheat and maize to produce flour and the compounding of animal feeds are the enterprise's principal activities. These are carried out by its three subsidiary companies. Wheat is imported mainly from the United States. It is paid for in Uganda shillings under a special commodity trade arrangement between Uganda and USAID. Maize is bought locally. The maize milling market is highly competitive. Despite its size, the Company only has 2% of the maize meal market. Animal feed compounding is also competitive especially from sporadic smugglers.

The company has a good cash flow. It has enough funds to meet the local cover to secure an allocation of foreign exchange. Delays in obtaining the small amounts involved can be crucial as the importation on a regular basis of mixes, vitamins and mineral additives is vital for proper production planning. In the past, 2 - 3 months could elapse before letters of credit were opened. The repercussions of this have affected capacity utilization and profitability as production has been reduced pending the arrival of these crucial inputs. It is hoped that in the future, procedures will be streamlined and this bottleneck removed.

## (b) Results of the Analysis

<u>Product</u>	<u>NRP</u>	<u>ERP</u>	<u>DRC</u>
1. Wheat	10.0%	11.6%	167.25
2. Maize	40.0%	70.5%	255.69

Wheat flour production has almost no protection (11.6%) compared to that of maize (70.5%). DRC's for both wheat and maize are close to the official exchange rate indicating that by international standards the production of wheat and maize flour is a viable concern.

## 5.11 UGANDA BAGS AND HESSIAN MILLS LTD

## (a) Background Information

This enterprise is a joint venture between Birla Industries of India (50%), UDC/UCCU (40%) and private investors (10%). It produces gunny bags, hessians cloth and jute twine from imported jute. Gunny bags are essential for bagging coffee and other agricultural produce. Uganda being a cheaper producer than neighbouring Kenya, the market has illegally imported second hand polypropylene sacks, but the major demand from the coffee processors and unions is not affected.

Generally the plant is in good condition and needs no major overhaul. The enterprise has two main problems, viz the high labour turnover and the need to import jute. The latter will be problematic in the long run. Labour is not attracted by the low wages paid. The company has cash flow difficulties caused by irregular access to foreign exchange and some dumping of imported gunny bags. These problems have now been particularly solved. Foreign exchange can now come through the Open General Licence (OGL) system. More orderly marketing agreements have been made with customers

The long term problem is associated with being dependent on jute from Bangladesh. This is to be solved by setting up a subsidiary company to grow kenaf. Kenaf is a perfect substitute for jute fibre. Over the next 5-7 years it is envisaged that a subsidiary company, with assistance from USAID, will effect the necessary transfer to domestic sources of supply of raw material inputs. If well managed, the company should be capable of considerably increasing its value added, improving its competitiveness and defending its markets.

(b) Results of the analysis:

<u>Product</u>	<u>NRP</u>	<u>ERP</u>	<u>DRC</u>
1. Gunny Bags	30.0%	48.6%	219.83 Ush/3
2. Heasian Cloth	30.0%	33.3%	200.02

Both gunny bags and hessian cloth have a very low degree of protection, 46.6% and 33.3% respectively. The IFC's for both products are approximately 1.5 times the official exchange rate of 150 Ug.shs per dollar. This indicates that the production of gunny bags and Hessian cloth are relatively efficient as far as the use of domestic resources required to save one unit of foreign exchange is concerned.

#### 5.12 PAPCO INDUSTRIES LTD.

##### (a) Background Information

The firm produces duplicating, printing, cover wrapping and bond papers from imported pulp. The company has to contend with difficulties arising from the constant breakdown of antiquated machinery, lack of adequate cash flow and inadequate capitalization. There is a longstanding dispute over ownership. The Uganda Development Corporation owned 26% of the shares by 1972 and, on the departure of the former owners, the balance was vested in the Departed Asians Properties Custodian Board. Further uncertainty was caused by July 1986 decision to vest government shareholding in UDC. To date the decision has yet to be formalized by actual transfer of the shares. A Bank still holds the title deeds pledged as security for an overdraft. The net result of all this uncertainty is that no funds can be mobilized from financial institutions.

The installed plant and machinery has gone well past its useful life. It is, moreover, technically obsolete. One of the consequences is that bleached sulfite pulp, the most expensive form, has to be imported because of the nature of the outmoded stock preparation equipment. The company is under capitalised, has a high debt to equity ratio, lacks working capital. It is in dire straits. Utilisation of capacity has fallen from 50% in 1975 to less than 1.0% in 1987.

Recently, loans from the African Development Bank and Japanese grant allowed renewed imports of pulp and capacity utilisation in 1988 rose to 3.1%. A commitment to reviving the plant's operations and switching to bagasse as a source of pulp supplemented by waste paper recycling would require total financial restructuring of this enterprise by the injection of new equity and loan capital.

(b) Results of the analysis

	<u>Product</u>	<u>NRP</u>	<u>ERP</u>	<u>DRC</u>
1.	Duplicating Paper	12.0%	12.0%	671.99
2.	Bond Paper	10.0%	23.2%	739.29
3.	Cover Paper	14.0%	11.7%	670.28

Paper products have very low rates of protection as shown above. The percentage difference between domestic prices and

the calculated free trade prices is also quite minimal. The DRC's which approximate to the official exchange rate of 600 Ug.shs per dollar indicate that by international standards, the production of these papers locally is relatively efficient.

#### 5.13 UGANDA CEMENT INDUSTRY LTD - (UCI) TORORO

##### (a) Background Information:

This enterprise produces cement at present. It has also a PVC pipe plant, an asbestos cement plant and a number of charcoal-fired lime kilns. A review of the situation and prospects for both cement and lime was carried out as part of this exercise and is attached as Appendix III:

"Pre-feasibility Study-Tororo Cement and Lime Plant". The basic problem is that of an aged, obsolete 1930's plant. The Public Industrial Enterprise Secretariat tentatively concluded and the subsequent pre-feasibility study has now confirmed "the costs of the needed rehabilitation may exceed the cost of a total replacement by new equipment" in case of cement.

A rehabilitated plant according to an update of the SCANCEM Report is not an attractive proposition. Foreign exchange payments for repayment of loans, expatriates' services and the continued importation, over ten years, of spares and replacement parts would take the lion's share of revenues from the sale of cement.

The lime plant is less of a problem. Demand for lime is high and the market is largely supplied from Kenya and even further afield. Charcoal was originally used to fire the vertical kilns. For a comparatively small capital outlay, these Kilns could be converted to oil-fired units. By funding from the cash flow generated from resumed production, the lime plant could eventually meet half the demand for road and housing construction in Uganda. Another option is the use of a rotary kiln. While this option is economically viable, it would be beyond the present financial resources of Uganda Cement Industry Ltd. It should however, be investigated whether it is possible to use hydro electricity from Uganda Electricity Board supply.

(b) Results of the analysis:

Production	NBP	ERP	BEC
1. Cement	11.8%	14.5%	68.70
2. Lime	30.7%	-45.7%	32.57



Cement production receives negligible protection of 14.5% while lime does not have any protection at all. Despite this lack of protective government policies applied to cement and lime production, the DRC's indicated that the production of the two is marginally efficient in terms of domestic resource savings. ERP for lime is negative because the value added per unit output at free trade prices is higher than the value added per unit output at domestic prices. The small value added at domestic prices is due to protective policies on material inputs and none on output.

#### 5.14 AGRICULTURAL ENTERPRISES LTD (AEL).

(a) Background Information:

The group consists of 6 subsidiary factories and tea estates on which 3 processing factories are in operation. Sales are made of the green tea produced and of the tea processed in the operating factories. Factory production of tea has proved to be problematic since the 1972 departure of the previous owners. Underqualified and inexperienced staff had very low productivity. As a result many factories fell into a state of disrepair through lack of maintenance. Gradually the tea estates were abandoned. Today only a small percentage of the total hectareage under tea has been reclaimed for production. Priority has been given to rehabilitating factories.

The then management, were inexperienced in running estates and their associated factories. Difficulties of A.E.L arose from the transfer of its shares from UDC to the Ministry of Agriculture. This effectively shut out external assistance and further delayed the urgent task of rehabilitation. A Ministerial Committee set up to look into the scope for revived UDC in the early eighties recommended that once again the shares should be vested in the UDC. Delays in effecting the regularization of AEL's status have meant that it has been deprived of funds, especially under I.D.A loans which were available since the middle of this decade.

(b) Results of Analysis

<u>Product</u>	<u>NRP</u>	<u>ERP</u>	<u>DRC</u>
1. Tea	5.6%	7.1%	160.57

Domestic tea price matches closely to the calculated free trade prices. The former exceeding the latter by 5.6%. Tea production receives a negligible degree of protection. The DRC of 160.57 Ug.shs per US\$ indicates that the tea production is marginally efficient in the use of domestic resources.

## 5.15 UGANDA BLANKET MANUFACTURERS COMPANY LTD.

### (a) Background Information

This firm produces blankets, some of which incorporate acrylic fibrous. Uganda Blankets supply the national market. Typically, the plant and machinery are in need of a major overhaul. Some of the shade looms are very antiquated. The new looms have been acquired but are not in use. Although capacity utilisation has increasing since 1986, the Company has experienced great problems with its cash flow. This has prevented the importation of the much needed inputs such as weft yarn and spares. One cause of the drain on the Company's resources, was the high rate of sales tax imposed by the Treasury which carried heavy penalties on arrears. The Company argued, eventually successfully, succeeded in obtaining reassessment of its excise duty liability. However, the arrears were nevertheless collected.

Recently, loans have been raised from a development bank and a commercial bank on foreign currency and from the Government. These will enable output to reach 16% of installed capacity this year. The trend towards recovery noted since 1986 is likely to continue. The estimates prepared by the Japanese team indicates that to rehabilitate the factory fully would involve a capital outlay of US\$ 4.0m. The Chronic under - capitalisation of this enterprise would of course require the further cash inputs.

Given its relative efficiency, it should be capable of over coming its past problems and become a highly profitable operation.

(b) Results of the Analysis:

Product	NRP	ERP	DRC
1. Blankets	53.7%	-67.4%	48.83

Blanket products get no protection. The negative ERP is brought about by the value added per unit output free trade price being higher than the value added per unit output at domestic prices. Again the relatively low value added per unit output at domestic prices is due to protective government policies being applied to material inputs and not to output. Despite the lack of effective protection on blankets, the DRC of 48.83 Ug.shs. per US\$ is lower than the official exchange rate of 150 Ug shs. per US\$ indicating that the blanket production is a viable concern and is relatively efficient in the use of domestic resource savings.

**APPENDICES**

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## APPENDIX 1: FURTHER DEFINITIONS OF CONCEPTS

- 1 The Nominal Rate of Protection (NRP) is defined as the difference between the domestic market price and border price expressed as a proportion of the latter.

$$\text{NPR} = \frac{(P_{\text{dom}} - P_{\text{border}})}{P_{\text{border}}} \times 100$$

Where:  $P_{\text{dom}}$  stands for domestic price and  $P_{\text{border}}$  for border price.

The NRP is a measure of the impact of government policies either on prices of finished products or consumed inputs. Because of lack of accurate data, we computed NRP for finished products only.

To estimate, for the purpose of this study, the NPR on 30 finished products, it was necessary to collect the relevant domestic ex-factory prices and border prices. The information on ex-factory prices was obtained from the survey questionnaire. The information on C.I.F. import prices was from approved pro-forma invoices, provided by the Ministry of Commerce - Import Licensing Section.

A positive value for the NPR suggests that a firm is given positive incentives on its sales, whereas a negative value indicates disincentives faced by the firm. In effect, NPR quantifies and measures a cumulative incentive impact on the

output but does not allow for sorting out the separate incentive contribution of each of government policies.

- 2 Government policies such as tariffs, indirect taxes, subsidies, quota restrictions, import prohibitions, price controls and an overvalued exchange rate are customarily aimed at protecting domestic producers from comparable more competitive products, freely traded in the World Market. Each of the mentioned policies individually provides different degree of protection. The impact can either be on the output side (sales) or the input sides - ie production costs. Their cumulative effect, ultimately, determines the degree of protection a producer enjoys - namely ERP.

In formula form, the effective rate of protection may be written as:

$$\text{ERP} = \frac{VA_{\text{dom}} - VA_{\text{cif}}}{VA_{\text{cif}}} \times 100$$

Where:  $VA_{\text{dom}}$  - Value Added at Domestic prices in Ushs  
 $VA_{\text{cif}}$  - Value Added at World prices in Ushs

In broad terms, value added is defined as the value of output minus the value of material inputs. A positive value for the ERP indicates a net positive protection afforded to an activity. A zero or negative value for ERP indicates that the activity is not protected.



- 3 Although the ERP is a far superior indicator of government policies compared with the NRP, it is deemed limited in the sense that it does not account for the effects of policies on factor costs (labour, capital and land). Therefore, in any analysis aimed at assessing the degree of government incentive policy measures and the economic efficiency of the selected enterprises, a more meaningful measure is the Domestic Resource Costs defined as:

$$\text{DRC} = \frac{\text{VA}_{\text{dom}}}{\text{VA}_{\text{pw}}}$$

Where:  $\text{VA}_{\text{pw}}$  - Value Added at World Prices in US\$  
 $\text{VA}_{\text{dom}}$  - Value added at Domestic Prices in US\$.

For a given enterprise, if the DRC is below the official exchange rate, then the country saves or earns foreign exchange through that enterprise's operations. However, when DRC is above the official exchange rate it cannot be viable, strictly speaking. However, in the case of over-valued local currency then the enterprise should be re-examined using other criteria and bearing in mind other economic factors. Correction using the black market or parallel rate, as this is the rate that establishes internal price levels for most commodities, would give a better idea of the Domestic Resource Cost of individual enterprises' activities.

TABLE II:1

NOMINAL RATE OF PROTECTION (NRP)

	Firm	Product	% Tot. Prod.	NRP (%)
1.	Papco	Dup. Paper	72.0	12.0
		Bond Paper	10.0	10.0
		Cover Paper	18.0	14.0
2.	Ulati	Finished Leather	100.0	278.8
3.	LMB-Edible Oil & Soap	Soap	-	30.0
		Edible Oil	-	10.0
4.	U.G.M	Wheat Flour	-	10.0
		Maize Flour	-	40.0
5.	A.E.L	Tea	100.0	5.6
6.	Uganda Blankets	Blankets	100.0	53.7
7.	Nile Breweries	Beer	100.0	481.5
8.	E.A.Steel Corp.	Rolled Steel	99.3	113.7
9.	SCOUL	Sugar	-	169.4
		Alcohol	-	66.7
10.	L.Vic. Bottling Co.	Mirinda	45.3	168.5
		Pepsi	49.3	168.5
		Teem	5.4	168.5
11.	UCI-Tororo	Cement	93.2	11.8
		Lime	1.2	30.7
12.	Jubilee Ice & Soda Works	Carbon Dioxide	-	10.0
		Soda	-	24.5
13.	Uganda Bags & Hessian Bags	Gunny Bags	-	30.0
		Hessian Cloth	-	30.0
14.	E.A.Distilleries	Waragi	95.0	53.4
		Mark Royal	3.0	113.8
		Q.Elizabeth Gin	2.0	75.1
15.	Tumpeco	2X Decker Beds	-	30.0
		Chairs	-	30.0
		No. Plates	-	20.0
		Hospital Beds	-	20.0

TABLE II:2

EFFECTIVE RATES OF PROTECTION (ERP)

Firm	Product	VA in Dom. Prices @ Unit of Output(Ushs)	VA in World Prices @ Unit of Output(Ushs)	ERP (%)
1. Papco	Dup. Paper	2,189,992.0	1,955,389.0	12.0
	Bond Paper	2,436,292.0	1,977,258.0	23.2
	Cover Paper	1,826,892.0	1,635,332.0	11.7
2. Ulati	Fin. Leather	355.3	318.8	11.4
3. LMB	Soap	192.3	130.0	47.9
	Edib. Oil	200.0	51.4	289.1
4. U.G.M	Wheat flour	18,909.9	16,951.0	11.6
	Maize flour	3,746.4	2,197.8	70.5
5. AEL	Tea	280.4	261.9	7.1
6. Ug. Blankets	Blankets	915.9	2,813.4	67.4
7. Nile Brew.	Beer	351.6	56.3	524.5
8. E.A.S.Corp.	Rolled steel	242,109.3	013,342.2	134.3
9. SCOUL	Sugar	218,474.0	76,897.7	164.1
	Alcohol	176.2	112.3	56.9
10. Lake Vic. BottlingCo.	Mirinda	1,236.4	363.7	239.9
	Pepsi	1,395.8	351.6	286.0
	Teem	1,252.5	379.6	229.9
11. UCI-Tororo	Cement	6,651.3	5,809.0	14.5
	Lime	6,770.0	12,471.0	-45.7
12. Jub. Ice & Soda Works	Carbon dioxide	31.0	7.6	307.9
	Soda	203.3	133.8	51.9
13. Ug. Bags & Hessian Cl.	Gunny bags	129,689.0	88,494.5	46.6
	Hessian Cloth	172,709.0	129,518.0	33.3
14. E.A Dist.	Uganda Waragi	1,306.7	470.4	177.8
	Mark Royal	1,219.5	485.7	151.1
	Q.Eliz. Gin	1,052.5	482.0	116.4
15. Tumpeco	2X Decker Beds	11,326.6	4,381.0	158.5
	Chairs	300.0	231.0	29.9
	No. plates	3,549.7	2,250.0	57.8
	Hospital Beds	8,424.0	4,807.0	75.2

TABLE II:3

DOMESTIC RESOURCE COSTS (DRC)

Firms	Product	VA in Dom. Price @ Unit of Output(Ush)	VA in World Price @ Unit of Output(\$ at Off. Rate)	DRC (Ush/\$)
1. Papco	Dup. Paper	2,189,992.0	3,258.98	671.99
	Bond Paper	2,436,292.0	3,295.43	739.29
	Cover Paper	1,826,892.0	2,725.55	670.28
2. Ulati	Finished leather	356.0	2.13	167.18
3. LMB	Soap	192.3	2.17	88.76
	Edible oil	200.0	0.80	233.40
4. UGM	Wheat flour	18,909.9	113.07	167.25
	Maize flour	3,746.4	14.65	255.69
5. AEL	Tea	280.4	1.75	160.57
6. Ug. Bl.	Blankets	915.9	18.76	48.83
7. Nile Brew.	Beer	351.6	0.94	374.81
8. E.A. Corp.	Rolled Steel	342,109.3	172.24	1936.27
9. SCOWL	Sugar	218,474.0	512.65	426.16
	Alcohol	176.2	0.75	235.27
10. Lake Vic. Bottling Co.	Mirinda	1,236.4	2.43	509.86
	Pepsi	1,395.8	2.41	572.93
	Teem	1,252.5	2.53	494.85
11. UCI Tororo	Cement	6,651.3	96.82	68.70
	Lime	6,770.0	207.85	32.57
12. Jub. Ice & Soda Works	Carbon dioxide	31.0	0.13	246.19
	Soda	203.3	2.23	91.17
13. Ug. Bags &Hes. Cloth	Gunny Bags	129,689.0	589.96	219.83
	Hessian cloth	172,709.0	863.45	200.02
14. E.A. Dist.	Waragi	1,306.7	3.14	416.67
	Mark Royal	1,219.5	3.21	376.63
	Q. Eliz Gin	1,082.5	3.21	336.90
15. Tumpeco	2X Decker Beds	11,326.6	73.02	155.12
	Chairs	300.0	3.85	77.92
	No. Plate	3,549.7	37.50	94.06
	Hospital Beds	8,424.0	80.12	105.14

TABLE II:4 INSTALLED CAPACITY AND CAPACITY UTILIZATION

Firm	Product	Unit	Inst.Cap.	% cap.utilization				
				1984	1985	1986	1987	1988
1. Papco	Paper	mt	2,690	7.6	10.6	3.7	1.0	3.1
2. Ulati	F.Leather	000'ftsq	5,070	9.6	3.4	6.7	4.1	1.0
3. L.M.B	Ed. Oil	mt	n.a	-	-	-	-	-
	Soap	mt	n.a	-	-	-	-	-
4. UGM	Maize fl	mt	9,360	16.2	14.0	14.6	26.7	34.6
	Wheat fl	mt	45,000	9.4	17.4	15.8	21.0	-
5. AEL	Tea	mt	n.a	-	-	-	-	-
6. U.B.	Blankets	000's	1,500	5.5	1.7	2.7	9.8	5.8
7. Nile Br.	Beer	000'lt	16,000	44.0	15.0	7.5	17.5	22.7
8. EAS. Corp.	Fin steel	mt	19,000	7.4	8.4	3.2	3.5	8.5
9. SCOUL	Sugar	mt	60,000	3.9	1.3	-	-	-
10. Lake Vic. Bottling Co.	Mirinda)	000'lt	12,110	46.3	39.2	36.8	44.21	45.0
	Pepsi )							
	Teem )							
11. UCI	Cement	000'mt	193	7.2	2.5	5.0	4.9	-
12. Jub.Ice & Soda Works	Co2	mt	n.a	-	-	-	-	-
	W.Soda	000'lt	5,28	-	4.1	5.4	19.0	-
13. U.Bags H.Cloth	G.Bags)	mt	5,400	21.3	13.3	11.3	9.7	-
	Hes )							
14. E.A.Dist	Waragi	000'lt	2,000	1.6	7.7	5.8	7.9	16.6
15. Tumpeco	Enamel.W.	000'dz	3,000	1.4	0.4	1.1	0.4	-
	No.Plates	Pairs	12,000	50.6	59.5	92.8	9.3	-

Source: "Background to the Budget", 1989

TABLE II:5

VALUE ADDED - LABOUR RATIO

Firm	Product	V/A	Lab	VA/L Ratio
1. Papco	Dup paper	2,189,992	234	9358.94
	Bond Paper	2,436,292	234	10411.56
	Cover paper	1,826,892		7807.23
2. Ulati	Fin leather	355.25	150	2.37
3. LMB	Soap	192.34	150	1.07
	Edible oil	200.02	180	1.11
4. UGM	Wheat flour	18,909.89	468	40.41
	maize flour	3,746.39	468	8.01
5. AEL	Tea	280.35	n.a	n.a
6. U.Blankets	Blankets	915.90	189	4.85
7. Nile Brew.	Beer	351.57	598	0.59
8. E.A.S.Corp.	Rolled steel	342,109.34	468	731.00
9. SCOUL	Sugar	218,474.00	45000	48.55
	Alcohol	176.22	45000	0.04
10. Lake Vic. BottlingCo.	Mirinda	1,236.41	400	3.09
	Pepsi	1,395.80	400	3.49
	Teem	1,252.47	400	3.13
11. UCI Tororo	Cement	6,651.25	500	13.30
	Lime	6,770.00	500	13.54
12. Jub Ice & Soda works	Co2	31.02	75	0.41
	Soda	203.28	75	2.71
13. U.Bags & Hes. Cloth	Gunny Bags	129,689.00	690	187.96
	Hes. Cloth	172,709.00	690	250.30
14. E.A.Diat	Waragi	1,306.70	112	11.67
	Mark Royal	1,219.52	112	10.89
	Q.Eliz Gin	1,082.50	112	9.67
15. Tumpeco	2X Decker Beds	11,326.56	Chair	300.00
	No. Plates	3,549.74	-	NA
	Patient Beds	8,424.03		

TABLE II:6

RANKING ENTERPRISES ACCORDING TO ERP

Firm	ERP	DRC	Off. Ex. Rate Ush/\$
1. Nile Breweries	524.5	374.81	160
2. Lake Victoria Bottling Co.	251.9	527.88	150
3. Jubilee Ice & Soda Works	179.9	168.68	60
4. LMB-Edible Oil & Soap	168.5	161.08	60
5. East African Distilleries	149.1	376.73	150
6. East African Steel Corp.	134.3	1986.27	600 (oc)
7. SCOUL	120.5	118.05	150
8. Tumpeco	80.4	108.21	60
9. Uganda Grain Millers	41.1	211.47	150
10. Uganda Bags & Hessian Cl.	40.0	209.93	150
11. Papco	15.6	693.85	600 (oc)
12. UCI-Cement (Tororo)	14.5	68.70	60
13. Ulati	11.4	167.18	150
14. Agricultural Enterprises	7.1	160.57	60
<u>NEGATIVE ERP</u>			
15. UCI - Lime (Tororo)	-45.7	32.57	60
16. Uganda Blankets	-67.4	48.83	150

NB For multi-product enterprises average ERP is used.  
For Multi-product enterprises average DRC is used.

oc - old currency

Table II:7

## RANKING ENTERPRISES ACCORDING TO ERP

Firm	Product	KRP	DRC	OER Ushs/US\$
1. Nile Breweries	Beer	524.5	374.81	150
2. Jubilee Ice & Soda	Carbondioxide	307.9	246.19	60
3. LMB Edible Oil & Soap	Oil	289.1	233.40	60
4. Lake Victoria Bottling Co.	Pepsi	286.0	578.93	150
5. SCOUL	Sugar	184.1	426.16	150
6. EA Distilleries	Uganda Waragi	177.8	416.67	150
7. Tumpeco	2X Decker Beds	158.5	155.12	60
8. E.A.Steel Corp.	Rolled Steel	134.3	1986.27	600 (oc)
9. Ug.Grain Millers	Maize Flour	70.5	255.69	150
10. Ug.Bags & Hessian	Gunny Bags	46.6	219.83	150
11. Papco	Bond Paper	23.2	739.29	600 (oc)
12. UCI Tororo	Cement	14.5	68.70	60
13. Ulati	Fin. Leather	11.4	167.18	150
14. Agric. Enterprises	Tea	7.1	160.57	150
<u>NEGATIVE ERP</u>				
15. UCI	Lime	-45.7	32.57	60
16. Uganda Blankets	Blankets	-67.4	48.83	150

NB. For multi-product enterprises the highest ERP is used  
 For multi-product enterprises the highest DRC is used

oc - old currency



TABLE II:8

UNITS AND OFFICIAL EXCHANGE RATES

Firm	Base-year	Product	Units	Off.Ex. Rates (Ushs/US\$)
1. Papco	1985	Dup. Paper	mt	600 (oc)
		Bond Paper	"	600 "
		Cover paper	"	600 "
2. Ulati	1988	Fin. Leather	sq.ft	150
3. LMB	1987	Soap	kg	60
		Edible oil	Litre	60
4. UGM	1988	Wheat flour	mton	150
		maize flour	mton	150
5. A.E.L	1988	Tea	kgs	150
6. Ug.Blanket	1988	Blankets	kgs	150
7. N.Breweries	1988	Beer	Litre	150
8. EASC	1985	Rolled Steel	mton	600 (oc)
9. SCOUL	1988	Sugar	mton	150
		Alcohol	Litre	150
10. LVBC	1988	Mirinda	case	150
		Teem	"	150
		Pepsi	"	150
11. UCI	1987	Cement	mtons	60
		Lime	mtons	60
12. Jub.Ice & Soda Works	1987	Co2	kgs	60
		Soda	litre	60
13. Ug.Bags & Hes. Cloth	1988	Gunny Bags	mtons	150
		Hessian cloth	mtons	150
14. E.A.Dist.	1988	Waragi	Litres	150
		Mark Royal	Litres	150
		Q.Eliz. Gin	Litres	150
15. Tumpeco	1987	2X Decker Beds	Nos.	60
		Chairs	Nos.	60
		No.Plates	Pairs	60
		Hospital Beds	Nos.	60

oc: means old currency

TABLE II:9 RANKING ENTERPRISES ACCORDING TO DRC/OFFICIAL  
EXCHANGE RATE RATIOS  
(in ascending order)

Firm	Base-year	DRC	Off.Ex.Rate	DRC/OER
1. Papco	1988	48.83	150	0.33
2. UCI-Lime (Tororo)	1987	32.57	60	0.54
3. SCOUL	1988	118.05	150	0.79
4. Ag. Enterprise	1988	160.57	150	1.07
5. Ulati	1988	167.18	150	1.11
6. UCI-Cement (Tororo)	1987	68.70	60	1.15
7. Papco	1985	693.85	600	1.16
8. Ug. Bags & Hessian Clth	1988	209.93	150	1.40
9. Ug. Grain Millers	1988	211.47	150	1.41
10. Tumpeco	1987	108.21	60	1.80
11. N. Breweries	1988	374.81	150	2.50
12. E.A Dist.	1988	376.73	150	2.51
13. LMB-Edible Oil & soap	1987	161.08	60	2.68
14. Jubilee Ice & Soda Works	1987	168.68	60	2.81
15. E.A.S.C	1985	1986.27	600	3.31
16. LVBC	1988	527.88	150	3.52

## APPENDIX III

## PRE-FEASIBILITY STUDY - TORORO CEMENT AND LIME PLANTS

## 1. Introduction

The Tororo Cement and Lime Plants fell into considerable disrepair in the seventies and eighties. Consequently the current situation is that the cement plant lacks spares due to the inability to raise local cover for acquiring the necessary foreign exchange: hence it runs at a fraction of its nominal capacity. It could, however, still generate an operating surplus if some US\$ 2.0 million were to be made available in addition to 124 million Uganda shillings. This injection of capital would be on a once-and-for all basis, the loan being repayable within 21 months, would avoid the need for subsidies and enable some 12-14,000 tons per annum (tpa) of cement to be produced.

The Lime Works stopped production because of the need for rehabilitation and the scarcity of charcoal. Proposals for rehabilitation of the existing lime works including changing to furnace oil as the energy source have been costed at US\$ 1.5 million. Under these proposals the lime plant capacity would be raised to 250 tons per day (tpd) (75,000 tpa) as against 100 tpd previously. Another option, which the market would appear to justify, is for a rotary kiln plus

additional quarrying machinery equipment costing US\$ 20.0 million, resulting in an annual output of 270,000 tonnes of lime.

The fundamental question of the viability of manufacturing ordinary Portland Cement using the abundant reserves of lime-stone has given rise to some confusion. Technically, there are no insurmountable problems associated with the limestone. Raw material are available in the Tororo area either from the existing quarry (8 million tonnes) or from the 70 million tonnes accessible in known deposits for the manufacture of BS 12:1958 standard cement. Both technically and economically the method used to produce this grade of cement is comparable to that used to manufacture ordinary Portland cement throughout the world where 90% of production and demand is for this grade. Currently, the use of Hima limestone only accounts for 294 Ushs out of the total variable cost of 5,185 UShs per ton i.e 5.6% of the total.

Fluorspar costing \$ 120 a ton, twice that a gypsum, is indeed used to offset the effects of phosphate in the limestone. This has not had such a bad impact on variable costs as had been supposed.

When the known inputs for the existing plant are compared with those for a rehabilitated Tororo plant of 30,000 tons per year capacity and both are contrasted with UNIDO data

for those needed by a 100,000 tpa capacity plant built in the 1960s. then it becomes clear that there is not great a comparative disadvantage due to the presence of phosphates.

The table below highlights this point:

TABLE. III:1 Comparison of Inputs in Various Plants per ton of Cement Produced.

Input	Existing Plant	Proposed Rehab. plant (80,000tpa)	Standard mini plant (100,000 tpa)
Electric power KWh	294	117	100-140
Fuel oil litres	173	115	100-160
Diesel oil litres	4	2	
Limestone Hima kgs	57	57	
Limestone tons	1.54	1.54	1.3
Gypsum kgs	25	25	30-50
Fluorspar kgs	23	23	-
Clay kgs	184	184	300

Gypsum is added to all clinkers to make cement and all clinkers are obtained from a mixture of limestone and clay. Phosphate is almost uniquely present in Tororo limestone and, as indicated in the Table III.1, fluorspar substitutes for between 5 and 25 kgs per tonne of gypsum in the comparable variable costs of a 100,000 tpa mini cement

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plant.

The economic impact of substitution of fluorspar for gypsum against the range given in Table II.1 on the basis of \$120 and \$ 60 per tonne for each material respectively is:

Mini plant gypsum cost	\$1.80 - \$3.00/tonne
Tororo existing/rehabili-	
tation: gypsum cost	\$1.50
fluorspar	2.76
	\$4.26

Phosphates inclusion cost disadvantage: \$2.46-1.26

Cost disadvantage at ex-works price of \$267 per tonne = 0.92-0.47%

Finally, there is no effective need for a second-grade cement in Uganda. None has even been imported, given the existence of Hima in W.Uganda and Bamburi from Kenya. There once was a suggestion that clinker might be imported and mixed with limestone to serve as a source of revenue during rehabilitation.

In short the East African market calls for the familiar BS 12:1958 specifications cement which is perfectly adequate for its requirements given the existing state of the art in building technology. To market an inferior grade cement would create considerable difficulties both as a temporary measure and for the future image of Tororo Cement Industry's

product out of a rehabilitated or new plant. Moreover, if the compressive strength of an inferior grade cement were to be greatly inferior to BS 12:1958 it would be nearly impossible to prevent sub-specification substitution for the higher grade by contractors and builders. High rise buildings would be in danger of collapsing if this substitution were to take place which given the economic incentives afforded by the price differential is highly likely.

The issue of the integration of the mining, fertilizer and cement industries was also raised in the PIES report. Parenthetically it should be noted that although gypsum can be produced as a byproduct of the pressure leaching or roasting of Kasese pyrites to produce sulphuric acid and cobalt matte, such a project would cost some \$40-50 m. Present research is increasingly pointing towards the economically more attractive microbial leaching route to cobalt metal recovery from both the pyrites and run-of-mine at Kilembe, followed by elector wiring. Gypsum would not be recoverable using this alternative and the sulphur present in the pyrites will be sacrificed so that no sulphuric acid would be available. The rate of return on capital, the order of magnitude of total project costs and the foreign exchange earning potential of this alternative route are such as to make it extremely attractive.



## 2 The Market for Cement in Uganda

Uganda demand for cement has been most reliably estimated by Turkish Cement Industries Corporation using international comparative data. The method used was on a per capita basis. By adjusting for changes in income due to economic growth, and increases in population, likely trends in demand can be made. For low income countries such as Uganda it was demonstrated that cement demand was very sensitive to changes in income per head. In other words for a given increase in income the increment in cement demand was a high multiple of the rate of growth of GNP per capita.

Table II.2 below gives this relationship for Uganda derived in 1982 from comparative cross-sectional analysis of known relationships between per capita income and cement consumption.

TABLE III.2 UGANDA CEMENT MARKET DEMAND

Year	Consumption per capita (Kgs)	Population (000's)	Derived demand 000's m.t.
1987	38.9	15,966	621
1988	40.8	16,440	671
1989	42.8	16,933	725
1990	44.8	17,443	781

Hence on the evidence of this comparative assessment of demand, the market in Uganda is currently around 750,000 tons per annum. This estimate is well above existing and foreseeable capacity of 12 - 14,000 tons p.a for Tororo and 100,000 tons p.a for Line 1 at Hima. As the physical resources exist in the country to produce cement and there is a market well in excess of foreseeable capacity the question arises as to what policy options are open for industry in Uganda? These are analysed below:

**Option I: SCANCEM Rehabilitation of Tororo.**

Kiln Line No.2 of 110,000 tons p.a nominal capacity was to be restored under this option, giving an affective production of 80,000. The cost of this rehabilitation programme was estimated at US \$18.5m. which figure continues to be the basis of the current estimates of the present capital cost on the grounds that the recent appreciation of the dollar has offset any inflation in sterling and D-mark prices in the original calculation.

The financial analysis presented shows that on the basis of a sales revenue of US\$ 267 per tonne and at the 1989 revised operational costs, the project would have paid back the initial capital outlay early in the fifth year. This would appear encouraging but closer analysis of the SCANCEM report revealed that much of the expected yearly revenues must, because of the dilapidated state of the plant, be

earmarked for importing spares. The annual percentage of shilling revenues that must be exchanged for dollars are as follows:

Year 3: 70%	Year 7: 50%
Year 4: 95%	Year 8: 35%
Year 5: 52%	Year 9: 34%
Year 6: 57%	Year 10: 32%

When added to the payments for expatriates' services and to those for loans outgoings in the period the payments will be very heavy. The figures to illustrate this are given in Table III:3.

Equally the foreign exchange exposure would be very high as increases in exfactory prices may not be able to offset depreciation of the shilling over time. Hence the rehabilitation option may not be as attractive as it may initially appear.

TABLE III:3

REHABILITATED TORORO PLANT BASED ON KILN LINE NO .2 SCANCEN REVISED FIGURES 1989

US \$000'S

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Production tons p.a.	0	0	50,000	65,000	80,000	80,000	80,000	80,000	80,000	80,000
Cash in-flow:										
New Loans 20,482	112,362	7,849								
Sales (U.S \$267/ton)			13,350	17,355	21,360	21,360	21,360	21,360	21,360	21,360
<b>Total Cash in-flow</b>	<b>112,362</b>	<b>7,849</b>	<b>13,350</b>	<b>17,355</b>	<b>21,360</b>	<b>21,360</b>	<b>21,360</b>	<b>21,360</b>	<b>21,360</b>	<b>21,360</b>
Total cash out -flow										
<u>Investment Loans:</u>										
Rehab.U.S \$ 18,500	11,100	5,500	1,850							
(Equipment Replacement)						1,333				1,333
Working Capital		267	1,567	617						
Operation										
Variable Costs			3,000	3,900	4,760	4,760	4,760	4,760	4,760	4,760
Production Overheads	341	341	182	182	182	182	182	182	182	182
General Overheads	342	342	417	470	470	470	470	470	470	470
Departmental Overheads	850	850	550	383	383	383	383	383	383	382
Expatriates		500	3,000	3,000	3,000	3,000	3,000			
<b>Sub-total Including</b>	<b>1,533</b>	<b>2,033</b>	<b>7,149</b>	<b>7,935</b>	<b>8,795</b>	<b>8,795</b>	<b>8,795</b>	<b>8,795</b>	<b>8,795</b>	<b>8,795</b>
Loan and Interest										
<b>Total Outflow</b>	<b>112,362</b>	<b>7,849</b>	<b>10,567</b>	<b>13,552</b>	<b>8,795</b>	<b>10,128</b>	<b>8,795</b>	<b>8,795</b>	<b>8,795</b>	<b>10,128</b>
Net Cashflow (pre tax)	0	0	2,783	18,803	112,565	111,232	112,565	112,565	112,565	11,232
Accumulated balance				11,536	124,151	135,388	147,948	160,513	173,078	84,310

**Option 2: Putting up a New Plant**

This option proposes that the country considers putting up a new plant either as a joint venture or from suppliers credit or from loans to be provided by donor agencies. The reason for this stems from many factors. In addition to problems raised in option 1 above, the following need to be considered:

- (a) There will be difficulties of converting high percentages of annual revenues into dollars even when local cover is available.
- (b) An increment of 80,000 tons p.a added to Hima's foreseeable maximum output of 250,000 tpa would only cater for 40% of the current market. This percentage would be diminishing overtime as the domestic demand is expected to increase in the future.
- (c) The productivity of a new cement plant would be far higher than that for the proposed rehabilitated line at Tororo. The output of cement per dollar is higher and the foreign exchange leakages are lower as constant replacement of machinery and equipment in form of spares would not be necessary in the early years of the new plant. Overall a new cement plant to produce, say, some 800,000 tons p.a of which some 300,000 tons could be destined for export markets would seem a more

feasible option. The return on scarce foreign exchange invested would be maximized if import substitution and export revenues were maximized. Foreign exchange out flow would be drastically reduced. In effect we recommend an urgent study of this option as the most promising.

If it is considered difficult, given the present financial circumstances of Uganda Cement Industry, for the loans to be raised, then hiving off Tororo Cement as a separate entity should be considered. The new enterprise would have physical reserves of limestone assets and some human resources, albeit in need of retraining. The domestic market would then be assured of a highly productive enterprise. We would therefore suggest that consideration be given for a joint venture for a new company centered at Tororo. We consider that this proposal would be attractive to some foreign investors.

### 3 The market for lime in Uganda

There are several sectors which consume lime in the Uganda economy. The principle source of demand being for stabilizing lacerates (murrum) in road construction. The demand for road construction lime is at present entirely met by importers from Kenya and difficulties are currently being experienced with supplies due to inadequate capacity. On the

basis of all known projects for road building and at an average of 120 tons of lime/km of road, some 130,000 tons of lime would be required between 1989 and 1991. Estimates indicate an annual average of 100,000 tons p.a for lime demand in this dominant sector.

Other sectoral demands from sugar industry, jaggery mills housing and agricultural applications amount to an additional 27,100 tons the bulk of which (20,000 tons) is for low-rise housing. To meet this demand, the Tororo lime making facilities need to be rehabilitated and/or a complete new installation built. The options are:

- (a) To convert the existing vertical kilns to burn furnace oil instead of charcoal, which is no longer available. New units cost: US\$ 1.5m. Output 67,500 tons p.a. Possibilities should also be examined whether other sources of energy besides furnace oil can be used.
- (b) To instal a large rotary kiln and expand quarrying facilities pro. rata. Costs: US\$ 20.0. million giving Output of 270,000 tons p.a.

Given the scarcity of resources it would seem prudent to renovate the existing facilities under option (a) and add additional new vertical units. This could be easily financed from the profits out of the annual gross revenue estimated to be 1.8 billion U.Shs (US\$ 9.0m).

## APPENDIX IV

PUBLIC INDUSTRIAL ENTERPRISE SECRETARIAT  
SAMPLE QUESTIONNAIRE ON ERP AND DRC

- (1) Name of Enterprise:
- (2) Location
- (3) Period covered:
- (4) Activities covered:
- (5) Employees:
- (6) Value of annual sales ex factory by commodity produced:
- (7) Value of stocks at year end of each commodity
- (8) Quantity of each commodity produced annually:
- (9) Capacity of production for each product
- (10) Capacity of utili time series for last five years
- (11) Cost of purchase of raw materials:
- (12) Tariffs and Tax Rates

(Conclude interview with) qualitative, open-ended questions designed to give a general impression of the enterprise, its problems and prospects.



## APPENDIX IV

## PHASE 1 - ITENARY FOR ECONOMIC VIABILITY STUDY (ERP &amp; DRC)

DATE	ACTIVITY	PLACE	PARTICIPANTS
April 17th	1st Steering Committee	MIT Kla	Study Team/ Client
	Review of Questionnaire and Work Schedule		
April 19th	Preliminary field work Testing Questionnaire		
	on Kla based firms	Kla	Study Team
May 22nd	Start of Field Work	Kla	Study Team
May 25th	2nd Steering Committee Meeting, and Review of activities	MI & T Kla	Study Team/ Client
	Meeting with UNIDO Staff		
May 26th	Dispatch of Letters	Kla Firm	CMS Staff
May 29th	Discussion with GM UCI (Tororo Factory)	Kla	Study Team
May 31st	Data Collection AEL, Uganda Blankets LVBC	Kla	Study Team
June 1st	Data Collection E.A Distilleries, Tumpeco, EOS & I (Nakasero Soap Works and Iganga) Kla	Kla	Study Team
June 2nd	Review of Activities	CMS Office	Study Team
June 3rd	Dispatch of Letters	Jinja Firms	CMS Staff

June 5th	Data Collection Nile Breweries Jubilee Ice, Ulati	Jinja	Study Team
June 6th	Data collection Uganda Grain Millers Papco, E.A Steel	Jinja	Study Team
June 7th	Review of Activities	CMS Office	Study Team
June 8th	Data collection 2nd Visit, FAL LVBC, Uganda Blanket	Kla	Study Team
June 9th	Data Collection 2nd visit, Tumpeco	Kla	Study Team
June 12th	Review of Options UCI	Tororo	Study Team
June 13th	Review of Options UCI	Tororo	Study Team
June 14th	Review of Options UCI	Tororo	Study Team
June 15th	Data Collection: UCI, Uganda Bags & Hessian	Tororo	Study Team
June 16th	2nd visit Papco Sugar Corporation	Jinja Lugazi	Study Team Study Team
June 19th	3rd Steering Committee Report on field work and Approval of Phase II Activities	MI & T	Study Team Client