



**TOGETHER**  
*for a sustainable future*

## OCCASION

This publication has been made available to the public on the occasion of the 50<sup>th</sup> anniversary of the United Nations Industrial Development Organisation.



**TOGETHER**  
*for a sustainable future*

## DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

## FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

## CONTACT

Please contact [publications@unido.org](mailto:publications@unido.org) for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at [www.unido.org](http://www.unido.org)

15984-E

PRELIMINARY SURVEY ON THE CEMENT INDUSTRY  
in the  
MEMBER COUNTRIES OF THE PREFERENTIAL TRADE AREA  
of  
SOUTHERN AND EASTERN AFRICAN STATES

Prepared by

Mehmet A. Basman  
Cement consultant

296

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION  
VIENNA

This report has not been cleared with the United Nations Industrial Development Organization which does not therefore necessarily share the views presented

## C O N T E N T S

<u>REPORT</u>	<u>Page</u>
* Summary and recommendations	(i)
1. Introduction	1
2. General	2
3. Factors affecting the cement industry in PTA	3
a) Addition of large scale cement production units based on optimistic surveys and studies	3
b) Insufficient experiance of managerial and of technical personnel	4
c) The influence of the world economic recession	6
4. Conclusions	7
5. Recommendations	10
 <u>ANNEXES</u>	
1. Summarizing Table	T
2. Country-data-sheet :	S
Angola	1
Botswana	2
Burundi	3
Comoro	4
Djibouti	5
Ethiopia	6
Kenya	7
Leshoto	8
Madagascar	9
Malawi	10
Mauritius	11
Mozambique	12
Rwanda	13
Seychelles	14
Somalia	15
Swaziland	16
Tanzania	17
Uganda	18
Zambia	19
Zimbabwe	20
3. Visited countries' notes :	
Ethiopia	ET
Malawi	MW
Tanzania	TZ
Zambia	ZA
Zimbabwe	ZB
4. List of Official met during survey	L

## INTRODUCTION

This survey of preliminary nature was carried out upon the request of the Secretariat of PTA, (Preferential Trade Area for Southern and Eastern African States), Lusaka, to UNIDO, under the framework of the programmes of IDDA, (Industrial Development Decade for Africa), for assessing the production potentials of the cement plants in operation in the member countries of PTA, for identifying their areas of constraints and, finally, for bringing recommendations for the sound development of the cement industry in these African countries and for the promotion of the cement trade between the member States, in lieu of importing from non-PTA countries.

The general information and data relevant to the cement industry and to the economic development of the all member States of PTA have been collected in the Headquarters of UNIDO, World Bank and of ECA, (Economic Commission for Africa), and the detailed information and data of the selected cement producing countries, namely, of Ethiopia, Malawi, Tanzania and Zimbabwe, have been directly obtained from the high level officials of the cement companies or corporations of the concerned countries.

Due to the narrow time schedule of this survey, it has not been possible to gather additional information and data from the Headquarter of ADB, (African Development Bank), in Abidjan, and from the Cement Corporation of Mozambique.

## SUMMARY AND RECOMMENDATIONS

The actual cement production and consumption of the member countries of PTA are respectively, about 3.4 and 3.3 million tons per year. And the total cement export and import quantities, from/into the member countries of PTA, are, respectively, at 990 and 880 thousand ton levels.

In the member countries of PTA, the total installed cement production capacity is 7.8 million tons per year. However, 2.8 million tons of this total capacity is practically not available. It is the iddle capacity of the of the plants, within PTA, which have aged and deteriorated production units, not in a position to be productive.

In the member countries of PTA, it is the nationalized cement plants and the plants established by the Governments, after the nationalizations, which have deteriorated production units and equipment, and which now require rehabilitation.

The reasons that have put these Government owned cement plants to rehabilitation requiring situations are : i) their installed production capacities which are much more than their countries' cement requirements, ii) their shortages of experienced managerial staff and technical personnel, iii) the irregular availabilities of spare parts and consumption materials in the countries and, finally, iv) the deteriorations of the national economies as provoked by the world economic recession.

At present, in the member countries of PTA, two plants have already been rehabilitated; two plants are being rehabilitated; and seven major cement plants remain to be rehabilitated. The Governments by which these plant are controlled are in search of the financing and technical assistance for undertaking their rehabilitations.

For the sound development of the cement industry and of the trade within the member States of PTA it is recommended that :

- The high investment requiring cement plant rehabilitation projects should be based on detailed techno-economic studies and that the projects only should be implemented after having completely ascertained the commercial viability of the rehabilitation.
- Together with the rehabilitation of the plants, their management should be strenghtened by delegating more responsability and more execuctive power to the plant management and, may be, by seeking UNIDO assistance to industrial auditing and check up of both technical and economic performances of the plants.

- The Governments of the member countries of PTA should give priorities in their hard currency allocations for consumption material and spare part requirements of their national cement industry, and that:
- The PTA Secretariat should initiate the establishment of a cement manufacturers association among the member countries of PTA : i) for gathering the information and the data of the area's cement industry and cement trade ii) for setting up the cement standards to be conformed within the area, and, iii) most important than all, for enabling the members of the association exchanging experiences and views, and for recommending to the PTA Governments the policies to be applied for the sound development of the cement industry and the cement trade within the member States of PTA.

## 2. General

The cement industry in the member countries of PTA has the potential to be a large cement exporter. However, its actual production level is little bit more than the area's cement requirements.

The actual cement production, consumption, export and import figures of the whole member countries of PTA, given in the "Summarizing Table" of this report, show that the balance between the global cement production and consumption or export and import quantities of the whole area is only about 100 thousand tons, a relatively small quantity when compared with the global production. These figures are as follows :

Cement production	3'390'000 tons	Cement exports	960'000 tons
<u>Cement consumption</u>	<u>3'307'000 tons</u>	<u>Cement imports</u>	<u>877'000 tons</u>
Balance	83'000 tons		83'000 tons

The total installed production capacity of the cement plants in operation in the member States of PTA is actually about 7.8 million tons of cement per year.

However, the actual technically feasible production capacity of these plants is only about 5 million ton of cement per year, representing 64 %, or less than the two-third of the installed production capacity of the whole area.

As the actual production capacity of these plant is 3.4 million tons of cement per year, it means that, actually, only 68 %, or approximately, the two-third of the feasible production capacity is being utilized.

It is unfortunate that with few exceptions, it is the land-locked plants having limited local cement demands and slight export potentials which are, in technical viewpoint, in position to produce almost their full installed production capacities; and, that, again with few exceptions, it is the sea-port located plants of the PTA countries having steady local cement demands and export potentials which are not in position, because of technical reasons, to utilize, even, half of their production capacities.

Besides, among the member countries of PTA, there are countries implementing or considering projects for establishments of new cement plants or plant extensions.

The production capacities of these establishment and extension projects amounts to 1.2 million tons cement per year.

### 3. Factors affecting the cement industry in PTA

The factors which have gradually led the cement industry of the member countries of PTA to its actual unfortunate situation and which would further deteriorate its situation are as follow :

#### a) Addition of large scale cement production units based on optimistic surveys and studies

The cement industry, as all other industries, as a whole, is a commercial undertaking, a bussiness expected to make profit.

Any investment to be done in the cement industry, for its establishment, its development, its expansion or for its rehabilitation should bring acceptable, if not substantial, financial returns not only to the project investors but also to the cement companies or corporations for securing their survivals and their further developments.

Therefore, before undertaking any project related to the cement industry, the local and foreign cement markets should be carefully assessed quantity and price-wise. The forecast of the markets should be based on realistic, if not on pessimistic, views and assumptions.

The raw material suitabilities and availabilities, respectively, in quality and in quantity should be secured for the life-time of the anticipated project,

The production capacity to be selected or rehabilitated should match with the cement market forecasts.

The equipment to be selected, the level of the plant sophistication should fit to the industrial environment of the countries.

And, most important than all, the commercial viability of the project should be ascertained.

These points above, however simple and logical, are in most Government projects over-looked or neglected.

This is due to that, in general, the Governments projects do not aim only a commercial achievement, but, also the promotion of social and economic development of remote and under-developed regions of the country.



For the success of such projects, in which emphasis is not given to the commercial viability of the projects, it is essential for the project promoters to prevent from the very beginning operation losses by means of Government concession grants and/or price subsidises and/or custom barriers, to support the plant under consideration.

As examples of Government projects :

It seems that the Tanga and Mbeya plants commissioned, respectively, in 1981 and 1983, and the last production unit of Wazzo Hill plant commissioned in 1975 of Tanzania and the Muger plant commissioned in 1984 of Ethiopia, have been established rather to promote social and economic development without serious market and economic feasibility studies. The total production capacity of these units amounts to 1.3 million tons of cement per year.

The Mbeya plant, since its commissioning has only produced 20 % of its installed capacity.

Actually it is almost kept out of production.

The Wazzo Hill and the Tanga plants, since 1980, have produced together, as an average, 25 % of their installed production capacities per year.

These plants, due to financial constraints provoked from low production levels, and, spare part and consumption material shortages have seriously deteriorated their equipment and their production units.

These plants are now being rehabilitated by European Aid Organizations.

It is likely, that the recently commissioned Muger plant of Ethiopia could face similar problems of the Tanzanian plants, unless the Ethiopian cement corporation phases out its old plants and concentrates all its efforts in the new plant.

b) Insufficient experiance of Managerial staff and of technical personnel

The cement industry, since the introduction of dry process kilns, the large, rational and energy saving production units, which have gradually replaced the small, easy to operate, but, much energy consuming wet process kilns, has become a large and rather sophisticated branch of industry requiring trained and qualified technical personnel and experienced and skilled managerial staff.

Since 1970, most of the PTA member States have nationalized their cement industry and have handed over the plants to national corporation which have expanded their existing plants by adding to them large dry process kilns and/or have established new large dry process plants.

The efforts for preparing their managerial staff and the technical personnel of their plants have been relied on the trainings and the technical supports of the equipment suppliers of the plants.

However, the managerial staff and the technical personnel thus trained, did in reality have neither the sufficient experience on plant operation in general nor on dry process cement production to secure efficient operation.

The plant managements have not been successful in coping with the daily problems of the plants and the planning of various programmes to improve the plant operation.

The managerial staff of the plants have apparently always faced shortages of spare parts, consumption materials and working capital which have rendered their tasks very difficult at times.

As the consequence of such plant management, the nationalized old plants and the established new ones have been gradually deteriorated. The efficiency of the equipment and of the production units of the plant have dropped to a such level that the corporation have been forced to recourse the Governments of the developed countries for obtaining additional financing and the necessary technical assistance for rehabilitating their plants.

At present :

The plants which have already been rehabilitated are :

The Chilanga and Ndola plants in Zambia  
- Partially financed by the Irish Government and realized by Irish Cement Limited, Dublin.

The plant which are being rehabilitated are :

The Tanga and Wazzo Hill plants in Tanzania  
- Being financed, respectively, by the Danish and the Swedish International Development Authorities,  
- Conducted, respectively, by F.L.Smidth & Co, Danmark, and Cements Internatioanl, Sweden.

The plants which are planning rehabilitation are :

The Changalume plant in Malawi  
- Being planned by Irish Cement Limited, Dublin

The Cacuaco plant in Angola  
- Being planned by F.L.Smidth & Co, Danmark

The plants which are considering rehabilitation are :

The Mbeya plant in Tanzania

The Tororo and Hima plants in Uganda

The Dondo and Matola plants in Mozambique

In contrast to the Government controlled plants, the private companies of the PTA member countries have limited or no management and technical problems.

The Mombasa plant in Kenya which recently upgraded its production units has excellent operation performances. It is the main cement exporter of the region.

The Zimbabwean Manresa, Bulawayo and Colleen Bawn plants have presently rather low operation performances because the demand has declined.

It is characteristic that the Kenyan and Zimbabwean plants are getting all the technical supports they require from the majority shareholders of their company who are internationally known cement producers, namely, Blue Circle, U.K, and Cementia Holding, Switzerland.

c) The influence of the world economic recession

All the PTA member States have been deeply influenced by the world economic recession which has been developing in the last decade.

This world economic recession has drastically reduced the PTA member countries earnings, particularly of those which are agricultural products and copper exporters.

In addition, together with the world economic recession the energy bills of the member countries of PTA have considerably increased.

As a consequence, the national economies of the PTA member countries have been weakened and all the social and economic development programmes of the Governments and all the activities of the sectors of the national economies have been slowed down.

As usual in all national economies, it has been the construction sector which has been the most hurt by the economic recession. The cement demands of all PTA member countries have been reduced substantially.

Besides, due to the acute hard currency shortages that this economic recession caused to the PTA member countries, the latter have been forced to reduce their imports drastically.

These cement demand reductions and the restrictions on imported spare parts and on consumption materials have caused, and are causing, heavy financial constraints to the cement industry of the PTA member countries.

#### 4. Conclusions

The information and the data related to the cement industry in the PTA member countries, which have been obtained from various sources, are presented in separate country-data-sheets prepared for each member countries of PTA, and, they are also summarized in one table. Both are given in the annexes of this report.

These data and information reveal that the cement plants established within the member countries of PTA by private companies and which still remain private are profit making efficient plants; They have their production units, may be not in line with the last technological developments, but in a position to almost fully utilize their production capacities, they have skilled management and technical staff and they are often efficiently helped by their mother companies abroad through periodic industrial auditing and continuous monitoring of their performance; and, that the cement plants established or nationalized by the Governments of the PTA countries are not in positions to efficiently operate their plants and to generate enough funds for keeping in shape their plants; Their production units are often large, modern and rather sophisticated but, deteriorated by the accumulation of problems and improper plant operation and maintenance.

Some of these Government plants have been or are being rehabilitated and the rehabilitation of the remaining plants are seriously considered.

As the rehabilitation projects of cement plants require relatively large investments, the rehabilitations of the remaining plants should be undertaken only if the returns on investments justify the projects.

The survey's data show that the actual ex-works prices of the Government owned plants vary between US\$ 100.- and 120.-, and, that those of the private plants vary between US\$ 50.- and 67.-.

These ex-works prices reflect the production costs of the plants.

The production costs of the Government owned plants are very high when compared with those of the private ones, because, most of these plants have fuel fired kilns, which increase substantially the variable costs per ton produced when compared with coal fired kilns, and, because of the low production levels of their plants which influence considerably the share of the fixed costs, in particular, in these Government plants due to the high initial investments of their large and sophisticated production units.

It seems that the Government owned plants with such cement sales prices, almost the double of those of the private plants could not expect increases in the local demands and could not seek any foreign market, even, with Government incentives for selling out its eventual production surpluses.

The survey's data indicate that major constraint of the cement industry in the member countries of PTA is the shortages of imported spare parts and consumption materials .

It is out of question to run any industry without the consumption materials needed in the production and without spare parts which have to be renewed after given working hours or productions.

There is no alternative, if the Governments of the PTA countries want to industrialize their countries or want to keep their already established industries in shape, they have to give priorities in their hard currency allocations to cover the requirements of imported materials for their local industries.

The imports restrictions of the Governments, in fact are not saving hard currency, contraly, they are causing more foreign exchange expentitures in the short and in the long run. As the the country-data-sheets show, many of the PTA member countries have imported cement, certainly with hard currencies, during accute cement shortages in their countries due to the production slow downs of their local cement industry. The large investment requiring cement plant rehabilitations are partially the consequences of management policies applied.

The management of the plants should plan their short and long term consumption material and spare part requirements and apply the Government with justifications for getting in advance their currency allocations required for a given time. They should not wait to the last moment when things are brocken down.

The same applies for UNIDO or any other assistances, the later action is taken the costlier is the cure.

The survey, in general, has also revealed, that the cement industries in the PTA member countries are self confined, trying to solve their own problems without exchanging experiences and views with their neighbouring countries industries.

It seems, that for the sound development of the cement industry and the cement trade within the member countries of PTA, the establishment of a cement manufacturers association has become a necessity.

Such a association would gather the statistical information on the cement industry within the member countries, assist to set up the cement standards of PTA, promote the cement trade within the PTA countries and recommend the Governments of the member States of PTA the policies to be be applied for the sound development of the cement industry and the cement trade within the whole Preferential Trade Area.

The establishment of such an association could be initiated by the Secreteriat of PTA by organizing a high level meeting among the decision makers of the cement industries of the member countries of PTA.

## 5. Recommendations

The recommendations drawn from this preliminary survey are as follows :

### a) General recommendations

1. All techno-economic feasibility studies for the establishment or the extension or the rehabilitation of cement plants emphasis should be given to the commercial viability of the plant.

Since such studies were frequently neglected new survival studied should include :

- The country's cement demands
- The country's cement export potentials
- The costs of cement production in different levels of production
- The pricing policies and distribution systems to be adopted for marketing the eventual cement production

The resulting information should be thoroughly studied in order to select the production capacity to be kept alive or installed or added and the investment requirements which should be given the priority with or without foreign aid.

Ambitious projects should be avoided.

Cement establishment or extension promoted more regional or social development or other reasons than commercial ones should be avoided.

2. The studies should be carried out by experienced and independent bodies or at least they have to be supervised and reviewed by independent organizations or consultants.
3. The rehabilitation projects of the cement industry should be planned and implemented by team formed by qualified and experienced technical personnel who could also take full responsibility for the operation of the plant.

4. The rehabilitation projects should be time-schedule-wise flexible and long enough that the production increases anticipated in the projects match with the development of the markets.
5. The rehabilitation projects, if it is not a must, should not include sophistications of the plant equipment or conversions from one existing system of plant's production units to an other one, unless it means fuel saving and simplification.  
They should generally aim to put the production units and the equipment of the plant to a state as they should have been at their commissionings.
6. The rehabilitation projects should be financed in a big part, by funds to be generated by plant itself, by its production revenues. Funds from other sources should be found for financing the procurement of given equipment to be renewed and/or the technical assistance to be required.

b) Recommendations for Governments of PTA

The Governments should :

1. Give priority to cement industry in their hard currency allocations for its spare part and consumption material imports
2. Set up rules for automatically leveling the ex-works sales prices of the cement whenever the prices of the main cost components of the cement production costs make the latter vary of a given percent.
3. Exempt, from custom duties and from other taxations the spare parts, the consumption materials and the equipment imported by the cement industry for its own requirements.
4. Let the cement industry exchange spare parts and consumption materials with the other cement industries of the member countries of PTA, without any custom duty and taxation.



c) Recommendations for The Secreteriat of PTA

The Secreteriat of PTA in order to promote the cement industry and the cement trade within the member countries of PTA, should lead the cement industries of PTA to establish an association.

A such association could :

- Periodically gather the information and the data on cement productions, consumptions, imports, exports, etc...
- Assist in setting up the cement standards of PTA
- Follow the developments of the market and freight of the cement and of the cement industry related products
- Recommend to the Governments of the member States the policies to be applied for the sound development of the cement industry and the cement trade within the member States of the Preferential Trade Area.



COUNTRY : ANGOLA

- 1. Population : 7'000'000
- 2. Area : 1.248'000 km<sup>2</sup>
- 3. Cem./Capita : 42 kg
- 4. GDP/Capita : US\$ 470
- 5. Currency :
- 6. Exch.rate : US\$ =

	1978	1979	1980	1981	1982	1983	1984	1985F
7. Cem.Pro.Capacity TPY	900	900	900	900	900	900	900	900
8. Cem.Pro. Plant 1							(150)	150
Plant 2							(150)	150
Plant 3								
Total	(170)	(120)	(230)	(250)			(200)	(200)
9. Cem.Imports							-	
10. Cem.Exports	(5.5)	(80)	(100)	(100)			-	
11. Cem.Consumption	(115)	(120)	(130)	(150)			(200)	(200)
12. Cons.Incr.rate (%)								(0)
13. Cap.Utilization (%)							(22)	(22)

- 14. Import partners: -
- 15. Export partners:

16. Plant's Name	Owner	Number	TPD	Process	Firing	Make of kilns
Cacuaco	Gov/PRI	3	2500	Wet	Fuel	F.L.Smidth and Co.
Lubito	Gov/PRI	1	500	Wet	Fuel	"

TPD : Ton per day      TPY : Thousand ton per year

- 17. Standard conformed :
- 18. Additives :
- 19. Ex-Works sales price : US\$ per ton (in bag)
- 20. Export price . :

- 21. Constraints : - Managerial staff and technical personnel shortages
- Aged and deteriorated equipment
- Financing lacks
- Spare parts non availabilities

- 22. Investment plans : - Rehabilitation of the plant

23. Sources : UNIDO - ECA

24. Note(s) :

25. OBSERVATIONS : The plants are owned by Cimangola, a share holding company which is majority shareholder is the government. (F.L. SMidth and Co., Denmark is also a shareholder).  
 Cimangola has accute managerial and technical staff shortages. The key posts left vacant since the departure of the portugese have not been filled. The plants production units and equipment are aged and deteriorated. A wet process kiln ordered by Cimangola and delivered by its constructor in 1975. Is still not been erected.  
 Recently, Cimangola has concluded an agreement of technical assistance with a Danish firm.  
 Actually, Cimangola is seeking financing for rehabilitating its plants and for already erecting its delivered kiln while converting it to dry process.

COUNTRY : BOTSWANA

- 1. Population : '800'000
- 2. Area : 575 '000 km<sup>2</sup>
- 3. Cem./Capita : 188 kg
- 4. GDP/Capita : US\$ 910
- 5. Currency : PULA
- 6. Exch.rate : US\$ =

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>								
9. Cem.Imports	90	115	168	170			(150)	(150)
10. Cem.Exports								
11. Cem.Consumption	90	115	168	170			(150)	(150)
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

- 14. Import partners: South Africa
- Zimbabwe
- 15. Export partners:

16. Plant's Name      Owner Number/ TPD/Process/Firing/Make of kilns

Plant's Name	Owner	Number	TPD	Process	Firing	Make of kilns

TPD : Ton per day      TPY : Thousand ton per year

- 17. Standard conformed :
- 18. Additives :
- 19. Ex-Works sales price :      US\$      per ton (in bag)
- 20. Export price . :

21. Constraints : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Investment plans : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources :      Cembureau-UNIDC

24. Note(s) :

25. OBSERVATIONS :

- A pilot plant of 2500 ton capacity per year is in operation  
 It produces cements from imported clinker and from local gypsum, lime and pozzolane.
- The Government considers a cement plant of 120 thousand tons per year capacity.

COUNTRY : BURUNDI

1. Population : 4 '100'000      2. Area : 27'800 km<sup>2</sup>  
 3. Cem./Capita : 12 kg      4. GDP/Capita : US\$ 470.-  
 5. Currency :      6. Exch.rate : US\$ = 1.00

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
Total								
9. Cem.Imports	(25)	(25)	(25)				(50)	(50)
10. Cem.Exports								
11. Cem.Consumption	(25)	(25)	(25)				(50)	(50)
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

14. Import partners:

15. Export partners:

16. Plant's Name      Owner Number/ TPD/Process/Firing/Make of kilns

Plant's Name	Owner	Number	TPD	Process	Firing	Make of kilns

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed :

18. Additives :

19. Ex-Works sales price :

US\$

per ton (in bag)

20. Export price . :

21. Constraints :

---



---



---

22. Investment plans :

---



---



---

23. Sources :      Cembureau - UNIDO

24. Note(s) :

25. OBSERVATIONS :

- Till 1977, the Enterprise National de la Fabrication de Chaux et de Ciment, operated a clinker Grinding plant of 20 thousand ton capacity per year. It was producing Pozzolana Cement from unported clinker and gypsum.
- The government sponsors the establishment of a cement plant of 100 thousand ton capacity per year. The project is in feasibility stage. The earlier studies have confirmed the availability of the raw materials.

COMORO ISLAND

COUNTRY : \_\_\_\_\_

- 1. Population : 350'000
- 2. Area : 2'100 km<sup>2</sup>
- 3. Cem./Capita : 57 kg
- 4. GDP/Capita : US\$ 300
- 5. Currency :
- 6. Exch.rate : US\$ = 1.00

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>								
9. Cem.Imports	18	(15)	(14)	(15)			(20)	(20)
10. Cem.Exports								
11. Cem.Consumption							(20)	(20)
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

- 14. Import partners: Kenya
- 15. Export partners:

16. Plant's Name	Owner	Number	TPD/Process	Firing	Make of kilns

TPD : Ton per day                      TPY : Thousand ton per year

- 17. Standard conformed :
- 18. Additives :
- 19. Ex-Works sales price : US\$ per ton (in bag)
- 20. Export price . :

21. Constraints : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Investment plans : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources : Cembureau

24. Note(s) :

25. OBSERVATIONS :

The actual cement consumption does not justify the local cement production.

COUNTRY : DJIBOUTI

- |                         |                                  |
|-------------------------|----------------------------------|
| 1. Population : 350'000 | 2. Area : 23'000 km <sup>2</sup> |
| 3. Cem./Capita : 100 kg | 4. GDP/Capita : US\$ 480         |
| 5. Currency :           | 6. Exch.rate : US\$ =            |

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
Total								
9. Cem.Imports	10	10	25	30			35	35
10. Cem.Exports								
11. Cem.Consumption	10	10	25	30			(35)	35
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

14. Import partners: France Kenya      15. Export partners:

16. Plant's Name	Owner	Number/	TPD/Process/	Firing/	Make of kilns

TPD : Ton per day                      TPY : Thousand ton per year

17. Standard conformed :                      18. Additives :
19. Ex-Works sales price :                      US\$                      per ton (in bag)
20. Export price .                      :

21. Constraints : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Investment plans : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources :                      Cembureau - UNIDO

24. Note(s) :

25. OBSERVATIONS :

The actual cement consumption does not justify its local production. However, the Government considers an export oriented cement plant.

## COUNTRY : ETHIOPIA

1. Population : 32 '000'000      2. Area : 1.023.000 km<sup>2</sup>  
 3. Cem./Capita : 6 kg      4. GDP/Capita : US\$ 300  
 5. Currency : Birr      6. Exch.rate : US\$ = 225 = 1.US \$

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY	200	200	200	200	200	600	200	500
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>			129	143	146	126	139	200
9. Cem.Imports			73	23	72	99	60	-
10. Cem.Exports	-	-	-	-	-	-	-	-
11. Cem.Consumption			202	146	218	225	199	200
12. Cons.Incr.rate (%)				-28	+49.	+3.2	-11.6	(0)
13. Cap.Utilization (%)			64	71.5	73	63	69/	36

14. Import partners: USSR      15. Export partners:

16. Plant's Name	Owner	Number	TFD	Process	Firing	Make of kilns
Dire-Dawa	Gov	1	150	Semi Dry	Fuel	Brede, Italia
Addis-Ababa	Gov	1	300	Dry	Fuel	Ingra, Jugoslavia
Gurgussum Massawe	Gov	1	300	Dry	Fuel	Krupp, Germany
Mugher	Gov	1	1000	Dry	Fuel	Sket. DGR.

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed : BS 12      18. Additives : Pozzolan  
 19. Ex-Works sales price : Birr 232.-      US\$ 110.-      per ton (in bag)  
 20. Export price : -

21. Constraints : In old plants: Aged equipment and production with  
in new plant: Lack of cement demand  
in general: Spare parts non availabilities.

22. Investment plans : - Rehabilitation of the old plants  
- Promotion of cement related industries  
- Promotion bulk cement sales

23. Sources : Ethiopian cement corporation

24. Note(s) :

## 25. OBSERVATIONS :

- The countries cement consumption has stayed steady the last decades.
- With the recently commissioned Mugher, plant, the cement production capacity of Ethiopia is about 3 times more than the country requirements.
- The Cement Corporation concentrates its efforts of the marketing of its cement. It also seeks technical assistance from international organization for cement distribution and marketing.



COUNTRY : KENYA

1. Population : 15.9 00'000      2. Area : 582'000 km<sup>2</sup>  
 3. Cem./Capita : 35 kg      4. GDP/Capita : US\$ 420  
 5. Currency : Kenyan Shilling      6. Exch.rate : US\$ = 16.5

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY	1400	1400	1400	1400	1400	1400	1600	1600
8. Cem.Pro. Plant 1				1003	1025	892	895	1050
Plant 2				256	292	297	295	280
Plant 3				-	-	-	-	-
<u>Total</u>	1140	1136	1272	1259	1317	1189	1190	1330
9. Cem.Imports				-	-	-	-	-
10. Cem.Exports	610	526	575	618	737	671	650	780
11. Cem.Consumption	530	610	697	641	580	518	550	550
12. Cons.Incr.rate (%)		+ 15	+ 14	-	- 10	- 11	+ 6	+ 5
13. Cap.Utilization (%)	82	82	92	93	95	86	75	84

14. Import partners:      15. Export partners: East African Countries

16. Plant's Name	Owner	Number/	TPD/Process/Firing/Make of kilns
Mombasa	PRI	8 (2)	3980 Dry Coal
Athi River	Gov/PRI	1	1300 Wet Fuel

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed : BS 12      18. Additives :  
 19. Ex-Works sales price : K.S.980.-1140.- US\$57.-67.- per ton (in bag) (1)  
 20. Export price :

21. Constraints : Financial, for Athi River. Its sales prices are subsidized spare parts shortages.

22. Investment plans : Extension and upgrading of Athi River Plant

23. Sources : World Bank- Cembureau - Unido

24. Note(s) : (1) Prices applied respectively in coastal and internal regions of Kenya.  
 (2) 6 Vertical (Shaft), and 2 Rotary Kilns.

25. OBSERVATIONS : MOMBASA PLANT is owned by Bamburi Cement Co. Its majority share holder is Cementia Holding, Switzerland. In 1983-84 the Plant's fuel firing system was converted to coal and the two rotary kilns were upgraded. The additional capacity obtained is 630 TPD.

Athi River Plant is owned by EAPC. East African Portland Cement Company. A share holding company. The majority share is hold by the government.

Studies are being carried out for the eventual extension of the plant and the conversions of the production process and the firing systems of the existing kiln.

The Government, from its side, is considering the establishment of a new cement plant of 500.000 tons capacity per year in the Western part of the country.

COUNTRY : LESHOTO

- 1. Population : 1 '300'000
- 2. Area : 30'300 km<sup>2</sup>
- 3. Cem./Capita : 69 kg
- 4. GDP/Capita : US\$ 390.-
- 5. Currency :
- 6. Exch.rate : US\$ = -

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>								
9. Cem.Imports							(90)	(90)
10. Cem.Exports								
11. Cem.Consumption							(90)	(90)
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

14. Import partners: South Africa      15. Export partners:

16. Plant's Name      Owner Number/ TPD/Process/Firing/Make of kilns


TPD : Ton per day      TPY : Thousand ton per year

- 17. Standard conformed :
- 18. Additives :
- 19. Ex-Works sales price :      US\$      per ton (in bag)
- 20. Export price . :

21. Constraints : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Investment plans : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources :      Cembureau

24. Note(s) :

25. OBSERVATIONS :

The country, due to its location, it is economically attached to South-Africa.

COUNTRY : MADAGASCAR

1. Population : 8'700'000      2. Area : 594'000 km<sup>2</sup>  
 3. Cem./Capita : 17 kg      4. GDP/Capita : US\$ 350  
 5. Currency :      6. Exch.rate : US\$ =

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY	(80)	(80)	(80)	(80)				(80)
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>	66	65	(20)	36				40
9. Cem.Imports	38	40	(50)	(50)				(100)
10. Cem.Exports								
11. Cem.Consumption	104	105	(70)	(86)				(140)
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

14. Import partners:

15. Export partners:

16. Plant's Name      Owner Number/ TPD/Process/Firing/Make of kilns

Manjunga	Gov	1	70	Wet	Coal	
Antsirapé	Gov	1	1	Dry		Loecshe

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed :      18. Additives :  
 19. Ex-Works sales price :      US\$      per ton (in bag)  
 20. Export price . :      .

21. Constraints : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Investment plans : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources :24. Note(s) :25. OBSERVATIONS :

- MAJUNGA plant efficiency has deteriorated over the past year
- Projects for its rehabilitation and extension are being carried out
- The Ibity plant of Antsirapé has not been commissioned due to infrastructures problems.

COUNTRY : MALAWI

1. Population : 5'9 00'000      2. Area : 126 '000 km<sup>2</sup>  
 3. Cem./Capita : 12 kg      4. GDP/Capita : US\$ 230.-  
 5. Currency : Malawian Kwacha      6. Exch.rate : US\$ =1.8 MaKw

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY	170	170	170	170	170	170	170	170
8. Cem.Pro. Plant 1	103	113	92	78	53	70	70	70
Plant 2								
Plant 3								
<u>Total</u>	103	113	92	58	53	70	70	70
9. Cem.Imports	30	41	31	11	27	5	-	-
10. Cem.Exports								
11. Cem.Consumption	133	154	123	69	80	75	70	70
12. Cons.Incr.rate (%)		-14	-21	-44	+15	-7	0	
13. Cap.Utilization (%)	605	66	54	45	31	41	41	41

14. Import partners:

15. Export partners:

16. Plant's Name      Owner Number/ TPD/Process/Firing/Make of kilns

Changalume	Gov	2	550	S-D-Dry	Coal	Polysius
Blantyre (1)	Gov	-		-		

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed : BS 12

18. Additives :

19. UNI-FORM: sales price : Ma Kw 180.-      US\$ 100.-      per ton (in bag)

20. Export price . :

21. Constraints : Contaminated and depleted raw material reserves  
Spare Parts' difficult availabilities  
Costly and irregular coal and gypsum supplies  
Technical personnel shortage.

22. Investment plans : Rehabilitation of the plant  
Raw material survey

23. Sources : Portland cement company (1974) Limited  
 (1) - a grinding plant, only.

24. Note(s) :

25. OBSERVATIONS :

The plants are owned by Portland cement company (1974) limited.  
 (The shareholders are parastatals). The company conducts surveys for  
 ascertaining the availability of suitable raw materials, and prepares  
 the rehabilitations programme of the plant which would be undertaken  
 after the results of the on-going raw material survey.

The company has already got the technical assistance of Irish  
 Cement Limited, Dublin, financed by the Irish Government.

The Government is considering as an alternative to the rehabilitation,  
 the establishment as of a new cement plant in North of the country, near  
 Kasungu limestone reserves of 250 thousand for capacity.

COUNTRY : MAURITIUS

1. Population : '900'000      2. Area : 1'800 km<sup>2</sup>  
 3. Cem./Capita : 222 kg      4. GDP/Capita : US\$1060.-  
 5. Currency : Mauritius Rupee      6. Exch.rate : US\$ = -

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>								
9. Cem.Imports	295	295	292	198			(200)	200
10. Cem.Exports								
11. Cem.Consumption	295	295	292	198			(200)	200
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

14. Import partners: Kenya      15. Export partners: -

16. Plant's Name      Owner Number/ TPD/Process/Firing/Make of kilns

Plant's Name	Owner	Number	TPD	Process	Firing	Make of kilns

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed :      18. Additives :  
 19. Ex-Works sales price :      US\$      per ton (in bag)  
 20. Export price . :      :

21. Constraints : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Investment plans : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources :

24. Note(s) :

25. OBSERVATIONS :

- The country's cement consumption justifies the establishment of a local cement industry.
- A project for may be 300. thousand ton per year capacity based on sea shell resources is under consideration. The first phase of this development activities will be to examine the environmental consequences of this envisaged project.

## COUNTRY : MOZAMBIQUE

1. Population : 10'200'000      2. Area : 784'000 km<sup>2</sup>  
 3. Cem./Capita : 17kg      4. GDP/Capita : US\$ 270  
 5. Currency : -      6. Exch.rate : US\$ = -

	1978	1979	1980	1981	1982	1983	1984	1985E
	990	990	990	990	990	990	990	990
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>								
9. Cem.Imports	354	300	236	261			(160)	
10. Cem.Exports							(10)	
11. Cem.Consumption	210	(150)	90	(100)			-	
12. Cons.Incr.rate (%)	144	(150)	146	(161)			(170)	170
13. Cap.Utilization (%)								

14. Import partners: Zimbabwe      15. Export partners:

16. Plant's Name	Owner	Number	TPD	Process	Firing	Make of kilns
Dondo	Gov	1	1000	Wet	Coal	Polysius
Matola	Gov	2	2000	Dry	Coal	"
Nacala	Gov	1	300	Smi Dry	Coal	"

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed :      18. Additives :  
 19. Ex-Works sales price :      US\$      per ton (in bag)  
 20. Export price . :      :

21. Constraints :  
 - Managerial staff and technical personnel shortages  
 - Spare part non availabilities

22. Investment plans :  
 - Rehabilitation of the plants

23. Sources : UNIDO

24. Note(s) :

## 25. OBSERVATIONS :

- Till 1980 Mozambique was a net cement exporter.
- The productions of the plants which had a peak of 611 thousand tons in 1973, have gradually decreased decreased to a level to not cover the countries cement requirements.
- The shortages of managerial staff and technical personnel, the non availabilities of spare part, and the politico-economic situation of the country had caused this gradual production decreases.
- Recently, the government has obtained for GDR a technical assistance for training personel of the cement industry
- Actually, it seeks financing for rehabilitating its plant.

COUNTRY : RWANDA

1. Population : 5'100'000      2. Area : 26'300 km<sup>2</sup>  
 3. Cem./Capita : kg      4. GDP/Capita : US\$ 200  
 5. Currency : FRANC RWANDAIS      6. Exch.rate : US\$ = 1.00

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>								
9. Cem.Imports	(25)	(25)	(25)				(50)	(50)
10. Cem.Exports								
11. Cem.Consumption	(25)	(25)	(25)				(50)	(50)
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

14. Import partners: ZAIRE-KENYA

15. Export partners: -

16. Plant's Name	Owner	Number/	TPD/Process/	Firing/Make of kilns

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed :

19

18. Additives :

19. Ex-Works sales price :

US\$

per ton (in bag)

20. Export price . :

21. Constraints :

---



---



---

22. Investment plans :

---



---



---

23. Sources :

Cemburea, ECA

24. Note(s) :25. OBSERVATIONS :

- 7/ A pilot plant of 15 TPY production producing Pozzolan cement made from lime is operated by the "Association Rwandaise des Compagnons Bâtisseurs".
- The Government sponsored Mashyuza cement plant of 50 thousand ton per year capacity is under construction. Likel a shaft kiln utilizing peat as combustible.

COUNTRY : SEYCHELLES

- 1. Population : 07'000
- 2. Area : 980 km<sup>2</sup>
- 3. Cem./Capita : 285 kg
- 4. GDP/Capita : US\$ 1770
- 5. Currency :
- 6. Exch.rate : US\$ = 1.00

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY	-	-	-	-	-	-	-	-
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>	-	-	-	-	-	-	-	-
9. Cem.Imports	15	13	22	22	22	22	(22)	(22)
10. Cem.Exports								
11. Cem.Consumption	15	13	22	22	22	22	(22)	(22)
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)				-	-	-	-	

14. Import partners: Kenya-(Mozambique) 15.Export partners:

16. Plant's Name	Owner	Number	TPD/Process	Firing	Make of kilns

TPD : Ton per day

TPY : Thousand ton per year

- 17. Standard conformed :
- 18. Additives :
- 19. Ex-Works sales price : US\$ per ton (in bag)
- 20. Export price :

21. Constraints : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Investment plans : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources :

24. Note(s) :

25. OBSERVATIONS :

Actual cement consumption does not justify a local production.



COUNTRY : SOMALIA

- 1. Population : 3'9 00'000
- 2. Area : 637 '000 km<sup>2</sup>
- 3. Cem./Capita : 13kg
- 4. GDP/Capita : US\$ -
- 5. Currency :
- 6. Exch.rate : US\$ = -

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>								
9. Cem.Imports	34	(30)	(35)	(40)			(50)	50
10. Cem.Exports								
11. Cem.Consumption	34	(30)	(35)	(40)			(50)	50
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

- 14. Import partners:
- 15. Export partners:

16. Plant's Name	Owner	Number/	TPD/Process/Firing/Make of kilns
Berbera	Gov	x	

TPD : Ton per day      TPY : Thousand ton per year

- 17. Standard conformed :
- 18. Additives :
- 19. Ex-Works sales price : US\$ per ton (in bag)
- 20. Export price . :

21. Constraints : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Investment plans : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources :

24. Note(s) :

25. OBSERVATIONS :

The construction of a wet process plant has been suspended by the supplier for financial reason.

The government has undertaking studies for resuming the construction works and for converting the process of production of the kiln from wet to dry.

COUNTRY : SWAZILAND

- |                         |                                  |
|-------------------------|----------------------------------|
| 1. Population : 560'000 | 2. Area : 28'000 km <sup>2</sup> |
| 3. Cem./Capita : 180 kg | 4. GDP/Capita : US\$ 980         |
| 5. Currency :           | 6. Exch.rate : US\$ =            |

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1								
Plant 2								
Plant 3								
<u>Total</u>								
9. Cem.Imports	(80)	(80)	(80)	(100)	(100)			(100)
10. Cem.Exports								
11. Cem.Consumption	(80)	(80)	(80)	(100)	(100)			(100)
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

14. Import partners: SOUTH AFRICA      15. Export partners: -

16. Plant's Name	Owner	Number/	TPD/Process/	Firing/	Make of kilns

TPD : Ton per day      TPY : Thousand ton per year

17. Standard conformed :      18. Additives :
19. Ex-Works sales price :      US\$      per ton (in bag)
20. Export price . :      :

21. Constraints : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Investment plans : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources :      Cembureau

24. Note(s) :

25. OBSERVATIONS :

The country has one clinker grinding plant.  
 It is assumed that the country's requirements are covered  
 by this plant, and that the clinker is imported from S.A.

COUNTRY : TANZANIA

1. Population : 18'100'000      2. Area : 937'000 km<sup>2</sup>  
 3. Cem./Capita : 19 kg      4. GDP/Capita : US\$ 260  
 5. Currency :      6. Exch.rate : US\$ = 17.5

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY	315	315	315	570	1075	1075	1325	1325
8. Cem.Pro. Plant 1	250	298	286	252	214	126	165	185
Plant 2			20	136	155	137	152	185
Plant 3						10	51	-
<u>Total</u>	250	298	306	388	369	273	368	370
9. Cem.Imports	75	47	24	22	48	-	-	-
10. Cem.Exports	10	3	9	9	18	19	14	20
11. Cem.Consumption	305	342	321	401	369	254	354	350
12. Cons.Incr.rate (%)			-6.2	+25	-8	-31	+39	(0)
13. Cap.Utilization (%)	79-	94.6	971	68-	34.3	25.4	27.7	27.9

14. Import partners: Kenya      15. Export partners: Burundi

16. Plant's Name	Owner	Number/	TPD/	Process/	Firing/	Make of kilns
Wazzo Hill	Gov	3	575	Dry	Fuel	F.L. Smith and Co.
Tanga	Gov	1	500	Dry	Fuel	"
Mbeya	Gov	1	250	Dry	Fuel	"

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed : BS 12      18. Additives : -  
 19. Ex-Works sales price : TZ SH 2112.-      US\$ 120.70 per ton (in bag)  
 20. Export price : US 105. FOB KIGOMA, port at lake Tanganika

21. Constraints : Cement demand shortages  
Spare part and consumption material shortage  
 \_\_\_\_\_  
 \_\_\_\_\_  
 22. Investment plans : Rehabilitation of the plants  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Sources : Tanzanian Saruji Corporation

24. Note(s) :

25. OBSERVATIONS :

Since 1975, after the nationalization of the private cement company the efficiency of the nationalized plant and of the new commissioned ones have been gradually decreased. The reasons of this decrease have been the acute spare part and consumption material shortages and the insufficient experience of the technical staff.

After the rehabilitation of the plant the corporation would face difficulties to market the production as the installed capacity is about three-time more than the actual cement consumption of the country.

UGANDA  
COUNTRY :

1. Population : 13'2 00'000      2. Area : 243' 000 km<sup>2</sup>  
 3. Cem./Capita : 7 kg              4. GDP/Capita : US\$ 280  
 5. Currency :                      6. Exch.rate : US\$ -

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY	465	465	465	465	465	465	465	465
8. Cem.Pro. Plant 1	90	(70)	(70)					
Plant 2								
Plant 3								
<u>Total</u>	(90)	(70)	(70)	(70)			(80)	(80)
9. Cem.Imports	(15)	(12)	(20)	(20)			(10)	10
10. Cem.Exports								
11. Cem.Consumption	(105)	(82)	(90)	90			(90)	90
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)	19	15	15	15			17	

14. Import partners:

15. Export partners:

16. Plant's Name      Owner Number/ TPD/Process/Firing/Make of kilns

Tororo	Gov	2	900	Drv	Fuel	
Hima	Gov	2	600	Drv	Fuel	

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed :

18. Additives :

19. Ex-Works sales price :

US\$

per ton (in bag)

20. Export price :

21. Constraints :

- Lack of liquidities
- Exhausted equipment
- spare part non availabilities
- Shortages of technical personel
- Costly and irregular fuel deliveries

22. Investment plans :

Rehabilitation of the plants.

23. Sources : UNIDO - CEMBUREAU

24. Note(s) :

25. OBSERVATIONS :

The plants are owned by UCEMCO, a parastatal agency also in charge in asbestos plates and pipes and lime manufacture.

On the other the government has investigated the establishment of a expert oriented Cement plant which received to be economically not feasible.

Due to the emergency situation in Uganda the development of the cement industry has suffered considerable draw backs in the performance.

COUNTRY : ZAMBIA

1. Population : 5 700 000      2. Area : 752 200 km<sup>2</sup>  
 3. Cem./Capita : 44 kg      4. GDP/Capita : US\$ 560.-  
 5. Currency : Zambian Kwacha      6. Exch.rate : US\$ = 2.25

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY	630	630	630	490	490	490	490	490
8. Cem.Pro. Plant 1	140	136	152	130	120	99	105	100
Plant 2	120	116	115	120	170	185	172	190
Plant 3								
<u>Total</u>	260	252	267	250	290	284	277	290
9. Cem.Imports	-	-	-	-	-	-	-	-
10. Cem.Exports				62	28	21	33	40
11. Cem.Consumption				286	262	263	244	250
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)	41.2	40.-	54.5	51.-	59.2	57.9	56.5	

14. Import partners:

15. Export partners:

16. Plant's Name	Owner	Number	TPD	Process	Firing	Make of kilns
Chilanga	Gov/RII	3	850	Wet	Coal	Vickers-FLS
Ndola	Gov/PRT	2	1150	Dry	Coal	F.L.Smidth-Polvsius

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed : BS 12      18. Additives :

19. Ex-Works sales price :      US\$      per ton (in bag)

20. Export price . :

21. Constraints : Spare part difficult envilabilities

Cement demand shortages22. Investment plans : Promotion cement related, (consuming), manufacturesPromotion of bulk cement sales.23. Sources : Chilanga cement Company24. Note(s) :25. OBSERVATIONS :

- The two plant are owned by Chilanga Cement Company. (Majority Share holder: Government others; Commenwealth and Anglo-American cooperations).
- The plants of the Company, with the exception of the first kiln of Chilanga plant, which is decommissioned, have been rehabilitated - By portially Irish Government financing and by the technical assistance of Irish Cement Co.

COUNTRY : ZIMBABWE

1. Population : 7'200'000      2. Area : 39'000 km<sup>2</sup>  
 3. Cem./Capita : kg      4. GDP/Capita : US\$ 630  
 5. Currency : Zimbabwien      6. Exch.rate : US\$ = 1.56 Zb\$

	1978	1979	1980	1981	1982	1983	1984	1985E
7. Cem.Pro.Capacity TPY								
8. Cem.Pro. Plant 1			210	278	284	299	307	320
Plant 2						312	333	320
Plant 3								
<u>Total</u>						612	640	640
9. Cem.Imports								
10. Cem.Exports						67	128	140
11. Cem.Consumption						545	512	520
12. Cons.Incr.rate (%)								
13. Cap.Utilization (%)								

14. Import partners:

15. Export partners:

16. Plant's Name	Owner	Number	TPD/Process	Firing	Make of kilns
Manresa	PR	2	1500 Semi-Dry	Coal	Vickers-Polysius
Bulawavo	PR	-	-	-	
Colleen Bown	PR	3	1500 Semi-Dry	Coal	(Polysius)

TPD : Ton per day

TPY : Thousand ton per year

17. Standard conformed : Zimbabwe      18. Additives : Slag (high furnac)  
 19. Ex-Works sales price : .56      US\$ 34.80      per ton (in bag)  
 20. Export price :

21. Constraints :
- Financial due to low sales price imposed by Government
  - Difficult availabilities of spare parts
  - Local and foreign demand shortages

22. Investment plans : - Overhaul of the first kiln of Manresa plant

23. Sources : Circle Cement Ltd.

24. Note(s) :

25. OBSERVATIONS :

- The plants are owned by private companies
- Manresa by Circle Cement Ltd. (Majority shareholder - Blue Circle U.K.)
- Bulawayo and Colleen Bown by United Portland Cement Co., equally shared by Premier Portland Cement Co. and Portland Holding Ltd. Bulawayo is only a cement grinding centre
- The plants are in a position to produce almost their full capacity.

### Ethiopian Cement Industry

In Ethiopia the cement is produced and marketed by the Ethiopian Cement Corporation, - a parastatal organization.

The Ethiopian Cement Corporation has its Headquarter in Addis-Ababa and it actually owns 4 cement plants within the country whose total installed production capacity reaches to 1750 tons of clinker per day, or, approximatively, to 545 or 600 thousand tons of Portland cement per annum, respectively, for 300 or 330 operation-day per year.

The location, the installed capacity and the commissioning date of the Corporation's plants are as follows:

	<u>Location</u>	<u>Production Capacity</u>	<u>Commissioning Date</u>
1.	Dire-Dawa	150 TPD	1936
2.	Addis-Ababa	300 TPD	1964
3.	Gurgussum Massawa	300 TPD	1965
4.	Mugher	1000 TPD	1984

TPD : Ton per day, (Clinker).

The production capacity of the Ethiopian cement industry has always been higher than the country's cement consumption. However, Ethiopia has only in the 70's exported relatively small quantities of cement, up to 15 % of its yearly production. Since 1980, the annual productions of the plants have dropped to levels below the country's cement demands. Since that year, Ethiopia has imported cement from USSR for filling its cement demand gaps.

In the past 5 year, the total cement production and the average production capacity utilization of the Corporation's plants, the quantities of cement imported by the Corporation and the annual apparant cement consumption of the country have been as follows:

<u>Year</u>	<u>Cement Produced</u>	<u>Capacity Utilized</u>	<u>Cement Imported</u>	<u>Cement Consumed</u>
1980	129	64.-	73	202
1981	143	71.5	23	146
1982	146	73.-	72	218
1983	126	63.-	99	225
1984	139	69.	60	199

Notes: 1. Quantities are in thousand tons  
 2. Capacity utilisation is in %  
 3. 1984 figures do not include the production capacity of Mugher plant commissioned in September 1984.

The Ethiopian Cement Corporation produces pozzalanic cements complying with the British standards, which contain up to 20 % pozzolanic materials.

The ex-works cement sale price, per ton, bagged, of the Corporation is :

Birr 232.- (US\$ 110.-)

The cement freight, per ton and per km, in Ethiopia is ;

Birr 0.10 (US\$ 0.05)

According to the management of the Cement Corporation, the low production capacity utilizations of the Ethiopian cement plants are mainly related to the difficulties that the Corporation had faced in the past, from the hard currency shortages that the country experienced, in importing spare parts and new equipment, respectively, for overhauling the aged plants' production units and for renewing the exhausted equipment of the plants, and, also, in importing the main consumption materials needed in cement manufacture.

However, it seems that the low production capacity utilizations of the Ethiopian cement plants in the past years are also related to the lack of cement demands experienced in Ethiopia in the last two decades, and, also to the high sale price of cement in Ethiopia which discouraged and discourages its consumption.

In fact, according to Cembureau statistics, in the last two decades, the Ethiopian apparent cement consumption per capita has stayed steady, around 5 kg. And, according to the saying of the Corporation, the cement sale prices have always been relatively high in Ethiopia.

Since the commissioning of Muger plant, the Ethiopian Cement Corporation has been giving all its efforts for efficiently operating its new production unit and for marketing the cement production obtained.

Besides, the Corporation has also plans for rehabilitating its old production units, step by step, by fund to be generated by Muger plant.

The operation of the Muger plant is conducted by the Corporation staff assisted by a team of the plant's equipment supplier, (SKET Export-Import Enterprise, DRG).

The Corporation for marketing its cement production plans the establishment of a bagged and bulk cement distribution network within the country, and, it seeks the foreign markets for export purpose.



The corporation's plans for the rehabilitation of its old plants are as follows:

1. Addis-Ababa plant  
The reconditioning of the electrostatic precipitator of the plant's dry process kiln.  
Complete overhauling of the kiln.  
(Ingra, Jugoslavia).  
Estimate : Birr 1 million
2. Dire-Dawa plant  
Rehabilitation of the plant's semi-dry process kiln, (Breda, Italia).  
Estimate : Birr 2 millions.
3. Gurqussum Massawa plant ,  
Overhauling of the dry process kiln of the plant (Krupp, FRG).  
Improvement of the plant jetty's facilities.  
Estimate : Birr 1 million.

The Corporation is not considering the conversion of the fuel firing system of its kilns to coal firing.

However, in its new Muger plant provisions are made for a such conversion.

The Ethiopian Cement Corporation has already benefited, and it is benefitting, from the in-plant training programme periodically organized by UNIDO for upgrading the skills of the technical personel of the cement indusrty of the developing countries.

At present, the Corporation is seeking technical assistance from International Organizations and/or from developed countries for being assisted in the establishment of the Corporation's cement marketing and distribution network that it has already undertaken.

### Tanzanian Cement Industry

In Tanzania the cement is produced and marketed by the Tanzania Saruji Corporation, - a parastatal organization.

The Corporation has its Headquarter in Dar es Selaam, and, it owns three cement plants whose total installed production capacity ranges around 1,300,000 tons of cement per annum. The location, the actual installed production capacity of these plants are as follows:

<u>Plant</u>	<u>Location</u>	<u>installed Capacity</u>	
		<u>Clinker</u>	<u>Cement</u>
1. Wazzo Hill	Dar es Selaam (15 kms from)	1800 TPD	575,000 TPY
2. Tanga	Tanga (on port area)	1600 TPD	500,000 TPY
3. Mbeya	Mbeya (near Zambia)	800 TPD	250,000 TPY
<u>Total</u>	----	<u>4200 TPD</u>	<u>1,325,000 TPY</u>

TPD Ton per day,                      TPY Ton per year

Besides, the Corporation has two packing stations which are, respectively, at Dar es Selaam's port area, next to the Corporation Headquarter, of 40 tons/hour packing capacity, and at Mtwara, a port city near the frontier of Tanzania with Mozambique, of 20 tons/hour packing capacity.

The Wazzo Hill plant of Tanzania Saruji Corporation was commissioned in 1967. It was the cement plant of Tanzania Portland Cement Company which was making part to the company group of Cementia AG, Zurich, Switzerland. The Mambouri Portland Cement Company, Kenya, was, and it is still, among this group of companies.

The initial installed production capacity of Wazzo Hill plant was 145 thousand tons of Portland cement per annum. It disposed a Humbolt dry-process, fuel-fired kiln of a production capacity of 450 tons of clinker per day.

The Tanzania Portland Cement Company was half nationalized by the Tanzanian Government in 1967, and wholly in 1975, thus to become the Tanzania Saruji Corporation.

The Wazzo Hill plant got in 1972 and 1950 new FLS, Danemark, constructed dry-process, fuel-fired kilns, respectively, of production capacities of 550 and 900 tons of clinker per day which increased the total installed production capacity of the plant, successively, to 365 and 570 thousand tons of Portland cement per annum.

The Tanga plant of the Corporation was commissioned in the last quarter of 1981. The plant conceived by F.L.Smidth and Co./Danemark disposes one dry-process, fuel-fired kiln of a rated production capacity of 1600 tons of clinker per day which represents an installed production capacity of 500 thousand tons of Portland cement per annum.

The Mbeya plant of the Corporation was commissioned in 1983. Because of lack of electrical power supply, the date of the commissioning of this plant took place three year after the end of the erection work of the plant. The modifications brought in the electrical power supply projects by the Government have caused this unfortunate event.

This plant, also, conceived by F.L.Smidth and Co./Danemark, disposes one dry-process, fuel-fired kiln of a production capacity of 800 tons of clinker per day which represents an installed production capacity of 250 thousand tons of Portland cement per annum.

#### Capacity utilization rates in Corporation's plants

The production capacity utilization rates of the Tanzanian cement plants figured out from the data provided by the Corporation, which are given together with the provided data in the Table (T) of this report, indicate that they were very low in the past 5 year, ranging arround 35 %.

On the other hand, the same table shows that the Wazzo Hill plant till 1980, the sole plant of the Corporation till that date, was utilizing almost its full production capacity, even, some years, was overproducing by forcing its production units.

The information given by the Corporation on the plants' performances during the past years clearly shows that two main factors have led, since 1980, the Tanzanian plants to realize such low production capacity utilization rates. These factors have been, respectively:

- The economic conditions that the country have experienced in the past years, and,
- The short sighted approach that the plant management has taken for coping with imported material shortages.

In fact, the economic conditions that the country have experienced in the past years have made very difficult, if not impossible, the imports to the country of the spare parts and the consumption materials absolutely needed for keeping the production units of the plants in a shape to operate and produce, efficiently, have substantially, reduced the utilization of the plant production units. On the other hand, the short sighted approach that the plant management has taken for coping with imported material shortages, by trying

to keep the production units operational with summary repairs, with worn out mechanical parts or refractory bricks and with inadequate spare part or consumption material substitutes, may have given some results for a short span of time, but, factually, has gradually deteriorated the potential of the units' production capacity, even has seriously damaged them, which in turn, has caused less productions, more break downs of short and/or long duration, and, in addition, has increased the cost of their rehabilitation, considerably. The large break of the shell of the kiln 3 of Wazzo Hill plant, which have put almost apart the kiln's outlet section, and which have put the kiln out of operation since 1982, illustrates this short sighted management approach.

### Cement consumption in Tanzania

As it could be seen from the annual apparent consumption figures given in the table (T) of this report, the cement consumptions in Tanzania have not had a steady increase trend since 1966. The average cement consumption increase rate can be figured out as 5 % per year.

Actually, Tanzania disposes an installed production capacity of 1,250,000 tons of cement per year, on the other hand, its actual is around 400,000 tons per year representing a consumption of        kg cement per capita, a relatively low figure.

Certainly, the economic recession that the country has experienced the last year has negatively affected the country's cement consumption. Assuming that the national economy would recover in the coming years and, also assuming that together the recovery, the annual cement consumption rate would pick up and reach to 10 %, to the double of its actual one, the actual Tanzanian cement production installed capacity is that large that, even with these considerations, it would easily cover the country's cement requirements in the coming dozen years.

### Cement prices in Tanzania

The Corporation actual ex-works sales price of cement is :

TZ SH 2112.- or (US\$ 120.70) per ton, (bagged).

The cement is retailed by the parastatal Regional Trading Companies which add on top of this price the hauling and handling expenses and their overheads and profit margins. Therefore, the cement retail price varies depending where the cement is retailed. In remote areas it may reach as much as Tz Sh 3400.- or (US\$ 194.30) per ton, (bagged).

Presently, The Corporation is exporting cement to Burundi, at US\$ 105.-, FOB Kigoma, a small port on Tanganika Lake where the cement is loaded to barges bounded to Burundi ports.

This export which is made without any commercial consideration, with net loss, helps the Corporation by providing it the hard currency that it needs for importing its plants spare parts and consumption materials. As the Government authorizes the Corporation to make use of a part of its hard currency earnings.

### Constraints of the Tanzanian cement industry

The actual constraints of the Tanzanian cement industry are as follows :

- Low efficiency of the production units of the Corporation's plants.

The old Wazzo Hill plant's equipment and production units are either exhaust or damaged, they need either to be renewed or reconditioned.

The recently commissioned Tanga and Mbeya plants quarry earth moving and raw material hauling and handling equipment, as they have been extensively used during the construction and erection of the plants, they are almost out of order to efficiently handle the quarry operations of the plants. They require to be replaced or reconditioned.

- Difficulties, if not impossibilities, in importing the equipment, des spare parts and, also, the consumption material needed by plants.
- Lack of local cement demand.

The installed production capacity of the plants of the Corporation, compared with the local cement consumption, is very large. The plants, together, would not be able to utilize their full production capacity.

- The export capabilities of the Corporation' plants are very limited.

The Corporation production cost do not provide competitive cement export prices vis a vis the other plants on the region.

### Planed and on-stream rehabilitation programmes

The rehabilitation programmes of Wozzo Hill and Tanga plants are on-stream.

The Wazzo Hill plant rehabilitation programme is financed by SIDA, (Swedish International Development Authority), as a loan from state to state, of very soft nature.

Under the framework of this loan, for conducting the rehabilitation programme of Wazzo Hill plant, a management team from Cemente International, Sweden, has been hired by Tanzanian Cement Corporation for a duration of five years.

SIDA would allocate, in the next 5 years, Sw Kr 15 mios, each year, to the Corporation for letting Wazzo Hill plant to import the spare parts and the consumption materials to be needed in its rehabilitation and production promotion programmes. The allocations would be authorized only when the equivalent quantities of local currency, to be generated would be deposited to a Tanzanian bank.

Besides, SIDA, also would make available a commercial loan of Sw Kr 13 mios to the Corporation, for enabling Wazzo Hill plant to import new equipment for replacing the its old one.

Similar arrangements for the rehabilitation of the Tanga plant have been done by the Cement Corporation with DANIDA, (Danish International Development Authority).

Actually, the the rehabilitation programme of the Tanga plant is being conducted with similar terms of those of Wazzo Hill plant, by a Danish Management team.

The Tanzanian Government is seeking to have again a similar arrangement with Norway for the Corporation's Mbeya plant which, actually is not in operation as its lacks the quarry earth moving and raw material handling equipment and, also, the required manpower.

The rehabilitation programmes do not include the conversion of fuel firing system of the kilns to coal firing one.

## Malawian Cement Industry

In Malawia cement is produced and marketed by the Portland Cement Company (1974) Limited, a former private company, actually co-owned by two parastatal agencies, namely, by MCD, (The Malawian Development Corporation), and ADMAR, (The Agricultural Development and MARKeting corporation).

The Company has a split cement plant. It disposes its clinker production plant at Changalume, approximately 70 kms North of Blantyre which has one semi-dry process Lepol and one dry process Depol kilns, both coal fired, and respectively, of rated production capacities of 200 and 300 tons of clinker per day, and, it disposes its clinker grinding plant in Blantyre, next to the Company's Headquarter, where it produces its cement with the clinker brought by rail from its afore mentioned Changalume plant.

The Company's rated production capacity is 170 thousand tons of Portland cement per annum.

### Cement productions, imports and local consumption

The table which follows summarizes the Company's cement productions, the quantities of cement imported into the country and the apparent cement consumption of Malawi for the past 10 year. It also gives the computed production capacity utilization rates for the same period.

<u>YEAR</u>	<u>PRO</u>	<u>IMP</u>	<u>CUR</u>	<u>AC</u>
1975	104	--	61.2	102
1976	85	--	50.-	87
1977	94	--	55.-	93
1978	103	--	60.5	119
1979	113	41	66.5	151
1980	92	31	54.1	123
1981	78	11	45.9	92
1982	53	27	31.1	80
1983	70	5	41.2	72
1984	70	--	41.2	72
1984(1)	70	--	74.-(1)	72

Quantities are thousand in tons  
CUR Capacity Utilization Rate, in %  
(1) For a production capacity of  
94.5 thousand tons cement  
per year, (without kiln 1).

### Production capacity utilization rates

The production capacity utilization rates of the Chingalume plant have been relatively low, particularly since 1980.

The factors which have negatively affected the production capacity utilization of the plant can be enumerated as follow:

- The qualities of the raw materials.  
The available limestones of the almost depleted quarries are contaminated.  
Surveys are being carried out for ascertaining additional limestone reserves.
- The equipmemnt and the production units maintenance states.  
All the production units require complete reconditioning.  
Due to to difficult spare part availabilities in the past, the production units have not been properly maintained. They are not reliable.  
Since begining 1985, the Lepol kiln of the plant, due to its state, has been kept out of operation.
- Irregular supplies of coal and gypsum.  
The coal and the gypsum are imported from Mozambique and from Zimbabwe. The transports are neither regular nor reliable.

All these factors have caused, and are causing, production losses.

### Cement consumptions, distribution and sales price

Since 1979, the apparent cement consumption of the country has shown substantial decreases. They have been related to economic recession of the country and also to the achievements of the main construction projects of the country's new capital, Lilongwe.

The actual cement consumption of the country is arround 75 thousand tons per year, approximatively at the same levels of what it was in the early 70's.

It is likely that no important consumption increases would happen in the years to come.

The Company applies a uniform sales price, regardless the quantity bought, in its three sales stores which are located at Blantyre, at Lilongwe and at Mzuzu.

The actual uniform sales price that the Compõny applies in its stores is :

Malavian Kwachas 180.-, (US\$ 100.-), per ton,  
Malawian Kwachas 9.- (US\$ 5.-) per bag.



### Rehabilitation programme of the plant

The rehabilitation of the Company's plants is under consideration.

In order to plan the rehabilitation of the plants, the Company has already obtained the technical assistance of the Irish Cement Limited, Dublin, which is co-financed by the Irish Government and the European Economic Community.

Since the beginning of this year, a production engineer has been delegated to the Company by the Irish Cement Limited.

The rehabilitation programmes of the plant would be undertaken upon the results to be obtained from the raw material surveys which are being carried out for ascertaining the raw material availabilities for the coming 20 years, at least.

However, the Government, from its side studies the eventual establishment of a new cement plant to be located at Kasungu, at 20 kms North of Lilongwe, where suitable limestone deposits are available.

### Constraints of the Cemnt Company

The major constraints of the Company are as follows:

- Inefficient and exhausted production units requiring reconditionnings,
- Contaminated and depleted raw material reserves,
- Irregular and costly supplies of coal and gypsum,
- Difficulties in importing spare parts and consumption materials.

## Zambian Cement Industry

In Zambia the cement is produced by Chilanga Cement Company, a shareholding company whose majority shares are owned by the parastatal INDECO holding company. The other shareholders are Anglo-American and Commonwealth Corporations.

The Company disposes 2 plants which the first one is located in South-West of Lusaka, at 15 kms distance, and the second one at Ndola, a small town in the North of Lusaka, near to the frontier of Zambia with Zaire. Both plants have road and rail connexions.

The commissioning dates, the makes, the production processes and rated capacities of kilns of the Company's plants are summarized in the following table :

Date	Make	Process	<u>CHILANGO</u>			<u>NDOLA</u>			<u>TOTAL</u>	
			TPD	<u>TOTAL</u>		TPD	<u>TOTAL</u>		TPD	TPY
				TPD	TPY		TPD	TPY	TPD	TPY
1951	Vickers	Wet	170	170	54					
1956	Vickers	Wet	280	450	142					
1967	FLS	Wet	400	850	267					
1969	FLS	Dry				550	550	173	1400	440
1975	Polysius	Dry				600	1150	363	2000	630

Notes : TPD Tons per day, (Clinker)  
 TPY Tons per year, (Cement), in thousand tons.

The cement production and export quantities, the figured out apparent cement consumption in Zambia and the overall production utilization rates of the countries cement plants of the past 10 years are as follows :

<u>YEAR</u>	<u>YSP</u>	<u>YSP</u>	<u>YSP</u>	<u>YSIP</u>	<u>EXP</u>	<u>CUR</u>	<u>AC</u>
	(1)	(2)	Tot.	Tot.		(%)	
1975	220	175	395	440		89.-	
1976	200	180	380	630		60.3	
1977	180	195	375	630		59.2	
1978	140	120	260	630		41.2	
1979	136	116	252	630		40.-	
1980	152	115	267	490		54.5	
1981	130	120	250	490	62	51.-	286
1982	120	170	290	490	28	59.2	262
1983	99	185	284	490	21	57.9	263
1984	105	172	277	490	33	56.5	244

Notes : YSP Year's production  
 YSIP Year's installed production capacity  
 EXP Exports  
 CUR Capacity utilization rate  
 AC Apparent consumption, per annum.  
 Quantities are in thousand tons.

## Production capacities of the Company's plants and their production capacity utilization rates

The total installed production capacity of Chilanga Cement Company, as given in the first table, above, reaches to 630 thousand tons of Portland cement per year. The individual production capacities of the Chilanga and Nbeya plants are respectively, 267 and 363 thousand tons.

The production units of the two plants, with the exception of the first Vickers kiln of Chilanga plant which was decommissioned in 1980, are rehabilitated. Therefore, they are in position to produce their full capacity.

However, due to the limited cement demand and export potential of the country, the capacity utilization rates of the Company's plants have been, in the past years, and it seems they would be also in the coming year, rather low.

Since 1980, due to market limitations, the Company has not utilized its second Vickers kiln. It is for this reason that in the computation of the plants' production capacity utilisation rates, given in the second table, above, onward 1980, the plants' total installed production capacity has been considered as 490 instead of 630 thousand tons of Portland cement per annum.

## Plants rehabilitations

As mentioned in the previous heading, with the exception of the first Vickers kiln of Chilanga plant, all the production units of the Company have been rehabilitated.

The recently completed rehabilitation programme of the Company was undertaken 1979. It has been planned and implemented by a team of Irish Cement Limited, Dublin, provided under the framework of an technical assistance arrangement between the Zambian and Irish Governments. The investment cost of this programme has reached to Zambian Kwacha 11 mios. It has been partially financed by the Company's own funds and partially, by EIB, (European Investment Bank), and the Anglo-American and Commonwealth Corporations.

## Cement sales prices and cement distribution

In Zambia, the sales price of cement are set up by the Government. The Company for bringing any change in pricing should apply to the Government, with justifications and obtain its approval.

The ex-works sales price of cement in Zambia is :  
Zambian Kwachas 123.-, (US\$ 54.70)  
(per ton of cement in bags, 50kg each)

The cement is reetailed within the country by means of dealers who buy from the Company the cement, at the ex-works price above, and, they retail it by adding on the top of this price their handling costs and their profit margins.

The actual road and rail freight in Zambia are respectively, around Zambian Kwachas 0.30 and 0.10, (US\$ 0.013 and 0.004).

In the remote areas of the country, the prices are reaching as high as Zambian Kwachas 184.-, (US\$ 81.80).

The Company's actual export ex-works price is US\$ 43.-.

The major export partners of Zambia have been : Malawi, Zaire and Burundi.

However, since 1984, the cement exports to Malawi have been ceases as the Government of the latter has banned all cement import into the country.

- The Company delivers to Zaire and to Burundi at FOB basis.
- For Zaire, it is US\$ 49.75, per ton, FOB Sakonia, a small town on Zaire frontier, nor far from Ndola plant.
  - For Burundi, it is US\$ 110.-, per ton, FOB Mpuluntu, a small port town on the Lake Albert.

The Government encourages the cement exports by letting the Company partially use its import hard currency earnings from exports in its spare part and consumption material imports.

#### Cement consumptions in Zambia

In the past 10 year, the cement consumption in Zambia have substantially declined till 1980. Since then, they have shown some increase trends. For the coming years, the Company expects annual consumption increase rates around 3 %.

#### Constraints of the Company

- The major constraints of the Company are :
- The lack of local cement demand,
  - The lack of substantial export markets,
  - The difficulties in importing spare parts and consumption materials needed for the cement production of the plants.

Plannings of the Company

The plannings of the Company are focussed on :

- The promotion of cement in Zambia,  
The Company is establishing a workshop in the plant premises for producing concrete tiles.
- The promotion of bulk cement sales in Zambia,
- The improvement of the operating costs of its plants.

## Zimbabwean Cement Industry

In Zimbabwe the cement is produced and marketed by two private companies, which are as follows :

### Circle Cement Limited

The company's 76 % share is owned by Blue Circle, U.K. The Company's plant is located 20kms East of Harare. The rated production capacity of the plant ranges around 550 thousand tons of Portland cement per year. The plant disposes one semi-dry process and one dry process, both coal fired Polysius kilns, respectively, of rated production capacities of 150 and 350 tons of clinker per annum, commissioned in 1957 and 1976. The plant is linked to the national railroad network.

### United Portland Cement Company

The Company is co-owned by two private cement companies who had established, individually, the two first cement plants of the country that owns the actual company. Actually, the Company's Colleen Bawn plant is an integrated cement plant having three dry process coal fired kilns of a total rated production capacity of 550 thousand tons of Portland cement per year. The Bulawayo plant is only a clinker grinding plant. Both plants are located in the South of the country near to Botswana, and both are linked to national railroad network.

### Cement productions, exports and consumptions in Zimbabwe

The data relevant to the cement productions, exports and consumptions of Zimbabwe in the past five year, and also the capacity utilization rates of the country's plants for the same period are given in the following table.

YEAR	<u>CIRCLE CEMENT</u>			<u>UNITED CEMENT</u>			<u>TOTAL</u>		
	PRO	EXP	CUR	PRO	EXP	CUR	PRO	EXP	AC
1980	210	13	38.2	---	---	---	---	---	---
1981	278	4	50.5	---	---	---	---	---	---
1982	284	--	51.6	---	---	---	---	---	---
1983	299	10	54.4	313	57	56.4	612	67	545
1984	307	23	55.8	333	115	60.5	640	128	514

PRO : Production    EXP : Export    AC : Apparent Consumption  
CUR : Capacity Utilization rate

Notes : Quantities are in thousand tons  
Capacity Utilization rate, CUR in %

### Capacity Utilizations in Zimbabwean cement plants

The production capacity utilization rates of the Zimbabwean cement plants, which are figured out from the available data, and, given in the table above, are not high enough to provide the plant a regular production level and an acceptable return on capital to the Companies. They cause financial constraints.

It has been, and it is still, the lack of local cement demands and limited export markets of Zimbabwean plants which have caused, and which are causing such production capacity utilization rates in the plants.

The plants' production units, although some of their maintenance programmes have been postponed for an infinite time, because of financial constraints, are in a relatively good conditions to produce almost their rated production capacities.

The investment requirement of Circle Cement Company for its postponed maintenance programmes amounts to Zimbabwean \$ 750.-, (US\$ 480,000.-).

The Company awaits the the picking up of the cement demands for undertaking the postponed programmes.

### Cement consumptions and exports in Zimbabwe

The actual cement consumption of Zimbabwe ranges around 550 thousand tons per year.

According Circle Cement, the local cement consumption could slowly pick up in the coming years.

In 1984, Zimbabwe has exported 20 % of its cement production.

The steady export partner of the Country is Botswana which import approximately, the half of its cement requirements from Zimbabwe, 40 thousand tons cement per year.

The occasional export partners of the country are South Africa, Mozambique, Burundi and Malawi.

South Africa has imported from Zimbabwe, up to 100 thousand tons of cement per year. These imports are likely to be ceased in the coming years as they were related to an incentive policy of the South African Government in favour of the construction sector of the country which has been suppressed the last year.

Mozambique which was a net cement exporter in the past, has imported small quantities of cement from Zimbabwe in the past years as its cement production has drastically fallen down. It seems that it would continue to import small amounts.

Since 1984, the cement export from Zimbabwe to Malawi has completely ceased, as the latter has banned all cement imports.

Burundi, which does not have a local production, imports almost its cement requirements from Northern PTA countries. It also imports cement from Zimbabwe, in small amounts for its projects which require high strength cements.

### The cement sales prices and distribution in Zimbabwe

In Zimbabwe, the cement sales prices are under the control of the Government. The Companies for readjusting their sales prices have to apply to the Government, with detailed justifications, and to get its approval.

Besides, the price readjustment procedures last long.

The Circle Cement who has recently applied to the Government for price adjustments is expecting Zimbabwe \$ 11.-, (US\$ 7.05), as increase in the coming months.

The actual ex-works prices per ton of cement, bagged, are:

In Harare plant	:	Zimbabwe \$ 55.00,	(US\$ 35.25)
In Bulawayo plant	:	Zimbabwe \$ 54.00,	(US\$ 34.60)
In Colleen plant	:	Zimbabwe \$ 49.00,	(US\$ 31.40)

The cement is marketed inside the country by the Companies' own marketing services and also by means of dealers.

The freight by road is approximately Zimbabwe \$ 0.032, (US\$ 0.02), per ton and per km.

In the remote area of the country the retail price of the cement reaches up to Zimbabwe \$ 100.00, (US\$ 64.10).per ton.

The Ex-works sales prices are also applied for for exports.

However, as Government incentive for the promotion of the exports, the Companies receive from the Government, as premium, 9 % of their ex-works sales prices.

### Constraints of the Zimbabwean cement industry

The major constraints of Zimbabwean cement industry are more financial than technical. They are resulting from :

- The lack of local cement demands,
- The limited export potential of the country,
- The long procedures for readjusting the relatively low cement sales prices of cement.

Among the other constraint of the Zimbabwean cement industry, the long procedure for getting the spare parts can also be mentioned.



( L )

OFFICIALS MET DURING SURVEY

<u>World Bank</u>	:	Mrs M. Haug Mr. M. Fog Mr. Mustapha Hossein	Industrial Projects Division Industry Department IFC Cement Industry Section
<u>ECA</u>	:	Mr. M. Faladé Mr. O. Layne Mr. J.G.Kimani	Human Settlement Division Construction Materials Section Joint UNIDO/ECA Division
<u>Ethiopia</u>	:	Mr. Mendaye Terefe Mr. Kumela Gragne Mr. L. Ibssa	Ethiopian Cement Corporation General Manager Ethiopian Cement Corporation Deputy General Manager Addis Ababa Cement Plant Works Manager
<u>Malawi</u>	:	Mr. M. Tsilizani Mr. F.M.Mvula Mr. T. Mackens Mr. J.R.Phiri	Ministry of Industry Portland Cement Company General Manager Portland Cement Company Technical Adviser Portland Cement Company Financial Manager
<u>Tanzania</u>	:	Mr. W.L.Nyachie Mr. A Mzese Mr. L. Eriksson Mr. A. Thabit Mr. W.B. Argade	Ministry of Industry Tanzania Saruji Corporation Sales Manager Tanzania Suruji Corporation Technical Adviser Tanzania Saruji Corporation Operation Division Wazzo Hill Cement Plant Works Manager
<u>Zambia</u>	:	Mr. N. Mwale Mr. C. Kelly Mr. J.C. Kaunda	Ministry of Industry Chilanga Cement Company Technical Adviser Chilanga Cement Company Commercial Manager
<u>Zimbabwe</u>	:	Mr. K. Nkomani Mr. G. George Mr. I.C.Chinyama	Ministry of Industry Circle Cement Company Sales Manager Ministry of Trade Statistic Department