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UNITED NATIONS INDUSTRIAL
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INDUSTRIAL SURVEY OF SWAZILAND

Final Report of the Survey Mission

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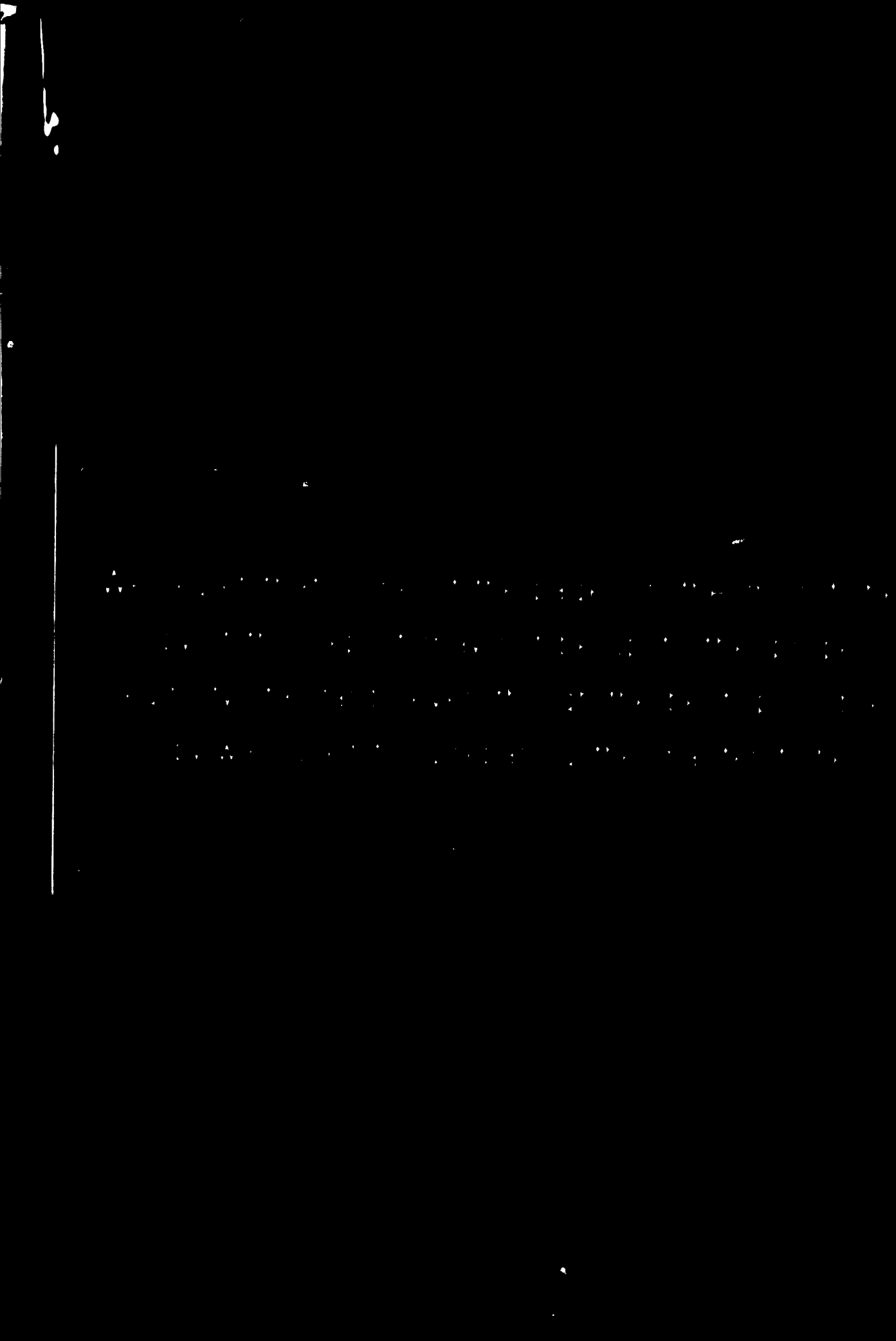

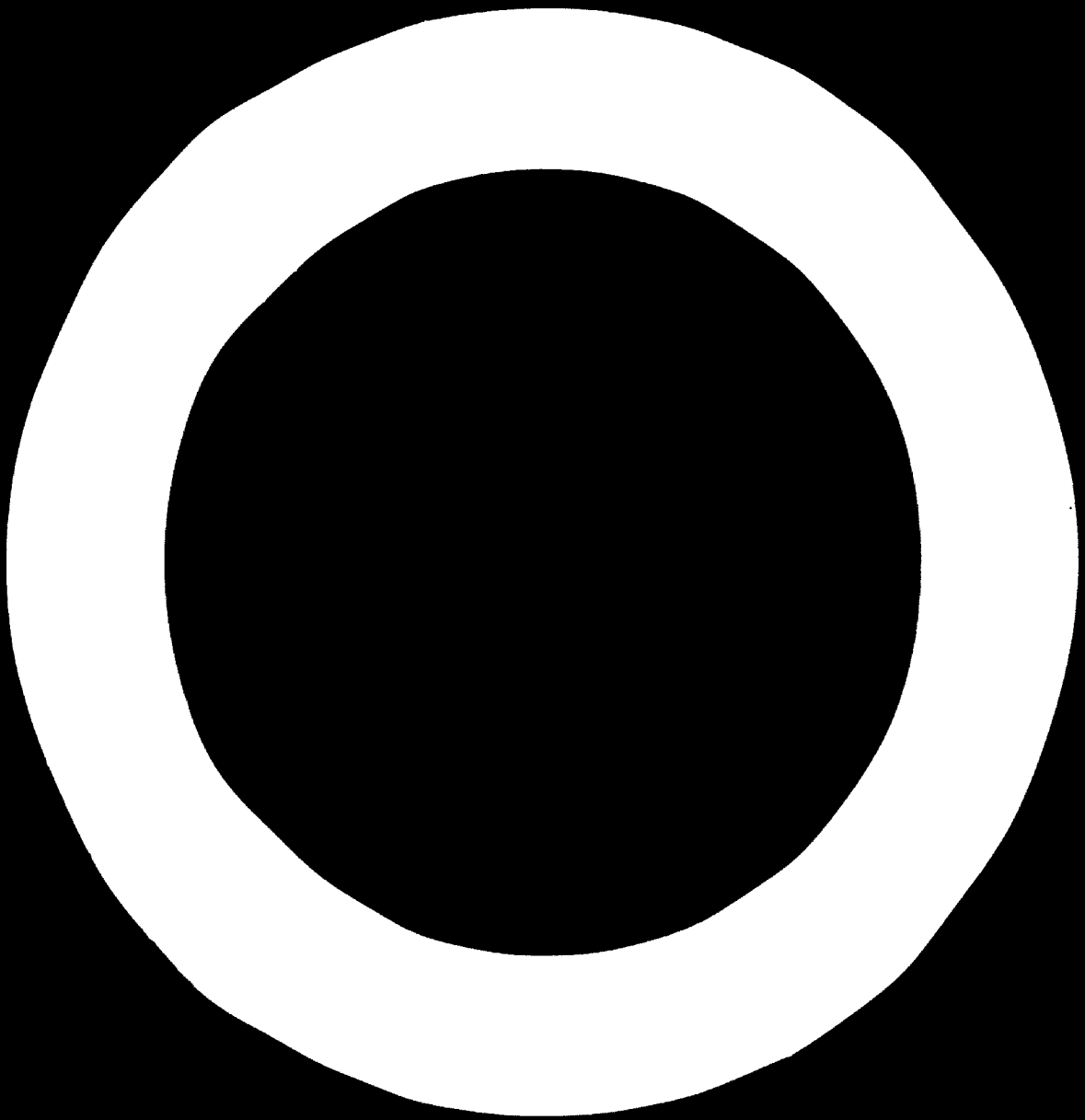

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I. INTRODUCTION

The present industrial survey was undertaken by UNIDO under the SIS programme at the request of the Government of Swaziland. The project was carried out by a Mission team of three experts:

Mr. John A.E. Orloski, Industrial Economist (Team Leader);
Miss Aleida van Oven, Industrial Economist
Mr. Einar Löfroth, Industrial Engineer.

The Mission's field work extended over approximately a four months period. The first expert arrived in Mbabane on March 18, 1970; the others on March 20 and April 3, and all had departed by the end of July. Prior to its arrival in Swaziland the Mission was briefed by UNIDO staff in Vienna in the Technical Co-operation and the Industrial Policies and Programming Divisions.

While the Mission did not stop at Addis Ababa to meet with members of the Economic Commission for Africa (ECA), it did have the benefit of exchange of ideas with a number of ECA officials who visited Swaziland during the Mission's field stay. Close collaboration was also established with the office of the United Nations Resident Representative and with related UNDP and other missions, including the Usutu River Basin Survey Group, the Natal University Transport Study Group, the FAO expert for evaluation of forest resources and their processing, and the ILO Small Scale Industry Project.

The co-operating agency for the team's project was the Ministry of Commerce, Industry and Mines, and effective contacts were established and maintained with the other ministries of the Government. Liaison was established also with the various institutions of the private sector concerned with industrial development such as the chambers of commerce and of industry, the Swaziland Sugar Association, the travel and tourism agencies, and the banking and business sectors. Field trips were undertaken to every part of the country and plant visits were made to practically all of the industrial manufacturing operations. At the same time repeated dis-

cussions were held with industry and business executives and their management staffs, and with farmers, estate farm producers, labour groups, and small traders and entrepreneurs, concerning their own operations and the economy as a whole.

The following Chapter of this report presents the team's main observations and its recommendations for UNIDO technical assistance. Chapters III through IX provide the detailed findings and include a description of existing and planned industries and their supporting facilities and institutions and an outline of current programs for industrial development.

Chapter II: FINDINGS AND RECOMMENDATIONS

A. General Findings

The following general findings and recommendations are based upon the information elaborated in Section II of this report. It is not intended that the reader infer that all of Swaziland's major industrialization features and problems are covered here. The entire report is commended to the reader, but the following points were thought to be of sufficient importance that they should be highlighted separately at the beginning. The order of presentation does not necessarily imply priorities.

1. The Ministry of Commerce, Industry and Mines had a staff of 27 in 1969-70, excluding personnel in the Department of Geological Surveys and Mines. It is this Ministry, however, which is charged with carrying out one of the nation's highest priority objectives: the promotion of industrial development. It would appear inappropriate to assign such a high priority to this objective and then fail to provide the resources to carry out the job. Due to the insufficiency in staff, the Ministry operates under severe handicap in its efforts to carry out all of the necessary research and development work, especially in the area of feasibility and market studies and the identification and follow-up of projects in which investor interest has been generated. Assistance is urgently required, and every effort should be made to see that the new Industrial Development Corporation is not subjected to similar handicaps.

2. It is extremely important that the new Industrial Development Corporation be adequately staffed so that it can actively promote industrialisation on the basis of completed feasibility studies. Close liaison should be maintained with the Investment Promotion Section of UNIDO whose task it is to assist in finding investors for feasible industrial development projects.

3. The incentives to investors and industrialists to establish factory operations in Swaziland are known generally but because they are the result of a series of legislative actions their specific application to a projected investment possibility is not always clear. A new comprehensive incentives law would appear to be desirable from the point of view of

both the potential investor and the government; it would facilitate investment decisions and conserve scarce public administration resources. It would thus be a useful tool for the Industrial Development Corporation, enabling it to concentrate more attention on the technical aspects of the projects themselves.

4. The Economic Planning Office, now greatly reduced in staff, should be built up to full strength as soon as possible. The importance of an Economic Planning Office has been demonstrated here and in many other countries. A fully staffed office is essential to carrying out the many investigations which are required for policy decisions by the Cabinet, and a strong Economic Planning Office would also be able to work closely with the Industrial Development Corporation in the feasibility determinations of potential investment opportunities and to contribute guidance regarding methodology for achieving balanced progress.

5. The absence of a direct railway link with South Africa results in higher transport costs for a large part of the merchandise imports from South Africa and is perhaps discouraging the establishment of some industries which would require fast and direct transport of their products to compete in that market. The Mission thinks that feasibility studies regarding this link have failed to take into consideration social and other national benefits which would accrue from such a route. Many times projects appearing to be uneconomic on a strictly commercial profitability basis are found to be economic when judged against a social profitability background. The future linking of the railroads is of such importance that the broader benefits must be considered.

6. For some Swaziland industries, present and contemplated, the availability of rapid truck transportation directly to the markets is essential. For Swaziland industry, much of the market is in South Africa, but there are severe restrictions placed upon such transportation because of the transportation monopoly of South African Railways. It is essential that the Government of Swaziland seeks a satisfactory solution to this problem. Transport costs make up an important part of the sale price of a commodity and there appears to be much room for improvement in the present transport system.

7. The continuing importance of the minerals industry's contribution to the economy will depend on unceasing geological exploration and surveys of Swaziland's mineral resources, carried out directly by the government or with the assistance of the Geological Surveys and Mines Department, Resources and Transport Division of The United Nations Secretariat. It is also essential to study beneficiation techniques for iron ore and the possibilities of an iron and steel industry so as to enable the Government to make prudent decisions regarding mineral utilization in the country.

8. Some basic reorientation of the education system appears needed. Considering that the livelihood of the majority of people is tied to agriculture, and that agriculture will continue to be the largest employer for many years, it is believed that the education programmes, at least in the elementary schools, and to some extent also in the secondary schools, should be more strongly oriented toward agricultural techniques and practices. Similarly, secondary education should be more oriented to business and industrial skill requirements.

9. Tourism can be a very effective method of building up capital and expanding business and industrial activity, and excellent prospects for tourism exist in Swaziland. The purchases of tourists - handicrafts, clothing, services, textiles etc. - permeate the entire economy, contributing to increased business at all levels but especially to earnings by small entrepreneurs and handicraft producers. The expansion of the hotel facilities in the country is a key factor and promotion in this area should continue. The promotion of tourism itself should receive added assistance from the Government and data should be collected on tourist visitors so that planning for tourism could be more realistically based. Brochures, and maps and other information should be prepared as the basis of information for a Tourist's Guide To Swaziland, to apprise potential tourists of the attractions available.

10. Air services to Swaziland should be expanded to serve the country better and to enable air tourists to travel to Swaziland more easily. Air freight transport also has possibilities which are not being promoted. Air lifting of fresh fruits and vegetables to nearby African markets appears to be feasible and represents an area for further study.

11. Because agriculture and industry have several basic interrelationships, the promotion of a healthy and growing agriculture sector will in turn promote the growth of industry. Increases in farmers' cash incomes redound to increased consumption of manufactures. Also increased output of food and fibre can be utilized as inputs by manufacturing industries. Accordingly, based on observations of the team, the following general recommendations are made.

a) A thorough review of the agricultural extension services should be conducted with the goal of making them more effective.

b) A basic deterrent to increased agricultural output is imbedded in the existing tenure system. Because much of the land is communally owned, it cannot be offered as collateral for credit. If traditional agriculture is to be commercialized, some solution to this problem must be found, either through alterations in the tenure system or through the establishment of government credit institutions. In this regard, the experience of other countries, such as Mexico, in the extension of credit to communal agriculture should be investigated.

c) The Government should encourage the development of various types of co-operatives among small scale farmers.

d) The Government should sponsor or request assistance for studies regarding the marketing of truck farm production.

12. The implicit division of business representation between the Chamber of Commerce and the Commercial Amadoda results in the views of many small Swazi entrepreneurs not being widely disseminated. Although earlier attempts to bring the two organizations together have not been successful, new efforts should be made. Understandably there may be organisational reasons for this dual structure, but this mission believes that the small scale entrepreneur suffers as a consequence.

13. The work being done in the small enterprise and trade sectors requires much more input to make the desired impact on the economy and to achieve the defined objectives. What is required is technical assistance on a continuing basis from experienced factory owners and businessmen in the woodworking, metal-working and textile trades, to help set up and train

local people to operate such factories. The UNDP channel for obtaining such expertise should be explored with the UNDP Resident Representative.

14. The Mission is concerned that the Government's policy toward small enterprise development is not fully understood by the small businessman and entrepreneur. The emergence of small entrepreneurs is a healthy development and should be encouraged. Small scale entrepreneurs should be guided, encouraged, and even aided financially in getting their operations started. However, there incentives must be consistent with general Government policy regarding industrial development.

15. The Shiselwani District is the least developed of the four district areas. Lacking power and good road connections and possessing little industry, progress has been almost at a standstill. Yet it nevertheless offers good prospects for many activities. It is an excellent forest area, and the economic aspects of additional man-made forests should be studied. An existing saw mill could be expanded if increased forestry resources become available. This is also a large livestock-producing area, and there appear to be some opportunities for small tanneries and small leather goods shops. Tobacco and cotton are also important crops which should be assisted and encouraged. There are also some small mines in the area which could offer employment to perhaps a hundred workers, if approval for exploitation should be obtained. The pyrophyllite mine now exporting its production to South Africa could be the raw materials source for a chinaware or ceramic industry. Some of these apparent opportunities should be further examined by the new Industrial Development Corporation which should provide marketing guidance with regard to these prospects.

16. The Industrial Development Corporation should carry out feasibility studies of industries that could be based on the further processing of mineral ores that are for the most part being exported. These include iron ore, asbestos, kaolin, coal, pyrophyllite, barytes, and silica. If such completed studies were available, it is believed that the opportunities indicated would be quite attractive and investor interest could more quickly be developed.

17. The location of the prospective thermal plant in the area of Mpaka (where rail, highway and other facilities, including water, would all be available) raises a question about the desirability of locating a second industrial estate in that area. As soon as the thermal plant project advances beyond the present feasibility studies regarding the suitability and adequacy of coal deposits, a study of the pertinent factors pertaining to an industrial estate should be undertaken.

18. The dairy industry in Swaziland has been in difficulty for many years. Yet on the basis of the size of the cattle industry, including dairy cattle, it appears that a better utilization of dairying should be made. It would be highly desirable to rejuvenate the industry, but it seems the problems are too deeply seated to allow a cursory evaluation. It is therefore suggested that the services of a special UN expert be sought to make a study of the industry. The expert should be experienced enough to recommend both immediate and long-term steps to place the industry on a self-supporting and growth basis.

19. While it is understood that the Government's policy of localisation has been formulated only after much deliberation and consideration of its full significance to the nation's growth objectives, the mission feels that this policy could unknowingly bring about some effects that are counter to its original purposes and which may not have been foreseen. Certainly it is not intended that this policy be interpreted so as to discourage the establishment of industry in Swaziland and yet each potential investor must question how this policy will affect his investment. The answer is particularly significant when the plant under consideration must depend on a well-trained technical staff to be successful.

It is, of course, up to the Government of Swaziland how fast they want to go with replacement of expatriates by Swazis, knowing the probable impact on development. A preference may sometimes be given to a slower pace of material progress as a price for a faster movement of Swazis to responsible posts. Where this is done, it may also involve a significant degree of trial and error. Working in this way may result in the making of a valuable member of society in one case while it may, in another case, lead to discouragement of the person concerned and those working with him.

In Chief Udoji's report "Training and Localization of Swaziland Civil Service," guidance was given regarding the question of which positions in the Civil Service were suitable for rapid localization if adequate training were given, and for which positions longer delays would be advisable. Although it might be more difficult to give a similar projection for the private sector, with its greater variability, indications of policy would be useful, giving potential investors some guidelines to plan by. When drafting such indications, advantageous and disadvantageous effects of localising the different occupations will have to be weighed against each other, carefully and continuously.

20. In addition to the appended prefeasibility studies, the Mission identified a number of other manufacturing opportunities which it believes warrant deeper investigation, especially since many of them appear to involve products readily marketable both within and outside the Customs Union area. Some of these such as radio assembly, cigarettes, air-conditioner assembly, tractor assembly, light agricultural equipment and tools, cosmetics manufacture, rubber products, and wigs are attractive possibilities because the availability of low-cost labour, wide market acceptability of Swasiland's products and other advantages which would enable a manufacuter to produce them at a competitive cost. Many of these products are not produced in sufficient volume in South Africa to satisfy domestic demand. On the other hand a Swaziland producer, unlike a South African producer, could also sell in the African markets to the north.

There also appear to be many excellent opportunities for establishing industries based on the further processing of local primary and secondary resources and products. Among these are cotton textiles, footwear, leather goods, china tableware, soap production, edible oils, cattle feed, distillation of cane spirits, beneficiation of iron ore, paper and paper products, wood and metal furniture, cotton mattresses, sterile cotton, condensed milk and cheese production. Preliminary investigations have been made regarding most of these industrial prospects, and they indicate that sound industries could be established in Swasiland. Additional data concerning these and other possibilities are found in the body of the report under the general topic of "Potential for Industrial Development" and under the sub-topic "Small Scale Industry Opportunities".

21. An important project in which the Mission has been able to assist was that of the prototype tractor designed by the engineering staff of the Agricultural College and University Centre at Luyengo. The design of the tractor, its low cost, and its peculiar suitability to African agriculture offers possibilities for basing a production or assembly industry in Swaziland that would be producing for a market estimated at upwards of several hundred thousand in the next five years. The Mission believes that the time has arrived when every effort should now be made to enter into an agreement with known interested companies so as to concentrate on solving the remaining technical problems in order that commercial production of the unit can get started at an early date.

B. Recommendation for Technical Assistance:

Although Swaziland has a relatively large public administration cadre, the Ministry of Commerce, Industry and Mines is severely understaffed. This relatively new organization has the major share of responsibility for promoting industrial development. Considering the progress to date, it has been very active and successful; however, its very limited staff is severely overextended. The necessity to increase its services, combined with limited budget and limited staff, makes international assistance in the area of staff provision and training particularly desirable. The Office of Economic Planning and the incipient Industrial Development Corporation would also benefit greatly from international assistance.

Because of the importance of industrialization in Swaziland's economic plans and because the Ministry of Commerce and the other agencies concerned with industrial development need considerable assistance to improve and supplement their operations, the following recommendations are made for further technical assistance.

1. An industrial economist with some background in industrial finance should be requested to work as a technical assistance expert with the new Industrial Development Corporation. In addition to assisting in the organization and operations of the corporation, this expert should be capable of assisting in the promotion of investment opportunities uncovered by other technical assistance units or by various units of the Swaziland Government.

2. Assistance should be requested for the Office of Economic Planning in the form of an CPEX expert (economist) to help in the formulation and implementation of planning and programming economic development. This office is responsible to the Prime Minister and should have assistance in planning and programming at the macro level to insure an optimum allocation of resources and effort among the various economic sectors.

3. It is recommended that there be established a three-year Special Fund Project that will allow for highly specialized, yet flexible, assistance over a wide range of activities. The large variety of resources and consequent project possibilities make it infeasible to provide technical

assistance experts to meet all contingencies. Further, based on the scarcity of counterpart personnel, it is unlikely that large numbers of United Nations experts could be profitably absorbed into the machinery of government over a relatively short time span. For these reasons it is recommended that a team of four experts serve as a nucleus for UNIDO assistance. The team should be composed of an industrial economist who will act as head of the project, co-ordinating the work of the team with the expressed needs of the Ministry of Commerce, including project preparation and project evaluation. Because Swaziland has a rich resource base to support future industrialization, there should be included an industrial engineer, who, in addition to supplying expert advice to various echelons when needed, can do prefeasibility studies and project evaluations.

A marketing expert might be included to deal with the complex market situation which includes the customs union market, East African markets, and general export markets in addition to domestic marketing problems. Also, the project should include a data-information expert on a short-term basis (4-6 months) to assay data requirements for planning and programming at both the macro and project levels. The project should probably include an adequate budget for consultants and other expert advice on a short-term basis, so that the experts connected with the project would have access to the advice of consultants over a wide range of categories from resource surveys to feasibility studies and marketing surveys and other specialized advice. It is believed that this type of organisation will offer a maximum of assistance while, at the same time, minimising both the cost of assistance and the strain on the presently minimal resources of the Ministry of Commerce. A fellowship component should also be included to provide for specialised training of counterparts.

4. In order that the Special Fund project be implemented as soon as possible and that additional expert advice be made quickly available to Swaziland, it is recommended that a UNIDO expert (industrial economist) be requested immediately. This expert should begin the groundwork for the SIS project. This task could conceivably be carried out by the UNIDO expert currently assigned to the Ministry of Commerce, in which case no new request would be required here.

5. Based on the prefeasibility studies appended to this report and extensive discussions with the pertinent expert staff members of the Industrial Technology Division of UNIDO, it is recommended that the Government of Swaziland request feasibility studies in the following project categories.

a) a pulp mill and the possibilities of a newsprint mill
b) tannery
c) assistance in the industrial utilization of asbestos.

6. Based on the observations of the survey team of the availability of resources and on discussions with the pertinent expert staff of the Industrial Technology Division of UNIDO, prefeasibility studies are recommended in the following areas:

a) clay products, including bricks, pottery and chinaware
b) iron and steel industry.

7. Based on the appended prefeasibility study and expert advice of the pertinent staff of the Industrial Technology Division of UNIDO, it is recommended that the Government of Swaziland move forward with the promotion of an investment for the manufacture of dry cell batteries. It is the expert opinion that the size of the present Customs Union market (as measured by imports) and the state of the industrial parts as they pertain to the manufacture of batteries warrant investment without further feasibility study. In these efforts, the Government of Swaziland may wish to request international assistance, possibly from UNIDO.

8. There is a tremendous shortage of skilled workers and professionals in Swaziland. It is recommended that the Government pursue with the UNDP Representative the feasibility of requesting a joint ILO-UNIDO mission to determine the training needs of Swaziland and set up a training programme.

9. Failing the foregoing, the Government should request a flexible number of fellowships through both ILO and UNIDO for the training of skilled workers and technicians (ILO) and postgraduate training (UNIDO).

10. The Government of Swaziland is in possession of a study entitled Report on Maintenance and Repair compiled earlier by a visiting UNIDO expert. The Report makes specific recommendations regarding possible United Nations assistance in the area of maintenance and repair. It is highly recommended that such assistance be requested, especially in that it bears heavily on the nation's ability to train workers in certain industrial skill areas where the requisite machinery and equipment is not presently available. The long-term benefits to industrial development of this potential assistance can hardly be over-emphasized

Chapter II CURRENT INDUSTRIAL STRUCTURE

A. General: Swaziland, despite its small size, is richly endowed with natural resources and has already developed a fairly diversified economy. The majority of its people are engaged in subsistence farming and cattle raising, although a rapidly developing modern industrial sector has emerged during the past decade. The country, despite the attainment of independence only in September 1968, has a long history of harmonious race relations.

The per capita income is quite high in comparison with other African developing countries (estimated R 140 in 1969) *) However, while the growing pace of industrial development is creating more opportunities each year for workers to move into the market economy, the majority of the people have incomes substantially below this average.

Industrial development is centred on mining and on the processing of agricultural, livestock, and forestry products. Production is strongly export oriented, and therefore competitive in world markets. Total exports were valued at R 48 million in 1969 compared with R 12.6 million in 1961. As contrasted with its small national population, the domestic market for Swazi products comprises the entire Customs Union area, totalling over 20 million people, which includes the highly developed South African market. The U.K. also continues to be an important market. Trade agreements with African countries to the north have also been entered into with a view to developing increased trade with these areas.

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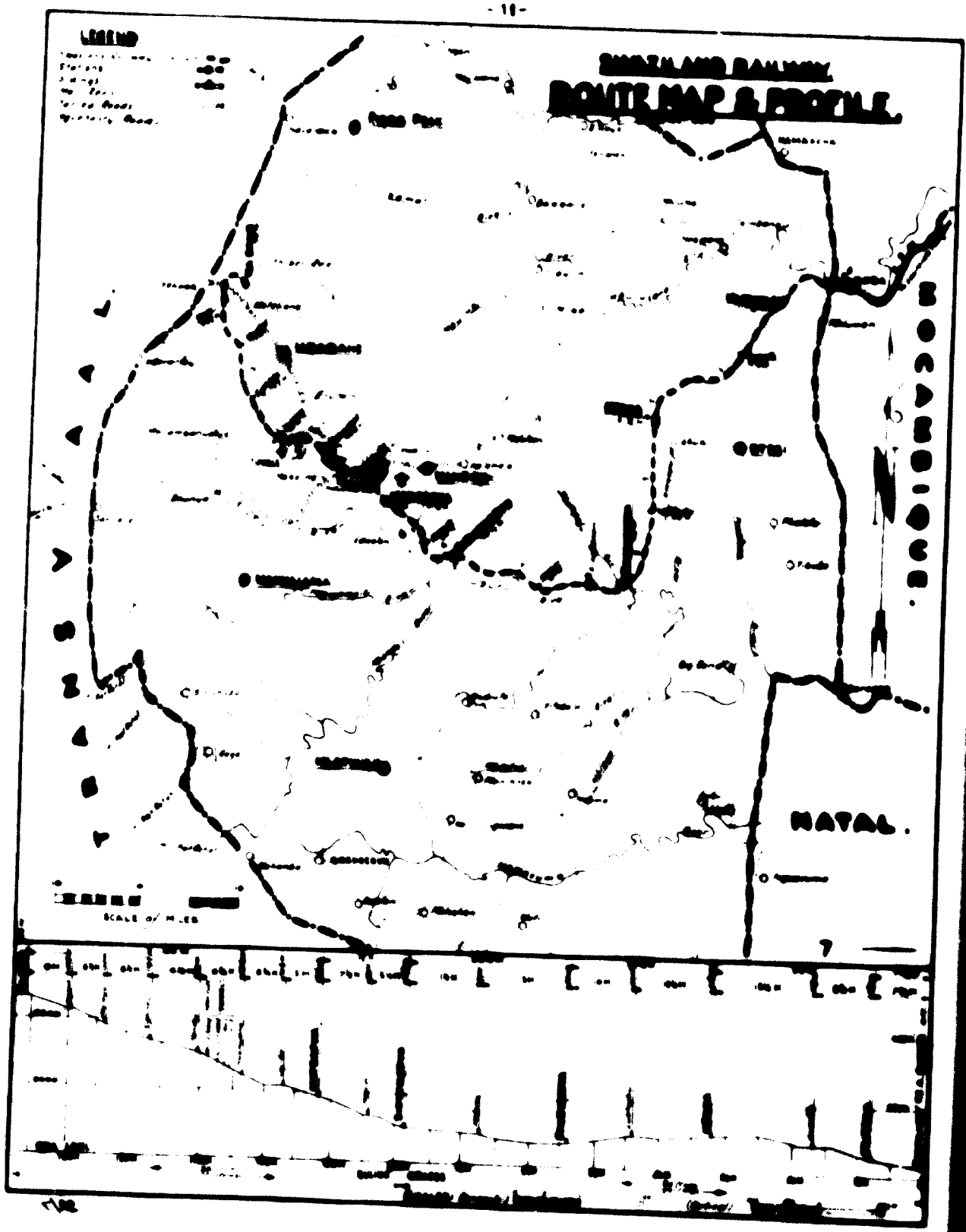
*) In Swaziland, the medium of exchange is the South African Rand, herein denoted by "R". The exchange rate is approximately 0.72 Rand per US Dollar.


LEGEND
SWAZILAND RAILWAY
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Mining production comprises iron ore, asbestos, coal and smaller amounts of kaolin, barytes and other minerals, the value of which totalled R 19.[illegible] million in 1969, a 7% increase over the 1968 figure of R 18.5 million. Sugar cane is the most important agricultural crop produced. Other important farm crops are citrus, pineapples, rice, maize, sorghum, cotton and tobacco and to a lesser extent beans, ground nuts and bananas. Animal husbandry is a very important activity of the Swazi - 70% of the cattle are owned by Swazi farmers and both meat and cattle hides are important exports. Wood pulp production is the largest forest products industry, accounting for production valued at R 7.1 million out of a total for the forestry products industry as a whole of approximately R 9 million in 1969.

Corn is the main crop of the subsistence farmer but little of this production moves into the market. The principal cash crops are sugar cane, cotton, rice, citrus, pineapples, tobacco, and to a limited extent corn. Through a series of settlement schemes the Government is placing more Swazi farmers into dependable crop production, giving them guidance and technical assistance to raise productivity and marketability of output. Because the four distinct topographical areas which make up the country include widely diverse agricultural conditions, many crops can be grown; in some instances planting can be carried out on a year round basis. Climatic factors greatly influence the yields of the rain-fed crops; drought conditions are not uncommon. On the other hand, on the large irrigation areas, a very wide range of fruits, vegetables, and other crops can be grown on a dependable basis. A plentiful supply of water for irrigation and other uses is one of the nations richest assets. In 1969, some 70,000 acres were under irrigation, mostly in sugar. A United Nations study of Swaziland's water resources indicates that the present irrigated area can be greatly expanded on an economic basis and that there is ample water to meet both international commitments regarding water flows and Swaziland's agriculture and industry requirements as well.

Of a total estimated population of 400,000 in 1969, the labour force consists of about 130,000 people. Approximately 50,000 are employed regularly as wage earners, salary workers and entrepreneurs. Approximately another 50,000 to 60,000 are engaged in farming on a subsistence basis with little or no participation in the market economy. The balance consists of migratory workers, the underemployed and those unable to find employment. Most of the Swazi workforce is unskilled However, literacy is now on the increase and more people are seeking and receiving training and get encouraged to continue their education and vocational studies.

A well developed infrastructure was created in the pre-independence period and is being maintained, improved and expanded. During that period the nation's only railroad was built, a 148 mile long line running from the iron ore mine in the Northwest of the country to the eastern border where it links with the Mozambique railroad to Lourenco Marques; electric power production has been expanded to meet industry's growing demands, the Matsapa Industrial Estates centre was established and developed; the telecommunications system was expanded; new schools were built, the University of Botswana, Lesotho and Swaziland was opened and the teacher staff in the public school system was greatly enlarged; an industrial training school was established and hospitals were built. A five-year plan of economic development has also been prepared and is now being implemented under the Government's budget.

Most industrial development is centred in four distinct core areas, each in turn drawing from and serving a wider peripheral area. These areas are: The Mbabane - Manzini - Malkerns core; the Big Bend core; the Tshaneni - Nhlume core; and the Havelock - Piggs Peak core. Although occupying only approximately 15 % of the overall territory of the country, these four hubs are responsible for 80 to 90% of the total output of primary and secondary commodities, and offer employment to at least 80 % of the workers engaged in those private enterprises employing 10 or more workers. The primary core - Mbabane - Manzini - Malkerns - is the most comprehensive and includes the Matsapa Industrial Estates area, established in 1964, which alone contains nearly 20 industrial plants and service organisations.

Indicative of the nation's dual economy is the fact that the combined core areas account for only about 22 per cent of the African population of the country whereas 7/ per cent of the Europeans in Swaziland live and work there.

Government policies are an important factor in attracting industry and investment to the country. Important tax incentives are granted to encourage private investment and additional measures are under consideration. Small-scale industry is being promoted and technical and financial assistance offered through the Small Enterprises Development Company and the Small Enterprises Promotion Office. The Government has announced that an Industrial Development Corporation will be formed shortly so as to centralize responsibility for the growing volume of work required in promoting industrialization. This corporation will be structured so that it also can share on an equity basis in the development of industry schemes in which some Government participation may be desired. It is stated that in carrying out its responsibilities, its decisions will be based strictly and solely on a project's economic considerations.

A reflection of Swaziland's economic growth is the increase of the Government's revenues in recent years. Government revenue in 1965-66 (In 1969-70 the original revenue budget was fixed at R 10.3 mill.) was R. 5.2 million. Following renegotiation of the Customs Union and the arrival at a new customs duty distribution formula for Swaziland, which resulted in more than doubling the previous revenue from this source, the budget was raised to R 15.2 million. The increased amount was more than enough to offset the deficit, which in the past was financed from British grant aid, and to give Swaziland the first surplus in many years. By balancing the budget the Government was able to achieve one of its two vowed objectives, as expressed in its Post Independence Development Plan. The other - increasing the income levels and the living standard of the people as a whole - is now being more strongly promoted. While some progress has been made, it is estimated that only small budgetary increases can be expected in the year immediately ahead and that little will be available for capital development. Funds for capital development were made available in the past by the United Kingdom, and this policy will be continued for at least the next three years, during which Swaziland has been alloted R 10 million.

The surge of new industrial investment during the past five years has slowed somewhat, but the eagerness of the country to achieve the objectives outlined in its Post Independence Development Plan is undiminished. Tourism, meanwhile, has taken on a new importance as an earner of foreign exchange and a stimulant to business. A Department of Tourism has been established and plans are being made for publicizing the country's attractions more widely, especially in neighbouring areas. More hotels are needed to house the growing number of visitors. Prefeasibility studies are being made regarding the internal processing of primary materials now being exported, and new investment opportunities are being brought to the attention of potential investors. New stimulus is being given to agricultural development. There is recognition that the most important task is to create jobs, both in industry and in agriculture, but especially in agriculture, where the majority of the Swazis earn their livelihood. It is only through this double-barrelled approach involving both industry and agriculture, that the earning capacity of the people can be significantly raised.

The following table illustrates Swaziland's economic growth by means of selected indicators: -

	1950	1960	1965	1968
Irrigated area (acres)	5,000	29,000	63,000	70,000
Marketed production of main cash crops (million Rand)	0.05	3.11	6.59	10.28
Cattle slaughtered or exported	46,000	55,000	51,000	59,000
Conifer and gum plantations (acres)	70,000	190,000	193,000	194,000
Mineral production (million Rand)	3.43	5.65	10.34	18.28
Sugar manufactured (short tons)	0	40,000	114,000	165,000
Production of Wood Pulp (short tons)	0	0	101,000	99,000
Electric Generating Capacity (megawatts)	0	0	0	47.3
Length of main and secondary roads (miles)	1,100	1,360	1,400	1,600
Motor vehicles in use	?	5,400	8,700	10,600
Enrolment in primary and secondary schools	15,000	36,000	52,000	68,000

B. The Sugar Industry: The production of sugar cane is one of Swaziland's major industries. It is grown entirely on irrigated land which comprises about 56% of the total area under irrigation. Sugar production, which was started in 1957, is centred on two modern mills, located at Mhlume and Big Bend, each producing 65,000 short tons per annum. Sugar production in 1969 totalled 132,532 tons. Most of the crop is exported to the United Kingdom and Canada, with small amounts being absorbed by nearby African countries and the United States. About 7% of the annual production - some 12,000 - 14,000 tons - is consumed locally. The value of sugar exports in 1969 was R 10 million. Exports of molasses last year were estimated to be valued at R 144,000. The mills at present do not operate at full capacity. While production could be expanded - there is adequate irrigated land available - the limitations of the market are the governing factors.

About half of the sugar cane is grown on two big estates operated by the sugar mills, and the other half is grown mostly on smaller holdings. The importance of the sugar industry, in addition to its large export earnings, is its standing as the largest single employer in the country. About 20 % of the wage and salary earners in Swaziland are employed in sugar growing and manufacturing. Including family members, altogether about 30,000 people are dependant on the sugar industry for their livelihood. In addition to the estate operations, there are about 155 farmers engaged in the production of sugar cane for the mills. Of these, 140 are Swazi farmers whose combined acreage accounts for 4 to 5 percent of total acreage devoted to sugar cane production. All of this production by Swazis is within a Settlement Scheme, started by the Commonwealth Development Corporation (C.D.C.) for the purpose of utilising the sugar industry as a means of moving traditional Swazi farmers into more profitable agricultural production.

The Mhlume (Swaziland) Sugar Company Ltd., which operates one of the two mills, is wholly owned by the C.D.C. The other mill operator, the Ubombo Ranches Ltd., is a private company with C.D.C. participation. Each of these companies has about 10,000 acres devoted to sugar cane.

Up to now Ubombo Ranches do not operate a Settlement Scheme similar to the one at Mhlume.

Manufacturing: The two sugarmills are both about 20 miles from a railway station. Sugar for export is therefore first trucked to the rail head and then transported to Lourenzo Marques in Mozambique. Distances by road to rail and rail to port are 74 miles from Mhlume and 120 miles from Big Bend. Mhlume produces raw and mill white sugar, Ubombo raw and refined. Most export sugar is delivered raw. Molasses is exported mainly to U.S.A. and Canada. The possibility of producing industrial alcohol in Swaziland, however, is being considered.

The mills work 24 hours a day, on a 6½ day week basis and grind about 160 to 170 tons of cane per hour. They have a grinding season of 32 to 33 weeks, from May to December. This is a long period compared with sugar grinding seasons in other parts of the world. Each mill produces on an average about 85,000 tons of sugar per annum. Bagasse is used as the major fuel for power production; electricity supplied by the Electricity Board is used to supplement power generation needs. Near the end of the season when the rains start, productivity is very much lower than in the dry months. The problem of holding cane cutters on the job at this time is also difficult in view of their desire to tend to their own plantings.

An investigation of the length of the grinding season most economical to Swaziland could be useful. The capacities of the existing mills would, however, not allow a significant shortening of the season. On the other hand the building of a new mill involves many issues, the most important of which is marketing.

Marketing: Although sugar consumption per capita in Swaziland is relatively high for a developing country, viz. 65 lb. per annum (50 lb. per person if sales to industry are excluded), domestic consumption amounts to only about 7.5 % of total production. For the year 1969/70 it is estimated that about 13,000 short tons are consumed domestically. About 3,500 tons are sold to the sweet factory and the fruit cannery. It is estimated that 75 % of domestic consumption is used in native home beer making. Changes in domestic crop production and sales are quickly reflected in local purchasing power fluctuations - the decline in production caused by the drought during the past few years has reduced cash incomes and present consumption is now lower than average. Attempts are being made to expand the use of sugar and its consumption through better distribution facilities and by drawing attention to its value as a source of energy.

Until 1965 Swaziland sugar export sales were integrated in the South African sugar marketing system. When South Africa left the Commonwealth, Swaziland became an independent exporter. The Swaziland Sugar Association was then established as a statutory body, representing both sugar growers and millers. The Association is a signatory to the Commonwealth Sugar Agreement (C.S.A.). It buys all of the sugar produced by the mills and controls all sugar marketing. In addition to the C.S.A. Swaziland has quota allocations under the International Sugar Agreement (I.S.A.) and the United States Sugar Quota. Under a mutual arrangement between the two countries Swaziland does not market any of its sugar production in South Africa.

The following table compares sugar and molasses exports with total Swaziland exports in the period 1963 - 1969:

Year	Total Exports	Of which Sugar and Molasses	Sugar and Molasses as % of total Exports
	R	R	
1963	22,111,200	8,331,000	27,7
1964	22,690,500	7,810,700	34.4
1965	30,762,000	8,241,900	23,8
1966	38,385,900	10,563,700	27,5
1967	41,624,600	10,055,500	24.2
1968	42,105,700	8,252,200	19.6
1969 (est.)	.....	10,520,000	.....

Swaziland's exports under the various sugar quota agreements are the following:

	In short tons
Commonwealth Sugar Agreement	90,200
International Sugar Agreement	61,600
U.S. Sugar Act	7,175
	158,975

The negotiated price under the C.S.A. fell in rand equivalent with the devaluation of sterling in November 1967. This drop in value, occurring at a time when the free market price of sugar was at a low level, decreased the export value of sales that year by about R 1.2 million. This situation improved somewhat after the conclusion of the new I.S.A. at the end of 1968 and was reflected in the export values of sugar in 1968 and 1969, namely R. 7.7[illegible] million and R. 10.03 million respectively. The negotiated price under the C.S.A. represents about R 74.40 per short ton. The price under the U.S. Sugar Quota was about R 94.30, and the free market price was about R 5[illegible].00 per short ton. Free market exports are made to Canada and Zambia (refined sugar), and small amounts to other African countries. Sales in the year 1968/69 were as follows:

Sugar Sales in 1968 - 1969 by Market and Amount

Market		Short tons	%
United Kingdom		97,725	60.5
Free Market		45,002	27.9
Canada	37,795		
Zambia	6,295		
Malawi	720		
Rhodesia	192		
United States		6,760	4.2
Local Market		12,043	7.4
		161,530	100.0

Swaziland is currently seeking a sizable increase in its quota in the United States and a request for such increase has been presented to the United States Government.

Employment: The number of persons employed in the sugar industry was 11,510 in 1968, or about 22% of the total number of employees for the country as a whole. These were divided as follows: -

	Total	Of whom, Africans
Sugar cane growing	10,030	9,840
Sugar Milling	1,480	1,320
	11,510	11,160

In addition there are an estimated 155 independent, large and small, sugar growers.

The following table shows the average earnings of a Swazi employee working in the Mhlume mill and on the Mhlume estates, including fringe benefits:

Cost per Swazi Employee per annum

	In factory Rand	On Estates Rand
Money Wages	400.00	250.00
Housing	50.00	70.00
Rations	60.00	75.00
Medical Services	10.00	10.00
Total	520.00	405.00

Training and Social Facilities: Sugar manufacturing is one of the industries where, because of the number of people involved, a fairly rapid degree of localization is possible. Both mills have training programmes where on-the-job training is carried out, and other employees are sent to the Swaziland Industrial Training Institute, the Agricultural College or abroad for special training. Mhlume recently started a programme of management training by selecting Swazi secondary school leavers and placing them in management training posts in the Company. As indicated above, both sugar mills provide housing and rations for employees, and each also has a clinic and offers free medical service.

C. The Mining Industry: Mining plays a most important role in Swaziland's economy. In the 1880's, gold mining was started at Pigg's Peak and flourished for about 25 years. Gold mining has been revived from time to time, and there is renewed interest at the present although there has been no such mining in the past few years. Next came tin, which was an important mining activity in Swaziland for the first forty years of this century. Asbestos came into production in 1939, and for many years it was the nation's principal export product. In 1960 asbestos exports accounted for R5,572,958 or 98.4% of the total value of all mineral exports in that year. While still ranking high in the industrial make-up of the country, it now has been outstripped by iron ore production which was started in 1964. Coal mining (which also started in 1964) has grown slowly, but its potential importance is enormous, especially if the proposed thermal power plant is built. Small quantities of quarry stone, kaolin, barytes and pyrophyllite are also being mined.

The export value of minerals demonstrates the importance of the mining industry to Swaziland. In 1963 and in 1969 exports were valued at R 1 .3 and R 19.5 million respectively, compared with total exports in those years valued at R 42.1 million and R 4[illegible] million respectively. In 1969, exports of asbestos went principally to the United Kingdom with 2 000 tons going to Belgium and lesser amounts to the Irish Free State and South Africa. Iron ore is exported almost entirely to Japan; coal to Kenya and Mozambique; and kaolin, barytes and pyrophyllite, to South Africa.

The number of employees, directly involved in the mining industry was 2,603 in 1969.

(1) Iron Ore: While the existence of high-grade iron ore deposits in Swaziland was known for many years, iron ore mining was not begun until 1964. Initiation of production however, was not an easy task. Located in the western part of the country with no rail link to carry the ore to market, the decision to commence mining of the Ngwenya ore body developed from the interest of several large steel mills in Japan, which was translated into a 10-year formal contract to buy 14.5 million long tons of high grade lump ore having an iron content of some 64%. To solve the transportation problem, a railroad stretching from the ore site at Kadake to Mozambique near Goba was built in the short span of 27 months. There it joins the Mozambique railroad. In late 1964 the first trainload of iron ore was shipped over the new railroad to the port of Lourenco Marques. Iron ore exports are now among the country's most important foreign exchange earners. Exports in 1969 were valued at R 9.9 million. The mine also offers employment to nearly 500 people. Ngwenya is the only iron ore being worked at present.

The contract with the purchasers was amended in 1966 to include the sale of 5.1 million long tons of high-grade fine ore. In 1970 further contract amendment provided for the purchase of 7.4 million tons of medium-grade ore, deliveries to be started in 1971 and continuing into 1979. Japan is the only buyer of Swaziland's iron ore, except for a small quantity (194,000 tons) that recently has been sold to West Germany.

So far geological investigations have not located additional high-grade ore bodies similar to that at Nguenya. At the present rate of mining, the high-grade ore body is expected to be exhausted by 1979. There are a number of large medium-grade iron ore deposits in the country, not to mention the large low-grade reserves at Nguenya. With sales of ten year's production already contracted for, prospecting is continuing in order to assure the industry's future. Among the investigations being carried out are several regarding the feasibility of concentrating the low-grade bodies through pelletizing. There is also a prospect that the coal areas near Mpaka, the proposed general area of the large thermal plant under study, could serve as a location for establishing a domestic concentrating industry where iron ore could be processed into shapes that could be both exported and used as a raw material in a possible future metal-working industry.

Production: The mine is worked on an excavation pit basis. The ore body is structurally complicated, having suffered considerable deformation, folding and faulting, accompanied by the intrusion of a number of diabasic dykes. Therefore, various ore grades are mixed.

The iron bearing minerals identified are haematite, goethite, specularite and, to a very limited extent, magnetite.

For blasting, a mixture of porous prilled ammonium nitrate and 6% diesel fuel is used. Depending on the type of ground structure involved, between 5 and 9 tons of rock is blasted per pound of explosive. Loading is by 3 electric shovels onto the mine's own fleet of fourteen 35-ton trucks. A part of the transport of the ore is made by subcontract. The ore is then delivered to a crusher, where it is broken down to a maximum size of 8 inches, as specified in the Japanese contract. The crushed ore is transported on conveyer belts to the washing and screening plant, where it is graded according to size and where a certain percentage of impurities are washed out.

Of the total feed, 64% is recovered as lump ore and 24% as fines, both averaging 64% iron-content. The remaining 12% (banded haematitic and quartsite) which is high in silicious fines and averaging 45% iron content, is pumped to the slime dams.

The Swaziland Electricity Board supplies the mine with all its electric power requirements. Other energy requirements are met by petrol and diesel, imported as return freight from Lourenco Marques. A small amount of coal is also used from the Swaziland coal mine.

Exports: The value of iron ore exports each year since the opening of the mine in 1964 has been as follows:

	In R 1,000
1964	316.6
1965	5,473.4
1966	8,546.6
1967	10,024.2
1968	9,023.2
1969	9,927.4

There are a total of 154 railway cars used for iron ore transport. Daily shipments are about 4560 short tons. To facilitate loading at Lourenco Marques harbour, a new wharf was built in 1964, the Lourenco Marques harbour channel was deepended, and mechanical ore-loading facilities were constructed at Matola.

Employment, Training and Social Facilities: There are 484 people employed at the mine, of which 53 are expatriates. Work is done in three shifts, 6 days a week. The entire mine is highly mechanised.

Two Swazis with University degrees are employed as a personnel officer and a chemist, both having been trained under the scholarship programme of the company. Other training is mostly on the job, with people of all education levels being accepted. The company programme of work favours the training of Swazi technicians.

In order to accomodate the labour force, the company has built a modern village near the mine. It includes about 100 houses for married employees, five sections of single quarters, a school, shop, restaurant, butchery, clinic, communal hall and sporting facilities.

(2) Asbestos: The Havelock Mine is one of the world's major producers of chrysotile asbestos fibre. It is situated in the Northwest part of the country close to the South African border. It is operated by the New Amianthus Mines (Pty) Ltd., a wholly owned subsidiary of Turner and Newall. Production was started in 1939. For many years asbestos was the most important export. Today it ranks in fourth place, after sugar, iron ore and woodpulp.

The asbestos fibre is of excellent quality ranging up to 1.5 inches in length. The company employes between 1700 and 1800 employees, of whom 170 are Europeans. Proven resources are adequate for another 12 years of production. The company is optimistic that as the mine gets deeper, additional reserves will be found.

Another asbestos ore body in the vicinity of the Havelock Mine is being explored by Lonrho Ltd. It is reported that this ore body would permit profitable exploitation on a smaller scale of operations than those conducted at Havelock and that preparations are being made to begin mining by about 1975. The prospect of a second asbestos mine would be very significant to the economy of Swaziland. It would also place the northwest area in a higher priority with regard to improvement of the present road structure since the production of the new mine would probably have to move by road to a rail point.

Production: The asbestos deposits occur in a massive apple green serpentine ore body having an average asbestos content of 4.5%. The annual production of asbestos has ranged from about 31,000 to 40,000 short tons; a total of 906,500 tons had been produced from the start of the mine to the end of 1968. Production in 1969 was 40,100 tons. The company generates its own electric power.

Exports: The value of asbestos exports since 1965 is as follows:

	R 1,000
1965	5,793.5
1966	4,986.8
1967	5,858.0
1968	6,045.7
1969	6,277.2

Asbestos production in 1968 and 1969 was at record levels. The demand for asbestos have been increasing in recent years and future market

prospects appear to be good. Some competition however, is developing from glass-fibres.

Most of the production is sold to the United Kingdom, with smaller amounts going to other European countries, Australia and Brazil and also to Zambia and Uganda. A very important use is in the production of asbestos cement products and about 10 percent of Swaziland's production is marketed in South Africa for that purpose. The transport of the fibre from the mill is exclusively by aerial ropeway to the railroad at Barberton, from which point it is transported by rail, either to Lourenco Marques to be shipped overseas, or to South Africa. The ropeway has a carrying capacity of about 11 tons per hour: 242 pans or cable cars each holding 375 lbs are in continuous operation.

Employment, Training and Social Facilities: Of the 1700 to 1300 persons employed by the mine about 170 are Europeans. About 20% of the Africans are from other African countries, principally Mozambique, and Malawi. Formerly, foreigners were employed, because the Swazis were not interested in mine work, but this reluctance has disappeared and only Swazi workers are now being hired. While there is a preference for applicants with some schooling, persons of all educational levels are employed.

The company maintains a testing and training programme which serves its needs for determining aptitudes and for matching the candidates with the job.

As a result of the mountainous terrain, highway connections from the mine to other parts of Swaziland are affected by the weather and are sometimes difficult. The mine therefore supports a more or less self-contained community. The census of 1966 recorded a population of 4,140 in the mine township, of whom 445 were Europeans. There is also a fully equipped and staffed hospital, and a variety of recreational facilities are provided.

(3) Coal: The existence of coal deposits in the Lowveld has been known for nearly a century. Until it was decided to build a railway, however, it was not feasible to exploit these deposits. A pilot mine was opened at Mpaka by Swaziland Collieries Ltd. (a subsidiary of Johannesburg Consolidated Investment) in 1964, the year the railroad was completed. This mine supplies coal for the locomotives.

Coal production is now Swaziland's third most valuable mineral industry. About 100,000 tons per year are produced, and most of this is exported. The industry employs about 300 workers. Coal deposits at Mpaka, Lukhula and Ehlane, are estimated at about 200 million tons ranging from anthracite to semi-anthracite. The coal near Lukhula has coke blending properties. Additional coal deposits occur also in the Lowveld and investigations are in process concerning the possibilities of exploitation.

Under study is a plan to build a thermal power station that would provide some power to the domestic market but export the major part to South Africa. If this project materialises, it will entail a rapid development of the coal deposits in Swaziland. Estimates are that up to 6 million tons of coal per year would be required for the thermal plant alone.

According to the Director of the Department of Geological Survey and Mines, the grades of coal known to exist in Swaziland are not believed to be suitable for a chemical industry, although no feasibility study yet has been made.

The production of coal has steadily risen as shown in the following table:

Quantity and value of production since 1966

	Short tons	R 1,000
1966	73,589	128.1
1967	95,930	184.2
1968	106,692	249.-
1969	117,919	281.9

Sales to the Swaziland Railway amount to about 20,000 tons per annum. Small amounts are also consumed locally for space heating. Exports are principally to Kenya and Mozambique.

The Value of exports of coal was as follows:

	R 1,000.
1966	37.7
1967	64.3
1968	94.7
1969	140.2

Japan has shown an interest in some of the coal being produced and discussions are being held about possible exports in the coming years.

(4) Other Mineral Production: Although deposits of various other minerals including gold, tin, silica and good quality clay are known to exist in the country, the only minerals that are mined beside the three discussed above, are kaolin, barytes, pyrophyllite and quarry stone.

Kaolin is found in the Mahlangatsha or in the Highveld, in the south of Hhohho District. It is mined by Kaolin Swaziland Ltd., and the ore is exported to South Africa. Several companies have expressed an interest in utilising kaolin for chinaware production in Swaziland.

Kaolin exports were as follows:

	Short tons	R 1,000
1966	647	5.7
1967	2,050	18.7
1968	2,364	23.4
1969	1,827	19.7

Barytes is mined by Swaziland Barytes Ltd. at the Bomvu Ridge, just northwest of the iron ore mine. The entire production is exported to South Africa.

Exports of Barytes were as follows:

	Short tons	R 1,000
1966	1,150	9.9
1967	623	6.-
1968	979	11.5
1969	629	7.9

There are several pyrophyllite occurrences in the Southwestern Highveld. One, near Sicunusa, is mined on a small scale by Swaziland Industries Ltd. All of the ore produced is exported to South Africa, where it is processed and used mainly as a vehicle medium for insecticides. Pyrophyllite is also suitable for the production of chinaware and other ceramic industry products.

Exports of pyrophyllite were as follows:

	Short tons	R 1,000
1966	460	2.4
1967	660	3.3
1968	640	3.-
1969	660	3.3

The production of quarrystone has increased considerably in the last few years as a result of increased demand for building and construction materials. It now ranks as the fourth important mineral.

Development of production since 1966 was as follows:

	Cubic yards	R 1,000
1966	24,230	57.4
1967	31,053	75.1
1968	48,577	116.4
1969	52,588	121.1

(5) Concluding Observations: A U.N.D.P. Mission survey of the mineral resources of the country, started in 1966, has just been completed. The report, however, is not expected to be available for some months. The Government's Department of Geological Surveys and Mines, which has assisted the UNDP study group, is continuing some of the investigations on its own in an attempt to identify new mining possibilities.

Virtually all mineral rights in Swaziland are vested in the King in trust for the Swazi Nation. Prospecting and mining leases are granted by the King upon the advice of the Minerals Committee. Prospecting rights covering an area of the northern Highveld near to the Havelock Asbestos Mine were granted by the King in 1965 to Lonrho Limited, and it is indicated that a second asbestos mine will be opened by the mid-1970s.

Geochemical surveys are to be extended to still other areas of Swaziland beginning in 1970. In addition, the Anglo-American Corporation and its partners, the owners of the iron ore operation in Swaziland, are undertaking a broad survey of the country to determine areas of potential mining interest.

The outlook in the immediate years ahead appears good, based on the known mineral deposits in which there is an interest. At present there are 10 applications for mining rights, 2 for renewal of mining rights and 13 for prospecting rights. However, no definite decisions on these have been taken by the Government. Some of these requests, it is stated, particularly for silica ore and kaolin development have been made as much as three years ago

Major developments in coal and iron should occur, if:

1) the proposed thermal station becomes a reality, and
2) the medium-grained magnetic iron ores can be economically beneficiated.

The outlook for asbestos is very encouraging and there appear to be good opportunities for developments of kaolin, pyrophyllite and silica which could lead to local industries based on these raw materials.

D. The Wood Products Industry: The large man-made forests in the highveld form the raw materials base for an important wood-products industry, of which the most important product is pulp. The total area covered by plantations is 215,000 acres of which 183,000 acres are in pine and 24,300 acres in eucalyptus - about 7500 acres are planted to wattle. The largest forest is located in the vicinity of Bunya, in the middle Highveld; it was planted by the Commonwealth Development Corporation in 1950 and covers more than 110,000 acres. Next in size is the 68,000 acre forest of Peak Timbers Company Ltd., a subsidiary of the Anglo-American Corporation. Adjacent to Peak Timbers is a forest of 12,000 acres, planted by Swaziland Plantations Ltd. Smaller plantations are located near Mbabane and in the middle and Southern Highveld. Expansion programmes presently underway will bring the area planted to forests to 232,000 acres. The export value of wood products in 1969, including pulp, was nearly R 9 million. The total number of employees in forestry, logging and wood processing together was about 5,250.

According to an ECA forestry expert, who recently made a study of the wood resources in Swaziland there is a surplus of unutilized pine of about 14 million cu. ft. each year. This will decrease to 11.8 million cu. ft. after expansion of the production of the present pulp mill - although at the same time the annual increment of pine will have increased from 40 million to 44.1 million cu. ft. Over the next 10 years it is expected that these surpluses will increase by about 3.0 million cu. ft. per year. In addition there is another 2 million cu. ft. of sawmill waste which can be better utilized.

(1) Pulp: The Usutu Pulp Company at Bunya began producing pulp in 1962. The company is a partnership owned by the Commonwealth Development Corporation and the British textile firm of Courtaulds Ltd. with one third of the preference shares owned by the Swasi Nation.

The Usutu Forest is 80 % pine and 20% eucalyptus. The eucalyptus trees are processed into transmission poles and mining timber.

The mill produces unbleached pulp. Production is steadily increasing and in 1969 10[illegible],500 short tons was produced. The planted forest is large enough to provide pulp wood for 150,000 tons. The company is therefore going ahead with plans to expand the mill's capacity. The mill originally costs R 11 million - expansion will cost about another R 5 million.

Parts of the pine trees are not suitable for pulp production and there is a waste of 4,000 tons a year. Investigations are being made by the Small Enterprises Development Company for possible use of this waste in a small scale industry.

The major part of the electric power is generated by the company itself; some 20 % is purchased from the Electricity Board. Most of the fuel for production of power by the company is waste wood material, supplemented by fuel oil.

Market: The Usutu Pulp Company supplies 7% of the free world wood pulp market. The long term market prospects appear to be favourable, in view of the rapidly expanding world demand for paper products. Earlier, in 1967 and 1968 the pulp market was depressed but improved in 1969 and continues to be firm.

The value of wood pulp exports in the 1966-69 period was as follows:

	Million Rand
1966	7.3
1967	5.5
1968	5.5
1969	7.1

The pulp is exported to the Far East (including Japan, Taiwan and the Philippines), to Europe (including Italy, Germany and England) and to several African countries (including South Africa, Malawi, Tanzania, and Kenya).

The mill is not located on the railroad route. The pulp is carried by truck to a warehouse at the Matsapa station, where it is loaded for rail shipment to Lourenco Marques.

Employment, Training and Social Facilities: The company employs about 2,100 people including 200 expatriates. The mill operates on a 24 hour basis with 600 employees. Of these, 210 are engaged in mill maintenance. Of the remainder, some 120 are also engaged in other maintenance activities, such as vehicle and road maintenance.

Since skilled employees are not readily available and the number of skilled workers turned out by the Industrial Training Centre is limited, the company has its own training centre. Housing as well as medical care is provided, and a Welfare Fund has been established. Forest labourers work on a piece-work basis whereas factory workers are paid fixed wages, a production bonus and fringe benefits.

Next to the Usutu Plantation the land is owned by the Swazi Nation. The company has proposed that the farmers on that land plant trees regarding which it would give assistance. The company would then offer to buy timber when the trees were full grown, although permitting the farmer to retain the right to sell them to another purchaser if a better price could be obtained.

(2) Timber, Lumber and Secondary Woodworking: There are four sawmills in the country. These belong to Peak Timbers and Swaziland Plantations, both at Pigg's Peak, Tonkwane Estates Sawmill Ltd., near Mbabane, and Rand Mining Timbers Company at Nhlangano. The Peak Timbers sawmill is the largest.

The first three mills process mostly pine. The main products are structural timber, industrial timber, box shooks, veneers and treated poles. Secondary woodworking is either integrated or associated with the sawmills. Production includes boxes, blockboards and mill products.

An independent secondary woodworking plant of medium size (60 workers) recently was established in Mbabane for the production of doors, prefabricated houses and low cost furniture, all based on local wood.

Rand Mining Timbers uses only wattle at the present but intends to process eucalyptus as well when the eucalyptus forests mature. It produces mine timber and telephone and transmission poles. In 1968 the Commonwealth Development Corporation planted a new 12,500-acre eucalyptus forest at Shiselweni, of which 20% is pine. Some of this production in later

years could be available to Rand Mining Timbers which now can process 1.5 million cu. ft. of log input per year. At that time it will have to consider expanding its present factory or establishing other sawmilling units.

The four saw mills together employed 1,000 people in 1968, of which 40 were expatriates.

The value of exports from these mills was:

	R. million
1966	0.9
1967	1.4
1968	3.- 1)
1969	1.8 1)

1) preliminary.

Shipments were mainly to South Africa, Zambia, Lesotho and Botswana.

Small furniture and joinery workshops, employing from 3 to 10 workers, are located throughout the country. Most of the quality furniture used in Swaziland, however, is imported. The Small Enterprises Development Company, Ltd. is assisting in the expansion of small factory production of local woods into furniture, tool handles, carvings and other wood products.

Peak Timbers: Peak Timbers produces logs, (requiring 21 to 37 years tree growth) and poles and mining timber, (for which 10 to 12 years growth is required). At present, the plantation is not using its available assets to their full potential. Moreover, thinning has not been exploited because of the lack of markets. Because thinning has not been carried out, there is a build-up of 3 million cu. ft. per annum over the normal increment of 12 million cu. ft. This build-up is expected to continue for about 10 years. Of this potential annual cutting only 5.1 million cu. ft. of timber are now being sawn. This leaves the remaining 9.9 million cu. ft. available for other processing. As about 1.1 million cu. ft. is used for poles and mining timber, the present annual surplus is about 8.8 million cu. ft.

Another usable resource is sawmill waste, amounting to about 1.6 million cu. ft. per annum. Waste is now partly used as a fuel and partly incinerated. If we add this amount to the above surplus, the total available wood for pulp or board production would be 10.4 million cu. ft. (see Appendix 3, Background Paper No. 3, pp. 5 and 8). The prospect of feeding these surpluses into the pulp mill at Usutu has been examined. There are several limitations but the principal one appears to be excessive transport costs.

Roundwood output at Pigg's Peak in 1968/69 has been as follows:

	cu. ft. 000
Sawlogs	5,145.—
Poles	206.9
Mining timber	931.4

Processed wood products produced by Pigg's Peak in 1968/69 and their prices were as follows:

	cu. ft. 000	cents/cu. ft.
Structural timber	714.2	100
Industrial timber	475.5	65
Shooks for wooden containers	337.1	11
Laminated door stiles	43.9	11

Most of the products are exported.

Secondary woodworking is done by a separate company, Peak Box Manufacturers, of which the share-holders are Peak Timbers Ltd. and Boxes and Shooks Ltd., South Africa. Produced are cleats and slats for the manufacture of fruit packaging boxes by Boxes and Shooks Ltd. as well as shooks themselves. Production is to be expanded to utilise 2 million cu. ft. of logs per annum.

The total number of employees in Peak Timbers mill are around 500, working in 2 shifts.

E. The Manufacturing Industries:

(1) General Introduction: The manufacturing industries in Swaziland are based primarily on the processing of local agricultural, livestock and forestry products. Most production is located in the four main core areas of development - Mbabane - Manzini - Malkerns, Big Bend, Tshaneni - Mhlume, and Havelock - Pigg's Peak. These areas which comprise only 15 % of the country's territory, produce 80 % to 90 % of the output of primary and secondary commodities. The largest manufacturing plant operations include the two sugar mills, four sawmills, a wood pulp factory and a meat processing plant. Descriptions of the sugar mill operations, the four saw mills and the pulp factory appear in other chapters of this report and are merely referred to in this section. Attention is focused here on the manufacturing sector primarily, especially in the Matsapa Industrial Estate area, and on the concept of the industrial estate in general.

The Matsapa Industrial Estate is the country's principal manufacturing centre. Because it has well-developed infrastructure facilities, it has attracted a considerable amount of industry and is the nation's key industrial growth point. It is described in detail in the following pages. The industrial estate concept has not yet been extended to other parts of the country. This is due principally to the fact that Matsapa is centrally located (it serves Manzini, Malkerns, Mbabane, and Bunya and other nearby areas), and also because the infrastructure facilities, which are essential for the success of an industrial estate, are costly to install and cannot be justified economically at the present time. Ultimately, the success of Matsapa will make it a model for other core areas.

There is a medium-sized industrial area near Mbabane, and it is today an important location for a wide range of wholesaling, repair, construction, joinery, cement block production, furniture production, steel shapes assembly and light engineering activities. The buildings on it are substantial and well constructed. In other parts of Mbabane, just as in Manzini, there are a number of small operations, some of which could grow into industrial estates. Manzini likewise has other larger industrial plants. Being fairly close to Matsapa, it can plan its industrial development to complement that in the Matsapa area.

There are also many small manufacturing plants throughout the country, some of which are cottage type operations, but there is a growing number producing on a regular commercial basis. In addition, mention should be made of the bone meal factory at Mhlangano, a small sisal decorticating plant in Lavumisa, a tyre retreading plant in Manzini, a printing and publishing plant in Mbabane, a soft drink and mineral water plant, a metal working plant, and several cement block production units.

Some of the incentives favouring the establishment of a manufacturing plant in Swaziland include a stable political situation, low cost labour, access to a wide range of natural resources, access to the Customs Union market and other international markets, and a well developed and serviced infrastructure. The Government also provides attractive financial incentives to new industry in the form of investment allowances, accelerated depreciation and tax benefits.

In spite of its growing importance, manufacturing is still at an early stage of development. In 1966-67 the manufacturing sector made up about 9 % of the gross domestic product; in 1968 this share rose to 11.6%, but it is estimated that in the past year this percentage has increased only slightly. In 1968 10% of the total number of wage employees were employed in the manufacturing sector. These employees however earned 18 % of the total wages paid to all wage earners. The manufacturing sector employed 4417 workers in 1967 and 4800 in 1968. In 1969 an average of 5100 workers were employed in manufacturing firms with ten or more employees, the total employment by firms in all sectors was 32,500.

The construction industry, while previously slow to develop, is now growing at a fairly rapid rate. In 1967 the industry consisted of 18 companies and employed 2500 workers. It contributed R 3.6 million to the total gross output or about 7.3 %. In 1968 the industry was made up of 23 companies employing 3461 people, and contributed R 6.5 million, a little under 15 % of the total gross output for that year. While later data are not available it is believed that little growth has occurred in the interim period.

(2) The Matsapa Complex: The Matsapa Industrial Estate is the principal centre in Swaziland where manufacturing activities are concentrated. Although initiated only in 1964, the Estate already plays an important part in Swaziland's industrial development. It is situated on the main highway 3 miles east of Manzini and 10 miles south-east of Mbabane, and is served by a spur of the Swaziland Railroad. The ground is level, and adequate water and electric power are available at reasonable cost.

The Matsapa Estate is sponsored by the Government, and it is a viable operation offering a full range of services to industry. It is largely self-financed. Of the R 1[illegible],000 needed for the first phase of development (purchase of land, construction of roads, drainage, water etc.) R 100,000 was obtained from the United Kingdom and the rest through the sale of land to industrial and other business enterprises. The 3½ mile railway spur linking Matsapa and the main Swaziland railroad line was financed under an arrangement paid for from the earnings of the line's traffic load. Power is supplied by the Swaziland Electricity Board at descending rates depending upon monthly consumption needs. There are also adequate water supplies and sewage facilities. There are some 600 sites available for the construction of employees' housing by employers on the Estate that wish to do so, although most employees now commute.

The Matsapa Estate area comprises a total of 1300 acres of which 600 are being developed at the present time. Sites vary in size from ¼ acre to 10 acres or more and are available at R 2,000 per acre for the first three acres and slightly lower for additional acreage. Sites on the rail line command an additional R 500.

In its five years of existence Matsapa has attracted a range of industries that have assured the Estate's success and expansion plans are already being prepared. A description of some of the industries located at the Estate is given below.

Abattoir and Meat Canning: This modern plant, built at a cost of R 1 million, has facilities for slaughtering, deboning, chilling, freezing and canning, and for the processing of animal waste products. Over 200 people are employed in its various operations.

In 1967 25,411 cattle were slaughtered and processed. Exports are mainly in the form of chilled and deboned carcasses, and canned meat and hides. In 1967 exports were valued at R 1,642,000 increasing to R 2,270,000 in 1969. The principal export markets were Zambia, South Africa and the United Kingdom. The company also operates a bone meal factory. Production of bone meal in 1969 was about 1,000 tons.

Cotton Ginning: The cotton ginnery in Matsapa, owned by the Cetona Cotton Ginning Company, was built at a cost of R 1 million, and was opened in the first half of 1965. While the plant can process the entire domestic cotton crop, it is only handling about one half at present because producers near the border areas market their production direct to South African ginneries. The ginnery processed about 3,000 tons of seed cotton in 1969. Cotton seed valued at R 67,500 and cotton lint valued at R 453,100 was exported to South Africa in 1968. There is no local spinning of cotton. Consideration is being given to utilizing cotton seed for edible oil production but at present it is all being exported.

Traditional Beer: Early in 1967 Heinrichs Breweries established a factory in Matsapa at a cost of R 300,000 to produce a traditional beer which has a high nutritional value. Malt and yeast are imported from South Africa. The basic ingredient, corn meal, is obtained domestically but can be imported when domestic supplies are not available. The company employs 16 workers when in full operation - the plant itself is highly mechanized. The plant at present is experiencing marketing difficulties and production is below capacity levels.

Corrugated Cardboard Container Factory: The NEOPAC corrugated box plant at Matsapa, owned by the St. Regis Company of New York and Amalgamated Packaging Industries of South Africa, was built and equipped in 1969 at a cost of R 600,000 and officially opened in April 1970. Producing corrugated boxes for its clients from imported corrugated board, the plant has a capacity of 10,000 units per hour and is considered one of the most modern plants in Africa. The demands of the manufacturing industry for boxes has already grown to the point where the company announced at the inauguration of the plant that it would shortly undertake to build a second unit costing R 500,000 to house a corrugator which would manufacture the company's board requirements at Matsapa. The company employs 38 people at present and would expand its labour force to 100 when the additional unit is completed. The main clients of NEOPAC are the citrus industry, candy plant, the meat and fruit canning plants.

Candy Factory: The Turnrights Chocolates and Sweets Ltd. plant was opened in 196[illegible] and its operations and production were expanded in 1969. The plant is capitalized at approximately R 200,000. Operating on a single shift it employs around 130 people. About 90 % of its production is marketed in South Africa with the balance consumed in Swaziland. Annual consumption of sugar has been increasing since the plant initiated production.

Cement Factory: The Matola Cement Company plant was established in the Matsapa Industrial Estate area at a cost of R 500,000. It utilizes clinker from Mozambique and gypsum from South Africa to produce 90 % of the cement consumption in the country. The balance is imported from South Africa, mainly for use near the border areas. The plant is highly mechanised and employs about 20 people. It has a capacity equal to five times the present domestic cement consumption. Cement is used in Swaziland, principally for building construction and cement block production. Consumption is about 64,000 bags (94 lbs each) per month - 766,000 bags per year - and is growing at an annual rate of about 10 %.

Malkerns Fruit Canning Plant: The fruit and vegetable cannery in Malkerns was established in 1953 to process the pineapple crop of the surrounding area. Over the years pineapple growing was a part of the Mphetseni Settlement Scheme, in which 27 Swazi farmers grow pineapples on plots of 22 acres each. This is supplemented by the cannery's own pineapple estates and the production of other growers. There were about 2,000 acres planted in pineapple when the Settlement Scheme began. Production was valued at R 390,000 in 1966. In 1967, 14,000 tons of pineapple and 2,000 tons of grapefruit were processed. Originally other fruits and vegetables were also canned, but the size of the domestic market had been overestimated, and marketing became a problem.

In recent years, the cannery had difficulty altogether in maintaining its operations on a profitable basis and finally went into receivership. In 1970 it was taken over by the firm of Libby McNeil and Libby, the present owners.

Under new ownership the cannery is now being reorganized with plans for a major expansion of production in the next four years. Equipment is being modernized and consideration is being given to handling additional lines of fruits and vegetables once again. A highly labour-intensive unit, the factory employs 900 people of which 600 are women.

Now that the uncertainty about the future of the factory has been removed, plantings of pineapple are again being increased. The Mphetseni Settlement Scheme is producing about one-third of the present crop, and expansion of the Scheme also is being considered. In 1969/70 the amount of pineapple and grapefruit processed was about 12,000 tons and 5,000 tons respectively; a small amount of youngberries were used for jam and canned as whole berries.

The value of exports of canned fruit were as follows:

	R 1,000.
1966	380.2
1967	673.6
1968	673.0
1969	773.9

Creamery: There are two dairy factories in the country, namely Swaziland Creameries near Manzini, which has been producing butter since 1937, and a milk factory, S.D. Dairies (Pty) Ltd. located in Mbabane, which started in 1969. The dairy industry is supervised by the Ministry of Agriculture. The creamery operates under an agreement with the Government guaranteeing it a minimum rate of return, extendable on a five years basis under certain conditions. A Dairy Act to regulate the industry was enacted in 1968 but has not been implemented because of the belief that the administration costs would be disproportionally high in relation to the size of the industry itself.

The creamery receives its butter fat mainly from Government cream collecting centres, as well as from a few private suppliers and from sources in South Africa. There are about 42,000 registered suppliers of cream to the centres. The milk is separated in the centres and the cream transported to the creamery, where it is manufactured into second and third grade butter. The second grade, being about 45% of the quantity produced, is sold locally, the third grade is exported to South Africa. The by-product, acidified butter milk, is sold on the domestic market.

The creamery has a capacity of up to 1 million lbs. of butter fat a year. The maximum annual receipt of butter fat was 750,000 lbs. in 1956. Since then milk production in Swaziland has decreased, and in the last year supplies of butter fat to the creamery have dropped below the 300,000 lbs level, which permits the Government to cancel the subsidy it was paying to provide guaranteed minimum rate of return. Cancellation is effective in September of this year. Meanwhile a Dairy Committee has been established to investigate the problems of the industry and to make recommendations for their solution. The Committee's report, expected soon, must take into consideration the fact that the sale of cream is an important cash producer for a great number of Swazi farmers. The creamery may be able to continue operations even without assistance from the Government. It appears that a link should be established between the creamery in Manzini and the milk factory in Mbabane, both of which have underutilized capacity, and the production of cheese and other dairy products should be developed, if both enterprises are to remain viable.

Maize Mill: Maize is the staple food of the Swazi. The annual per-capita consumption is estimated to average a little over 2 bags of 200 lbs. It is grown in most parts of the country. Most of it is consumed directly by the farmer and his family; smaller amounts are sold at the local markets. The climate is not dependable for this crop and, without irrigation, the rainfall during the growing season is often inadequate. Of the irrigated area only 1 to 2 per cent is planted in maize. The Vuvulane Irrigation Farmers grow it on part of their plots, and it is included in the programme of the Usutu River Basin Scheme. The main production areas are in the Middleveld, but soil nutrition deficiencies and the infrequent use of fertilizer keep yields low. The price the farmer receives for maize is now relatively high (R 3.85 per 200-lb. bag), but this is partly because poor weather has kept production at unusually low levels for several years. At present the country is not self-sufficient in maize production, and imports have been necessary in recent years to supplement domestic production.

Maize Imports:

	Short tons
1966-67	13,100
1967-68	7,100
1968-69	20,700
1969-70	30,000

While milling is done in a number of small plants throughout the country, the principal mill, the Swaziland Milling Company near Manzini, has exclusive wholesale rights and in turn is obligated to buy all local offerings of maize at a fixed price.

The quantities offered to the Manzini mill during the past years, however, were too small to justify processing. Instead the milling company imported maize meal from South Africa and sold it in Swaziland. The company is also a producer of insecticides and a mixer of fertilizers, the latter being done at Matsapa. It has indicated an intention to produce a maize mixture as a basic cattle feed, blending maize with cotton seed meal, blood meal, bone meal, rice meal and molasses.

Oxygen Compressing: An oxygen compressing plant was established in April 1970, in the Matsapa Industrial Estate area by the Swaziland Oxygen (Pty). The company is a wholly owned subsidiary of Afrox (African Oxygen) of South Africa. Oxygen is brought in from South Africa as a liquid, then vaporized and compressed in cylinders and sold to users in that form. Its uses are principally for industry and hospitals. Prior to the establishment of the plant, all imports of oxygen were in compressed form, procured in cylinders which had to be returned to the suppliers.

(3) Other Industrial Areas: Outside of the four main areas of industrialization the remaining sections of the country contain only a few manufacturing plants of medium size. These large underdeveloped areas nevertheless contain 78 % of the Swasi population. Development is slowed by a lack of electric power, entrepreneurship and capital and by the people's suspicion of change. Nevertheless there are opportunities for increased productivity, and attitudes toward full time employment are changing, as evidenced by innumerable cases in which enterprising individuals have established small but profitable enterprises.

Bone Meal Factory in Mhlosheni: This factory in the South of the Middleveld grinds up the bones of all kinds of animals, and processes them into a high-grade bone meal. The raw material is collected throughout a wide area and brought to the factory. Production is around

60 tons per annum, all of which is exported to South Africa. The plant, though small, is mechanized, employing only three people. The end product is of high quality and readily marketed. It is used as an ingredient in cattle feed. Strict requirements as to hygiene have to be met, and rigid testing is carried out by the South African importer.

Sisal Mill at Lavumisa: Sisal is grown on about 400 acres near Lavumisa (formerly Golitel), and earlier about 200 tons annually of high quality fibre were produced. All of this production was exported to South Africa. However, a drop in demand has occurred, and now the greatly reduced output must be marketed locally. It is used in handicraft articles, such as carpets, mats and handbags.

Attempts are being made to find markets for sisal overseas, but in view of the depressed world demand for this commodity, caused largely by the competition of synthetics, export prospects are not favourable.

Sawmill at Nhlangano: A description of the sawmill of the Rand Mining Timbers Company is contained in the section of this report dealing with forestry products and their processing.

Maize Mill at Nhlangano: The Swaziland Co-operative Tobacco Company entered into an agreement with Swaziland Milling Company to produce and sell maize meal in the Nhlangano area. The co-operative has produced no meal in the last two years, however, because of the unavailability of maize for grinding due to poor domestic crops.

Chapter IV: PROMOTION OF SMALL SCALE INDUSTRY

A. General. Swaziland is promoting industrial enterprises of all sizes- artisan and handicraft shops, small and medium-scale industries, and also the large-scale operations. While the distinction between these categories is not precise, the mining enterprises, sugar mills and forestry industries can be considered large in scale even by outside standards. The medium and large-scale categories in Swaziland include meat processing, cotton ginning, sweets production and fruit and vegetable canning, among others. Small-scale industry on the other hand consists mainly of operations involving Swazi entrepreneurs in industry and trade, working alone or with fewer than 20 employees. The importance of small-scale industry cannot be overemphasized as a channel for increasing Swazi participation in the developing modern economy.

B. The Small Enterprises Development Company Ltd. In March of this year the Government created the Small Enterprises Development Company Ltd (SEDCO) to assist new and existing small-scale entrepreneurs and traders by making available to them adequate working premises and planning, technical and financial assistance. SEDCO is registered as a private limited company and directed by its articles of incorporation to profit-making and businesslike dealings. Of the equity capital 24 % is provided by the Government, 24 % by the Swaziland Credit and Savings Bank and 52 % by private investors. One class of shares is reserved for small enterprises of the kind that SEDCO intends to assist. Thus, control is to remain in private hands. SEDCO was initially capitalized at R 5,000, and additional loan capital has been provided under a loan-aid arrangement with the United Kingdom amounting so far of another R 70,000. Applications have been made for further loan capital from the United States and the United Kingdom and other governments; the amounts under consideration are in the neighbourhood of a further R 250,000. SEDCO is empowered to borrow from commercial banks and other lending institutions to the extent required to carry out its objectives.

SIDCO provides assistance in the location of working premises at low rentals, helps in acquiring machinery, equipment, and raw material, and also renders assistance in marketing the finished product. It encourages the organization and operation of industrial and trading co-operatives. One of the main objectives of SIDCO, moreover, is the stimulation of light industries, especially outside the urban areas, so as to provide more employment there and to assist Swazi businessmen to set up and run manufacturing enterprises.

Three small factory shells have already been completed at Matsapa and over 50 requests for factory space have been received, and the programme originally established by SIDCO has been accelerated. Work has been completed also on the construction of small industry sites at Mbabane, Manzini and Figg's Peak. These sites have accommodations ranging from workshop space suitable for employing one to three persons, to factory shells for business with five to twenty-five workers. In addition a group of workshops are under construction at Hlatikulu, Mankayane, Mhlangano, Siteki and Lavumisa. Altogether some 80 to 90 workshops and factory shells are expected to be ready for occupation within the next three to four months.

• Small Enterprises Promotion Office. Within the Ministry of Commerce, Industry and Mines is the Small Enterprise Promotion Office (SEPO), which operates parallel to the programme and objectives of SIDCO. This office provides small enterprises with technical advice, guidance, training and various forms of assistance, other than financing. This assistance, which is free, may take the form, for instance, of advice and guidance regarding the correct choice of a new enterprise, the feasibility of an expansion project, or the marketing prospects for a manufactured product. SEPO also acts as an industrial extension service to small entrepreneurs and traders with its staff maintaining direct field contact with all areas and being available for on-site assistance regarding problems which may arise.

D. Small Scale Industry Opportunities. There is a wide range of products which offer opportunities for small-scale industry, many of them having the advantage of local resources available at reasonable costs. Among these are wood-using industries, sheet metal and other light metal-working industries, ready made garments and related industries, ceramics and clay products, rural tanning and leather work, and essential oils. The potential markets for such products include the whole customs union area and export outlets through Lourenco Marques.

More specifically the small-scale industry potential in wood working includes furniture of all kinds, filing trays, storage racks, shelving, bookcases, picture frames, mouldings and panelling, shop fitting and counters, coffins, toys, coat hangers, rulers, tool handles, crates and box shooks, fencing, brooms and mop handles. Most of the things are now brought in from South Africa.

There is also considerable opportunity in the metal working industry, based in part on scrap metal and imported steel and iron. There are already a few such plants in Manzini but untapped possibilities include kerosene cookers, bicycle parts, hurricane lanterns, stove wares, buckets and pails, electric torch cases, automobile parts, tanks and vats, metal signs, metal toys, and metal boxes for packing.

Another area for small enterprises in products using cotton waste. The Swaziland Cotton Ginning Company had approximately 100,000 lbs. of cotton linters in 1969 which could serve as the basic raw material for small industries in the following areas: mattresses, pillows, cushions, automobile upholstery, dress padding, medical wadding, soft toys, sanitary napkins, felting sterilised cotton for medical purposes and wadding for packaging fragile items. At present cotton seeds resulting from the ginning process are being exported. This commodity could serve as a basis for edible oil production soap manufacture and cattle cake.

Equally good prospects exist with regard to the utilisation of wood pulp, all of which is now exported. Among the possibilities here are acoustic tiles, paper plates, papier maché products, chipboard and particle board, plaster board, protective packaging tubes, handicraft items such as dolls, jewel boxes etc.

There is also a good potential for the production of leather and leather goods, as well as for the manufacturing of pottery items, for small-scale mining and quarrying, and for the production of essential oils. In each case the raw materials are available and await development or processing. The feasibility of setting up small units for the production of essential oils has been examined by the Tropical Production Institute in London, and the conclusions are mainly favourable. Collaboration is taking place between the Ministry of Commerce, Industry and Mines, the Ministry of Agriculture, the Agricultural College of the University of Lesotho, Botswana, and Swaziland on test planting of essential oil bearing crops. The interest of the Swasi entrepreneurs has been slow to develop, but there is now a greater desire to move into industry. The marketing of production should not be an insurmountable obstacle.

To carry out effectively the development of small enterprise in Swasiland, additional technical staff must be assigned to this area. There is an urgent need for experts to devote full time to the creation and development of industries based on available resources. It is recommended that such experts be assigned on a rotating basis under the proposed Special Fund Project. The areas of specialisation include the woodworking industries, the metalworking industries, the mineral products industries, wood pulp utilisation, essential oils, leather goods and cotton waste and cotton utilisation. Under the guidance of these technicians and the programme director, Swasis could be stimulated with the assistance of SEDCO to become entrepreneurs and to acquaint themselves with the techniques of production and management.

8. Co-operatives. Up to the present time the use of the co-operative approach to bulk buying and selling for small-scale industry has not been utilised to any great extent. The Government is emphasizing the advantages of co-operatives and both SEDCO and SLPC with assistance from ILO and the British Ministry of Overseas Development conduct programmes to explain the co-operative concept and to train prospective co-operative officers. The target is to establish co-operatives to serve small traders throughout the country, including some 20 to 25 co-operative purchasing groups and a central co-operative union.

Chapter VI TOURISM

Tourism is developing into a sizeable industry with ramifications throughout the entire economic structure. While still small in relation to its potential, there is recognition of its significant economic benefits, and strong encouragement to expand the facilities and services is being given by the Government to private industry.

Swaziland is known for its scenery and climate and the hospitality of its people. Comprising rugged mountains in the Highveld, rolling grasslands in the Middleveld, flat bush country in the Lowveld, and the impressive escarpment of the Lubombo Plateau — each with its own distinctive climate — the country offers within a small area a remarkably wide range of tourist attractions.

There are 21 hotels located throughout the country and comfortable lodging and fare are available in all districts. The Manzini - Mbabane area itself has 11 hotels, the newest being the luxurious 192-bed Royal Swasi, opened in 1966, and the 120-bed Holiday Inn, opened in 1970, one of the first Holiday Inns in Southern Africa. The 21 hotels have a total of 1,000 beds. In addition there are also a small number of camping and caravan type facilities.

It is difficult to estimate the number of tourist visitors because no data exists. Probably some 60,000 to 75,000 tourists visited the country in 1969, although some estimates are much higher. However an important limiting factor at the present time is the number of beds available. It is believed that many tourists who wish to visit the country are unable to obtain reservations. The owners of the Holiday Inn announced at the inauguration ceremonies that they were going ahead with plans to build an additional 80 rooms in the near future. There are also at least two new hotels scheduled for early construction and important expansion programmes have been announced by several of the existing hotels.

The majority of tourist visitors coming to Swaziland are from South Africa and arrive by automobile and stay an average of 2½ to 3 nights. A small proportion arrives by public land transport. Arrivals by air transport are also relatively small. The Swazi Air line is expected soon to increase its thrice weekly flights to and from Johannesburg to daily service. An average of 17 passengers per flight have utilized the air service in recent months. In May of this year a larger plane carrying up to 40 passengers has been placed on the Monday run to and from Swaziland. Special weekend flights from Durban are promoted by one of the hotels. There is also a scheduled air service between Lourence Marques and Swaziland. Traffic on this line is very small but it offers a good potential for the future, when increased numbers of tourists utilize the Europe-Mozambique air connections.

In addition to providing employment for approximately 600 people in 1968, about 700 in 1969 and about 1,000 in 1970, the impact on local business of tourist purchases is also considerable. It is estimated that the sale of handicrafts to tourists each year has amounted to between R 15,000 and R 20,000, and this is growing. The impact on general business, though not known, is also presumed to be important. The Government itself is benefiting not only from the regular taxes paid by the hotel industry but also from the operation of a casino. Government revenue from this source in 1969 was in the area of R 300,000 and is expected to reach R 500,000 in 1970.

In an effort to meet the demands for qualified hotel employees, the Swasiland Industrial Training Institute, in conjunction with the Swasiland Hotelkeepers Association, conducted a hotel and catering course this year to train students for all aspects of hotel work. The Ministry of Commerce and Industry has established a Tourist Section to assist in the development of the tourist industry and to work with interested associations and groups in this regard. To reap the full potential benefits of the tourist industry, Swasiland must make its attractions more widely known through systematic and continuing promotion and through encouragement of hotel construction.

Section VII: THE INFRASTRUCTURE

A. General. A good system of roads, a railroad, adequate power, communications and water facilities continue to give the country a strong infrastructure. Most of these facilities were built in the 1955-66 period at a total cost of more than R 40 million, the highway system alone requiring an expenditure of R 8,8 million. Unlike many developing countries where road and power construction preceded the launching of the first phase of industrialisation, the situation in Swaziland followed a different pattern. As mining and agriculture increased in importance and forestry operations began to develop and expand, each in a different part of the country, the shortcomings of the existing facilities to power and move production to the markets became clearly apparent. Priority attention was rapidly focused on remedying the shortcomings. A vast programme of road construction, railroad and power development was initiated and the basis of a good communication system was planned and built. By the middle of 1966 the ambitious programme had been completed, and a foundation for a programme of industrial expansion was laid.

B. Roads. When Swaziland became an independent nation in 1968 it already had a good network of roads connecting practically all parts of its territory. The country is approximately 120 miles from north to south and about 90 miles from east to west. In 1968 there were 840 miles of main roads and 760 miles of secondary roads. About 125 miles of road are tarred. There is a good programme of road repair and maintenance. Little road construction has been undertaken since independence. The Post-Independence Development Programme projected only limited outlays for highways and that mostly in the areas warranting road improvements by virtue of traffic expansion. The 1969-70 and 70-71 capital budgets alloted R 169,000 and R 106,000 respectively to road construction and highway related projects.

The growth pace of Swaziland's economy, however, has been greater than expected, bringing with it demands now for further infrastructure facilities, and the Government is responding to this development by undertaking a new review of the infrastructure needs and by reformulating priorities, where necessary, by virtue of the changing pattern of economic development. The evolution and rapid growth of tourism has been an important factor in influencing road development. Most tourists come to Swaziland by highway - primarily from South Africa and to a lesser degree from Mozambique. The importance of highway transportation is made clear by the fact that 90 % of Swaziland's imports come from South Africa with which no railroad link yet exists. Moreover many Swaziland industries depend on road transport for moving their production to the market or at least to railheads. A Natal University Survey team currently is studying the entire transportation sector to assist in determining where the future emphasis should be directed.

C. Railroad Transportation: Swaziland's railroad system, a freight carrier only, is made up of a single 136-mile line running from the iron ore mine in the Northwest (4300 feet above sea level) to a point at the eastern border (300 feet above sea level) where it joins the 46-mile Mozambique line to the port of Lourenco Marques. The railroad started operation in 1964 specifically for the purpose of carrying about 1,350,000 tons of iron ore per year, which was contracted for export to Japan. While the railroad is owned by Swaziland, Mozambique supplies and owns the locomotives and controls the rail traffic to its port city. The cost of the road was financed by the Anglo-American Corp., the Colonial Development Corporation and the South African Mutual Life Assurance Society and others. Most of the roads indebtedness will be paid off by 1974.

The tonnage carried by the railroad is steadily increasing. Iron ore is moving at approximately 2.5 million tons a year; woodpulp at over 100,000 tons; sugar at about 150,000 tons; and other traffic, including coal, citrus, and canned fruits at about 200,000 tons. The total traffic is about 4.0 million tons. It should be noted that neither the forestry products mills nor the sugar mills are located directly on the railroad line. While most of the tonnage moves eastward to Lourenco Marques, there is also a growing volume of goods being imported. A spur line was completed in 1965 to serve the industry complex at Matsapa. The railway also passes through the Mpaka coal area.

The railroad's future is already assured for the period after the rich iron ore is exhausted, although there is greater optimism now than previously that additional ore bodies can be profitably worked. The effect of the railway on the economy of the country already has been outstanding.

The economic feasibility of a link with the South African Railroad system has long been considered. The connecting point in South Africa probably would be Lothair. Studies are being made to determine the economic justification of the link and the relative advantage of extending it from the Matsapa area or from the end of the roads terminal at Kadaki. It is obvious from an estimation of the increase in traffic that might be carried on the railroad if it were linked with the South Africa line that it would not be commercially profitable for some time. On the other hand a social-cost-benefit study might place the proposed link in a better light, and such an investigation should be made.

D. Housing: Though most of the people live in the rural areas, urbanisation is rapidly increasing. The present urban population is estimated to be about 67,000, growing at an annual rate of about 6 %. This movement of people to the towns is bringing with it a serious shortage of housing which at best is only being met in small part. To avoid the development of permanent large slums areas, an accelerated programme of housing construction is imperative especially in the low cost range.

In 1968, the only new residential buildings constructed were 62 one-family houses. It is estimated that there is a backlog of over 600 housing units and that a minimum of 200 additional units are required each year. In the sugar, wood-production and mining centres, housing is provided by the industries themselves. The biggest problem is to satisfy the needs for low-cost housing outside these areas, especially in the larger towns, including Mbabane and Manzini.

There are two institutions in Swaziland specialising in housing finance. These are the Swaziland Building Society, established in 1962, and the Swaziland Credit and Savings Bank, established in 1965. The private banks also made funds available for housing but not for low-cost units. The Government has financed its own programme of housing for its burgeoning, post-independence civil service staff.

The problem of financing is not the only reason for inactivity in building low-cost housing. Loan funds reportedly can be made available but the difficulties stem in large part from the lack of a scheme through which bulk loans rather than individual loans could be devoted to building with a rate of interest and repayment commensurate with the financial capacity of individual holders. In the past months a plan was announced by the Government to build 100 low-cost public housing units in the Mbabane area at a cost of R70,000.

Some 7,000 people live in the sub-standard area near Mbabane. Thus, this is only a start, but an important one.

Recognising growing problem of housing, the Government has proposed the establishment of a National Housing Authority to be empowered to raise sufficient capital to make a significant impact on urban housing. A Housing Adviser is to visit Swaziland shortly to draft detailed guidelines for the Housing Authority regarding its functions, its relationship with Government and its management, financial structure, and objectives. It is planned that within 4 years the Housing Authority will build up capital assets of about R9 million. The 1970-71 Capital Budget provides R 500,000 for this project, the first of four annual allocations from British aid funds. The Legislative is expected to approve the establishment of the Authority this year.

Government housing policies according to the Post Independence Development Plan are as follows:

1. High cost housing should as a general rule be financed by the owner out of his own funds and from regular loans from banks and other credit institutions.
2. Major industrial firms also will be expected hereafter to provide adequate housing for their employees.
3. The Government will endeavour to increase the funds available for low-cost housing.
4. The Government will discontinue providing housing for new staff in urban areas, except for certain categories of staff and personnel not employed on local terms. The Government has also agreed that the question of civil-service housing requires further detailed examination, especially in relation to the problem of improving standards of housing in the urban areas for the general public.

5. Necessary investments in institutional and out-station housing are included in various sector programmes. In addition an amount of R150,000 is included in the plan for investments of this kind which are not covered in the sector programmes.

6. The Government has already approved in principle the establishment of a National Housing Authority, and its creation is now being investigated.

E. Power: While electric power is sold only by the government-owned Swaziland Electricity Board, important amounts are also generated by industry for its own use. Prior to 1964 power was produced principally by the Government and by the larger company operations - Havelock Asbestos Mine, Usutu Pulp Company, Mbombo Ranches and the Mhlume Sugar Company. The Swaziland Electricity Board was established in 1962 as a statutory body and constructed the country's first hydro-electric generated plant in 1964. The Board now operates two hydro plants and two diesel plants with a total capacity of 28.5 M.W. A third diesel plant is being set up to produce an additional 4.5 MW, bringing the total to 33.0 MW. Including the facilities of the industrial groups, the total generating capacity for Swaziland at the end of 1969 was 59.5 MW. Electric power sales by the Electricity Board have grown from 10 million k.W.h. per month in 1964-65 to 82.6 million k.W.h. at the present time. Per-capita consumption in 1969 of electric power in Swaziland was 490 k.w.h. per annum.

While demands for electric power are increasing, it is believed that the establishment of an additional hydro station in Swaziland is unlikely and that, when consumption approaches present capacity (including the new diesel generator being installed), additional power will have to be imported under an arrangement with the Electric Supply Commission (ESCOM) of South Africa. An agreement to this effect has already been entered into by the parties concerned.

For the longer term Swaziland is studying the feasibility of utilising the large coal reserves in the lowveld to power a thermal station producing in the order of 1000 MW to 2000 MW. It has already reached an agreement under which South Africa will purchase for its own use the excess beyond Swaziland's requirements, if and when such a power station is built. A thermal unit of this size could not be built before 1979. Swaziland would continue to use South African power until its own plant begins to operate.

There are still large parts of the country, mostly in the peripheral sectors, not yet served with electric power by the Electricity Board, though the company has extended its lines considerably in its short period of existence. This lack of power inhibits development of industry and affects the growth of the areas themselves. With no large-scale industry in these regions, very little purchasing power is generated, which in turn inhibits growth. Yet it is evident from an appraisal of the resources available that some manufacturing activity could be created if adequate power were available.

The Electricity Board is negotiating with industry in the Northwest of the country to supply power for distribution and sale through the Board. This would have the effect of opening up that area to a regular supply of power and removing one obstacle from the path of industrial development. The Government should not wait in each instance for full commercial justification of power sales before tackling this problem itself; a selective but continuing programme of bringing the entire country into the electric power system should be undertaken in a series of stages. It could be implemented with grants or long-term low-cost loans to producers.

The ramifications of the thermal power station are far reaching. The construction and operation of the plant itself plus the expansion

of mining operations to provide about 6 million tons of coal per year would employ thousands of otherwise underemployed Swazis. Completion of the project would place the economy on a sound power basis for a lengthy period.

F. Air Services: Swaziland's national airport is located at Matsapa, five miles from Manzini and thirty miles south of Mbabane. There are also three additional government-owned and twenty privately owned landing strips in the country utilised mostly by light aircraft.

Air traffic to Swaziland from abroad moves via Johannesburg, Durban, or Lourenco Marques. As mentioned in Chapter 6 above, scheduled flights between Matsapa and Johannesburg - (now running three times per week) are to be stepped up to daily service in the near future. Arrangements for chartered flights can also be made. Service between Matsapa and Lourenoc Marques is maintained twice per week. At the present time no other international flights originate or terminate at Matsapa.

The growth of tourism in Swaziland, the increasing flow of other air passengers, and the potential for airborne trade with African and overseas countries has focused attention on the limited facilities of the present airport. A survey is underway by a team sponsored by Natal University, regarding the feasibility of building a new airport in the country, including airport facilities.

G. Posts and Telecommunications: Through 1953 the nation's telecommunications services were operated by the South African Post Office system. It was taken over by Swaziland at that time, and construction of a national telephone and telegraph system was started. Despite many problems, including a shortage of technical personnel, long delays in the delivery of equipment and competing claims to limited budgetary funds, the

Department of Posts and Telecommunications has made great progress in providing the required scope of services. As in many other countries, however, this expansion has not been able to catch up with the demand because of a continually growing clientele. At the end of 1969 the number of telephones in service was about 5,000. Of the 30 telephone exchanges in operation in 1968 only those at Mbabane and Mansini are automatic.

In 1969 Swaziland became the 142nd member of the Universal Postal Union. There are 33 Post Offices at present. Local Post Offices throughout the country also handle the savings accounts of the Government-controlled Swaziland Credit and Savings Bank. It is the policy of the Government that the Department of Posts and Telecommunications shall provide services on a commercial basis and shall in due course become a source of net revenue. In 1966-67 total revenues were R488,371 of which 37.1, 46.9 and 16.0 percent were derived from Posts, Telephones, and Telegraph and Telex respectively.

A three-year development programme costing R600,000 was initiated in 1968-69 and is expected to be successfully concluded in the current 1970-71 fiscal year. The objectives of the development programme are to expand the main trunk lines, to improve and expand the minor trunk routes feeding into the main switching centres and to expand the local exchanges and networks. Telephone circuits are to be expanded from 24 to 104, and trunk speech circuits from 67 to 179.

Telephone and telegraph links with the outside world are through the main trunk routhe to Johannesburg and thence to the rest of the world. As 95 % of Swasiland's external traffic either terminates in South Africa or transists through that country, heaviest emphasis has been laid upon improvement of circuits to that area. Direct trunk circuits also connect with Mosambique.

There is no television as yet either in Swaziland or in the Republic of South Africa. Swaziland has one standard-frequency radio broadcasting station. This station, the Swaziland Broadcasting Service, broadcasts on the 881 kc meter band and operates 9½ hours per day, offering 7½ hours of general programmes and two hours of school programmes.

H. Education: Since 1950 primary and secondary education in Swaziland expanded rapidly. In 1950 there were 205 primary and 10 secondary schools, with 14,300 and 300 pupils respectively. There were 400 teachers in the primary schools; no information is available regarding teachers in that year in the secondary schools. In 1968 these figures were 358 primary and 31 secondary schools, with 62,100 and 6,200 pupils, and 1630 and 300 teachers respectively. About 60 % of the children between 7 and 13 years of age attended primary school and about 30 % of the 14 to 18 year age group receive some secondary education. The first schools were started in Swaziland by missionaries in the late nineteenth century and the majority still are run by missions, although most of them receive substantial Government assistance. In 1969 eleven more secondary schools were created, partly by transforming primary schools into junior secondary schools. The budget for 1970/71 allocates funds for four new secondary schools.

Eleven of the secondary schools go up to the Cambridge Overseas School Certificate (Form V, "O-Level") with access to the University of Botswana, Lesotho and Swaziland, and one is classed as equivalent to Cambridge Overseas Higher School Certificate ("A-Level") with admission to British Universities. The remainder offer only three years of education leading to a Junior Certificate. There are seven government secondary schools and two are maintained by the Swazi National Administration with Government assistance. The Government intends to establish a centre where pupils of O-Level can study for an additional two years to reach A-Level.

Tuition is free in all schools except the Waterford School, which goes up to the A-Level. (This school receives only nominal Government assistance). However, all pupils must make a contribution to the school fund which varies from less than R1 in the smaller primary schools to R45 in the larger Government secondary schools.

Other educational institutions in Swaziland are the following:

1. The Swaziland Agricultural College and University Centre (SACUC), which came into existance in 1966 when Swaziland's College of Agriculture at Luyengo became associated with the University of Botswana, Lesotho and Swaziland (UBLS). This University was established in 1964, when the three countries took over the Roman Catholic Pius XII College in Lesotho. In 1969 there were 55 Swazi studying at the UBLS, while another 56 were at universities in other countries. Most faculties of UBLS are in Lesotho at present, although plans are being made to start some operations in Botswana and Swaziland too. The first faculties to be added in Swaziland probably will be languages and history. It is the intention that the Swaziland Industrial Training Institute and a teacher training college be incorporated in the University complex.

2. The Sebenta National Institute, an adult education institution, was founded in 1969, and receives financial support from the Government and private local and overseas sources. Classes are held in the large urban areas. The main aims are to promote literacy and community development. In 1969 there were 94 adult classes, attended by about 1,500 persons.

3. There are two general teacher training colleges in Mansini, which provide training mainly for primary school teachers, and one college for teachers of domestic scienceteachers in primary and junior secondary schools. In 1969, 129 general teachers and 14 domestic science teachers completed their training.

4. Industrial training is sponsored by the Government and by the larger industries. The Government's industrial education is now centred mainly in the Swaziland Industrial Training Institute (SITI), which offers training for artisans and technicians. There is also a Trade Testing Centre which tests materials used in the building and light engineering trades and offers some courses in Training within Industry. All big industries have their own programmes for training employees on the job and in training institutes. These programmes include some followships.

5. Farmer training other than at the University level takes place at farmers' training centres, where interested farmers can take short courses. There is one centre at SACUC and one in the Lomati Valley in the North. A third one is being built in Shiselweni and a fourth will follow in Lubombo, so that every district will have such a centre. Moreover a centre specifically for cattle farmers will be established at Mpisi. These centres will have a capacity of 5,000 farmers a year. Training in farming for boys having finished primary school also will take place at Youth Training Camps. The camps will give practical courses with a duration of 10 months. The boys will be selected by the chiefs, who will take into account their leadership capacities.

6. The Staff Training Institute trains administrative, executive, accounting, clerical and secretarial staff for Government service.

7. The Swaziland Broadcasting Service produce a two-hour programme each school day on widely varying subjects for primary and secondary schools. The aim is to make the lessons more interesting.

8. The nurses training college, attached to a mission hospital in Mansini and subsidised by the Government, offers a five-year training course.

In spite of the considerable expansion of education in the last two decades, there are not yet enough primary schools for the number of children who are eligible to attend. There are also not yet enough teachers so that many schools are unable to offer the full seven-year course. In many cases, moreover, the teachers are not fully trained. Of the 1630 primary school teachers in 1968, 400 had no secondary education.

Another problem is that the curricula of both primary and secondary school are not adapted to the needs of the country in its present stage of development. In some primary schools, courses in home economics are offered and practical agriculture is taught by work in school gardens, but this is exceptional. Many primary school leavers will not have the opportunity to get any further school education. The schools therefore should offer more practical courses. The same suggestion is relevant to the secondary school programme. The present curriculum is too academically oriented. Many pupils leave after three years or less to find work; and of those who go up to O-level, only a small percentage go to a university or college.

The intention of the Ministry of Education is now to broaden the programmes so as to add subjects of a more practical nature. The pupil should have an opportunity to choose, so that he can exploit his natural aptitude to a greater extent. Two years ago a start was made by introducing wood and metalshop work, typewriting and bookkeeping in two boys secondary schools. Later this principle was extended to a girls school with courses in home economics, dressmaking and cookery. The Ministry intends to start agricultural courses in three secondary schools next year. Two of these will be in the rural areas and one in Mbabane. This programme can only be carried out gradually because of its cost. Yet it must be expanded considerably, and good teachers must be found if a high standard is to be established and maintained.

The current budget allocated R2.696 million and the capital budget R633,570 for education in 1970/71.

I. Health Services: Over the past two decades health services in Swaziland have increased very considerably. Curative health services are provided by the Government, the missions, the larger industries, and private practitioners. Preventive services are mainly available from Government hospitals and clinics. Since 1947 the number of hospitals has increased from 4 to 11, of which 6 are Government hospitals, three are subsidised mission hospitals, and two - including the Havelock Mine hospital - are private. Most of the other industry operations maintain their own clinics. There are 45 health centres staffed with trained nurses in rural areas and soon each of the four district capitals also will have its health centre. There are 54 doctors in Swaziland, i.e. one doctor per 7,400 people. Public Health Services are available in Mbabane and Mansini. A Public Health Laboratory is maintained in Mansini. Nurses' training is offered at a Mission Hospital subsidized by the Government. Swaziland has 365 trained nurses. Life expectancy in 1966 for a Swasi was 44 years.

Malaria, once a severe threat to the health of the Lowveld, is nearly conquered. This is also true of leprosy. There is still a high incidence of tuberculosis, but it is decreasing as a result of the general tuberculosis and smallpox inoculation campaign. An inoculation campaign against measles has started. Bilhardzia is widespread and increasing, especially in the irrigated areas; the Government is working closely with industry to try to bring this disease under control. Attempts to bring other diseases under control are also being made. Gastro-enteritis and diseases resulting from malnutrition remain serious problems.

UNICEF provides skimmed milk for young children, and, in the recent years of drought, considerable quantitities of various foodstuffs were provided under the World Food Programme. A school feeding programme, initiated by the Save the Children Fund and Oxfam (Oxford Committee for Famine Relief) is being expanded to cover most schools. Education regarding nutrition, which includes school vegetable gardens and improved school diet, is also directed to the parents.

Health education is being expanded throughout the country. New Public Health Legislation is presently being drafted in an effort to raise health standards through improved hygiene and food inspection. The Director of Medical Services would like to see such inspection requirements extended also to industries and other enterprises.

The Government's growing concern for the health of its citizens is reflected in the growth of its budgetary allocations for health services. In 1960 total Government expenditures for health services amounted to R300,000. In the 1970/71 budget R1,159 million was alloted under the recurrent budget and R 234,000 under the capital budget.

Chapter VII. LABOUR AND TRAINING

A. The Work Force. The work force in Swaziland was estimated at nearly 136,000 in 1969. This included all persons between 15 and 64 years of age, minus a percentage considered economically inactive. Of these, 129,370 were African residents. In view of the rate of population growth (3,7% a year), the work force is expected to increase by about 20,000 by the end of the Development Plan period in 1974.

The number of wage and salary employees is estimated at 48,600 and the number of self-employed in the money economy at 1,400. The self-employed group includes working proprietors of industrial or commercial enterprises and independent farmers. The remainder of the work force comprises those mainly engaged in subsistence farming, those looking for work and those temporarily working outside of the country (mainly South Africa).

Of the total wage and salary workers, 39,000 are engaged in the private sector, of which 6,000 are in household services; 9,600 are in public service, of which general administration makes up 2,900, local government 200, health and education 2,900 and public enterprise 3,600.

Regarding the measure of skills, amongst the wage and salary workers excluding domestic servants, 7,430 employees were classified as administrative (in management and supervisory), technical (professionals) and clerical; 1,335 were classified as skilled manual workers (having served an apprenticeship in a recognised trade) and 32,370 as unskilled manual workers.

The following table shows the distribution of employees by size of establishments;

Size of unit, persons employed *)	No. of Units	Employees
Less than 5	402	759
5 - 9	134	839
10 - 19	151	2,067
20 - 49	125	3,836
50 - 99	47	3,509
100 - 249	24	3,562
250 - 499	6	1,881
500 and more	15	15,056
TOTAL	904	31,569

It has been indicated elsewhere that fringe benefits often form a significant part of an employee's earnings. It should be noted that, whereas food rations are included in the earnings shown below, other benefits such as housing, board, etc. are not shown because they are too complex to calculate.

*) Excluded are private schools whose teachers are paid by Government.

AVERAGE EARNINGS FOR MONTH OF SEPTEMBER, 1969, OF SKILLED AND UNSKILLED MANUAL WORKERS IN PRIVATE SECTOR BY INDUSTRY *):

	Skilled	Unskilled	
	Males	Males	Females
	(Rand)	(Rand)	
Agriculture	157	11	5
Forestry	195	22	11
Mining	307	47	25
Manufacturing of which:	181	31	14
Food and Drink	102	17	12
Wood and Wood products	229	45	10
Other	171	28	18
Construction	143	28	7
Distributive Trade of which:	167	29	33
Wholesale Trade	186	33	43
Retail Trade	218	35	42
Hotels and Restaurants	82	15	14
Transport, Storage and Communication	211	30	15
Financial and Business Services	60	30	13
Community, Social and Personal Services of which:	125	19	12
Educational	77	21	14
Veterinary and Medical	-	17	9
Personal and Household	146	30	23
Other	N/A	20	12
Total	176	22	12

*) One of the reasons for the wide difference between the earnings of the skilled and unskilled groups is the fact that amongst the first mentioned are such highly skilled manual workers as precision instrument makers, electricians, machinery fitters, computing machine operators, automobile mechanics, general foremen, cookers (chemical), cooks, housekeeping supervisors and, in the mining field, miners and quarrymen experienced in recovery techniques and use of explosives. In the next Employment and Wages Survey, the Department of Statistics intends to make a further division and split the unskilled groups into a semi-skilled group, i.e. employees with considerable on-the-job training but no formal qualifications, and a residual group of unskilled. This refinement will make it possible to define clearly average earnings and to make comparisons between different industries.

B. Employment by Sectors. According to the Employment and Wages Survey, September, 1969, the number of employees in industry and mining was about 12,120, in agriculture and forestry 16,730 and in services (excluding private domestic servants) 12,280. The following table shows the breakdown among the various sectors:

Industry Group		Number of employees
Total: Males		35,693
Females		5,448
Industry and Mining		12,127
Mining		2,720
Manufacturing		5,119
Food and Drink	2,188	
Wood and Wood products	2,235	
Other	696	
Electricity and Water		498
Construction		2,823
Hotels and Restaurants		967
Agriculture and Forestry		16,731
Agricultural products and Services		14,084
Forestry		2,647
Services		12,283
Wholesale Trade		606
Retail Trade		1,704
Transport, Storage and Communications		2,038
Transport and Storage	1,674	
Communication	364	
Financial and Business Services		501
Community, Social and Personal Services		7,434
Public Administrative and Defence	3,061	
Education	2,694	
Medical and Veterinary	1,208	
Personal and Household 1/	231	
Other	237	
Total		41,141

1/ This number excludes private services. Judging from the Population Census, 1966, the number of these may have been about 6,500.

Although in previous years data on unemployment were collected from the labour exchange system, the Department of Statistics decided to discontinue this practice because the method of compilation produced ill-defined on unreliable results. For example, a man may come from a rural area and apply to the Labour Exchange Office in Mbabane for a job. If, after waiting in vain for some time, he decided to return to his work on the land, his employment status would not be clear. Moreover, many people looking for work do not approach one of the two Labour Exchange Offices, in Mbabane and Manzini and are not registered as unemployed. Those who do frequently do not inform the Office when they find a job. A properly constructed sample survey would be necessary to overcome these difficulties.

The labour exchange has not yet found a satisfactory working method to assist the unemployed. In particular it appears difficult to help unemployed people not living in or near the two towns.

C. Industrial Training. As indicated in the section on education, industrial training is provided by industry as well as by the Government. The most important Government institution in this field is the Swaziland Industrial Training Institute (S.I.T.I.).

Four types of courses are offered by S.I.T.I.: courses for technicians, craftsmen, hotel and catering employees, and selected other occupations. The technicians' courses train workers in mechanics and mechanical engineering, electronics and telecommunications, and in construction techniques. Minimum education requirements are standard VIII or Junior Certificate, but an 18-month introductory course is required for admission to a technical course. After completion, the students undergo an apprenticeship in industry.

The craft courses are of two years' duration and relate to automotive mechanics, fitter/turners, fitter/welders, electricians, bricklayers and carpenters. The hotel and catering course runs for three years.

The number of students at S.I.T.I. increased from 80 to 247 during the last two years, and an expansion programme is under way.

D. The Agricultural College and Extension Training and Services. Some information on the expansion of agricultural training is contained in the section on Education. The Farmers' Training Centres, which will be located in every district, offer courses and training to farmers interested in modern methods of cultivation and cattle-raising. Youth Training Camps, which cater to young potential agriculturists, will bring together young men with leadership capacities from all parts of the country for a ten month training program, after which they return to the village and hopefully apply their new agricultural knowledge. One of the objectives is that the trained young people will help the extension workers in their activities to pass on knowledge about modern agricultural practices.

Until recently the Agricultural College conducted four full-time courses as well as the short farmers' training courses. Last year the Government decided to close the courses in forestry and home economics. The forestry companies indicated that the small annual increased demand for forestry did not warrant the continuation of the course. As to home economics, it was found that there were not enough posts for women at this level of training. An F.A.O. expert has investigated the question and the possibility is now being considered of bringing home economics under the Diploma Course so as to train the students as teachers in this discipline at the secondary schools.

Animal husbandry is taught as part of the Diploma and Certificate Courses, with greater importance being given to it recently. Extension methods are also part of both curricula.

After its expansion last year, the College now has a capacity for 138 students plus facilities for 32 farmers and school teachers who may be taking short courses.

Up to now, 5 Diploma students have successfully finished their studies and 84 students including 19 foresters and 13 home economists have obtained certificates.

E. Skill Requirements. Though programmes for skill training and skill upgrading are being carried out both by Government and by industry the outlook is for a continued shortage of skilled workers and professionals for some time. This appears to be the case especially with regard to industry's requirements for technicians, accountants, engineers, animal health inspectors, management skills, agriculturists, and skilled manual workers, especially motor mechanics and fitters. Government's demands for graduate teachers, planners, and other specialized professional staff are likely to outstrip the growth of supply of workers with the requisite skills and training. Greater progress is being made regarding other skills through on the job traing and selective special training. Correct planning regarding the development of skills is required to meet the present and future demands for skills of both the private and public sectors and to influence the skill make-up of new entrants as well as existing members of the labour force.

The Manpower Planning Unit of the Department of Economic Planning and Statistics, in attempting to programme for such growth, is in the midst of a study regarding high and middle-level manpower

requirements and resources during the five year period of the Post Independence Development Plan, and although this study is not yet completed, preliminary conclusions so far developed can offer some guidance. The study, covering Swazi manpower with at least three years of secondary education, is based on material collected for the greater part through interviews with representatives of Government Departments, private and public enterprises and educational and health institutions.

The calculation of requirements is based on the objective that by the early 1980's a sufficient number of Swazis with completed education should be available to fill all jobs now performed by expatriate employees. This does not mean, however, that all these trainees will have had a period of practical experience by that time. The length of the period of in-service training that must be carried out before the Swazi will replace the expatriate will depend on the Government's localization policy. While the Manpower Unit chose the early eighties as its overall target, it indicated that in the present Plan-period (5 years) the training programme should make available a number of Swazis equal to half of the expatriate employees which are eventually to be replaced.

The preliminary conclusions of the Manpower Planning Unit are the following:

1. Estimated demand for workers who have completed from three to five years of secondary education is 5546. Against this number there are expected to be about 6150 workers meeting the required education levels. Because the Government's education policy emphasises expansion of secondary education, the Manpower Unit advises that the Government reconsiders its policy.

2. An expansion in the number of University graduates is urgently required, with emphasis on science/math subjects. An average of about 96 students per annum would have to enter the University if the requirement of sufficient University graduates in the early eighties had to be met. Of these, 56 would be in science/math courses of training and 40 in arts. Although it is quite possible that localisation requirements may actually be lower than assumed, it is nevertheless essential that the need for specialists in science and mathematical subjects is stressed in the secondary schools. The greatest shortages at the end of the Plan period will be for graduate teachers. (about 100 even under the unrealistic assumption that all non-specialist graduates would become teachers), engineers (48), doctors (35) and agriculturists (30).

3. It is estimated that during the Plan period there will be a demand for about 820 persons with one to five years of higher education training beyond the secondary level, 480 of whom should have courses in science/math orientation. It will be possible to train only about 370 of such people in institutions now existing in Swaziland. Considering the number of people now being trained by these institutions, the ratio of demand and supply for various occupations may be as follows:

About 100 persons will obtain their diplomas and certificates of agriculture from S.A.C.U.C. Meanwhile Government demand is estimated at 107 and the private sector demand at 88, leaving a shortage of almost 100. There will be a considerable demand for animal health inspectors (42) and the Manpower Unit observes that this seems to justify the establishment of a relevant course in Swaziland.

Motor vehicle technicians trained at SITI could well be in oversupply (23); but there will be room for them as instructors at the craft level and as workshop managers and motor mechanics foremen. If it were decided to build the thermal power station, an additional 125 electrical and mechanical engineering technicians would be needed. This number, added to the normal requirements for these technicians which is not being sufficiently met by SITI at the moment, particularly regarding electrical engineering technicians, would bring the total need to about 60 students a year, in these two groups, to start their studies during the Plan period.

There will also be a shortage of accountants at the end of the Plan period. The estimated figure of 43 includes those working on their own account, for whom no localisation requirements is applicable. The Staff Training Institute hopes to enroll 16 accountant students each year, and thus, lower the shortage after 1974.

.4. Under the category of persons requiring additional training after obtaining a Junior Certificate are primary school teachers. The supply and demand for primary school teachers will probably come into balance in the course of the Plan period. The same situation does not apply to nurses where the shortage will be about 36.

5. A comparison of the supply and demand for several skills shows shortages of motor mechanics (78), fitters (57), electricians (42), bricklayers (44), carpenters and joiners (41). In other occupations, as in the cases of power machine operators and typists, the generation of skills will be adequate. These categories of employment comprise those jobs

which normally require three to five years' secondary education and also on the-job training. These employees may have attended SITI or a training institute of one of the larger companies.

It is clearly apparent that a more satisfactory meshing of qualifications with job needs will require a re-orientation of the secondary school curricula in a more practical direction.

F. The Manpower Unit Study. In evaluating the preliminary conclusions of the manpower unit study, the following points should be taken into account:

1. The Government Departments were asked to estimate their manpower requirements up to 1974 with a reminder from Chief Udoji's memorandum: "Training and Localisation of Swaziland Civil Service", regarding the limitations on the expansion of the Civil Service and the existant budgetary restraints. The result was nevertheless that a 32% expansion of posts over the next five years was requested.

2. Estimates made by the Electricity Board to the Manpower Unit did not take into account the proposed thermal power station, as this is likely to be built after 1974.

3. The requirements of the proposed University Centre and Polytechnic have not been included in the estimates.

4. It was concluded from the interviews with the eight largest enterprises, which together employ about one third of all wage earners in the private industry sectors, that their rate of growth in the Plan period would be very low and that consequently their requirements for additional high and middle

level manpower would also be low. On the other hand it was concluded that a new coal mine employing 1,350 people would be opened within the Plan Period. If this occurs, mining employment would be increased from 2,760 to 4,110. It was also concluded that employment in the manufacturing industry (excluding forestry products, sugar and pr nting) would increase from 1,190 to 3,100 (173%); in the construction industry from 1,310 to 2,150 (63.5%) back to the 1967-68 level; and tourist-industry employment would increase from 970 to 1,540 (53%).

5. It was assumed that, for private enterprise, there would be no changes in the composition of the labour force, so that if a certain percentage of increase occurred, this same percentage would apply to each occupation and skill. Actually the data made available were insufficient to allow firm forecasts and this probably led to an understatement of future skill requirements, especially for skilled manual labour, such as carpenters, bricklayers, and motor mechanics, because here as supply increases, improving work standards were likely to be demanded. It was stressed therefore, that the skill requirements for the various occupations had to be reviewed regularly.

6. It is believed that the following observations are pertinent to the manpower unit study:

(a) An increase of the cash economy in agriculture will result partly from an expansion of industries processing agricultural products and partly from the establishment of additional settlement schemes. Estimates about the impact of such developments have been made and are included in the Manpower Unit's results. It is also believed, however, that

higher education attainment by farmers under the current programme, more extension work, community development and more irrigation facilities, will increase the numbers of cash-crop farmers, and by this the demand for high and middle manpower.

(b) Small enterprises and business are being promoted and assisted by the Government and the numbers of people in these activities should increase. SEDCO estimates that these small self-employed entrepreneurs may reach several hundred by the end of the Plan period. As the majority of these persons must have an education level of at least Junior Certificate, and as they will require some employees with the same level of education, the demand for such high and middle level manpower, especially middle level, is estimated by SEDCO at over 500. The Manpower Unit had estimated at only 175 the increased requirements for small enterprise in general.

(c) The contemplated changes in the curricula of the secondary schools will broaden the education of school leavers and therefore place them more in demand by prospective employers; and moreover make them more able and willing to apply their knowledge in enterprises of their own.

(d) On the basis of interviews which the Mission had with employers it appeared that they would welcome being placed in a position whereby they could find and engage employees educated at a higher level than at present. We agree therefore with the Manpower Unit's belief that its estimates of skill requirements in the private sector are underestimated.

We also feel that this under-estimation is not limited to the artisan group, but extends to the other skills and professions as well.

(e) Discussions on localisation policy gave us the impression that the Government's goal of replacing the expatriate cadre of employees by fully trained and qualified Swazis was not tied to a fixed date. Localisation policy, although considered highly important, shows a flexibility involving a good deal of adaptation to circumstances.

(f) As a result of this study it must be stressed that the expansion of UBLS, including its agricultural branch, is of tremendous importance to Swaziland, as is the intended expansion of SITI. A review of the programmes of both the primary and secondary school systems is also essential.

Chapter VIII: INSTITUTIONAL SETTING FOR INDUSTRIAL DEVELOPMENT

A. The public sector: Other than electric power, the Government of Swaziland is not directly engaged in industrial or agricultural production activities as such. Unlike many developing countries in which the Government had to take the initiative in lifting the area out of economic stagnation, Swaziland has thus far limited its role to that of creating and maintaining the conditions which attract private investment to develop the agricultural and industrial resources, including the manufacturing sector, and to aid and encourage private investment through various incentives and services.

Building on the basis of the productive industries already established during pre-independence and possessing additionally a wide range of natural resources which still awaited development, the Government built a strong infrastructure to serve these resource areas. Priority was given to roads. Fairly large projects involved housing, water supplies, and telecommunications. There was also considerable expansion with regard to the social services, especially in education. But it was mainly in the railway, highway and power infrastructure that the largest capital investment was made.

The most important statutory bodies are the Swaziland Electricity Board, the Swaziland Railway and the Swaziland Credit and Savings Bank, all established in 1962. The Swaziland Electricity Board is financially self-supporting. The Railroad will be practically free of its indebtedness in 1974 and also operates on a commercial basis, as does the Credit and Savings Bank. This bank was established to fill a need for credit for agriculture, and for low cost housing, financing for which were not available from the commercial banks. The Swaziland Building Society was also created to assist in the financing of housing construction. The Credit and Savings Bank, in addition, participates in the Government's newly established Small Enterprises Development Company, which assists the establishment of small enterprises and handicraft operations.

In recent years the Government has stepped up the share of its revenues allotted to education, agricultural services and to health services. It has also endeavoured to promote the expansion of agricultural settlement schemes in which Swazi participation has proved so successful. By making credit available to small farmers, small entrepreneurs and traders, and by assisting them through Government sponsored organizations it has built up new participation of the Swazis in the modern economic sector - the long term objective.

The Office of Economic Planning has responsibility for determining the requirements of the public sector on a long-term basis, and for recommending priorities. Though such plans do not attempt to establish any targets for development of the private industry sector, this sector is of necessity greatly influenced by the actions of the Government and looks to it for the many services and facilities which affect its daily operations.

The surge of industrial development over the past several years and growing investor interest in Swaziland's industrial potential, has been a challenge to the Government to keep pace with increasing demands for technical and other data on the nation's industrial opportunities, incentives, and policies. These demands have been met mainly by the Ministry of Commerce, Industry and Mines, the newest Ministry in the Cabinet structure. The proposed Industrial Development Corporation is expected to assume these responsibilities when it is established and further to expand industrial investment promotion activities in the medium and large scale industry areas. To render assistance to small enterprises and businesses the Ministry has already established a Small Enterprises Development Company and a Small Enterprise Promotion Office.

The Ministry at present undertakes to promote the establishment of medium and large scale industries in various ways, including taking the initiative in formulating project opportunities, bringing them to the attention of interested investors and following-up the interest generated so as to bring about plant construction. It is also the Ministry's responsibility to develop the long term possibilities for industrial development so that these may be woven in the plan projections of the Economic Planning Office.

As the volume of required assistance and services by private investors grows, the Ministry must recognise the importance of providing broader institutional support for its activities rather than the present case-by-case approach. There is also a need to draw together present incentive policies and to determine the depth of the Government's necessary involvement in undertaking feasibility studies and industrial analysis as a means for attracting investment.

B. Industrial Development Policy: Government policy regarding industrial development is based on the decision that industrialization is to be achieved through the private enterprise system. This is a continuation of the policy of growth and development in effect immediately prior to independence.

(1) The Government's broad policy objectives and the role of industry therein are clearly expressed in the Post Independence Development Plan, as follows:

a) The main objective is to improve the living conditions of the mass of the people.

b) The Government will intensify efforts to mobilize foreign capital funds for the public investment programme, paying increased attention to non-British sources of aid and taking advantage of possibilities for grants and soft loans as well as commercial credits.

c) The Government welcomes foreign capital for investment in the private sector and will provide reasonable terms. The private sector for its part will be expected to co-operate in the attainment of the Government's principal objectives.

d) The efforts to mobilise foreign capital resources will be supplemented by determined efforts to increase the internal resources of the country, in particular domestic savings.

e) The Government will endeavour to finalise current negotiations for a new customs union agreement as soon as possible, inter alia with a view to increasing Swaziland's public revenue. *)

f) High priority will be given to the development of agriculture and related industries without neglecting other sectors of the economy.

g) Negotiations with the British Government on the land question will be continued. *)

h) High priority will be given also to education and training, with the main emphasis on expanding and improving secondary education and training.

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*) The negotiations under point (e) have already been successfully concluded and discussions with the British Government regarding the land question, point (g) have also been favourable.

(2) Protection of New Industries. Although the main purpose of the common tariff arrangements under the Customs Union Agreement is protection of South African industries, it also offers a measure of protection to similar Swazi industries. The modification of the Customs Union Agreement reached in 1969, however, specifically states that Swaziland may under certain conditions give protection to infant industries. The reference here is the protection against South Africa mostly, but also against Lesotho and Botswana industries. The provisions of the new agreement are very important for the future since they spell out a right which previously at best had been d b us. Within the Customs union area, however, Swazi industrial products must compete with other producers. As a result, industry in Swaziland has been established within a framework of natural resource advantage, competition, and export market orientation, and protection has not been an adopted policy.

(3) Industrial Development Incentives. Swaziland as yet does not have a specific industrial development incentives law though a draft of such a law is under preparation. Various guarantees and incentives are offered to new industry under existing laws and regulations. These include investment credits, accelerated depreciation, additional depreciation allowances and a number of indirect incentives such as serviced industrial sites, low land costs and low labour costs. Under consideration, also, are further tax incentives and other benefits. Special processing and manufacturing rights have been selectively granted to help new industries in their early years.

The institutional services to industry have also been expanded. The Small Enterprises Development Company offers several forms of aid to small enterprises; and a new Industrial Development Corporation, to serve primarily medium and large scale industry, is being established. Double taxation agreements have been concluded with the Republic of South Africa and with the United Kingdom, and there are no restrictions on the repatriation of profits.

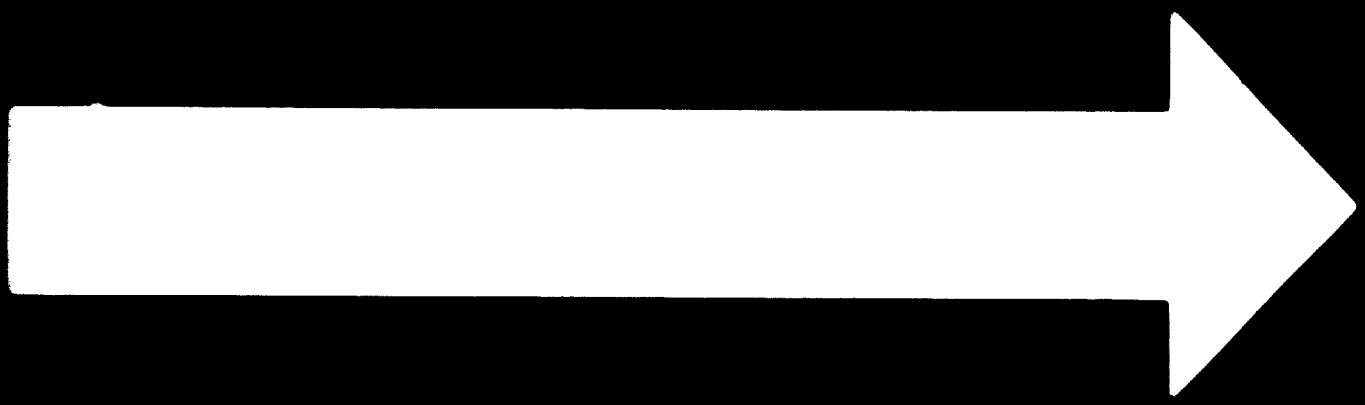
C. Industrial Development Corporation: The Government has announced its intention of establishing an Industrial Development Corporation, as a means for making more effective its activities regarding the promotion of trade and industry. Recently the preponderant part of the industrial development and promotion work carried out by the Government has fallen

to the Ministry of Commerce, Industry and Mines. The increasing demands on this Ministry, especially in the areas of technical and fiscal data, have made the proposed action an imperative precondition for the success of a programme of sustained industrial promotion. Planned for establishment during the course of the present year, the proposed Industrial Development Corporation is expected to assume prime responsibility for carrying out Government policy regarding the promotion of industrial development. It will be the central agency to which investors can turn for data and information, including the incentives which can be offered to manufacturers and industrial lists. It is planned also that the new corporation, with its own capital resources made available to it, will be able to enter into selective joint ventures which are of benefit to the economy. The Industrial Development Corporation is expected to be guided in its policy actions solely by the economic viability considerations of projects which it may assist.

D. Industrial Financing: The banking structure of Swaziland is intimately associated with that of South Africa and to a lesser extent the United Kingdom. The nation has no central bank. The legal tender is the Rand currency system of South Africa. As a member of the Commonwealth, Swaziland is a member of the sterling bloc.

Swaziland has two commercial banks - Barclays Bank Ltd., D.C.O. and the Standard Bank Ltd. Both of these banks are branches of banks incorporated in the United Kingdom, having regional head offices in South Africa. These banks are not subject to either U.K. or South African regulations insofar as their day to day operations in Swaziland are concerned. The two banks maintain a total of 12 branches and 16 agencies, located in different areas of the country. Barclays Bank also acts as banker to the Government.

A third bank, the Swaziland Credit and Savings Bank, a statutory body, was established in 1965 to fill a gap in the credit system in the area of agriculture, low cost housing and small enterprise and business activities. The main purpose of the bank is to provide credit facilities for Swazis, particularly those who are unable, because of insufficient security, to obtain credit from commercial institutions or wholesalers. Although the Bank is run as far as possible on commercial lines, it is designed to accept risks which commercial banks by their very nature, are not permitted to assume.



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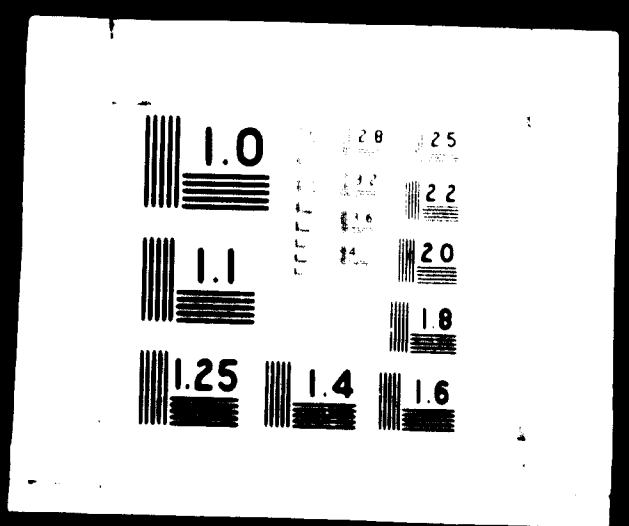

In addition to the three banks varying amounts of capital are held by a building society and several foreign insurance companies. Because of the important contribution of South African capital to the development of the industry structure in Swaziland, many residents and investors are presumed also to have access to South African credit sources.

C. Industrial Programming and Project Evaluation: Besides the office of Economic Planning there are also other Governmental bodies which take part in programming the development of the various economic sectors, especially as regards energy, mineral developments, and infrastructure. The Post Independence Development Plan is primarily directed to the role of the Government in the expansion of the public sector in order to provide the infrastructure and services which industry and agriculture requires. On the other hand the selection of industry on the basis of programmed development is not yet being utilized in any depth. The Government is able to encourage one industry instead of another, if for instance one may be more labour intensive than the other. However, as industry growth continues and the competition for capital and labour resources increases it is essential that programming of development and the selection of projects through a process of evaluation be established. The need to conserve available capital and savings so that they can be channeled to achieve optimum advantage to the country through the creation of jobs and earnings and, in turn, to rationalize use of foreign currency holdings of the country, requires that the selection of projects be submitted more and more to a systematic process of programming.

F. Industrial Planning: Industrial Planning, within the overall context of the Economic Planning office is the responsibility of the office of the Prime Minister. The Planning body consists of two units, the Planning Secretariat and the Statistical Office, both having been formerly in the Ministry of Finance. The Economic adviser to Cabinet is Chairman of the Committee. An inter-Ministry group comprising the Permanent Secretaries, a Senior Economist and the Director of Statistics make up the rest of the Committee and assures the participation in planning decisions of the entire Government structure. Co-operation with the private sector is also provided so that the views of that sector can be obtained and considered.

The duties of the Economic Planning office, as stated in the Post Independence Development Plan, include co-ordination of financial policy with economic policy; exploration of means to obtain financial assistance; and the provision of an overall economic planning view in connection with the preparation of the annual budget.

The present economic plan covers the five year period 1969/70 - 1973/74. Aimed originally at the prospect of full implementation in four years, it is currently being reviewed in the light of changed conditions in some areas. The 1969/70 capital and recurrent budget takes the Plan's financing needs into consideration as does the 1970/71 budget. To carry out the investment and development programme outlined in the Plan the Government will require considerable capital from abroad in the form of grants, soft loans, commercial loans and credits, and direct investment.

The plan contains a public investment programme amounting to R 23,100,000 formulated in accordance with policies aimed at developing the full potential of the nation's resources. The programme comprises the following:

Agriculture.....	R 3,196,000
Mining, Industry and Commerce...	R 2,482,000
Power.....	R 2,800,000
Roads	R 4,000,000
Vehicles and various equipment...	R 1,200,000
Telecommunications	R 600,000
Housing Utilities and Community Development....	R 2,790,000
Education, Training and Broadcasting	R 3,310,000
Health.....	R 530,000
Administrative Buildings....	R 730,000
Judiciary, Police and Prisons	R 1,274,000
Miscellaneous	R 188,000
	R 23,100,000

The mining industry and commerce component of the plan is made up as follows:

Mining Plant Hire Service	R 20,000
X-Ray Spectrometer	R 4,000
Matsapa Industrial Estate	R 200,000
Small Business Loans etc.	R 250,000
Industrial Development Corp.	R 2,200,000
	R 2,682,000

The public investment programme of R 28 million is not expected to be financed in its entirety through the Government's Capital Budget. Several projects such as the new Industrial Development Corporation, the investment in power expansion, and a few others, all amounting to about R 5 million, will be financed through other means, leaving R 18 million for budget financing.

The implementation of the Development Plan will require action by the Government on a large scale and will involve public investments as well as administration and organizational measures. The Government will thus continue to develop the economic infrastructure, particularly transportation, posts and telegraphs and water and power. Likewise, according to the plan, the Government will extend and improve education, training, public administration, information and extension services, certain credit measures, public health facilities and other services. The amount of R 2,200,000 which is indicated as the amount required for the Industrial Development Corporation has been increased to R 5,000,000.

G. Trade Agreements in Effect: Upon attaining independence Swaziland assumed the rights and obligations of those commercial agreements entered into by the United Kingdom and Northern Ireland concerning commerce and navigation, which were applicable to it as a part of the Empire, and practically all of these agreements are still in force. Following independence Swaziland indicated that these agreements should remain in force for a two year period during which it would re-examine their stipulations and application. As this two-year period draws to an end it is expected that this re-examination will be far from being completed and that, on its part, the Government will extend them in general for another two years.

Swaziland's trade, especially imports, is principally oriented to South Africa. A Customs Union Agreement between the Governments of Swaziland, Botswana, Lesotho and South Africa, in force since June 29, 1910, was re-negotiated in December, 1969. Commercial relations with Mozambique, through whose port of Lourenco Marques a large volume of Swaziland's exports move, are based on the agreement between the Government of Great Britain and Northern Ireland and the Portuguese Republic dated February, 1930, which was revised in May 1938. The growth of trade relations between Swaziland and the rest of the African nations, particularly those

to the immediate north, has brought about a mutual desire on the part of Swaziland and certain of these countries to formalize their trade relationships into trade agreements. Under the provisions of the Customs Union, Swaziland may enter into trade agreements with partners outside the Customs Union, without necessarily consulting with partners in the Union, provided it does not grant concessional tariffs. So far such trade agreements have been signed by Swaziland with Zambia, Kenya, Uganda, Malawi and Tanzania.

(1) The Customs Union Agreement: Swaziland, Botswana, Lesotho and South Africa together form a customs union that was originally established in 1910 under an agreement between Great Britain and South Africa. Since the independence of the former British territories, this arrangement has been continued. It was re-negotiated in 1969 and a new agreement was signed in December of that year. The re-negotiated agreement gave the three smaller countries rights and privileges not previously accorded them under the former agreement, making them working partners and providing for mutual consultation on matters affecting the Customs Union.

The Customs Union Agreement provides for a common external customs tariff and, broadly speaking, the free interchange of goods within the area, including freedom from quantitative restrictions. Each member of the Customs Union receives a fixed proportion of the total customs duties on goods imported into the area - this proportion is based on a formula which takes into consideration the share of imports of each country in the total, plus the production and consumption of excise burdened goods and sales tax goods, plus a multiple factor to compensate for price raising effects of the common external tariff (primarily benefiting South African import substitution industries) and other factors, including the limitations on fiscal discretion of the three smaller partners.

The average rate of import customs duties under the common external tariff is 7.6 percent advalorem.

As a result of the re-negotiation of the customs tariff formula for distributing the import duty and sales and excise taxes among the four members, Swaziland's share rose in 1969-70 to R 7,083 million - an increase which was sufficient in one stroke to eliminate the budget deficit for that year. As a consequence, import duty and import taxes made up about 80% of a higher level of total revenue in 1969-70, as compared with 20% in the previous year.

In the future the level of Swaziland's share of the total import duty and tax collections will depend on the level of its own imports, rather than on a fixed percentage share (thought for many years to be unduly low) of the total amount.

While the Botswana-Lesotho-Swaziland - South African customs union imposes certain limitations on the Government's freedom of action in matters of economic and fiscal policy, and is as yet far from being a full partnership arrangement, it is believed that its benefits to Swaziland outweigh by far its disadvantages. The Customs Union area has served not only as an enlarged market for the sale and distribution of Swazi industrial and agricultural production but also as an important source of capital and technical expertise. From the standpoint of long term economic development it is a most valuable attraction to foreign investors and entrepreneurs.

(2) Other Trade Agreements: In recognition of the strong export oriented nature of Swaziland's growing industry structure and its interest in developing a greater exchange of trade with other African developing countries, Swaziland has entered into trade arrangements during the past year with Uganda (June 2, 1969), Kenya (June 4, 1969), Tanzania (June 9,1969) Malawi (July 3, 1969) and Zambia. Under these agreements each country agrees to grant to the other most-favoured-nation treatment with regard to imports of the products of one country into the other and to undertake to increase the volume of trade between them. Exceptions are made for concessions to neighbouring countries and for those resulting from a customs union, free trade area, or other international trade arrangement to which either contracting party is or may become a member or party. The Swaziland agreements with Uganda and Tanzania draw specific attention to lists of products the export of which each country would wish to increase in its trade with the other. The Government has also made application for associate membership in the East African Common Market.

(3) Trade Relations with Mozambique: Swaziland's principal transportation link for exports beyond the customs union area is through the Mozambique port of Lourenco Marques. Trade relations between the two countries are governed by a most-favoured-nation treaty, still in force, negotiated between the United Kingdom and Northern Ireland and the Government of the Portuguese Republic signed in 1938. This treaty also provides

for the transit of Swazi export products free of import duties and other taxes, and in general, regulates the flow of merchandise trade between the two countries. There is close co-operation between the two countries regarding transport and other facilities as well as agreement to promote increased trade.

H. Marketing: The principal export crops are sold in selective markets under specific procedures governing their quality, their quota allocations, and other considerations, including price. The Swaziland Sugar Association, through the Marketing Executive Committee, has the responsibility for the sale and disposal of all sugar produced, and marketing is carried out within the limits of quota allocations. Cotton is sold by the ginnery itself and by the producers, practically all in the South African market where growers enjoy free entry under the Customs Union Agreement. Citrus is marketed by the Swaziland National Citrus Board in co-operation with the South African Citrus Board, which until the establishment of the Swaziland Citrus Board in 1969, regulated export shipments. The marketing of maize, [illegible], the most important subsistence crop is handled by the Swaziland Milling Company, which is required to purchase, at a fixed price, all maize offered to it by the Swaziland producers. About a third of the maize consumed in the country is marketed through this company which also has sole rights to import maize and maize products.

Tobacco and rice producers utilize co-operative organizations, but in general the co-operative effort has not been widely adopted.

(1) Purchasing Power and Pattern of Consumer spending: The tendency with regard to manufactures and various agricultural products is to consider Swaziland a limited marketing area of 400,000 people whereas it should be viewed at all times as part of the large customs union market.

There are very few statistics available regarding earnings in the private sector that can be used as a basis for determining real purchasing power and consumer spending in Swaziland. The majority of the people still derive their livelihood from subsistence agriculture and from earnings as unskilled workers in the developing modern sector. Though post war economic development has been impressive it has also, in important aspects, been unbalanced. Low wages, even when in full employment, characterise

the earnings of the Swazi, and purchasing power is quite low. In turn low productivity is one factor that keeps wages depressed. A prominent feature of the Swaziland economy is the extremely unequal distribution of income, reflecting the dualistic nature of the economy. The earning power and consequently the purchasing power of European participants in the economy is greatly in excess of the average but the number of such participants is quite small.

Data prepared by the Department of Statistics show total salaries and wages earned, including income in kind and medical and pension fringe benefit contributions, as amounting to R 25.3 million for 1967/68. This total includes wages for Swazis and for non-Swazis in the various sectors. It does not account for the savings brought back by Swazis engaged in mining and other employment in the Republic of South Africa, estimated to be a good part of the wages received. These wages paid to Swazi immigrant workers are considered to be in the area of R 5 million per year. Total earnings, therefore, were in the neighbourhood of R 31 million, in 1968.

The purchases of the traditional Swazi are still limited to essential clothing and household items, and to general supplies, for which his meager available cash is reluctantly spent. A larger purchasing potential is earned by the cash crop producer and the full wage earner. In the latter category, however, earnings are also mostly at the unskilled level, and consequently low.

The largest single area of above average consumer demand derives from the Government employees, including teachers, and other professionals. A growing volume of purchasing power is also accounted for by the Swazi small business group. Even though earnings are low, the practice of savings is growing and both the Credit and Savings bank and the Commerical banks report steady increases in the number of Swazi depositors.

(2) Import substitution and Export Orientation: Import substitution has played a relatively small role so far in the development of the existing industrial and manufacturing sector. The nations industrial and manufacturing experience has thus been strongly in the direction of export orientation with regard to product and commodity marketing. This experience has fixed a pattern that will undoubtedly be followed as additional industries are set up to utilise or process primary products and consumer goods.

Imports of most commodities are not large enough to support import substitution industries. However, this situation is already showing some change and this change will become increasingly evident in the period ahead. A meat canning plant, a fruits and vegetable canning plant, a sweets industry, a maize milling plant - all of these have already been established to supply in part domestic market needs. But the main thrust of these enterprises is toward the export market. In certain cases where transport costs make up a large part of the sale price of a product, several industries based on carrying out a final stage of packaging or further processing in Swaziland (e.g. oxygen gas and clinker cement) have been successful. By and large however, because Swaziland must always think in terms of its wider market under the customs union, manufacturing production must be competitive in order to sell in that market. Consequently the nation also benefits from the fact that product prices in the local market are kept at a low competitive price.

(3) Co-operatives: A number of farm co-operative organisations have been formed in recent years, and the Government is devoting much time and effort to increase the utilization by farmers, small business men and traders of the co-operative structure. Both the Ministry of Agriculture and the Ministry of Commerce, Industry and Mines are engaged in programmes aimed at encouraging the farmer and the merchant to organize co-operative units to serve their particular needs. Study courses are also held from time to time on functions of co-operatives at the Agricultural College and University Centre. At best, however, progress has been slow. Stepped up efforts to help establish co-operatives in a broad range of activities are developing under the sponsorship of the Credit and Savings Bank and under the newly created Small Enterprises Development Company (SEDCO), with fixed target objectives. There are very many advantages in a country like Swaziland for co-operative organisations, especially for small farmers, entrepreneurs, and traders confronted with unfavourable price factors due to the scale of production, purchasing and buying which confront them as individuals.

(4) Customs Policy: As a member of the Customs Union with South Africa, Lesotho and Botswana, the customs policy of Swaziland is greatly influenced by the provisions of the common external customs tariff of the Customs Agreement. This external tariff is of South African design, aimed at protecting new industries through a high rate of import duties and other controls,

including import licensing. Since 1948 South Africa has operated an elaborate exchange control mechanism and has followed a policy of import substitution aimed at maximizing manufacturing activity in its area. In effect these policies were also the policies of Swaziland since up to the time of the negotiation in 1969 Swaziland's ability to influence customs policy was greatly limited. Under the new agreement Swaziland becomes a fuller partner with rights and privileges more clearly established than previously.

With the growth of the Swazi economy since the early 1960's imports have greatly increased. While this increase in large part is due to capital goods imports during the period, it also reflects the rise in consumer demands for many products. In a limited way, therefore, opportunities for import substitution have been made possible with regard to several categories of agricultural products, and some manufactured items based on the availability of local materials. Despite the incentives to import substitution under the common Customs tariff of the Customs Union, Swaziland is not promoting the development of the manufacturing sector through this approach. Rather for the greater part it is encouraging the manufacturing sector to supply both local requirements and exports. It is doing this even though it is able under the Customs Union Agreement to offer new local manufacturing enterprises protection and other assistance as infant industries.

While the Customs Union Tariff is not designed to be a revenue tariff - it is actually a protective tariff - Swaziland finds that about 30% of its total revenues in 1969-70 were derived from customs duties.

The advantages to Swaziland of having free access for its products to the entire South African market, a large area embracing 20,000,000 people, are indeed great. The Government's industrial development programme recognizes these advantages. However Swaziland is looking beyond its immediate borders for marketing outlets for more of its products. In addition to the links with South Africa and Mozambique, there is an interest in working more closely with the Common Market of East Africa, and trade agreements were signed last year with five African countries. Swaziland is attempting to broaden its trade links also with countries in the Middle and Far East as well. Whereas 90 percent of Swaziland's imports come from South Africa, the participation pattern of exports is changing. In 1960 over 50% of all of Swaziland's shipments abroad went to South Africa, in 1969 though overall exports had meanwhile grown more than five-fold, South Africa took only about 15% of the total.

Chapter IX: POTENTIAL FOR INDUSTRIAL DEVELOPMENT

General: On the basis of its numerous resources, its accessibility to a wide market area, an adequate supply of trainable, low-wage labour and favourable Government policies and incentives, the potential outlook for industrial development appears to be promising. The minerals resources area already the most important sector from the standpoint of value of production and exports, offers good possibilities for further growth. Agricultural resources also offer opportunities for manufacturing industry in terms of the processing of foods and the use of fibres, timber and animal by-products as principal industrial inputs.

I) Minerals: The extent of Swazilands mineral resources is detailed earlier in this report.

II. Agricultural Resources: Swaziland is endowed with favourable land and climatic resources for extensive agricultural and forestry production. The variation in altitude, climate and soil fertility permit the production of a broad variety of crops, both temperate and tropical, some on a year round basis. Rainfall is in general adequate except in periods of drought. There are abundant water resources and irrigation farming is conducted on a large scale. In the western highlands the climate is ideally suited for forestry. Trees reach maturity in 12 to 15 years compared with 25 to 50 years or more in other forestry areas in the world. Some of the largest man-made forests in Africa have been established in this area. Despite overstocking, the lower lying sweet pasture areas provide very good grazing for cattle, as do other sections of the country, and livestock production and processing are the basis of an important industry.

Despite this relatively encouraging situation, agriculture has been developing on a dualistic basis, with output growing rapidly in the freehold title land areas, and more slowly on the Swazi nation land. This great disparity in agricultural progress is one of the country's most difficult problems, and is a basic factor in the rate of growth of the economy as a whole and a sizable deterrent to the achievement of a measure of balanced development.

About 45% of the land is owned under freehold and concession title by individuals who are mostly non-Swazi. The balance of 55% is vested in the King in trust for the Swazi Nation. The great majority of Swazi farmers are small-scale subsistence producers and pastoralists with traditional usufruct rights on fragmented blocks of arable land and have grazing rights on communal pasturage. Maize and sorghum make up 90 % of the cultivated land use of Swaziland, all produced on a rainfed basis, and subject to the vagaries of the weather.

The remaining cultivable Swazi-held land is used for the production of cotton, beans, groundnuts, tobacco, wattle bark etc. Supplying milk for dairy product production is also an important source of income to the small Swazi farmer. Technical standards and income are low and drought is always a threat. Swazi Nation land contains more than 30,000 arable holdings worked by an estimated 61,000 people. While no official data are available regarding Swazi Nation land production, estimates are that the value of output in 1966/67, including subsistence production, was R 8 million. The average size of a family unit of Swazi Nation Land is a little over 6 acres of cultivated land, 6 acres of land in fallow, and communal grazing rights in about 50 to 60 acres.

The privately owned title land area consists of timber plantations, a few large estates mainly growing sugar cane, citrus and rice, and about a thousand farms and ranches. In 1966/67 the gross value of the area's output, including timber processing, was R 18 million. The principal crops produced on title deed land are sugar cane, cotton, maize, rice, citrus, pineapples, avocados, maize, field beans, sorghums, tobacco, vegetables, potatoes and a few others.

The average size of the individual title deed holding is about 1400 acres. The development of cash crops on title land is primarily based on the utilization of irrigation. In contrast, of the 70,000 acres under irrigation in 1969, only 5,000 were in the Swazi Nation area.

While the general patterns of farming on Swazi Nation land has changed only marginally in recent years, there is greater concern since independence for enabling the small producer to share more fully in the nation's growth. The Government has adopted as a key policy a programme

of assisting Swazi farmers to upgrade their agricultural practices, in part as an example to others, through participation in settlement schemes based on newly acquired title land for the Swazi Nation. At present there are some 130 Swazi farmers on a settlement scheme at Juvulane (run by the Commonwealth Development Corporation) and about 40 Swazis who are independent commercial pineapple growers, sugar cane growers, or dairy farmers. However the vast majority of Swazis do not as yet produce for the market. The following is a brief review of the principal agricultural crops produced in Swaziland, the extent of forestry and cattle production activities, and some indication of future growth prospects.

(1) Sugar: (covered in Chapter IV).

(2) Citrus: Citrus is the second most valuable farm crop produced. Marketed production of 40,000short tons was valued at R 1.8 million in 1967/68. There are about 600,000 citrus trees in the country, mainly late season oranges (about 400,000) and grapefruit. They are grown on a large scale in the central Middleveld, the Lomati Valley, and the Northern and southern irrigation areas of the Lowveld. Most of the crop is exported as fresh fruit, with a small amount being processed by the local cannery, before being exported. For marketing purposes the citrus industry is fully integrated with that of South Africa inasmuch as independent marketing is yet uneconomic due to the small volume of export sales. Exports move through Lourenco Marques and through Durban mostly to the United Kingdom. Some quantities are also sold in the South African market, mainly for processing.

The citrus industry is still young. In 1966 66.5% of all the trees were under 5 years old. As full maturity is reached production will increase. Estimates are that output may reach 90,000 tons of fruit in the current year. The industry can be even further expanded in Swaziland - there is considerable suitable land available - but expansion will depend on world demand in the immediate years ahead. Citrus on irrigated land is grown solely by non-Swasi farmers.

(3) Cotton: Cotton is the third most valuable crop and it is the most important cash crop grown under rainfall conditions. Swaziland cotton is of high quality middling and long staple, but production is subject to strong fluctuations due to weather conditions, though it is more drought resistance than many other crops. Only about two per cent of the crop is grown on irrigated land. Cotton is of particular importance to the southern part of the country which has not kept pace with other areas in development, and offers good possibilities to the small farmers. A ginnery has been built at Matsapa and both lint and seed are exported at present. Production of seed cotton due to severe drought conditions was 6,500 short tons in 1969 as compared with 12,500 tons in 1967. About 20 percent of the crop is produced by Swazi growers, making it the Swazi farmer's chief cash crop. This compares with only 4 per cent of the total crop produced by Swazi farmers in 1955.

The consumption of cotton by South Africa's cotton industry is estimated to be about 200,000 bales of lint cotton. Swaziland's output is equivalent to 15,000 to 20,000 bales. There should be therefore considerable opportunity for increasing production for that market by at least another 30 to 40,000 bales per year. At the same time considerable investor interest is developing in utilizing domestic cotton for a local textile industry.

(4) Rice: Rice production is mainly on the large farm and estate areas, and mostly under irrigation - 8,500 tons was produced in 1968 and 9,000 tons in 1969. The expansion of the crop has been encouraged by favourable price and market arrangements. At the present the Republic of China is providing technical assistance on several demonstration areas near Matsapa. Most of the Swaziland rice production is exported to South Africa which consumes about 80,000 tons per year, the major part of which is imported. Plans are under way to increase rice plantings further on the irrigated land areas of the northeast lowveld.

(5) Maize: Maize is the principal crop grown on Swazi Nation land. It is the Swazi staple food. Some 800,000 bags of 200 lbs each are consumed annually. It is almost entirely a rain fed crop. In the past few years due to drought, production was only at the 600,000 bags level. Imports in 1969 amounted to 287,000 bags, most of which came from

South Africa. When weather conditions are good, there is no problem in producing enough for domestic needs. Production of maize on irrigated land yields about 20 bags per acre while the national average is about 2 bags. The Government would like to see production of this important crop increased to eliminate the need for imports.

(6) Tobacco: Climate and soil permit the growing of tobacco in many areas of the country but production is confined mainly to the south. Swaziland's tobacco which is almost exclusively the dark air-dry type, is used in South Africa for the manufacture of pipe tobacco. In recent years, marketing has become a problem due to increased production in South Africa itself. Output declined from a peak of one million pounds of cured leaf in 1960 to only 135,000 pounds in 1965. In 1967 Swazi farmers produced about 57 percent of the harvest of 147,000 lbs which rose to about 165,000 pounds in 1968. Drought conditions adversely affected rainfed production in 1969. At present the prospects for expanding production are not good. Although there continues to be a market potential in South Africa, the use of irrigated land is uneconomic in comparison with sugar and citrus from which higher profits are obtained.

(7) Pineapple: (covered in Chapter IV).

(8) Livestock: The livestock industry is based on a national cattle population of over 500,000, 80% of which are owned by Swazi farmers who receive their largest source of cash income from cattle and dairy raw materials. Permanent grazing for cattle covers 7% of the country's total area.

Stock management is still very deficient and the quality of cattle is not as high as it could be although the Government is rendering increasing extension services to improve breeding and grazing practices. The Agricultural College and University Centre has strengthened its animal husbandry programmes to meet the expanded demand for assistance by Swazi farmers regarding animal production. Since 1965 the Ministry of Agriculture has operated two pre-sale fattening ranches of about 25,000 acres each for use by stockowners at a modest fee. The value of the cattle is increased by as much as 20% in one grazing season. A higher level of management practices by European cattle growers is also beginning to influence the industry generally.

A meat packing plant was established in the Matsapa complex in 1969 with a capacity for 25,000 head a year, containing facilities for slaughtering, de-boning, chilling, freezing, and canning, and for the processing of animal residue products. Cattle hides are all exported.

Cattle production is mainly carried on in the Lowveld areas, but there is considerable scope for expanding production also in the Middleveld and Highveld regions. A total of 55,942 cattle were slaughtered within the country during 1969 compared with 59,743 in 1947. Slaughtering in 1969 was affected by the outbreak of foot and mouth disease in October. Apart from its effect in the Government budget - costing about E 270,000 - it has temporarily disrupted the cattle industry. Even by the end of 1969 the necessary restrictions to thwart the spread of the disease had caused a substantial decline in the number of cattle slaughtered and in the number of live cattle exported. The problem has now been brought under control and export restrictions have been lifted. The export of boned beef by the Matsapa meat plant has to some extent cushioned the adversity of the desease outbreak, Exports of this product increased from 1.2 million pounds in 1968 to 2.3 million pounds in 1969.

Despite the disruption to the industry, the livestock population has continued to increase - from 515,000 in 1968 to 540,000 in 1969.

The cattle industry in Swaziland has now reached a point where future concentration must be focused on breed upgrading, scientific grazing practices must be adopted, the full potential of dairying developed, and export markets greatly broadened. It is anticipated that the Matsapa plant will of necessity have to expand its production facilities to meet the demands on it in the years ahead.

(9) <u>Other Crops:</u> Many other farm products are grown, mostly to supplement diet needs. Among these are beans, sweet potatoes, potatoes, pumpkins, groundnuts, red beets and cucumber, very small quantities of which are presently marketed. The very favourable climate factors permitting winter crop production for outlet to nearby areas, shipped by land and by air, are being studied. If dependable marketing arrangements can be made, a whole new sector of agriculture could be developed in which the Swasi farmer could participate on a new settlement scheme basis.

On a longer term basis test plantings show that tea can be favourably grown in the Highveld.

(10) Forestry: Forest products constitute Swaziland's third most valuable export. In 196 wood pulp and other forest products exports were valued at an estimated R [illegible].5 million. About 235,000 acres of land are planted with pine and to a lesser extent eucalyptus and wattle. The most important single product is unbleached kraft pulp; production in 1969 amounted to over 100,000 tons, most of which is exported. Pinewood for pulping can be grown on a 15 year rotation basis compared with up to 40 years and more in northern Europe. There are also four saw mills in the country producing a wide range of sawn and planed timber, block-board, telegraph transmission poles, mine props and logs. Wattle tree production is declining in importance owing to a drop in demand for wattle bark which is used in tanning.

At the present time the increment of wood available each year is not in balance with harvesting. Estimates are that as much as R 1 million worth of pulping wood is not being utilized in the northwest area. A study of the feasibility of establishing a second pulp mill in the country has been made by this Mission and is included as part of their report.

It is clear that the marketing of lumber and lumber products is greatly hampered by the difficulties in transporting direct to contractor sit s in South Africa by tr ck. A solution t the problem would also permit an increase in milling operations in Swaziland which are now limited. Rail transport on a direct basis to South Africa, the principal consumer of Swasi lumber products, could also lower shipping costs and expand the market, if and when a link with South Africa is established. Since transportation costs, even ordinarily, are an important part of a product's sales price structure, every effort should be made to bring these costs down.

(11) Water: Swaziland is relatively rich in water resources. It is crossed by some of the major rivers in South Africa, all of which can be utilised for irrigation purposes. At the present time about 70,000 acres of land are under irrigation. The five main rivers are the Usutu, Lomati, Komati, Mbulusi and Ingwavuma. So far no large storage dams have been built for irrigation purposes. For the most part land is irrigated by means of diversion canals, gravity, and spray irrigation.

While it is generally believed that Swaziland offers a bountiful supply of water for high water volume consuming industries, such as a pulp mill, or a tannery, a comprehensive survey of the country's water resources is being made by the United Nations Usutu River Basin Study to permit planning for its optimum use for both agriculture and industry.

APPENDIX A

TERMS OF REFERENCE OF THE MISSION

The mission's terms of reference were as follows:

(1) To conduct an industrial survey of Swaziland in order to identify potential areas for new industrial development as well as prospects for the expansion of existing industries.

(2) To assess the potentials of all sizes of existing industry (small, medium and large-scale) taking into account the country's natural resource endowments, labour, and potential sources of domestic and foreign investment capital.

(3) To formulate a portfolio of new industrial projects for more intensive investigation on the basis of existing resources and potential markets.

(4) To recommend priority sectors for development.

(5) To conduct prefeasibility studies (including market and export possibilities) of selected industrial projects.

(6) To conduct technical feasibility studies of resource-oriented industries (e.g. industries utilizing asbestos, iron ore, ceramic clays, agricultural products, and timber).

(7) To evaluate the country's infrastructural requirements for industrial development.

(8) To evaluate and recommend areas in the country for regional industrial development.

(9) To evaluate the requirements of existing industry for skills and other inputs, identify industries in which there are deficiencies, and formulate recommendations for eliminating those deficiencies.

(10) To assess existing industrial policies.

(11) To train counterpart personnel in the above functions.

APPENDIX B

PREFEASIBILITY STUDIES

1. Pulp Mill
2. Pulp Mill
3. Warp Knitting Plant
4. Tannery
5. Asbestos Cement Factory
6. Wood Wool Slab Production
7. Dry Cell Battery Manufacturing Plant

APPENDIX B : PREFEASIBILITY STUDIES

PREFACE

With a view to determining whether certain available resources could serve as a basis for the establishment of additional industrial production and whether prime materials being exported in their crude form offered economic prospects for basing new industries on their further processing and manufacture, the Mission undertook to carry out a number of prefeasibility surveys of identified industrial opportunities. A total of seven studies was carried out, selected on the basis of the availability of: 1) important unused domestic raw materials; 2) unprocessed domestic raw materials being exported in crude form, and 3) products that could be produced in Swaziland by virtue of low labour costs and a large Customs Union market.

The studies were advanced through the prefeasibility stage to the point of development of marketing data. In each case it was presumed that marketing would not be a problem if a quality product could be produced at a cost which would be low enough to make it competitive with similar production elsewhere, and at the same time offer attractive profit earning prospects.

The list of studies includes:

1. - 2. Two wood pulp projects based on different volumes of wood pulp production and requiring different levels of capital investment in the mills and in the required new pine plantations. For the moment, these can be considered as alternatives; however, the planting of additional forests would make both investments feasible.
3. - A warp knitting plant
4. - A tannery to produce upper shoe leather
5. - An asbestos cement products plant
6. - A wood wool slab industry
7. - A dry cell battery plant.

In each of the studies made the prefeasibility conclusion was that a rate of return could be obtained on the capital investment required that should be attractive to an investor.

PREFEASIBILITY STUDIES NO. 1 + NO. 2

PULP MILL PROCESSING UNBLEACHED KRAFT PULP

CONCLUSIONS

The prefeasibility studies of Pulp Mills 1 and 2 relate to the prospect for profitability in producing unbleached kraft pulp in Swaziland. By utilising the surplus of pulpwood in the Pigg's Peak area and additional man-made forest south of the same area, and utilizing Swazi low cost labour, we have concluded that plants of the.. sizes indicated, (150,000 ton/annum for No. 1 and 100,000 ton/annum for No. 2) would be both economic and feasible. However, it must be emphasized that since only limited time and staff have been available for these studies, the results reported herein must be considered only as preliminary and used solely for the purpose of evaluating these prospects in a greater depth at a later time. Any specific new mill developments must be subjected to detailed independent professional examination prior to undertaking financial commitments for construction of the plants.

In selecting the "proto-type" mills for this study, markets, the technical suitability of fibre raw materials available from new man-made forest, and the economic size of the mills and new forest have not been studied at this time. We estimate, however, the two plants would cost Rand 32 Million for 150,000 ton pulp /annum capacity, and Rand 26 Million for an estimated capacity of 100,000 ton pulp/ annum. The plants would work on a three shifts basis.

The total annual value of the entire production based on world Market prices for unbleached pulp in April 1970 are Rand 13,800,000 for Pulp Mill No. 1 and Rand 9,200,000 for pulp Mill No. 2..

Gross Earnings Estimates for Unbleached Pulp Mills

Item	Unit	Pulp Mill I	Pulp Mill II
Capacity	T	150,000	100,000
Output Price (cif Rotterdam)	Rand/T	110.60	110.60
Freight	"	14.30	14.30
Insurance and Commission	"	4.30	4.30
Mill Net Price	"	92.00	92.00
Total Investment	Rand	32,000,000	26,000,000
Product Sales	R/annum	13,800,000	9,200,000
Manufacturing Cost	Rand/T	52.00	54.00
"	R/annum	7,800,000	5,400,000
Gross Profit	"	6,000,000	3,800,000
Gross Profit on Investment	%	18.7	14.6

Experience has shown that mills which have been properly designed and provided with modern and adequate management and operating skills, will reach manufacturing capacity 3-5 years after start-up. This is at least 20% higher than the rated design capacity and will permit about 2% lower direct manufacturing costs than shown in the table above. While the gross earnings estimates in this study are conservatively based upon the rated capacities, operations at these higher capacity levels would increase gross earnings by 3-4 percentage points as compared with profits shown in the Table here. Proposed location: South of Pigg's Peak area near Komati River, the water flow in this river is adequate for the studied mills. Electricity can be made available. The existing roads in the area would need improvement since highway transport to railroad would be necessary.

The markets for the production from these pulp mills have not been studied in detail because time does not permit the development of this part of the study. However, we are assuming that the opportunities for marketing the products in South Africa, Europe, and Near and Far East do not offer any special obstacle at this point. The traditional northern European pulp wood and pulp suppliers are now approaching a situation where the yield of their forest resources cannot meet the demand. Expansion cannot be made without substantial cost increases. On the other hand plantations of coniferous species can be established near the Pigg's Peak area to produce uniform pulp wood at a relatively low cost. The world demand for ground wood based papers such as newsprint and printing paper, liner board sack paper and corrugated boxes is significant and is expected to increase, carrying with it increased demand for the raw material, kraft pulp. It is assumed that the world market for wood pulp would improve in the seventies and the eighties.

The study has been based on an evaluation of similar plants in other parts of the world; the value of the plants is based on available data from 1967/68; the value of raw materials pulp wood is based on the Swaziland price level in 1969/70. As has been mentioned before the cost involved for land, buildings, machinery and equipment and new man-made forests has not been evaluated in those studies.

ECONOMIC ASPECTS OF PRODUCTION

I. INTRODUCTION

The total forest area in Africa and the Near East is almost 700 million hectares, but at the same time, the value of the annual net imports of paper to these sub-regions has exceeded 150 million dollars. This paradox is caused by such factors as inaccessibility, heterogenity and uneven availability of natural fibre resources, lack of industrial infrastructure, shortage of capital and skills and small, widely dispersed domestic markets. Under such conditions paper manufacturing has seldom been considered an economically sound venture in these regions. Rapidly improving economic and social conditions, new technological developments and predicted changes in the patterns of world trade in paper justify, however, an examination of the future technical and economic feasibility of pulp and paper manufacture in Swaziland. The purpose of this paper is to record the results of such studies.

To create a realistic and useful picture of the economics of pulp manufacturing, it is necessary to estimate capital costs, manufacturing costs, and earnings of a typical project which appear sound from both the marketing and economic points of view. Two such plants have been selected; one pulp mill with capacity 150,000 ton/annum unbleached kraft pulp and one pulp mill with capacity 100,000 ton/annum unbleached kraft pulp.

It must be emphasized that since only limited time and staff have been available for these studies, the results reported herein must be considered only as preliminary and used solely for the purpose of evaluating prospects and the relative importance of the different cost factors for new detailed feasibility studies prior to undertaking financial commitments for construction of the plant.

II. SIZE AND TYPE OF PLANTS

In selecting the "prototype" mills for this study, markets, the technical suitability of fibre raw materials available and the economics of size of operation must be considered. The demand for ground wood based papers such as newsprint and printing papers is substantial and is expected to increase. Industrial papers such as liner board and sack paper and corrugated boxes are needed to package, transport and export such products as cement, fruit, canned food etc. The traditional Northern European pulp wood and pulp suppliers to continental Western European paper manufactures are now approaching a situation where the yield of their forest resources cannot meet the demand, at least not without substantial cost increases. The natural forests in Africa and Near East are predominently mixed hard-woods. Plantations of coniferous and deciduous species can be established in locations to produce uniform wood to a relatively low cost.

On basis of the foregoing and experience from pulp industry elsewhere the following plants have been selected for these studies:*)

TABLE I. Plants studied

Case No.	Product	Capacity	Fibre Raw Material	Market
1.	Unbleached Kraft Pulp	150,000 TPA	Soft Wood	Export
2.	" " "	100,000 TPA	" Pine"	"

*) The following abbreviations are used in this paper:

T = metric ton; TPA = tons per annum; FT. = Finished Metric Ton; ADT = air dry m.ton; 1 Rand = 1.4 U.S$; cu. secs = Cu. feet/second; TPD = tons per day; ac.ft = acre feet; cu.ft/A = cu feet/Annum; M Rand/A = Million Rand/Annum. c/cu.ft = cents per cu.feet.

III. LOCATIONS OF PLANTS

For the purpose of preparing realistic estimates it is necessary to define reasonably accurately the locations of the plants. Considering the water and wood available, the following plant locations appear logical for these studies. South of Piggs Peak forest near the existing road and Komati river. According to 'UNDP Survey and Plan ... of the USUTU RIVER BASIN'S TEAM, there are only two rivers in Swaziland with adequate sources of water for the proposed mills: the Lomati River north of Piggs Peak and the Komati River south of this area.

The above UNDP survey indicates the following figures regarding the water flow:-

Lomati river: The length of the river within Swaziland is only 29 miles. The long term mean annual run off at the point of entry into Swaziland is 89,000 ac.ft. The lowest flow in this river to be expected once in a hundred years is 10 cusecs.

Komati river: The Komati river has a catchment area of 2,332 sq.miles at the western border of Swaziland and the catchment area within Swaziland is 764 sq. miles. The length of the river in Swaziland is 70 miles. The long term mean annual run off at the border is 577,000 ac.ft. The lowest flow to be expected once in five years is nearly 150 cu.secs; the lowest average one month flow to be expected once in hundred years is about 68 cusecs. Agricultural development of any consequence is over 40 miles below the border. The proposed mills are to have a capacity in case 1 of 150,000 tons/year and case 2 of 100,000 tons/year and for the mill in case 1 an estimated maximum consumption of 20 cu.feet/sec.

From the above it is evident that the low flow in the Lomati is too small to meet the requirements for a mill and the discharge of effluent would affect the irrigation down stream.

The low flow in the Komati river is adequate for the purpose. Due to the greater flows there would be a greater dilution of the effluent and the irrigators are sufficiently far below the border not to be affected by the change in the quality characteristics of the stream flow. Placing the mill near the Komat has the advantage that it will be near the present sawmills and can utilize their wood surplus and the wood surplus from existing Pine Plantations. A second advantage is the short distance to the rail head at Kadake.

IV. FIBRE RAW MATERIALS

Fibre raw materials: soft wood grown in plantation near the pulp mill south of Piggs Peak area, Pinospatula and Pinuselliotti..

TABLE II. ESTIMATED CONSUMPTION OF FIBRE RAW MATERIAL

Case No.	Capacity	Soft Wood(cu.feet/A)
1.	150,000 TPA	28,200,000
2.	100,000 TPA	18,800,000

The above consumption is based on: 188 cu.feet per ton pulp.

It has been assumed in both cases that wood can be delivered to the plants by road and that the average transportation distance would not exceed 10 miles. Prices of wood used herein are based on a report by the E.C.A. Regional Advisor on his exploratory mission in Swaziland during April, 1970. He indicated the following prices: for I grade 6"-9" diameter top 8, 12.8 c/cu.feet f.o.r. sender station; for II grade 3"-6" top 5", 10.8 c/cu.ft; and 1 c/cu.ft. for freight to the mills. Average composition of 2/3 of I grade and 1/3 of II grade yields a weighted average price of 13.2 c/cu. ft."

TABLE III. COST OF WOOD DELIVERED TO MILLS c/cu.ft.

M Rand/A and Rand/ton pulp

Case	Capacity	Soft Wood consumption (cu.ft./a)	Cost per cu.ft. (c./cu.ft.)	Total cost (M)	Wood cost per ton pulp (R)
1.	150,000 TPA	28,200,000	13,5	3,81	25,40
2.	100,000 TPA	18,800,000	13,5	2,54	25,40

Cost of wood delivered to the mills as used in this study and tables above includes all charges such as stumpage and the costs of logging, transportation, reforestation, fibre and protection, etc.

V. PRODUCT MARKETS AND PRICES

It can be expected that the production of the plants studied would in most cases be too large for the demand in Swaziland and therefore it has been assumed that the total production would be exported to Europe and Near East. It has furthermore been assumed that the mills would be established as joint ventures between interested parties in Swaziland and European paper manufacturers and/or converters who would secure captive markets for the exports. The mill net prices calculated below and used in these studies are based upon presently prevailing wholesale and c.i.f. prices and exclude import duties or export and sales taxes.

TABLE IV. MILL NET PRICES FOR EXPORT MARKETS

Case No. I and II: Unbleached Soft Wood Pulp

Price c.i.f. Rotterdam		110.60 Rand/MT
Freight	14.30	
Insurance and Commission	4.30	
Total deduction	18.60	
Mill net price		92.00 Rand/MT

VI. DESCRIPTION OF PLANTS

The two pulp mills would be equipped with conventional wood barking, chipping, pulping and electric power and steam generation facilities. In general it has been assumed that these two mills would be designed in accordance with practice in Sweden, resulting in better heat and power economy, but also in higher capital costs than experienced by typical North American mills.

General services facilities such as offices, laboratories, shops, stores and warehouses would be provided. Extensive maintenance, maintenance-shops and spare parts inventories would be needed in view of the remoteness of the plant location from equipment manufacturing and servicing facilities. It is assumed that provisions would have to be made for housing all mill personnel, but that no special effluent treatment facilities would be needed.

TABLE V. CAPITAL COST ESTIMATE

Item	Unit	Case I	Case II
Product	-	Unbleached pulp	Unbleached pulp
Capacity	TPA	150,000	100,000
Total Investment	MRand	32	26
Daily capacity (on basis of 365 days per annum)	Tons	410	274
Investment per day	Rand	87,670	71,230
Investment per ton	Rand	214	260

No equipment specifications have been prepared on tenders received for these estimates; they have been based upon data for similar mills built recently. The estimates require the following comments:-

1. All equipment and materials have been assumed to be new and imported duty-free.
2. Interest during construction has been estimated on the basis of typical time-money schedules during a 30 months' period with 60% of the plant capital being borrowed at an interest of 6%.
3. The cost of providing housing for employees is not included. It has been assumed that mill town sites would be financed separately and operated on a self-liquidating non-profit rental basis.
4. The estimates are based upon cost levels prevailing at the end of 1968. While no provision has been made for cost increases from possible inflation, it should be kept in mind that capital cost escalations are frequently followed and balanced by world-wide increases in product sales price.
5. The cost of training personnel before start-up varies widely depending upon local conditions and must, thus, be carefully checked for any specific developments.
6. The estimates exclude the cost of any infra-structural developments such as power generation and transportation facilities, which may be needed outside the plant sites.

TABLE VI. MANUFACTURING COST ESTIMATES

Item	Unit	Case I	Case II
Product	-	Unbleached pulp	Unbleached pulp
Capacity	TPA	150,000	100,000
Wood	Rand/T	25.40	25.40
Conversion	"	26.60	28.60
Total direct cost	"	52.00	54.00

1) Conversion includes the cost of chemicals, fuel, other materials, labour, administration and overheads.
The manufacturing cost estimates are based on operating data of similar mills and modified to suit conditions expected to prevail in the cases studied. These estimates include under "administration" special allowances for start-up, management and operating assistance expenses, which are expected to be proportionally higher during the initial year of operation and then to diminish in the course of time when local operators gain experience. Excluded from these direct production costs are depreciation, interest on debentures and corporate income taxes which must be included when calculating net earnings.

TABLE VII. GROSS EARNINGS ESTIMATES UNBLEACHED UL? MILL

Item	Unit	Case I	Case II
Capacity	Ton	150,000	100,000
Output Price (CIF Rotterdam)	Rand/ton	110.60	110.60
Freight	"	14.30	14.30
Insurance and commission	"	4.30	4.30
Total deduction	"	18.60	18.60
Mill net price	"	92.00	92.00
Total investment	000 Rand	32,000	26,000
Product sales	000 Rand/annum	13,800	9,200
Manufacturing cost	Rand/ton	52.00	54.00
" "	000 Rand/annum	7,800	5,400
Gross profit on investment	"	6,000	3,800
" " " "	%	18.7	14.6

Experience has shown that mills which have been properly designed and provided with modern and adequate management and operating skills will reach 3-5 years after start-up an actual manufacturing capacity which is at least 20% higher than the rated design capacity and will operate at some 2% lower direct manufacturing cost levels than shown in Table VI. While the gross earnings estimates presented in this paper are conservatively based upon the rated capacities, operations at these higher capacity levels would increase gross earnings by 3-4 percentage points as compared with the profits shown in Table VII.

VII. DISCUSSION

What constitutes an economically sound and satisfactory industrial operation depends naturally upon the target set in each case. In most of the industrially developed countries, pulp projects produce a financially attractive net return if they earn around 20% gross return on investment before depreciation, interest and taxes. While this rule cannot be applied to developing countries without giving special consideration to such factors as the level of exemption from corporate income taxes and concessionary levels of depreciation allowances, the results of these estimates show that the proposed plants would have very good chances of being economically sound. However, as pointed out in the first section of this paper, the feasibility on any specific development must be subject to a more detailed examination than has been possible within the scope of this study before proceeding with the financing of a plant.

The cost of wood delivered to the mill has a significant effect on the profitability of the operation. It is indicated from several mills studied that delivered wood cost ranges between 40-50% of the total direct manufacturing cost. In this study, however, wood cost has been calculated at the higher rate equal to about 47-49% of the total direct production cost.

The total investments involved for these developments are so large that whoever would sponsor them would require good guarantees of wood availability and cost before making financial commitments. In practice, this means that thorough forest inventories are carried out and long-term timber concessions specifying stumpage rates, removal rights etc. are agreed upon before any industrial investments are undertaken.

The investments required for the plants studied herein could, of course, be reduced by using second-hand equipment. In practice, it is, however, not possible to purchase more than half of the equipment secondhand. This would mean that even if the reconditioned secondhand equipment prices were 50% lower than for new equipment, the total investment involved would be reduced only by some 10%. This is hardly a big enough incentive to take the chance of lower operating efficiency and financial return because of old and poorly standardized equipment.

PREFEASIBILITY STUDY 3 - WARP KNITTING PLANT

CONCLUSIONS

The prefeasibility study attached hereto relates to the prospect for profitably operating a warp knitting plant in Swaziland. Utilizing Swasi low cost labour and taking advantage of the Customs Union market which Swasiland offers, we have calculated that a plant of the size indicated would be both economic and feasible. We estimate the plant would cost Rand 495,000 for the building and machinery and equipment, employ a total of about 95 employees, and produce gross earnings of about 22 %.

The warp knitting plant in this study has an annual capacity of 230 - 240 tons of knit production. The knitting shops work on a three shift basis,- the bleaching operation works only two shifts and all other operations are on a one shift basis. The products and annual quantitities are the following; stockinet 90,000 kg, underwear 13,600 dosen , stocking and socks 20,000 dosen. Other products having a value at Rand 30,000, are also produced.

The total value of the entire annual production is Rand 431,000. Raw material used is 245 tons of cotton yarn which is imported and valued at Rand 196,490. Total intermediate inputs are valued at Rand 223,500.

Fixed capital assets amount to Rand 495,000 as follows: - Land and buildings Rand 151,000, machinery and equipment, Rand 300,000, other assets, Rand 44,000.

Estimated Profitability:

Sales			R 431,000
Cost of intermediate inputs	Rand	223,500	
Total wages and salaries	"	44,200	
Interest, rents	"	29,700	
Depreciation	"	41,100	338,500
Estimated gross profit			R 92,500

Proposed locations: Matsapa Industrial Estate which has complete infra-structure facilities and services including water, electricity, railroad, and good highway links. The prices for machinery, equipment and raw material are based on 1964 prices but updated to 1968 value. The value for land and buildings is, however, based on 1968/1969 value. Salaries are based on available data for 1968.

The markets for the production envisaged by this plant have not been studied in detail because time does not permit the development of this part of the study. However, we are assuming that marketing in South Africa under the Customs Agreement and the opportunities for marketing in other nearby and foreign areas does not offer any special obstacle at this point.

The study has been based on an evaluation of a similar viable plant operations which are already in production in other parts of the world. It should be mentioned also that there is an elasticity in the mixing of the products shown in this study so that choices of volume of the different products can be readily made within the present plant capacity projections.

ECONOMIC ASPECTS OF PRODUCTION

Major products: Knitting mills (stockinet, underwear, stockings socks, etc.) capable of producing annually 230-240 tons of knittings on partial three shifts (only knitting shops work three shifts).

I. Fixed Capital Assets (000 Rand at 1968 prices): 495[1]

1. Land - 6 acres	11
2. " improvements	4

[1] No import duties are calculated on assets. It is assumed that the project will be granted exemption from import duty under an investment promotion decree.

3. Building, 1,500 m^2	140
4. Other construction works	10
5. Machinery and equipment	300
6. Tools and instruments	10
7. Vehicles	10
8. Office furniture & fixtures	10

Detail of I/5:

a. Knitting machines	50 units
b. Stitching machines	30 units
c. Pressing machine	1 unit
d. Calendars	
e. Kier boilers	
f. Steam boilers	
g. Bleaching Winch	
h. Drying machine	
- Capacity of electric motors	36 kW

Technical features:

a. Knitting of yarn, highly mechanized and fair automation.

b. Stitching of edges, highly mechanized and fair automation.

c. Cutting of garment, fairly mechanized.

II. Inventories (000 [illegible] at 1968 prices)	170
1. Direct production materials	35
2. Work in process	95
3. Finished products	40

III. Labour :

		1st Shift	2nd Shift	3rd Shift
Total employed	95	73	14	8
1. Direct production	37M) 30F)	45	14	8
a. Knitting		8	8	8
b. Stitching		17		
c. Cutting		7		
d. Pressing		6		

	1st Shift	2nd Shift	3rd Shift
e. Bleaching	7	6	
2. Auxiliary Activities:	28		
a. Technical and managerial control	9		
b. Other shops and stores	19		

Employment and Labor Cost by Skill :

Category:	Persons		Annual Cost (000 Rand)	
Managerial Staff		9		10.1
a. Engineers	1		3.0	
b. Technicians	2		3.5	
c. Administration and commercial staff	3		1.8	
d. Foremen	3		1.8	
Blue-collar workers		86		24.1
e. Skilled workers	3		1.5	
f. Semi-skilled workers	7		2.8	
g. Unskilled Operatives				
male:	37		11.1	
female:	30		6.0	
h. Other unskilled	9		2.7	
Totals.....		95		34.2

Employees in direct production	Total production	1st shift
a. skilled workers)		2
b. semi-skilled operatives)		2
e. other semi-skilled)	19)	2
d. unskilled auxiliary workers)		5
e. unskilled production workers:		
male	28	24
female	20	10
e.- j.	67	45
Total cost (Rand)	19,400	13,300
Average annual wage per employee R	290	296

IV. Annual Value of production (000 Rand) 421

	Unit	Quantity produced	Unit Value Rand	Total (000 Rand)
a. Stockinet	kg	90,000	1.40	126
b. Underwear	Dozen	136,000	1.80	245
c. Stocking & socks	Dozen pairs	20,000	1.00	20
d. Other	000 Rand	40		40

The proportions of the production of (a) and (b) are mutually interchangeable

Unit value of product: market value f.o.b. before sales tax.

V. Intermediate inputs

Total value of consumption (000 Rand) 223.5

1. Energy and Water total:

	Unit	Quantity	Unit Value Rand	Total (000 Rand)
Electricity	000 kWh	100	26.8	2.68
Coal	ton	180	4.4	0.7
Water			negligible	3.47

2. Direct production materials:

a. Cotton yarn	ton	245	802	196.49
b. Caustic soda	"	6	90	0.54
c. Soda ash	"	3	75	0.22
d. Bleaching powder	"	1.5	300	0.45
e. Sulphuric acid	"	3	75	0.22
f. Colours	"	1.5	1,800	2,70
g. Metal	"	1.2	750	0.90
h. Hydrogen peroxide	"	0.9	525	0.47
i. Others	000 Rand			1.00
				203.00

3. Packaging materials: Total	3.00
4. Maintenance & Repairs (materials and services purchased)	4.00
5. Material inputs for auxiliary activities (office stationary etc.)	3.50
6. Non-factor service inputs: total	6.50
	17,00

Unit value of material market price c.i.f. and no import duty.

VI. Value added Total (000 Rand) 207.5

	Rand
1. Wages & salaries (before income tax)	
Employees in direct production	19,400
Other Employees	14,800
2. Other expenditure for employees	10,000
3. Annual depreciation allowance 4 % on building 140,000 = 5,600 10 % on machinery & equipment 355,000 = 35,500	41,100
4. Rental paid (10% on 60% of inventories) 10% on 60% of 495,000 = 29,700	29,700
5. Sales, 'other indirect taxes'	-
6. Other gross business income before income tax (gross profit)	92,500

7. Selected Coefficients

Machinery, equipment, instrument & tools (310,000) per employees in direct production on 1st shift (45)	6,900
Value added (207.5) per employee (95)	2,185
Annual wage (19,400) per employee in direct production (67) 1/	290
Variable input costs/gross production Ratio	54.4%
Gross profit (92,500) gross production ratio (431,000)	22 %

1/ Other expenditure as expressed above in VI:2 (10,000) for employees are not included.

Definition of:

Selected coefficients: in section VI:7

Machinery, equipment, instruments and tools per employee in direct production on first shift is obtained generally by dividing the original book value of machinery, equipment, instruments and tools before depreciation (as recorded in section I items 5 and 6 by the number of employees in direct production on the shift (as recorded in section III item I).

Value added per employee is a quotient of the total value added (section VI) divided by the total number of employees, including, managerial and professional staff (section III).

Annual wage per employee in direct production is computed by dividing the wages of employees in direct production (section VI) by the number of employees in direct production (section III).

Variable input costs/gross production ratio is obtained by simple arithmetic, relying on value data for both numerator and denominator. "Gross production" represents the total value shown in section IV. "Variable inputs" are defined to include total energy and water, total direct production materials, total packaging materials, work performed by sub-contractors and wages of direct production workers (it is impossible to standardise the extent to which the last component - "wages of direct production workers" - can be considered as variable costs.)

In the ratio of gross profit/gross production the numerator is the "other gross business incomes" shown in the section VI on Value added, while the denominator represents the total annual value of production shown in section IV.

PREFEASIBILITY STUDY NO. 4

TANNERY

CONCLUSIONS

This prefeasibility study examines the prospects of establishing a certain size tannery operation in Swaziland and running it at a profit high enough to make it attractive to an investor. There are more than 550,000 cattle in the country and of this number about 55,000 - 60,000 are slaughtered annually. About 25,000 to 30,000 cattle are slaughtered at the meat plant in Matsapa. The hides produced at Matsapa are barely adequate for one shift. This plant however assumes operation in two shifts. Additional hides would be imported from Botswana, Mosambique and South Africa, and other neighbouring countries.

Utilising Swazi low cost labour and the above mentioned possibilities of hides, and taking advantage of the customs union market which Swaziland offers, we have calculated that a plant of the size indicated would be both economic and feasible. We estimate the plant would cost Rand 442,000 for the building, machinery and equipment, employ a total of about 85 employees, and return gross earnings of about 17.5 % in one shift operation, and 22.6 % in a two shifts operation.

The annual capacity is 2,800,000 sq.ft., of production in two shifts. The annual quantity of upper shoe leather produced in one shift would be only 1,600,000 sq.ft.

The total value of the entire production is Rand 1,218,000. Raw material used is 2,500,000 lbs in one shift and 4,370,000 lbs. in two shifts 20% of the hides are imported for one shift operation and 60% of the hides for two shift operation. The value of hides is for 1 shift, Rand 250,000 and the value of hides is for 2 shifts, Rand 437,000. Total intermediate inputs are valued at Rand 453,000 for one shift and Rand 793,000 for two shifts.

Fixed capital Assets amount to Rand 442,000 as follows:

Land and buildings, Rand 151,000; machinery and equipment, Rand 200,000; other assets, Rand 91,000.

Estimated profitability (000 R)	1st Shift		Two Shift	
Sales		696		1,218
Cost of intermediate inputs	453		793	
Total wages and salaries	39.1		53	
Interest, rents	26.5		26.5	
Depreciation	35.8		35.8	
Other expenditure (sales cash, ind. taxes)	20.0	-574.4	35.0	- 943.3
Estimated gross profit		121.6		274.7

Proposed locations: Between Mankayana - Mgasini near the road and Ngwempisi river. Electricity can be made available. There is suffioient water in the Ngwempisi river and it is only 35 miles to the rail link in Matsapa to the port in Mozambique.

The cost for machinery, equipment and raw material are based on 1964 prices but up-dated to 1968 value. The value for land and buildings is however based on 1968/69 prices. Salaries are based on available data for 1968.

The markets for the production envisaged by this plant have not been studied in detail because time does not permit the development of this part of the study at this time. However, it is assumed that marketing in the customs union area and the opportunities for marketing in other nearby countries and foreign areas does not offer any special obstacle at this point.

The study has been based on evaluation of similar viable plant operations which are already in production in other countries. There is an elasticity in the products which can be achieved by adding a few facilities in the machinery and equipment. This aspect, however, has not been studied at this time.

ECONOMIC DATA FOR THE TANNERY

Production. 1.5 million square feet of finished upper leather in a one-shift operation (4 million sq ft. if operated with full three shifts).

I Fixed Capital Assets (000 Rand)

	Total Value	442.0
1	Land - 4 acres	11.0
2.	Land Improvements	2.0
3	Buildings 1,500 m2	140.0
4	Other Construction Works	20.0
5	Machinery and Equipment 1/	200.0
6	Tools and Instruments	20.0
7	Vehicles	20.0
8	Office Furniture and Fittings	20.0

N B 1/ Water supply facilities, i.e pumps, reservoirs, etc. and waste disposal systems are not included in the machinery and equipment facilities. However, an annual cost of R 10,000 or R 17,500 is included as indicated in V. 1c for water supply.

Detail of I.5 (No.)	(000 Rand)
(a) Drums (13)	18.6
(b) Puddles (3)	6.9
(c) Leather processing pits (8)	4.6
(d) Automatic Steam Boilers (2)	2.8
(e) Pumps (7)	4.0
(f) Drying Rooms (2)	1.7
(g) Refrigerating Rooms (2)	5.7
(h) Splitting machine (2)	12.9 4.6
(i) Cutting Machine (1)	2.8
(j) Spraying (1)	17.1
(k) Presses (2)	11.4 8.6

..... continued

(l)	Measuring Machine (1)	1.1	
(m)	Vacuum Machines (2)	18.6	
(n)	Staking machine (1)	3.4	
(o)	Buffing Machine (2)	5.7	
(p)	Stressing Machine (1)	5.7	
(o)	Shaving Machine (1)	12.9	
			149.1

Capacity of Electric Motors 260 kW

Capacity of Electric Furnaces 100 kW

II. Inventories

	1 Shift	2 Shift
Total Value (000 Rand)	125	220
1. Direct Production Materials	24	43
2. Other input Materials	33	59
3. Work in Process	40	70
4. Finished Products	28	48

III. Labour

		1st Shift	2nd Shift	3rd Shift
Total Employed	85	60	25	-
1. Direct Production	75	50	25	-
(a) Storage and Refrigeration		1	1	-
(b) Lime		6	3	-
(c) Drum Shop		4	2	-
(d) Tanning Shop		16	8	-
(e) Finishing		4	2	-
(f) Miscellaneous		19	9	-
2. Auxiliary Activities	M-6) F-4)	10		

Table III / 3

	Education Background (No.of Empl.)			Salary Total Cost (000 R)
	Univ. or higher engineers	Sr. Highschool or equiv.	Others	
Management	1			3.0
Direct production:				
skilled	-	-	-	
semi-skilled	-	5 + 3	45 + 22	32.1
unskilled	-	-	-	
Auxiliary Activities				
skilled	-	-	-	
semi-skilled	-	-	-	
unskilled	-	3	6	5.9
Employees in direct prod. (75)				32.1
Employees in direct prod. 1st shift (50)				21.2
Other employees, not in production (10)				8.9
All employees (85)				41.0

IV. Annual Production

			1st Shift		2nd Shift	
Total Value of Production (000 Rand)			696		1,218	
Product	Unit	Unit Value	Quantity produced	Total Value (000 R)	Quantity Produced	Total Value (000 R)
Upper Leather	000 sq.ft.	435	1,600	696	2,800	1,218

V. Intermediate Inputs

	Unit	Quantity Consumed (1st shift)	Unit Value Rand	1st Shift 453 Total Value 000 Rand	Two Shifts 793 Total Value 000 Rand
1. Energy and Water					
a) Electricity	000 kWh	120	21	2.5	4.4
b) Solar and Crude Oil	000 Rand	7	1	7.0	12.3
c) Water	000 Rand	10	1	10.0	17.5
2. Direct Production Materials Total 000 Rand				350.0	612.0
a) Hides	000 lbs.	2,500	100	250.0	437.0
b) Chemicals dyes and fats	000 Rand	100	-	100.0	175.0
3. Packaging Material				0.5	0.9
4. Maintenance and Repair Materials and Services Purchased.				15.0	26.3
5. Materials for auxiliary activities				8.0	14.0
6. Manfactor service inputs, total of which transportation, insurance and storage purchased separate (Rand 3,700).				60.0	105.0

Unit Value of Product: Market value before sales tax

Unit value of material: Market price C.I.F. (no import duty)

It is estimated that about 30,000 - 40,000 hides are from Swaziland. The remaining hides are to be imported from neighbouring countries.

Average weight per hide - 45 lbs. 30,000 hides equal to approximately 1,350,000 lbs.

2,500,000 lbs. = 56,000 hides.

VI.

Value Added Total (000 Rand)	one shift 243	two shifts 425
1. Wages and Salaries (before income tax)		
Employees in direct production	21.2	32.1
Other employees	8.9	8.9
2. Other Expenditure for employees	9.0	12.0
3. Annual Depreciation allowances		
4% building (140,000) = R 5,600	5.6	5.6
10% on land, machinery and equipment (302,000) = R 30,200	30.2	30.2
4. Interest on 10% on 60% of capital assets (10% on 60% of 442,000 = R 26,520)	26.5	26.5
5. Sales, cash and indirect taxes	20.0	35.0
6. Other gross business income before income tax (= gross profit)	121.6	274.7
7. Selected coefficients (see definitions below)		
Machinery, equipment, instruments and tools per employee in direct production	R 4,400	R 2,933
Value added per employee - (243/60,425/85)	" 4,050	5,000
Annual wage per employee in direct production (21.2/50, 32.1 75)	424 1/	428 2/
Variable input costs/gross production ratio -	56.2%	55.7%
Gross Profit/gross production ratio -	17.5%	22.6%

N.B. 1/ 2/

other expenditure as expressed above in VI:2 (R9,000 and R 12,000) for employee are not included.

Definition of

Selected coefficients: in section VI:7

Machinery, equipment, instruments and tools per employee in direct production on first shift is obtained generally by dividing the original book value of machinery, equipment, instruments and tools before depreciation (as recorded in section I, items 5 and 6) by the number of employees in direct production on the shift (as recorded in section III item I).

Value added per employee is the quotient of the total value added (section VI) divided by the total number of employees, including managerial and professional staff (section III).

Annual wage per employee in direct production is computed by dividing the wages of employees in direct production (section VI) by the number of employees in direct production (section III).

Variable input costs/gross production ratio is obtainable by simple arithmetic, relying on value data for both numerator and denominator. "Gross production" represents the total value shown in section IV. "Variable inputs" are defined to include total energy and water, total direct production materials, total packaging materials, work performed by sub-contractors and wages of direct production workers (it is impossible to standardize the extent to which the last component - "Wages of direct production Workers" - can be considered as variable costs.)

In the ratio of gross profit/gross production the numerator is the "other gross business income" shown in the section VI (Value added), while the denominator represents the total annual value of production shown in section IV.

ASBESTOS CEMENT PLANT

1. This prefeasibility study relates to the prospect for profitability in the operation of an asbestos cement products plant in Swaziland. Utilizing Swazi low cost labour and taking advantage of the political stability in the country and the customs union market which Swaziland offers, it has been concluded that a plant of the indicated size would be both feasible and economic. The plant cost is estimated at R 1,495,000 for the building, machinery and equipment. The total number of employees would be about 160 and the gross earnings are calculated to be about 9.9% reaching 21% at full capacity.

2. The estimated initial capacity is 13,200 tons of production with three shifts. A full capacity output 27% higher can be reached with no additional labour. The products and annual quanities are the following: asbestos sheets products 6,200 tons. Pipes and pipe products 5,800 tons. Moulded and formed articles 1,200 tons.

3. Total turnover R 1,162,000. Asbestos material used is 1,600 tons. Cement used is 12,000 tons. The asbestos fibre is available in Havelock Asbestos Mine and the cement is available in the Matsapa cement factory.

4. Fixed capital assets R 1,495,000. Land and buildings R 211,000. Machinery and equipment R 1,200,000. Other assets R 84,000.

ESTIMATED PROFITABILITY

	Rand	R
Sales		1,162,000
Cost of intermediate inputs	731,000	
Total Wages and Salaries	80,600	
Internal rents	89,700	
Depreciation	137,500	1,038,800
Estimated gross profit		123,200

5. The plant should be located in Matsapa Industrial Estate because the main input of the raw materials is cement which is produced in the existing cement factory in the same area. Another advantage of this location is that the construction industry activities in the country are mostly centered in the Mbabane and Manzini areas. The Matsapa Industrial Estate has complete infrastructure service, and facilities such as water of high quality, electricity, railroad and good highway links are available.

6. The cost for machinery equipment and raw material are based on 1964 price level but updated to 1968/69 price level. Salaries are based on available data for 1968.

7. The cost for machinery equipment and raw material are based on 1964 price level but updated to 1968/69 price level. Salaries are based on available data for 1968.

8. Market: It is assumed that marketing in South Africa under the customs agreement and the opportunities for marketing in other nearby and foreign areas does not offer any special obstacle. However, the markets for the products envisaged by this plant have not been studied in detail because time does not permit the development of this part of the study.

9. The study has been based on similar viable plant operations which are already in production in other countries. There is an elasticity in the mixing of the products shown in this study so that choices of volume of different products can be readily made within the present capacity projections.

ECONOMIC DATA ON ASBESTOS CEMENT PRODUCTION

I. **Major Products:** Asbestos-cement products (sheets, pipes and moulded forms); capable of processing circa 15,000 tons of cement and 2,000 tons of asbestos per annum on the basis of 3-shift operation.

1. Estimated Capital Assets:

Total (000 Rand) 1495	(000 Rand)
1. Land - 6 acres	11
2. Land improvements	4
3. Buildings 2,000 m	200
4. Other construction works	20
5. Machinery and Equipments	1,200
6. Tools and Instruments	20
7. Vehicles	20
8. Office Furniture and Fixtures	20

Capacity of electric motors 80 H.P.
" " " generator 45 H.P.

Technological Features: "Hatcheck system" is employed for sheets (a); "Mazza system" for pipes (b); and conventional process for Moulding system (c). Degree of mechanization is high in (a) and (b); poor in (c). No automation.

II. **Inventories**

Total value (000 Rand) 605	(000 Rand)
1. Direct production materials	500
2. Other input materials	50
3. Work in process	10
4. Finished products	45

III. **Labour**

Total employed 160	1st shift	2nd shift	3rd shift
	126	24	10
1. Direct production 112	78	24	10
a. Sheets	28	8	4
b. Pipes	22	8	2
c. Moulding	28	8	4

		1st shift	2nd shift	3rd shift
2. Auxiliary operatives	M.12 F.10	22	-	-
a. Store-house		10	-	-
b. other auxiliary operatives		12	-	-
3. Auxiliary Activities	M. 16 F. 10	26	-	-
a. Technical and administrative management		10	-	-
b. Other office work		16	-	-

Employee	Educational Background		No. of Employee	
	Univ. or higher		Sr.High Sch.or equiv.	Others
	Engineer 3	other 1	4	152
Management	1	1		
Direct Production				
Skilled	-	-	-	3
Semi skilled	1		1	10
Unskilled	-	-	-	97
Auxiliary Activities:				
Skilled	-	-	-	-
Semi skilled	1	-	3	13
Unskilled	-	-	-	29

Categories of persons employed:

	No. of employed	000 Rand Annual Cost
a. Engineers	1	3.0
b. Technicians	2	3.5
c. Administrative and Commercial staff	4	1.8
d. Foremen	3.	1.8
e. skilled operators	3	1.5
f. semi skilled operators	3	1.2
g. other semi skilled	13	5.2
h. " unskilled	3	1.0
i. unskilled male	108	35.6
j. " female	20	6.0
	160	60.6

IV. ANNUAL PRODUCTION

Total value of production (000 Rand) 1.162

Product	Unit	Quantity produced	Unit Value 1/ Rand	Total Value 000 Rand
a. Asbestos sheets and products	ton	6,200	65	403
b. Pipes and pipe products	ton	5,800	105	609
c. Moulded and formed articles	ton	1,200	125	150

Capacity output: 25% higher than the actual production given sufficient demand. No additional labour input is required.

V. INTERMEDIATE INPUTS

Total value of consumption (000 Rand) 731.

1. Energy and water total

	Unit	Quantity consumed	Unit Value 2/ Rand	Total Value (000 Rand)
- Electricity	000 kWh	1,000	21	21
- Water (Internally Supplied)	000 m³	40	-	-

2. Direct production materials: Total

a. Asbestos	ton	1,600	150	240
b. Cement	ton	12,000	16	192
c. Others	(000 Rand)	53		53

3. Packing materials: Total (000 Rand) 50
4. Work performed by sub-contractors 10
5. Maintenance and Repair Material and Services purchased, total (000 Rand) 20
6. Material inputs for auxiliary activities total (000 Rand) 10
7. Non-factor service inputs total (000 Rand) 135
   (of which transport, insurance and storage services purchased separately)

1/ Unit value of product: Market value f.o.b. before sales tax

2/ Unit value of Material: Market price c.i.f.

VI. VALUE ADDED TOTAL (000 Rand) 431

	(000 Rand)
1. Wages and Salaries (before income tax)	
Employees in direct production (including auxiliary operatives)	48.0
. Other employees	12.6
2. Other expenditures for employees	20.0
3. Annual depreciation allowance	
4% on building 200,000 = 8 000	8.0
10% on land machinery and equipment 1,295,000 =	129.5
4. Interest at 10% on 60% of capital assets (10% on 60% of 1,495,000 = 89,700)	89.7
5. Sales and other indirect taxes	-
6. Other gross business income before income tax (gross profit)	123.2

Selected coefficients

- Machinery, equipment, instruments and tools per employee in direct production on 1st shift (1220/78)	R 15641
- Value added per employee (431/160)	R 2700
- Annual Wage per employee in direct production (48/134)	358 1/
- Variable input costs/gross production Ratio (566/1162)	48.7% 2/
- Gross profit/gross production ratio (123.2/1162) (at full capacity = 21%)	10.6%

NB 1/ Wages of employees in direct production including auxiliary operatives. Other expenditure as expressed in VI.2 = 20 000 for employees not included. The number of employees in direct production comprises 22 auxiliary operatives (storehouse, other auxiliary operatives)

NB 2/ Excluding all wages and salaries from variable costs.

Definition o.

Selected coefficients:

Machinery, equipment, instruments and tools per employee in direct production on first shift is obtained generally by dividing the original book value of machinery, equipment, instruments and tools before depreciation (as recorded in section I, items 5 and 6) by the number of employees in direct production on the shift (as recorded in section III item I).

Value added per employee is a quotient of the total value added (section VI) divided by the total number of employees, including managerial and professional staff (section III).

Annual wage per employee in direct production is computed by dividing the wages of employees in direct production (section VI) by the number of employees in direct production (section III).

Variable input costs/gross production ratio is obtainable by simple arithmetic, relying on value data for both numerator and denominator. "Gross production" represents the total value shown in section IV. "Variable inputs" are defined to include total energy and water, total direct production materials, total packaging materials, work performed by sub-contractors. Wages of direct production workers are not included. (It is impossible to standardize the extent to which the last component - "Wages of direct production Workers" - can be considered as variable costs.)

In the ratio of gross profit/gross production the numerator is the "other gross business incomes" shown in the section (VI) Value added while the denominator represents the total annual value of production shown in section IV.

PREFEASIBILITY STUDY NO. 6

WOOD WOOL SLABS PLANT

CONCLUSIONS

1. An attempt has been made in the following prefeasibility study to determine the possible size of a plant that could operate at a level of profitability that would attract investor interest in a manufacturing enterprise based on residues of industrial wood or branch wood, and aimed at the Customs Union market and the markets of other African countries. A detailed marketing study, however, has not been attempted because of time considerations.

2. Assuming that marketing is not a problem this study shows the prefeasibility and prospects of a plant producing a maximum of 180,000 wood wool slabs per annum, working on 2 shifts and processing 1300 tons of wood wool and 1700 tons of cement. Wood wool is the wood fibre of an industrial wood or branch wood. It is essential for the success of this project that the average yearly production in the first three years approximates 78% of the maximum capacity (78 % of 180,000), or 140,000 slabs per annum, in a two-shift operation.

3. Total annual turnover is valued at Rand 242,200. Wood material used is 1800 tons and 1700 tons of cement. The wood material is available within the country and the cement is available in the Matsapa Cement factory.

4. The total plant cost is estimated at Rand 321,000 including working capital of Rand 69,000 and Rand 47,000 of other investment. The costs of land and buildings are Rand 85,000 and machinery and equipment, R 120,000.

5. **Estimated profitability**

- Annual Sales			Rand 242,200
- Cost of intermediate inputs	Rand	121,000	
- Total Wages and Salaries	"	27,300	
- Depreciation	"	23,400	
- Internal rents	"	19,300	
- Other costs	"	10,000	" 201,000
Estimated gross profit.....			41,200

6. The plant is proposed for location in the Matsapa Industrial Estate. About 60-70% of the total construction volume of the country is concentrated in the Mbabane-Manzini area. There is also a sawmill in this area and a cement clinker mill. The Matsapa Industrial Estate has excellent infrastructure facilities - electricity, water, a rail link with Lourenco Marques in Mozambique and a highway link with South Africa.

7. The study has been based on the operations of similar viable plants which are already in production in other countries.

ECONOMIC DATA ON WOOD WOOL SLABS PLANT

I. The plant will produce wood wool slabs for the building industry. It is capable of producing 180,000 slabs per annum and would process 1,300 tons of wood wool and 1,700 tons of cement. This study is based on a production in the first three years of about 78% of the maximum capacity which is 140,000 slabs per annum produced in two shifts.

Since about 60%-70% of the total building construction in the country is concentrated in the Mbabane-Manzini area, and a cement clinker mill is located in this area, the Matsapa Industrial Estate has been proposed as the location of the plant. Furthermore the Matsapa Industrial Estate has excellent facilities: electricity, water, a rail link with Lourenco Marques in Mozambique and a highway link with South Africa.

II. Estimated Capital Assets (000 Rand) 321

1. Fixed assets			205
Land and Development		25	
Buildings		60	
Machinery and Equipment (50kW)		120	
2. Working capital			69
Investments		32	
Production materials and Auxiliary	7		
Parts and Supplies for Maintenance and repair	3		
Work in process and finished goods	22		
Accounts receivable		23	
Other liquid assets		14	

3. Other investments 47

Planning costs	13	38
Engineering	8	
Interest during construction	2	
Training costs	5	
Others	10	
Start up expenses		9
Costs for test run	8	
Others	1	

4. Detail of II:1

Major machinery and equipment (000 Rand) 120

Wood wool plant and saw	8
" " impregnation device	4
Miting device and conveyer belt	6
Continuous press with closing mechanism	13
Piling press and saws	15
Ventilation device cables etc.	3
Contingencies, spare parts	10
Cement silo	2
Container for salt solution	1
Machines and tools of repairs shop	4
Transformer station	18
Factory and office equipment	16
Vehicles	20

The process of production adopted is highly mechanised, utilising conveyors, automatic distribution and closing mechanisms.

III. Labour

Employees by Educational Background

	Univ. or higher		Sr. High Sch. or equiv.	Others
	Engineer 1	Other 1	5	29
Management	1	1	1	1
Direct production				
Foremen		2		
Skilled				6
Semiskilled				3
Unskilled male				12
" female				3
Auxiliary Activities				
Skilled				2
Semiskilled			1	
Unskilled male				2
Unskilled female			1	

Categories of persons employed and yearly cost

	No. of employed	Annual cost Rand
Engineers and other	2	7000
Technician	1	1100
Administrative and Commercial Staff	3	1900
Foremen	2	3000
Skilled Labour	6	3000
Semiskilled "	4	1600
Unskilled "	16	5000
Part time "	2	400
Total employees	36	Rand 23000

Number of employees in direct production, 26; annual cost, Rand 11500.

Average cost per employee, Rand 443.

Number of employees in auxiliary activities, 6; Rand 2200.

IV. Annual production (000 Rand) 242.2

Product	Unit Quantity produced	Unit Price Rand ex factory	Annual Turnover Rand
Slabs 2' x 2'			
Slabs of 0.5" thickness psc	20,000	1.20	33,600
Slabs of 1.0" thickness psc	42,000	1.60	67,200
Slabs of 1.5" thickness psc	42,000	1.90	79,800
Slabs of 2.0" thickness psc	28,000	2.20	61.600

V. Intermediate inputs

Total value of consumption (000 Rand) 121

1. Energy and water Total Rand 4000

	Unit	Quantity consumed	Unit value Rand	Total value Rand
Electricity	000 kWh	140	21	3000
Water	-	-	-	1000

2. Direct production materials Total Rand 57,000

Wood	T	1800	12	21600
Cement	T	1700	18	30600
Calcium Chloride	T	70	40	2800
Moulding oil	000 l	80	20	1600
Fuel and Lubricant				400

3. Work performed by sub-contractors 10000

4. Maintenance and Repair (Material and Services) 20000

5. Material inputs for auxiliary activities 10000

6. Non-factory service inputs total (of which transport, insurance and storage services purchased separately) 20000

Major inputs materials: Wood, cement and mineralizing agent (a calcium chloride solution of 3% concentration). Residues of industrial wood or branch wood may be used, including soft or moderately hard wood with long fibre (i.e. with a density of up to 40 lbs/cu.ft., depending on the oven-dry weight and types of wood). Portland cement is a suitable mineral - building agent. Magnetic cement is vulnerable to high thermic humidity.

Unit value of product is market value f.o.b. before sales tax.

Unit value of material is market price c.i.f..

Products are all partly exported.

VI. Value added total 000 Rand 121,2

			Rand
1.	Wages and salaries (before income tax)		
	Employees in direct production (including auxiliary operatives)		13,700
	Other employees		9,300
2.	Other expenditures for employees		4,300
3.	Annual depreciation allowance		23,400
	4 % on building (60000)	2,400	
	10 % on machinery and equipment	12,000	
	10 % on other fixed assets (85,000)	9,000	
4.	Interest on 10% on 60% of capital assets (321000)		19,300
5.	Administration and Sales cost		10,000
6.	Other gross business income (estimated gross profit)		41,200

Selected coefficients

Machinery, equipment, instruments and tools/ per employee in direct production on 1st shift	Rand	7,700
Value added per employee (121,200)	"	3,370
Annual Wage per employee in direct production (11500/26)	"	440[1]
Variable input costs/gross production ratio (82,5/242,2)		34.0%[2]
Gross profit/gross production ratio (41,2/242,2)		17.0%

N.B.[1] Other expenditure as expressed above in VI:2 (4300) for employees are not included.

N.B.[2)]

Variable input costs	
Total energy, water	4000
Production material	57000
Packing material	-
Work performed by subcontractors	10000
Wages of direct production workers	11500
	82500

Definition of

Selected coefficients:

Machinery, equipment, instruments and tools per employee in direct production on first shift is obtained generally by dividing the original book value of machinery, equipment, instruments and tools before depreciation (as recorded in section I, items 5 and 6) by the number of employees in direct production on the shift (as recorded in section III, item 1).

Value added per employee is a quotient of the total value added (section VI) divided by the total number of employees, including managerial and professional staff (section III).

Annual wage per employee in direct production is computed by dividing the wages of employees in direct production (section VI) by the number of employees in direct production (section III).

Variable input costs/gross production ratio is obtainable by simple arithmetic, relying on value data for both numerator and denominator. "Gross production" represents the total value shown in section IV. "Variable inputs" are defined to include total energy and water, total direct production materials, total packaging materials, work performed by sub-contractors and wages of direct production workers (it is impossible to standardise the extent to which the last component - "wages of direct production workers" - can be considered as variable costs.)

In the ratio of gross profit/gross production the numerator is the "other gross business incomes" shown in the section VI (Value added) while the denominator represents the total annual value of production shown in section IV.

PREFEASIBILITY STUDY No.7

DRY CELL BATTERY MANUFACTURING PLANT

CONCLUSIONS

This prefeasibility study is based on data, obtained from the Ministry of Commerce, Industry and Mines, which include material and machinery cost; labour, land and building requirements. The indicated cost for machinery, material and products has been updated to 1969/70 cost level by adding 20%. Costs of land and building were based on the cost level for 1970; labour cost is based on data available for 1968.

However, it must be emphasized that since only limited staff time was available for this study our conclusions must be considered only as preliminary and used solely for the purpose of determining the relative importance of the different cost factors for new developments. Any specific study on industrial development must be subjected to detailed independent professional examination prior to undertaking financial commitments for construction of the plant.

It has, however, been concluded that a plant of the indicated size would be both feasible and economic. The plant cost is estimated at Rand 361,000 and required working capital is estimated at Rand 80,000. The cost for land and building is Rand 146,000 and for machinery and equipment, Rand 180,000. The total number of employees is estimated to be about 149; the gross earnings are calculated to be about 7,7% with 1 shift production, and about 19,3% with 2 shifts.

The estimated annual capacity is 17,280,000 dry cell batteries produced in two shifts. The total turnover in 2 shifts operation is Rand 727,000. Direct production material, which is imported, is Rand 430,000; total intermediate input is Rand 470,000.

ESTIMATED PROFITABILITY

	Rand	
- Annual sales		R 727,000
- Cost of intermediate inputs	470,000	
- Total wages and salaries	69,000	
- Depreciation	23,600	
- Internal rents	21,660	584,260
- Estimated gross profit		R 142,740

Plant location: We have assumed that the plant will be located at Matsapa Industrial Estate, which has complete infrastructure services, and facilities such as water of high quality, electricity, a railroad and good highway links.

Market: It is assumed that marketing in South Africa under the Customs Union Agreement and the marketing in other nearby and foreign countries does not offer any special obstacle at this point. However, the markets for the products envisaged by this plant have not been studied in detail because time does not permit the development of this part of the study at this time.

South African imports in 1968 were 28,000,000 pcs. and exports were 6,700,000. It seems that there is a sufficient demand in South Africa for the type of production indicated in this study.

ECONOMIC DATA ON DRY CELL BATTERY PRODUCTION

Major products: dry cell battery, capacity 17,280,000 pcs/annum in two shifts production.

I. ESTIMATED CAPITAL ASSETS (000 RAND) 361

1. Land, 2 acres	4
2. " improvements	2
3. Building, 1,400 m2	140
4. Other construction works	5
5. Machinery and Equipment	180
6. Tools and Instruments	15
7. Vehicles	5
8. Office Furniture and Fixtures	10

II. ESTIMATED WORKING CAPITAL (000 RAND) 80

1. Direct production material	25
2. Other inputs	5
3. Work in process	20
4. Finished products	30

III. Employees total 149 Total cost (000 Rand) 53

2 Engineers	7
5 Administration and Auxiliary operators	6
38 Production operators male	14
104 " " female	26

IV. Annual production — Total value of production (000 Rand) 727

Dry cell battery		Unit	Quantity produced	Unit value Rand	Total value Rand
First 6 mths. production	UM1	000 pcs.	5,760	51,50	296,640
	UM2	000 pcs.	960	43,40	41,664
	UM3	000 pcs.	960	26,30	25,248
Second 6 mths production	UM1	000 pcs.	7,200	41,20	296,640
	UM2	000 pcs.	1,200	34,60	41,520
	UM3	000 pcs.	1,200	21,00	25,200
			17,280		726,912

V. Intermediate input

Total value of consumption (000 Rand) 470

1. Energy and Water total	Unit	Unit Value	Quantity produced	Total Rand
Electricity	000 kWh	21	520	10,920
Water 8,000,000 gallons	000 gls.	varies o.50-o.30		2,000
2. Direct production materials				430,000
3. Packing material included in V,2				-
4. Work performed by subcontractor				5,000
5. Maintenance and Repairs (5% on machinery and equipment)				9,000
6. Materials inputs for auxiliary				5,000
7. Non-factor services inputs (of which transport, insurance and storage services purchased separately)				8,000
				469.920

VI. Value added Total (000 Rand) 257

		Rand
1.	Wages and salaries (before income tax) (including auxiliary operators)	50,000
	Other employees	9,000
2.	Other expenditure for employees	10,000
3.	Annual depreciation allowance 4% on building (140,000) 10% on machinery and equipment (180,000)	5,600 18,000
4.	Rental paid 10% on 60% of total capital Assets (10% on 60% of 361,000)	21,660
5.	Sales and other indirect taxes	-
6.	Other gross business income before income tax, sales cost and licence fee	142,740

Selected coefficients

- Machinery, equipment, instruments and tools/ per employee in direct production on 1st shift — Rand 2,730
- Value added per employee (257/149) — " 1,725
- Annual wage per employee in direct production — " 282[1)]
- Variable input/gross production ratio at 2 shifts production — 61.5%
- Gross profit/gross production ratio at 2 shifts production (at 1 shift production 7,7%) (142.74/727) — 19,6%

N.B. 1) Other expenditure as expressed above in VI:2 (10,000) for employees are not included.

Definition of

Selected coefficients:

Machinery, equipment, instruments and tools per employee in direct production on first shift is obtained generally by dividing the original book value of machinery, equipment, instruments and tools before depreciation (as recorded in section I, items 5 and 6) by the number of employees in direct production on the shift (as recorded in section III item I).

Value added per employee is a quotient of the total value added (section VI) divided by the total number of employees, including managerial and professional staff (section III).

Annual wage per employee in direct production is computed by dividing the wages of employees in direct production (section VI) by the number of employees in direct production (section III).

Variable input costs/gross production ratio is obtainable by simple arithmetic, relying on value data for both numerator and denominator. "Gross production" represents the total value shown in section IV. "Variable inputs" are defined to include total energy and water, total direct production materials, total packaging materials, work performed by sub-contractors and wages of direct production workers (it is impossible to standardize the extent to which the last component - "wages of direct production workers" - can be considered as variable costs.)

In the ratio of gross profit/gross production the numerator is the "other gross business incomes" shown in the section VI (Value added) while the denominator represents the total annual value of production shown in section IV.

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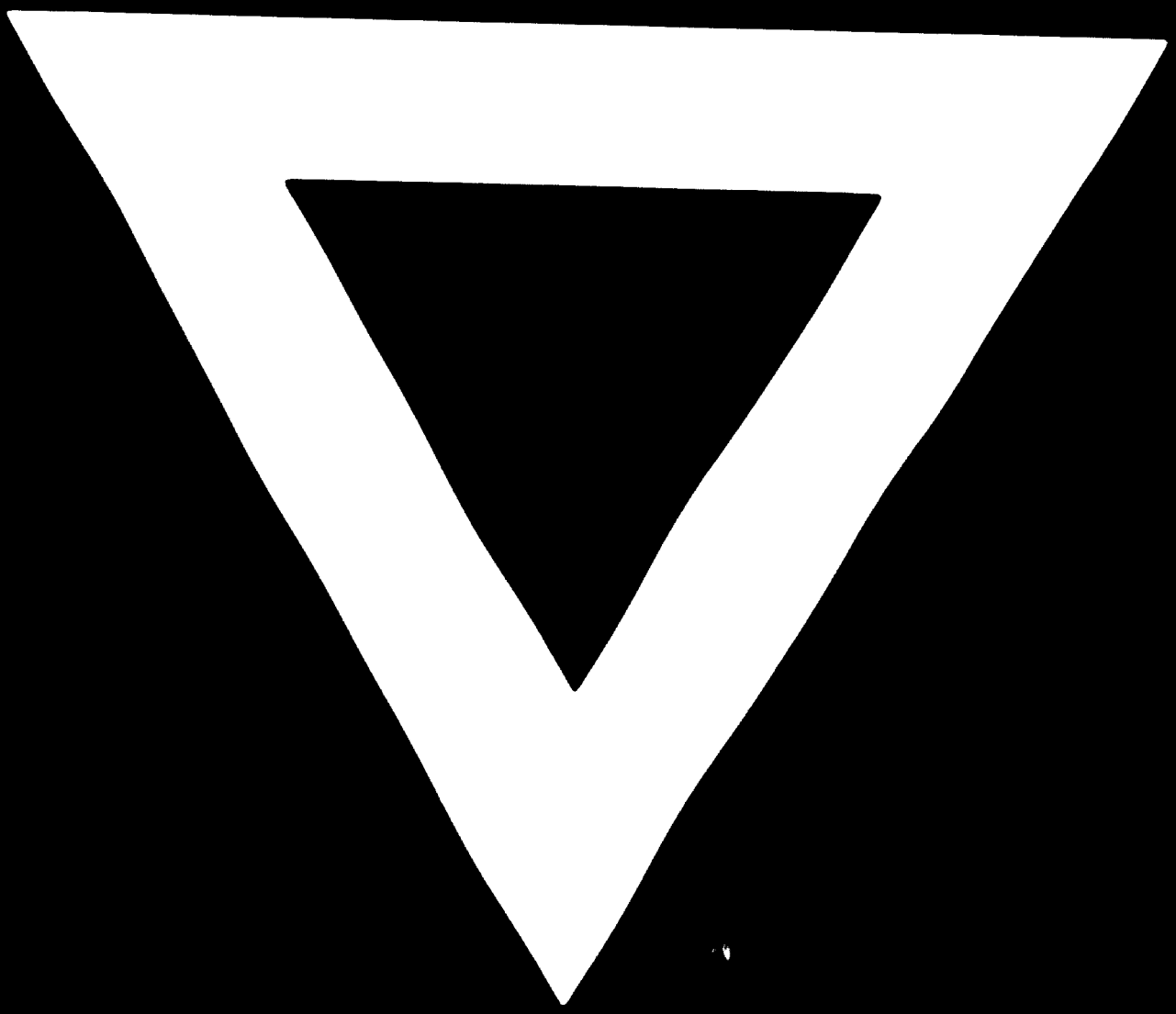

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