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THE SUGAR-CANE PROCESSING INDUSTRY IN AFRICA

Background paper*

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* The views expressed in this document are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document has not been edited.

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Introduction

As a follow up to the First Interregional Consultation on the Food-Processing Industry with Emphasis on Sugar-cane Processing, held in Havana, Cuba, from the 26th to the 30th September, 1988, the UNIDO decided to pursue its efforts to promote the Sugar Industry in Africa.

In this paper the situation of the Sugar Industry in Africa is assessed and the prospects for the next decade are indicated and discussed.

In the first instance, an evaluation of export markets is effected. It reveals that future expansion can only be the outcome of enhanced inter African trade or the increase of self sufficiency levels.

The second part comprises an analysis of the African countries in terms of their situation vis-à-vis production, consumption and trade. The various reasons which have brought about the relative stagnation of African production observed during the last decade are also highlighted. Lack of extra market share, inadequate technical expertise in key areas, high cost incurred in the purchase and installation of equipment and competition from low cost suppliers have been the major stumbling blocks.

Conscious that intra African trade would go a long way towards improving the viability of the African sugar industry, an assessment of the requirements of the continent has been effected in the third part. It shows that there would be opportunities for some 5 million tons of EEC Grade II white sugar to be traded between African countries over the next decade.

The fourth part analyses the existing refining capacities and the upgrading thereof. It appears that it is technically possible to increase the output of white sugar. The cost of achieving this is substantial. Any such venture would only be warranted if market shares are secured.

High capital cost involved in the production of centrifugal sugar have led us to investigate into the economics of the production of non centrifugal sugar. The latter is obtained with little or no capital expenditure.

In addition, the establishment of units engaged in the production of non-centrifugal sugar has the advantage of making sugar, a very valuable carbohydrate, readily available in rural areas. Convinced that this type of production could be of great interest to Africa, informal contacts have been established with Indian sugar consultants.

The profitability of the Sugar Industry in the African continent can be improved through diversification. In the sixth part, this aspect is reviewed. A survey of the African situation indicates that there is very little use of sugar by-products. At individual level, Mauritius, Malawi and Zimbabwe, in their own way, have found an optimal use for a given by product. A comparison with GEPLACEA countries has also been effected and the appropriate course of action indicated.

Intra African trade considered to be the key element in the development strategy of the sugar industry of Africa is envisaged in part seven and proposals made to that effect.

The paper lays down the elements which can be used for the preparation of a plan of action for the sugar industry of Africa.

Two conditions have to be satisfied before any such plan is submitted to potential lenders in a bid to secure funds for the development of the sugar industry and the use of by-products. Firstly, concrete action in the field of training and research and secondly, an inter African trade agreement which would clearly indicate the market availabilities.

PART I
ASSESSMENT OF THE INTERNATIONAL MARKET SITUATION

1. Assessment of the International Market Situation

The improvement of the profitability and viability of the sugar industry can be achieved by extra production triggered by additional market opportunities and substantial reduction in operating and capital expenditure.

In this part of the report, the possibilities offered by the various export markets are being investigated.

The main outlets are considered, the European Economic Community (EEC), the United States (US), Eastern Europe and the world or free market.

1.1 The European Economic Community

Sale of sugar to this market by a non-member state has been rendered virtually impossible by the various provisions of the Sugar Régime of the Common Agricultural Policy.

Entry of some 1.3 million tons of sugar/year from a certain number of countries of the African Caribbean Pacific (ACP) group, is allowed under the Sugar Protocol.

The Protocol, signed in 1975, is a model North-South Trade Agreement. It has an indefinite duration. Although it has always been annexed to the various ACP/EEC Lomé Conventions, it has an independent existence and provision has been made for it to outlive the Conventions.

This agreement provides for guaranteed price and access. At the time of its signature, the EEC was constituted of nine member states. Since then, the membership of the EEC has been enlarged to include three new countries, Greece, Spain and Portugal.

All three being sugar deficit countries, i.e. with consumption exceeding output.

The ACP countries, signatory to the Protocol have been making representations to the EEC to the effect that further quantities of ACP sugar be granted access to the Community given the developments that have taken place in the EEC since the inception of the Protocol.

The Community has never acceded to any of the ACP requests and has always stated that the quantities agreed to under the Protocol are unalterable.

The reading is clear, except Portugal, no extra sales of sugar can be reasonably expected to be made to the EEC.

1.2 Portugal

This country is of interest to African countries. It is basically a cane sugar consuming country. It purchases some 300,000 tons of raw cane sugar which are processed in its three refineries.

Portugal joined the EEC in 1985. It is presently undergoing a transitional period which would end in 1992.

The accession of this country to the Treaty of Rome (establishing the EEC) was considered by some EEC countries and their DOM (Departements d'Outre Mer) as being beneficial to them in the sense that it would bring an extension of their markets.

Beet producers considered that they could export their beet raws, DOMs their raw cane sugar. Some beet producers also thought of setting up a beet sugar industry in Portugal.

Five years later, it has been proved beyond doubt that beet cannot be grown in Portugal. Beet raws have nearly disappeared and DOM cane sugar production is on the decrease.

Once Spain and Portugal had joined the EEC, the next step for them, was to accede to the ACP/EEC Lomé III convention. This was effected in 1987. ACP countries, in particular those signatory to the Sugar Protocol, raised forcefully the issue of access to the Portuguese market, a cane sugar one. Finally a joint ACP/EEC declaration was annexed in the accession treaty agreement making reference to a review of the possibilities of access to the Portuguese market.

Nevertheless, the outcome of negotiations relative to the Portuguese market was not outright a negative one. Indeed, four African countries, Swaziland, Malawi, Zimbabwe and Côte d'Ivoire managed to obtain some concessions regarding the entry of 75,000 tons of sugar to Portugal. This amount of sugar from these countries, valued according to world market prices, enters the Portuguese market upon payment of a levy. This levy is significantly lower than the one imposed on sugar falling outside this agreed quantity.

During the recent negotiations leading to the signature of the Lomé IV ACP/EEC Convention, the issue of access to the Portuguese Market was again raised. Once more a joint declaration has been annexed.

"Joint declaration on sugar in the Portuguese market (Annex XXVIII to the IV Lomé Convention)

1. The ACP and the EEC agree, as foreseen in the Protocol of Accession of Portugal to the third ACP-EEC Convention to continue under the appropriate provisions of the Convention and in particular Article 168(2)(c), the examination of requests made by the ACP States concerning increased preferential access to the Portuguese market for ACP sugar.

2. Having regard to the review of the supply situation on the Portuguese market in 1991, the Community, for its part, undertakes to consult the ACP States prior to taking any decision, bearing in mind the interests of all the traditional ACP suppliers to that market, and the request of the ACP States submitted to the Community before and after the accession of Portugal to the third ACP-EEC Convention and in the framework of the negotiations on the fourth ACP-EEC Convention."

Given the fact that Portugal will always be in need of cane sugar, it can be reasonably expected that this market will be opened in 1992, one year after the above mentioned 1991 review, to ACP countries capable of reliably supplying raw cane sugar to refineries.

Benefits would of course accrue to a certain number of countries including non-African ACP countries.

It is further assumed that the opening up of this market will be accompanied by a substantial upward price revision and that the sugar exported to Portugal will benefit from terms and conditions similar to those obtaining under the Sugar Protocol. Countries having access to this market will undoubtedly receive extra revenue which will improve or maintain the viability of their sugar industries.

In this category quite a few African countries are included.

1.3 The US Market

The United States of America has never been a traditional outlet for African countries. It is essentially an importer of sugar from Latin America and the Philippines. Nevertheless, a certain number of African countries have been granted access to this market.

Import of sugar into the US is governed by a system which provides for a global Import Quota and for countrywise allocations expressed in terms of percentages.

The amount of sugar supplied by African countries represents only 9% of the total quota, whereas the Latin America/Philippines group accounts for 78% .

This remunerative market has considerably shrunk over the recent years. The import quota which was of 2,702,200 metric tons raw value (MTRV) in 1983, came down to a mere 957,100 MTRV in 1988, i.e. 35% of the 1983 figure.

This significant reduction is attributed to increased consumption of alternative sweeteners and the rapid rise of domestic beet sugar production in the US.

Exporting countries as well as sugar users have been continuously pressing the authorities to review the sugar policy so as to allow further quantities of sugar, essentially if not totally cane sugar, to enter into the United States.

The US Farm Bill which lays down the framework for the production and the import of sugar is being reviewed this year. Hearings on the Bill have already started amidst lobbying action from all sides.

Reasonable forecast by independent observers tend to indicate that the new US Legislation would provide for a minimum import quota of some 1,250,000 MTRV of sugar with the same country allocation system as the one prevailing now.

Under the new régime, 110,000 MTRV of sugar would accrue to the traditional African suppliers, representing a more or less status quo situation compared to the prevailing one.

Apart from the EEC and the US markets, Eastern Europe constitutes the third remunerative preferential market. However, no provision exists for the import of sugar from African countries.

Moreover, recent developments in that part of the world may even lead to an end of the existing preferential trade agreements.

1.4 An International Sugar Agreement

Since July 1988, prices on the world market have rarely gone below 12 US cent/lb. This level of price is considered by many observers to be interesting for the sugar industry.

This market, in the absence of an International Sugar Agreement (ISA) with economic provisions, is bound to be a volatile and unpredictable one, as evidenced by the 3-4 US cent/lb prices of the 84-85 period.

The conclusion of the ISA with economic provisions has been rendered impossible by the refusal of the countries members of the Cairns Group, Australia in particular and Thailand, to consider an ISA for the time being. They are focussing their attention to the current Uruguay Round of the GATT Multilateral Trade Negotiations, where they are pressing for a global trade agreement on primary commodities.

Notwithstanding this situation, it is a fact that an ISA with economic provisions will undoubtedly have a stabilising effect on prices with the establishment of country quotas and various floor and ceiling prices which will create a healthier environment for sugar production worldwide.

Since the expiry of the last ISA, Thailand has emerged as a major world exporter. Australia has continued to increase its exports. It can now be envisaged that Cuba would come to the World Market. These developments will certainly have a major incidence on the allocation of export quotas under the ISA. African countries with a poorer export performance cannot be expected to obtain substantial quotas.

1.5 Prospects and the Need for intra African Sugar Trade

The situation on the various remunerative international markets (US and EEC) is such that African countries have little to expect in terms of extra market shares thereon. Whatever extra share can be secured, Portugal for instance, would, according to the beneficiary African states, only offset reductions in revenue. Indeed, they point out that all countries exporting to the EEC have been bearing the brunt of the EEC Restrictive Price Policy which is being implemented since the 1985/86 marketing year.

It would appear therefore that the export of sugar to the free market, uncertain pricewise and where sales can be constrained by the implementation of an effective ISA, is the only alternative.

Profitable operations in such a price environment are possible for very few countries - those with very low cost of production. There are certain African countries which meet this requirement.

Other producers can also operate on the free market. Namely those which can sell at low variable costs. Remunerative trade agreements or lucrative and substantial domestic markets provide sufficient income to cover all fixed costs and allow production destined to other outlets to be effected at low variable costs. This situation applies to only one country in the continent, South Africa.

Under these circumstances it is reasonable to envisage that the expansion of the production of the African sugar industry, thereby an improvement of its viability, can only be achieved by developments taking place within the continent i.e: -

- (i) the upgrading of the self-sufficiency level; and
- (ii) the development of intra African trade.

The last element can be achieved if the traditional exporting countries are allowed to meet the needs of the importing countries whether actual or future. Before proceeding to the evaluation of the possibilities of some African countries meeting the requirements of others, an analysis of the existing sugar situation is being effected.

PART II

CONSUMPTION/PRODUCTION SITUATION IN AFRICAN COUNTRIES OVER THE
1979-80 - 1988/89 PERIOD

2. Consumption/Production Situation in African countries over
the 1979/80 - 1988/89 period

It is essential that an analysis be conducted on the consumption/production situation prevailing in African countries. This exercise has been coupled with an evaluation of the performance over the last decade i.e. 1979/80 to 1988/89.

Regarding the issue of sugar, the African continent is heterogeneous.

Accordingly, for analysis purposes, it has been segmented. The choice of regions, group of countries and significant individual countries has been made to reflect the variety of situations existing in respect of sugar consumption, production and trade in the continent.

Alongside the assessment exercise, efforts have been directed towards the identification of those factors which affect the viability of the sugar industry or which have prevented Africa to increase its production in a significant manner.

Material used comes either from the International Sugar Organisation reports or year books or from F.O. Lichts Statistical Bulletins.

Fully aware that circumstances in Africa and Asia are quite different, we have nevertheless used for comparison purposes the performance, production and consumption, over the last decade of three Asian countries. They are India, Pakistan and Thailand. These three states, combined or individually, have witnessed a more than two fold increase of both production and consumption over the reference time period.

In the exercise carried out, South Africa and the islands of the Indian Ocean namely Mauritius (an independent state) and Reunion (a French DOM) have been deemed to form part of Africa.

The main elements of the analysis are outlined in what follows.

2.1 Reunion and Mauritius

These two islands of the Indian Ocean, representing a total area of slightly more than 4000 sq kms, account for some 13% of the production of sugar in Africa (South Africa included). More than 80% of the sugar produced is exported to the EEC, a remunerative market.

The sugar Industry is vital to both countries. It provides substantial employment opportunities.

Income from sugar is crucial. Indeed, in the case of Mauritius the net foreign earnings of the sugar sector represent more than 60% of the total net foreign exchange earnings.

Mauritius is in this manner a very rare case. Only Fiji and Cuba depend to that extent on sugar.

Consumption which was already at high levels before 1980 has remained stable over the last decade.

Production intended to meet local consumption and commitments under preferential trade agreements has remained also more or less constant.

Both producers are technically efficient with the only difference that Mauritius is cost efficient whereas Reunion is a high cost producer.

Regarding supply to other African countries these two island states are not expected to have a major contribution. On the one hand, most of their production is committed, while on the other hand, extension of production on account of limited acreages is not possible.

Economic development of non-agricultural sectors has been such that land under cane has decreased substantially in Reunion and to a lesser extent in Mauritius. These two countries can be termed as stable producers exporting to preferential remunerative markets.

The efforts of Mauritius in respect of diversification are being dealt later.

2.2 South Africa

Some 27% of sugar production of the African continent originates from this country.

Consumption, fairly high at per capita level, has remained stable over the last decade. Production has slightly increased, whereas exports have remained constant during the same period. Sales of sugar are mainly effected to Far East countries. Technical and cost efficiencies are considered to be among the best in the world; comparable countries being Australia, Brazil and some of the countries of Southern Africa, Swaziland, Malawi, Zimbabwe.

There is tremendous potential for expansion of production in case new outlets crop up. The country is able to supply both raw and white sugar.

2.3 Southern Africa

The four countries considered under this heading: Malawi, Swaziland, Zambia and Zimbabwe account for 17% of Africa's production.

In this net exporting zone, in spite of an increase in consumption of more than 35% over the last decade, the net available surplus for export has nearly doubled.

These countries have access to the remunerative markets of the US and the EEC and sales thereto represent around 25% of total exports.

Per capita consumption in this region is lower than for the countries already mentioned. It stands at 20 kg/capita/year. There is still room for improvement to reach the figure of 30 kg/capita/year.

Agronomic conditions are extremely suitable for cane production and therefore there is considerable scope for increased production in these low cost and technically efficient countries.

The Southern part of Africa (S Africa included) can be termed as an efficient producing region with substantial expansion possibilities.

Given the same opportunities, market wise, as for instance Thailand, there is no reason why production could not progress at the same rate as it did in the Asian country.

2.4 East Africa

This region comprises the following countries: Tanzania, Kenya, Uganda, Somalia, Rwanda, Burundi and Ethiopia.

10% of Africa's production comes from this area and it accounts for 11% of the continent's consumption. However, average per capita rates are fairly low, less than 10 kg/capita/year.

Increased production has matched increased consumption in this region which is a net importing one.

A major producer, Uganda, has for internal reasons ceased production during the last decade. New developments taking place now under the aegis of the World Bank and the return of the former sugar operators are expected to allow this country, with a very fertile land, to become self sufficient in the first instance and eventually allow it to export sugar to neighbouring countries. It must be remembered that prior to 1971, the Ugandan sugar industry was a very healthy one and was exporting sugar to Kenya and Tanzania.

Regarding the Sugar Protocol, performance has been very poor. Indeed, two countries, Uganda and Kenya, signatory countries to the ACP/EEC Sugar Protocol, unable to perform in terms of exports to the EEC have found themselves in a situation whereby the Community had to reallocate their quota to other ACP countries on a permanent basis.

This region is not expected to export sugar to other parts of Africa. Increased production would be used mainly to meet enhanced consumption needs.

2.5 Sudan

Ambitious plans were devised in the mid-seventies for the development of the sugar industry in Sudan. In that respect, the largest sugar undertaking in the world was erected, Kenana, with a processing capacity of 330,000 t of sugar i.e. seven times the size of what was considered in those days as the optimum size for a viable processing unit.

Sudan was expected to become the major if not the sole supplier of Egypt and the Middle East.

Production take off was delayed on account of numerous problems. In the early eighties, the World Bank became deeply engaged in the rehabilitation of the Sudanese sugar industry. Production picked up and has steadily increased over the last decade.

However, self-sufficiency has not yet been attained.

Based on progress already achieved it is felt that although this country may become a net exporter, it will not be able to avail itself of the tremendous opportunities offered by its neighbours.

The nearby deficit countries of the Middle East and Egypt need some 1,500,000 t of sugar annually.

2.6 Egypt

This country is the most important sugar consuming and importing one in Africa. It is also the second largest cane sugar producer in the continent. Furthermore, beet production is also undertaken.

Over the last decade production has increased in line with the rise in consumption.

It is expected that this country will remain a net importer of sugar in the next decade.

2.7 Northern Africa

This group is made up of five countries: Libya, Tunisia, Algeria, Morocco and Mauritania. Apart from Morocco, all the others are non-sugar producers.

Beet production has increased substantially over the last decade, but it is in cane production that Morocco has made considerable progress, with technical advice as well as training facilities provided by Mauritius.

It is expected that Morocco will continue to improve its self sufficiency level in the coming years.

2.8 West and Central Africa

The prevailing agronomic conditions are conducive to large scale cane production. But this has not been the case. The most probable reason being that the countries of these regions were engaged in the full development of other cash crops and consequently were not able to devote enough resources to cane sugar concerns.

Sahelian countries, having on their part to face serious water shortage problems, could not reasonably be expected to enter into cane production.

In the last decade, production levels increased very slowly compared to a slightly higher rise in consumption.

Reliable analyses of technical efficiency and cost of production indicate that West and Central Africa lag behind Southern Africa and even East Africa. They are high cost producers.

Per capita consumption is low, less than 10/kg/capita/year.

These are basically importing regions with however, a few exporters, Cote d'Ivoire, Congo, for instance.

2.9 Location of Production and Consumption at the Level of the Continent

Sugar production and trade have developed in such a way in Africa that inter African trade is very difficult.

The South (Southern Africa, S Africa, the Indian Ocean islands) representing some 57% of total production manufacture sugar in an efficient manner. However, on account of trade commitments or for political reasons, more than 95% of the surplus of some 2.5 Million tonnes is marketed to other parts of the world.

North, West and Central Africa are deficit regions requiring imports of some three million tons of sugar. Supplies are effected by non-African countries.

2.10 Trading Partners of Africa

Mention has already been made of the importers of sugar from Africa.

The deficit regions of Africa are nearer to extra African sources of supplies. Indeed, the EEC countries, Brazil and Cuba are nearer than the net exporting countries found in the South of the continent.

Furthermore the above mentioned exporters, either on account of remunerative prices secured on preferential export markets, Cuba, or because of relatively high domestic prices, Brazil and the EEC, are in a position to supply sugar, produced at variable, low costs, to the free market. Under such conditions, these countries are able to sell on that market at all times, irrespective of the prices, which are very often on the low side.

Most of the sugar importing countries of Africa whose economies depend essentially on the sale of primary commodities have been hard hit by the depressed prices thereof experienced during the last decade. Low prices of sugar were certainly welcome during the same period.

Last but not least, most of these African countries as well as the sugar exporting ones, have trade agreements with the EEC. Therefore import of sugar from the Community has been part of a normal trade process.

2.11 Raw and White Sugar Trade

The major element in African sugar trade is the clear distinction between the categories of sugar imported and exported.

75% of the imports are made up of white sugar of EEC Grade II specification. The remainder being mostly under the form of raw sugar. Plantation white sugar is rarely traded.

95% of the raw sugar imported is directed towards sugar refineries which produce EEC Grade II white sugar.

Consumer preference in the major importing countries goes to EEC Grade II white sugar and it is very unlikely that this situation will change.

The situation is quite different on the export side, where EEC Grade II white sugar make up only 10% of the total exports. Two thirds thereof come from Southern and South Africa.

2.12 Constraints to the Development of Production

Having identified the main characteristics of sugar production in Africa, it is essential to determine the causes which are responsible for the relative stagnation of production over the last decade.

It is a matter of fact that production has actually increased in the continent during the 1979/80-1988/89 period. But the rate has been slow compared to the one obtained in India/Pakistan/Thailand.

The production performance can be attributed to several causes. The most important ones are indicated below.

2.12.1 Limits to Expansion of Production

Three producing countries, Mauritius, Reunion and South Africa, accounting for some 40% of African output have strong limitations to expand production.

The first two have limited land resources. The third one, where consumption already at high levels has been stabilised, can only rely on exports to cater for incremental output.

The political régime of that country has debarred it from access to nearly all markets. Very few states are willing to have trade relations with it. Most of these have already reached the saturation point regarding consumption. Therefore, sales could not increase.

2.12.2 Absence of Extra Market Share

On the one hand, shares on remunerative preferential markets decreased in the last decade; on the other hand, as spelt out above, intra African trade is limited, if not inexistent.

Moreover, the major exporters on the free market, Brazil, Thailand, Australia, Cuba and the EEC, are more competitive on the world market than most of the African countries.

2.12.3. Cheap Sources of Supply

In a decade where free market sugar prices have been on the low side, many importing countries, who have also been facing economic problems, have either reduced consumption or have imported the cheap product from the world market. The latter move has been detrimental to the domestic processing industries.

2.12.4 Absence of Appropriate Institutions

Yields and production depend upon the timely availability of high yielding and disease resistant varieties. This condition can be met in countries with well established research stations and extension services. It is a well known fact that there is a dearth of such institutions in Africa, in particular in the new sugar producing countries.

2.12.5 Lack of Process Control and Improper Maintenance of Equipment

Process control is essential for proper recovery of sugar at factory level. Maintenance of equipment is also a contributory factor.

In addition, improper or absence of maintenance invariably brings about cost escalation. The likely outcome being unprofitable units requiring subsidies from Governments hard-pressed from all quarters for allocation of scarce resources.

The importance of these factors has been recognised by many institutions.

- (i) For instance, the GEPLACEA, has published a handbook entitled:

"Methodology for technical analysis of the equipment of the sugar industry".

- (ii) The Regional Sugar Cane Training Centre for Africa (RSTCA) is setting up training courses on maintenance of equipment and machinery, much sought after by African sugar producing countries.

2.12.6 Cost of Equipment

The total cost of an equipment is made up of two components, the cost per se and the installation costs.

Most African countries purchase turnkey equipment, from Europe, the EEC in particular.

In comparison, Asian and GEPLACEA countries are manufacturers of most of the equipment used in sugar production and are in position to install imported machinery.

In the continent, South Africa is a manufacturer of equipment. The capability of Mauritius to install equipment significantly reduces foreign exchange burden compared to what it would be in the case of a turnkey acquisition. Installation costs represent 20% of the c.i.f value in the case of Mauritius. It is significantly higher elsewhere, around 50% of the c.i.f value.

The amount of foreign exchange required on account of installation costs is a deterrent to normal rehabilitation and modernisation.

Improper maintenance and delayed capital investment are certainly not conducive to optimum sugar recovery and cost reduction.

It is certain that the improvement of the viability of the African sugar industry requires the production of cheap EEC Grade II white sugar to be supplied to users and importers within the continent after overcoming the various geographical and other barriers. The pre-requisite to the realisation of this new trade régime is reinforced collaboration between African countries.

At the same time attention must be given to a reduction of operating costs and capital costs either by spreading them over higher levels of production or by reducing them outright.

Removing the constraints identified at 2.12.4, 5 and 6 above is as essential as securing extra market shares.

There is another area where profitability and viability can be enhanced, the diversification of activities. This issue is being discussed at a later stage.

PART III
ASSESSMENT OF THE REQUIREMENTS OF THE AFRICAN CONTINENT

3. Assessment of the Requirements of the African Continent

Increased inter African trade is a privileged way to improve the viability of the sugar industries of the continent.

It is therefore proposed to assess the requirements of the various countries/regions of Africa.

3.1 Per Capita Consumption

Average per capita consumption in Africa is lower than the world average. Table 3.1 indicates the average consumption of centrifugal sugar for the major regions of the world.

Table 3.1 - Worldwide Consumption of Sugar

Region	Average consumption years 84-88 Kg sugar/head/yr
Europe	41.6
North America	31.3
Central America	44.7
South America	40.0
Africa	14.7
Asia	11.4
Oceania	43.4
World	21.6

Source: F.O. Lichts

However, it should be noted that if figures concerning the consumption of traditional sugars are included in the above computation then the Asian average would be more important than the African one.

The regionwise analysis of consumption in the African continent is more revealing than the global average.

Table 3.2 - Consumption on an African regionwise basis

Region	Average consumption years 84-88 Kg sugar/head/yr
Mauritius/Reunion	38.0
South Africa	38.0
Southern Africa	20.0
East Africa	< 10.0
Sudan	24.0
Egypt	34.0
North Africa	around 30
West & Central Africa	< 10.0

It appears that the major trading regions (North Africa, Egypt on the one hand and Mauritius/Reunion and South Africa on the other hand) have more or less peaked in terms of what can be termed a reasonable level of consumption.

Progress can still be achieved in Southern Africa and Sudan where indeed, consumption is increasing and can be expected to increase to around 30 Kg/capita/year.

The regions where major developments can take place remain East, West and Central Africa.

However, it must be borne in mind that most of the countries of these regions, with the exception of Nigeria, are considered to be low income ones by the United Nations organizations.

Several scenarii of enhanced per capita consumption can be envisaged.

A 5 kg/capita increase over the decade in these regions, population growth being taken into consideration, would create an additional requirement of 2.3 million tons of sugar.

An incremental 10 kg/capita, on the other hand, would need extra availabilities of 4.6 million tons.

Taking into account current imports there would be a 5 million tons market in Africa.

PART IV

MEETING THE REQUIREMENTS

4. Meeting the Requirements

Ensuring that African requirements are adequately met by African supplies is indeed the most formidable challenge which the continent will have to face in respect of the sugar industry.

This objective, given the magnitude of the efforts that have to be undertaken, can only be achieved with the full co-operation of all African countries.

It is certain that the problems are complex but it must be remembered that there are also certain assets which can be advantageously used to solve them.

Resources are scarce in Africa, they should therefore be used judiciously. For instance, intra African trade should not mean that sugar is sold at prices well above those prevailing on the world market. Similarly, investments in extra production capacities should consider the opportunity cost of importing sugar from cost efficient African countries.

4.1 Existing Trade in EEC Grade II White Sugar

Meeting the needs of sugar importing countries of Africa implies that exporters would have to supply large quantities of EEC Grade II white sugar.

Six countries are already exporting more than 20,000 t of EEC Grade II white sugar yearly: Ethiopia, Malawi, South Africa, Swaziland, Zambia and Zimbabwe.

4.2 Enhancing White Sugar Production

EEC Grade II sugar can be produced at competitive prices either by refining raw sugar or by adding a white line to an existing raw sugar factory.

4.2.1 Refining

Efficient and low cost refineries already exist in many countries, Malawi, Swaziland, South Africa etc. Increasing or upgrading their capacity can be initiated as a first step.

However, for the amount of white sugar required, the setting up of large scale refineries should be seriously envisaged.

The economies of cane sugar refining is such today that large scale refineries are viable only if they process a minimum quantity of sugar. The break even point is around 300,000 t/year.

4.2.2 White Line

South Africa and Mauritius have successfully explored and developed white lines attached to raw sugar factories.

Indeed, a small refinery operates at the end of the raw sugar manufacturing process.

Production ranges from 10 to 25,000 t of EEC Grade II white sugar/year and is carried out in an economic way.

Whatever the path chosen, investments will be substantial. They will be incurred only if outlets are secured.

PART V

PRODUCTION OF NON-CENTRIFUGAL SUGAR IN AFRICA

5. Production of Non-Centrifugal Sugar in Africa

Production and use of non-centrifugal sugar is very important in India and Pakistan. This type of sugar accounts for some 40% of the consumption in these countries.

Consumers there, guided by cultural and religious reasons, show a marked preference for sugar obtained in the traditional way. In addition, these small units, manned by experienced artisans, are scattered around the country, especially in the rural areas. Thus a smooth and ready supply of sugar is at the disposal of the inhabitants of these regions. These units requiring little capital investment allow the Government to divert scarce resources to other needy sectors.

The attractiveness of traditional sugar or Gur sugar to producers lies in the fact that the price fetched on markets is higher than that of white sugar, plantation white or EEC Grade II. It is to be noted that already the price of the latter is on the high side in India, around 20 US c/lb at wholesale level.

The remunerative nature of Gur creates numerous cane supply problems for centrifugal sugar manufacturers. Indeed, cane is regularly diverted to Gur producers.

Price and cane supply considerations as well as absence of skill are important constraints to establishing units engaged in the production of non-centrifugal sugar in Africa.

However, low capital requirements and ready supply of sugar to rural areas should be overriding considerations.

In this respect informal contacts have been established with Indian sugar consultants with a view to conducting feasibility studies on the production of non-centrifugal sugar in Africa.

There are certain countries which will, on account of the scarcity of their resources, experience enormous difficulties in setting up centrifugal sugar production plants which are indeed costly by their standards.

Then non-centrifugal sugar production which has very low capital requirements is an attractive proposition.

PART VI

DIVERSIFICATION EFFORTS

6. Diversification Efforts

The First Interregional Consultation on the Food-Processing Industry with Emphasis on Sugar Cane Processing came up with a definition of the word diversification.

"Diversification means the integral use of the sugar cane plant, the optimization of the use of the by-products of the manufacture of sugar, and the use of sugar itself and of the sugar cane plant as raw materials for transformation into other valuable products in terms of economy and social impact. It also means the optimum use of land under cane, for example, interline cultivation".

No single country in the world has been able to attain this ambitious target. Certain GEPLACEA member states have gone a long way though. Brazil, for instance, uses the cane plant directly without having recourse to the production of sugar and the obtention of its by-products. The Cuban Institute for the development of by-products has conducted experiments on an impressive list of products.

The use of by-products in Africa is still at an infant stage.

Whilst bagasse is very rarely used, most African countries export the near totality of their molasses mainly to the EEC, where they account for some 25% of total purchases.

The absence of alternative outlets for molasses compels African countries to market this product to the EEC which imposes a levy at the point of entry. It represents on average 6 US \$/t for ACP countries and 12 US \$/t for non ACP countries.

It is therefore imperative to devise ways and means to increase the use of sugar by-products.

We are first going to review two cases where attempts have been made in that direction.

6.1 Diversification Projects

6.1.1 Malawi and Zimbabwe

These two countries which have no oil resources have gone a long way in the use of final molasses and even some "B" molasses for the production of ethanol. It is used for blending with fuel. The extent of alcohol used is slowly being increased. Wider applications for ethanol as a neat fuel and diesel substitutes are also being explored.

However, it appears that expansion projects may need the use of the more expensive "B" molasses which will undoubtedly have a negative incidence on the profitability of such ventures.

The way out would be to increase the availabilities of molasses, which can be achieved by raising sugar production or by purchasing molasses from neighbouring traditional exporters to the EEC.

The first option is in line with the proposition to significantly enhance sugar output in the Southern African region.

Use of bagasse is rather limited in these two states. There are no paper and furfural plants in operation. Low cost hydro-electricity and cheap coal do not warrant heavy investment for the purpose of generating electricity from bagasse.

6.1.2 Mauritius

(a) Molasses

85% of the country's molasses production, averaging to some 170,000 t, are exported.

Several factors are responsible for this market strategy. Firstly, the internal market cannot absorb more than one third of the production of an economic ethanol plant and foreign trade is very uncertain pricewise. Secondly, transport costs from the factory to the harbour are such that the producer is able to avail himself of more than 85% of the f.o.b price. Finally, technical and commercial know how on low volume and high value added products obtained from molasses/ethanol is limited.

The policy of the Mauritian Government is to develop this last line of production.

(b) Bagasse

Hawaii has the world's most performing sugar industry in terms of co-generation.

Mauritius comes after this Pacific island.

At present, some 110 kWh/t of sugar produced are generated and sold to the national grid.

Electricity generated by burning bagasse accounts for 16% of the total requirements of Mauritius. It is planned to increase this proportion to 30% by 1995 and for this purpose, Government has designed a comprehensive and attractive incentive scheme.

One sugar factory has a dual purpose boiler which can alternatively use coal (imported) or bagasse as combustible and its share in the national production is around 15%.

Experiments are also being conducted on the use of cane trash and cane tops as boiler fuel.

Energy audits at factory level have also been conducted under the aegis of the local Research Institute.

(c) Interline Cultivation

Land scarcity has prompted the Mauritian Government and the sugar industry to develop a rational policy whereby the acreage under cane is used in an optimal manner. Mauritius is, in this respect, considered to be a model country.

Mauritius, Malawi and Zimbabwe have adapted themselves to their economic and geographic environment and have actually found an optimal use for a given by-product.

Molasses is exported by Mauritius, a small island, whereas, Malawi and Zimbabwe landlocked countries devoid of oil deposits, fully use this by-product.

Absence of fossil fuel and hydro-electric power stations has significantly encouraged the use of bagasse for the generation of electricity in Mauritius.

6.2 The GEPLACEA Countries

Member states of this organisation are rightly considered to have achieved real progress in the use of the by-products of cane sugar. It is therefore interesting to understand the reasons behind this success.

The first element which stands out is the difference in the scale of production. GEPLACEA member states sugar production is four times than that of the whole of Africa. If cane output is considered the ratio would be even higher, given the extent of the use of this plant in Brazil.

The magnitude of production in certain states affords considerable leeway to either undertake ambitious projects or to convert economically by-products into a variety of derivatives.

The proximity of the United States provides an attractive and often remunerative outlet to the by-products transformation industries.

Finally, these countries have derived considerable benefit from the research, development and dissemination network established by the GEPLACEA in collaboration with the UNIDO.

There are wide differences between the African situation and that of the GEPLACEA countries.

Automatic replication of solutions already adopted by the latter is not called for.

Nevertheless, experience gathered in research and dissemination by the GEPLACEA is invaluable to Africa.

Action will have to be at different levels. Many individual countries will, by the very nature of their location and environment, have to adopt solutions specific to them.

Collaboration among African countries is warranted for the pooling of available by-products to render processing operations feasible. Market intelligence will also have to follow the same path.

However, attractive the Brazilian option of the use of the sugar cane plant may be, it is clear that such a scale of operations cannot be carried out in most African countries. Only those with sizeable populations could be interested in the Brazilian experience. Such countries exist in Africa, Nigeria and Egypt. But they are oil-producing countries.

Finally, in Brazil itself, the ethanol line is being seriously challenged.

PART VII

ENHANCEMENT OF CO-OPERATION

7. Enhancement of Co-operation

In part VII, two areas of co-operation are being dealt with. The first one relates to sugar trade and is basically an intra African matter. The second one refers to a crucial aspect of sugar production, procurement of equipment. In this case an African/GEPLACEA association is needed.

7.1 Sugar Trade

In respect of this much needed interaction between countries, the following is proposed:

- (i) A meeting of organisations dealing with the marketing of sugar should be organised, either under the aegis of the UNIDO or under that of the African 'GEPLACEA'. The object of this meeting would be
 - (a) to inform everyone about the opportunities of intra African sugar trade;
 - (b) to discuss all the consequences and practical difficulties resulting from a change in the existing trade flows; and
 - (c) to find solutions whether economic or otherwise to any issue resulting from the meeting.
- (ii) Depending on the outcome of the marketing meeting, assuming it is a positive one, sugar producing associations should be convened to prepare a development strategy.
- (iii) Finally, a permanent bureau to promote and monitor inter African trade should be set up.

7.2 Procurement of Equipment

It is vital for the African sugar industry to obtain equipment for sugar production and by-product use at relatively cheap rates.

Many GEPLACEA countries are low cost manufacturers of equipment.

There is therefore the need for African and GEPLACEA countries to:

- (i) identify the needs of the African sugar producing countries; and

(ii) find solutions which would reduce capital costs in Africa.

It is felt that this examination should be carried out under the aegis of the UNIDO.