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COUNTRY PAPER OF FEASIBILITY STUDIES
IN SELECTED LEAST DEVELOPED COUNTRIES ON
UNITED REPUBLIC OF TANZANIA *

by

T. Mworia **

and

A.O. Ngamilo ***

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** Principal Industrial Officer, Ministry of Industries.

*** Sector Manager (Light Industries), National Development Corporation.

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EVALUATION AND FOLLOW-UP OF FEASIBILITY
STUDIES IN TANZANIA.

PART I

At the time of independence Tanzania was virtually without industries. In 1960/61, the industrial sector contributed about Shs. 429 million. The figure rose to Shs. 1751 million in 1975. As a percentage of total GDP the value of industrial share of GDP in current prices was 7.6 per cent in 1965 and 10 per cent in 1975.

It is with the full realization of the importance of industrialization that Tanzania has, since independence evolved on a system of making a blue-print every five years to act as guiding torch to industrial development. Since independence the country has gone through two consecutive five year plans.

The Third Five Year Plan which forms part of the 20 year development plan commenced in 1976. Chapter Seven of this plan is devoted to industrial development and has the following goals:-

1. To restructure the industrial sector through the following activities:
 - a) To establish export - processing industries to earn foreign exchange which will supplement agricultural exports;
 - b) to establish industries to produce consumer and capital goods;
 - c) to establish industries and workshop for spare parts manufacture, tools, machine parts to enhance self reliance and to expand the home market for the iron and steel industry;
 - d) to establish basic industries which will use local resources: iron/steel, coal, chemicals and construction material industries;

2. To improve capacity utilization. To increase efficiency and improve capacity utilization in existing industries.

- 3 -
3. To expand employment and training opportunities for employees.
 4. To establish and expand industrial services in research, consultancy and technology transfer.

The Ministry of Industries, other relevant ministries and their associated institutions have been charged by Parliament with the responsibility of implementing the objectives laid down in the long-term industrial plan. The Ministries concerned formulate policy guidelines and strategy for promoting projects within the framework of the long-term industrial strategy. The associated institutions which are parastatal and the private sector operating within the Ministries' policy guidelines and within the long-term industrial strategy identify specific projects, evaluate and finally implement them. Consultations have to from time to time be made between the Ministry of Industries, other relevant Ministries and the project implementing parastatal.

The role of institutions concerned with industrial development

In developing the industrial sector with a 20 year perspective, different tasks and responsibilities have been assigned to various national institutions at different levels. At the national level the large and medium scale industries will be established and controlled by national parastatal organizations such as National Textile Corporation (TEXCO) Saruji Corporation, Sugar Development Corporation (SUDECO), Tanzania Wood Industries Corporation (TWICO) and State Mining Corporation (STAMICO) under the supervision of the relevant parent Ministries. At the District and village level are the medium and small scale industries which can be promoted and implemented by District Development Corporations, villages, cooperative groups and individuals in urban areas under the supervision of regions and parent Ministries. The criteria used in dividing industries into these two groups are on the basis of the market to be served, capital outlay, and the level of technology involved in manufacturing.

The above division of responsibility is intended to ensure identification and initiation of industrial projects at every stage. It is felt that the only way to ensure that people participate fully in expanding industrial production is with the assistance of national and regional institutions. We append a chart showing the interrelationships between various governmental institutions involved in the industrial development in Tanzania.

The development banks and industrial consulting institutions both inside and outside the country have and will continue to play a very important role in initiating, implementing and evaluating pre-investment studies for parastatal, district and private organizations. The Tanzania Investment Bank, for example has assisted almost all the parastatal institutions in either extending loan finance to projects initiated by the parastatals, after making thorough appraisal of their projects and or has in collaboration with the institution responsible for the particular sector undertaken research and identification of bankable projects or has evaluated investments and carried out techno-economic feasibility studies in connection with the development of the industrial sector.

Problems

a) Manpower

At the Ministerial and institutional levels there are problems which make project initiation, implementation and evaluation difficult. The most crucial problem is lack of trained manpower. Project appraisal is a relatively new discipline in Tanzania and has therefore, not been comprehended by many decision makers. Unless we have trained people at the above mentioned levels and possibly downwards our national industrial objectives will not be fulfilled as fast as we would like them to. We need people who not only have the ability and know-how to work right from conceiving projects to evaluating them but also those who have the ability to screen them and advise on priority basis which projects should be implemented.

b) Finance

Although our parastatals have received clearly defined policy guidelines and strategy from their parent Ministries and although after having realized that within the guidelines they are incapable of conceiving projects because of lack of trained manpower to do so, there is room for such parastatals to get assistance from bodies like UNIDO in the way making experts available to them or commissioning a group of experts from consulting firms. UNIDO and other International Bodies have assisted Tanzania in this regard but it is Tanzania's feeling that the assistance so far rendered is not sufficient and that if funds could be made available Tanzania could go shopping for consultants.

PART II CASE STUDY:

CAUSTIC SODA PROJECT:

- 1.1 The Government has assigned national priority for the development of basic chemical industries in the country. Caustic Soda, chlorine, chlorine derivatives, PVC resin and PVC Compounding project have been suggested as the first step towards the establishment of a chemical complex in the country. The proposed caustic soda/chlorine project forms the basic starting point for the successful realisation of the above objective.
- 1.2 Caustic soda and chlorine are basic inputs to a number of key industries in the country. The capacity of the caustic soda plant has been recommended at 7,000 tons per annum. The production of chlorine at the rated capacity will be 5970 tons/year. The capacity decision is based on the constraints of demand for caustic soda, chlorine and chlorine derivatives. Caustic soda is an essential element in the manufacture of detergents, soap, textiles, pulp and paper and also it is used in refineries and other miscellaneous industries. While adequate demand for caustic soda exists, demand for chlorine is still in the nascent stage. The growth of chlorine based industries has virtually been absent due to non-availability of chlorine at reasonable prices.

Hence, it is proposed to develop chlorine based industries simultaneously with the setting up of the caustic soda/chlorine plant. After taking into consideration the other uses of chlorine, the surplus availability of chlorine is expected to increase from 1550 tons during the first year of production to 3260 tons in the fifth year of production. The surplus chlorine could be consumed beneficially by creating chlorine based industries.

- 1.3 At present, schemes for the manufacture of PVC pesticides and insecticides i.e. D. D. T. and ozone Hexa chloride are under study.
- 1.4 The present investment proposal covers only the basic caustic soda/chlorine plant.
- 1.5 The processes available for the manufacture of caustic soda and chlorine are:-
 - i) Mercury cell process
 - ii) Diaphragm cell process
 - iii) ion-exchange membrane cell process.

"
On the basis of detailed investigations conducted so far, it is concluded that the diaphragm cell process is the most suitable process for the proposed plant. As such, the report is based on the establishment of a diaphragm cell plant.

A brief summary showing important parameters of the project are as follows:-

1. PRODUCTS:

- a) Caustic Soda - 7,000 tons at full capacity
- b) Chlorine 5,970 tons at full capacity

2. RAW MATERIALS:

- a) The primary base material required for manufacture of caustic soda is salt. Salt is available in the environs of Dar es Salaam namely Bagamoyo and Utundwe Salt Works.

Consumption of salt at full capacity production will be about 10,150 tonnes.

b) Ancillary Chemicals:

The norms of consumption of salt and ancillary chemicals as indicated by suppliers are as given below:-

	<u>Per tonne of chlorine</u>
(a) Raw Salt 1.7 tonnes	(as 100% NaCl)
(b) Sodium Carbonate 3 kgs	(as 100%)
(c) Calcium chloride 26 Kgs	(as 100%)
(d) Sulphuric Acid 17 Kgs	(as 98%)
(e) Alkali Stach 14 Kgs	(as 100%)

4. POWER:

Caustic soda Chlorine plants are highly power intensive and hence it is essential to ensure steady and cheap supply for electricity for the plant. A 7,000 tons/year diaphragm cell plant would have a consumption of around 4,000 kwh per tonne of chlorine.

5. WATER:

Requirement of water for the plant would be around $40M^3$ per tonne of production of chlorine. At the rated production capacity the annual requirement would be $240,000M^3$.

6. MANPOWER:

Supervisory	- Day	-	1
	- Shift	-	1
Operatives	- Process	-	3
	- Utility	-	1
Day Analyst	-	-	2

The total manpower requirement will be about 75.

7. BREAK-UP OF TOTAL INVESTMENT: (in She. Million)

a) Plant and machinery, erection and commissioning	62.2
b) Land and Buildings	28.0
c) Other fixed costs	11.3
d) Contingencies (representing 15% of machinery & Civil Works	<u>13.5</u>
Total Capital cost	116.0
Net working capital	<u>13.0</u>
	128.0

The above estimates are based on:

- a) quotations received from machinery suppliers of diaphragm coll.
- b) broad estimates of local costs as indicated by suppliers.

8. SOURCES OF FUNDS:

- 1) It is proposed to raise an equity share capital of She. 48.0 million to meet part of the total cost of the project.
- 2) Term Loan: It is proposed to secure a term loan of She. 80.0 million to finance plant & Machinery and part of local costs.

Repayment of term loan is assumed to be spread over 10 years from the date of commercial production including a grace period of 3 years. The gross interest rate is assumed at 10 per annum.

9. ANNUAL COST OF SALES:
5th year of production Shs. 32.9 million
10. ANNUAL SALES EARNINGS:
5th year of production " 51.88 million
11. EXECUTION OF THE PROJECT: 3 years
12. FINANCIAL ANALYSIS:
 - a) Internal Rate of Return: 8.23%
 - b) Pay Back Period: 8.6 years
 - c) Break Even Capacity: 73%

PART III

To overcome the handicaps mentioned in Parts I and II above following steps need to be taken to alleviate the problems:-

a) TRAINING:

Though this is a long term process it will eventually provide a permanent solution to this problem. We suggest that two pronged approaches should be undertaken at the ministerial and institutional level thus providing these institutions with cadres who are capable of undertaking studies acceptable to local as well as international financing institutions.

- b) At national level consulting institutions be created to undertake studies for industrial institutions. These consulting institutions should be given most project ideas originating from appropriate organizations for them to undertake complete studies which will later be used for investment purposes. At international level institutions like the IBRD, SIDA, CIDA, etc. should provide opportunities to such national consulting firms to undertake studies of projects in their respective countries. Where the above international bodies find that the quality of the studies done

not meet international standards, then such international institutions should provide facilities to improve quality of studies made by local consulting firms.

It is only by this approach of providing such opportunities will the LDCs develop their own consulting firms of international repute.

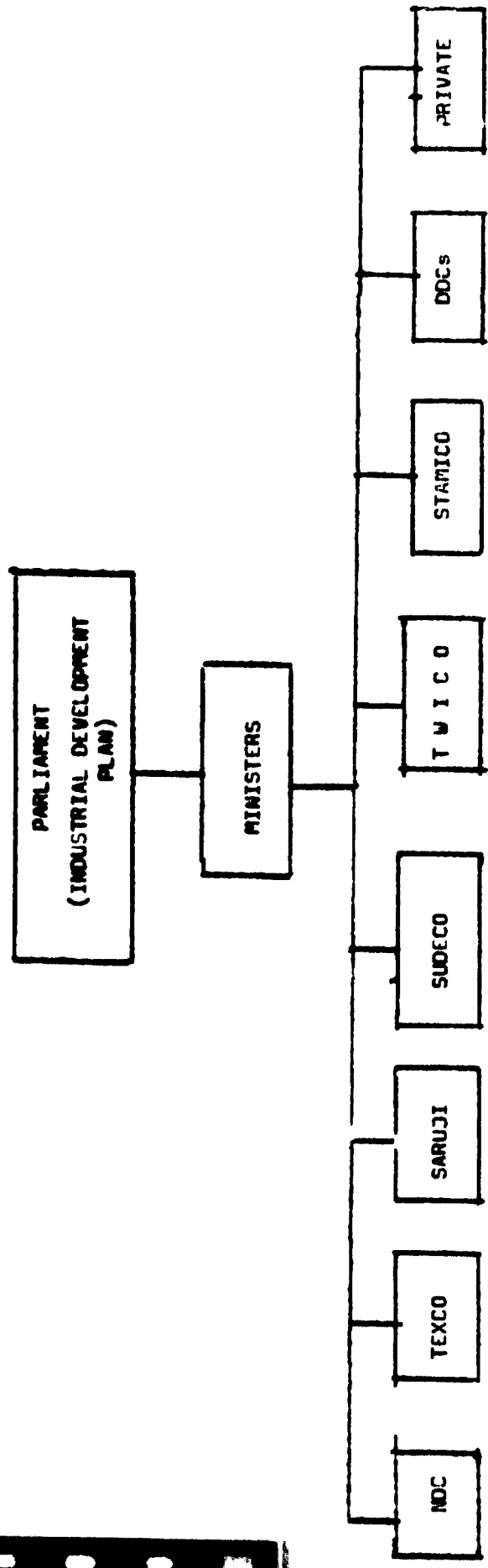
UNIDO ASSISTANCE:

- a) UNIDO assistance could be provided by sending their expert personnel to LDCs to provide expert advice and to work hand in hand with nationals concerned so that when the UNIDO personnel leave the local personnel will have acquired sufficient knowledge to stand on their own.

- b) UNIDO could provide training facilities abroad for personnel from LDCs. This approach will expose the personnel from LDCs to the already established training facilities and provide them with practical experience in the well established and internationally recognised firms dealing with preparation of feasibility studies.

- c) UNIDO could conduct courses in the LDCs by sending their experts for a short-term assignment. This approach will enable more personnel to participate in such courses at less cost than would have been the case if such courses were conducted abroad.

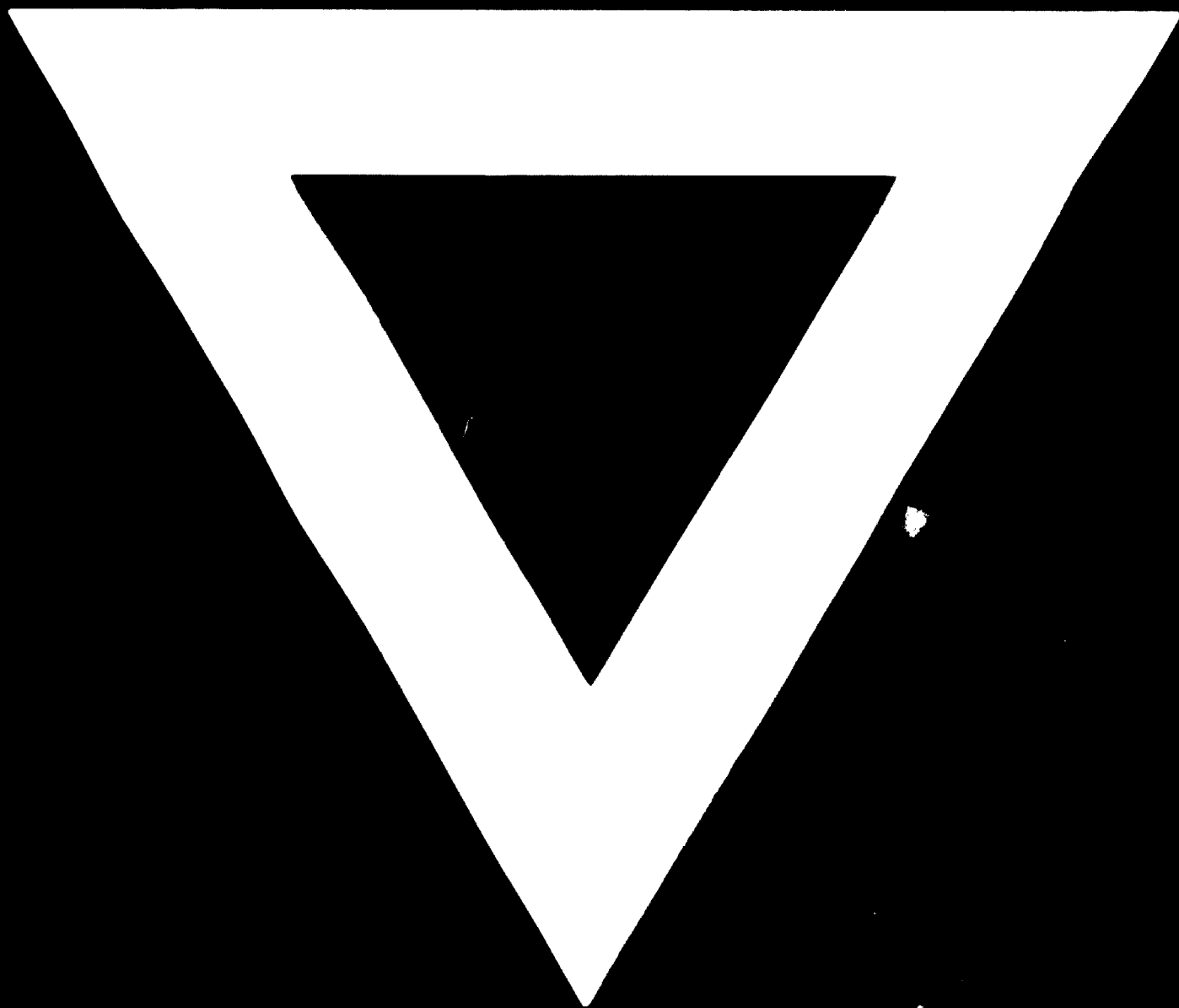
INTERRELATIONSHIPS BETWEEN GOVERNMENT AGENCIES INVOLVED IN INDUSTRIALIZATION IN TANZANIA



- NDC = NATIONAL DEVELOPMENT CORPORATION
- TEXCO = NATIONAL TEXTILE CORPORATION
- SARUJI = CEMENT CORPORATION
- SUDECO = SUGAR DEVELOPMENT CORPORATION
- TWICO = TANZANIA WOOD INDUSTRIES CORPORATION
- STAMICO = STATE MINING CORPORATION
- DOCS = DISTRICT DEVELOPMENT CORPORATIONS

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche

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