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CORDAGE, BAGS AND BAGGING MATERIALS:
INDUSTRIAL PROSPECTS IN THE EAST
AFRICAN SUB-REGION

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CHAPTER I

Introduction

1. The rest of this study is divided into two chapters.
2. Chapter II is concerned with cordage industries based on sisal, a fibre in which the sub-region holds a pre-eminent position. Cordage in the context mostly means the usual range of products, such as binder twine, baler twine and parcelling and packaging twine in which sisal holds a primary over other hard fibres. The discussion is directed in the main to possibilities of setting up export industries and the whole approach might be summarized under the term "export upgrading".
3. Chapter III is devoted to bags and bagging materials, an area in which the needs of the sub-region are currently met in a large way by imports from the jute industries of India and Pakistan. The limitations of industrial efforts based on currently exploited raw materials - such as sisal, doum palm fibre and aloe fibre - are noted, and the recommendation is evolved for a sizable sub-regional effort based (at least until kenaf production in the region achieves economic viability) on imported jute.

CHAPTER II

Cordage Industries based on SisalSisal: A General Picture

4. Sisal (*agave sisalana*), abaca or Manila Hemp (*musa textillis*) and Henequen (*agave fourcroydes*) are the three principal hard fibres in the world economy. In general terms hard fibres have similar characteristics - long fibre lengths, high tensile strength, flexibility and durability - which bring about a large measure of substitutability among their various uses, when warranted by price and supply considerations. In more normal market conditions substitutability works in a more limited manner. Anyway, the general effect is to render the world hard fibre position a relevant perspective in seeing the role of sisal. This is supplied in Table 1.

TABLE 1

World Hard Fibre Production : 1935 to 1964

| | ('000 Metric tons) | | | | |
|---------------------------------------|--------------------|--------------|-----------------|----------------------------------|-----------------------|
| | <u>Sisal</u> | <u>Abaca</u> | <u>Henequen</u> | <u>Other Hard Fibres</u> | <u>All Fibres</u> |
| 1935-38 (Av.) | 257 | 170 | 110 | 49 | 586 |
| 1952-56 (Av.) | 427 | 136 | 114 | 34 | 711 |
| 1961 | 587 | 120 | 166 | 32 | 905 |
| 1964 | 624 | 113 | 159 | 32 ⁺ | 928 |
| <u>1964 as % of 1935-38 (Av.)</u> | 243 | 66 | 145 | 65 | 158 |

Sources: Monthly Bulletin of Agricultural Economics and Statistics, FAO.
Hard Fibres, London.

⁺1961 data.

5. The two major propositions which arise from Table 1 are:

(i) Sisal formed 44 per cent of the total world hard fibre production before the Second World War and currently amounts to 67 per cent of it.

(ii) The above improvement in relative significance arises, in one part, from an increase in sisal production. But in another, significant part it arises from the fall in abaca (because of the destruction of Philippine plantations during the Second World War), and slower increase in the production of henequen (which slowed down as a result of over-cutting during the War years). In other words, interfibre substitutability has operated in recent years largely in favour of sisal.

6. The preceding propositions need to be supplemented in some additional respects. Firstly, during the post-war years synthetic fibres have made considerable headway in hard fibre uses, although the major impact (such as, say, jute has had) is yet to come. Secondly, plans in the Philippines and Mexico are likely to result in a larger volume of supplies of abaca and henequen in the future.^{1/} Thirdly, notwithstanding the relative improvement in the position of sisal among hard fibres, sisal prices have fluctuated widely from year to year, and within the year, as may be seen below.

TABLE 2

Sisal Prices - 1947 to 1964

| | <u>1947</u> | <u>1951</u> | <u>1957</u> | <u>1960</u> | <u>1963</u> | December <u>1964</u> |
|--|-------------|-------------|-------------|-------------|-------------|-------------------------|
| Price Quotation ^{2/} (B.E.A. Sisal No.1) C.I.F. European Ports (£s. per ton) | 72.3 | 229.8 | 71.8 | 102.1 | 144.3 | 108 |

Source: Hard Fibres, London.

^{1/} For details see FAO, Monthly Bulletin of Agricultural Economics and Statistics, Vol. 12, May 1963, P.9.

^{2/} Annual prices are averages for the year. The quotation for December 1964 is at the beginning of the month.

Sisal in the Sub-region

7. Countries of the sub-region (and Angola and Mozambique) produce currently over 60 per cent of the world's total supply of sisal, a devolution which has been in part facilitated (as may be seen below) by the great decline in the role of Indonesia as the major producer of sisal since the end of the Second World War. The current pattern of production is outlined in Table 3.

TABLE 3

Production of Sisal in the Sub-region (and Angola, Mozambique) - 1935 to 1964

| | 1935-38 (Average) | 1952-56 (Average) | 1961 | 1964 (estimates) |
|--------------------|----------------------|----------------------|------|---------------------|
| Tanganyika | 92 | 177 | 201 | 230 |
| Kenya | 33 | 39 | 64 | 70 |
| Uganda | x | x | x | x |
| Angola | 6 | 33 | 56 | 68 |
| Mozambique | 22 | 24 | 29 | 33 |
| Madagascar | 2 | 10 | 15 | 24 |
| Total : Sub-region | 155 | 283 | 365 | 425 |
| Rest of World | 102 | 144 | 222 | 198 |
| - of which, | | | | |
| Indonesia | 90 | 30 | 16 | 3 |
| Brazil | - | 77 | 165 | 173 |
| Total: World | 257 | 427 | 587 | 623 |

Sources: See note to Table 1.

^x Less than 1,000 tons a year; and included under Kenya.

8. The importance of sisal in the countries of the sub-region might be seen with the help of details^{1/} about Kenya and Tanganyika.

9. The main sisal areas of Tanganyika cover 674,000 acres and nearly one-third (105,000 in 1961) of the organized labour force in the country is employed in the sisal industry (i.e. plantations and processing factories on the estates). The investment exceeds £40 million (112 million US dollars), and over 1920-1961 exports have averaged 35 per cent of the total export trade.

10. The area under sisal in Kenya is 260,000 acres, and organized work force (as distinguished from African small-holders mostly growing hedge sisal) is over 28,000. In 1960 sisal formed 13 per cent of the export proceeds of Kenya.

11. The next table attempts a more systematic statement of the vital role of sisal exports in the foreign trade of the countries of the sub-region.

TABLE 4

Exports of Sisal and Total Exports - 1963

| | <u>Sisal Exports (1963)</u> | <u>Total Exports (1963)</u> | <u>Share of Sisal</u> |
|------------|-----------------------------|-----------------------------|-----------------------|
| Tanganyika | 22.7 m.£ | 62.3 m.£ | 36% |
| Kenya | 7.5 m.£ | 43.7 m.£ | 17% |
| Madagascar | 1,310 m.CFA | 20,261 m.CFA | 9% |
| Angola | 578 m.Es. | 4,730 m.Esudos | 12% |
| Mozambique | 262 m.Es. | 2,896 m.Escudos | 9% |

Source: Yearbook of International Trade Statistics, 1963, United Nations.

^{1/} The facts in this and the immediately following paragraph are derived from Lock, G.W., Sisal, Longmans, Green & Co. Ltd., 1962; Barclays Bank D.C.O., Sisal and other Hard Fibres, 1963; and materials from the Kenya Sisal Board.

12. The most pertinent fact about the international trade in sisal is that the producing countries have not hitherto been significant manufacturers of end-products, apart from minor usage on a handicraft basis. The following figures bring out the near-identity of production and exports of fibre which is a consequence of the lack of manufacturing development.

TABLE 5

Comparison between Production of Sisal Fibre and
its Exports - 1961 to 1963 (Long tons)

| | <u>Output (Av. 1961-3)</u> | <u>Exports (Av. 1961-3)</u> |
|------------|----------------------------|-----------------------------|
| Tanganyika | 208,000 tons | 209,000 tons |
| Kenya | 64,000 tons | 59,500 tons |
| Madagascar | 13,600 tons | 14,000 tons |
| Angola | 63,000 tons | 62,300 tons |
| Mozambique | 26,800 tons | 28,000 tons |

Source: Based on data from Hard Fibres, London. Figures for Madagascar are based on 1960, 1961 and 1962.

13. This absence of manufacturing facilities (with the exception of a small industry in Kenya) does not issue either from the nature of hard fibres or from the absence of a large volume of international trade. Thus, Mexico, the world's leading producer of henequen, exported 76,000 m. tons out of a total output of 96,000 tons in the form of fibre in the three years (average) preceding the second World War. Cordage exports during the same period amounted to only 8,800 tons. In subsequent years, development of manufacturing facilities has lifted cordage exports to 76,000 tons in 1963 and brought about a fall in fibre exports to 25,000 tons.

14. The impressive growth of the Mexican cordage industries is also not an isolated phenomenon. It is merely a counterpart of the growth in world demand for hard fibres which was documented partially in Table 1.^{1/} More specifically, attention should be directed to the fact that cordage exports^{2/} entering international trade aggregated over 216,000 long tons in 1963. The tabulation following concentrates on countries that have successfully developed an export trade in cordage, and underlines the fact that the bulk of the world's exports of cordage currently are derived from production in high-wage cost countries based on imports of fibre (with the leading exception of Mexico).

TABLE 6

Loading Exporters of Cordage - 1935 to 1963

| <u>Country</u> | <u>Exports of Cordage</u> | |
|----------------|---------------------------|-------------------------|
| | <u>1935-38 (Av.)</u> | <u>1963 (Long Tons)</u> |
| Belgium | 12,400 | 18,900 |
| Canada | 8,400 | 13,600 |
| Cuba | 2,800 | n.a. |
| Denmark | 640 | 10,400 |
| France | 5,800 | 3,400 |
| W. Germany | 1,700 | 3,800 |
| Mexico | 8,800 | 76,400 |
| Netherlands | 20,200 | 12,000 |
| Portugal | Negligible | 40,400 |
| United Kingdom | 18,200 | 17,300 |

Source: See notes to Table 1.

^{1/} In the early 1920's the world output of three main hard fibres was placed at 366,000 tons, compared to the current level of 900,000 tons.

^{2/} The figures relate to twenty countries listed by Hard Fibres, London, and probably represent 90 per cent or more of the total volume of trade.

15. In short, the five major recent developments of export capacity in a comparatively simple product structure like cordage have taken place in four non-producers of fibres - namely Belgium, Canada, Denmark and Portugal - and only one fibre-producing country, Mexico. A closer look at the former group is taken in the next table in order to bring out the further fact that exports are not a marginal activity in these four countries but form a substantive part of operations.

TABLE 7

Export Sector as % of Raw Material Input 1963

| <u>Country</u> | <u>Exports of Cordage as % of Hard Fibre Imports (1963) (Quantities)</u> |
|----------------|--|
| Belgium | 62% |
| Canada | 27% |
| Denmark | 45% |
| Portugal | 100% |

16. These developments indicate the existence of a vast international cordage market to which sisal producing countries of the sub-region, Tanganyika, Kenya and Madagascar, could direct themselves. However, it should be clear that the future of world trade in cordage is conditioned by two developments. On the one hand, many countries are likely to set up their own industries thereby causing a shrinkage in international trade. On the other hand, the development of synthetic cordage is almost sure to make major inroads in the market for hard fibre cordage. In the circumstances, any development of cordage industries in the sub-region will have to be based on comparatively modest notions of over-all rates of market growth and might well have to contend with conditions of severe competition from established industries in other countries. Subsequent sections must be viewed in relation to this over-all perspective.

Rationale of an East African Cordage Industry

17. The first step in considering the possibility of setting up a cordage industry is the determination of the existing market and its likely rate of growth. Detailed data on cordage products cover only Kenya, Uganda and Tanzania, where the domestic market might be placed at not more than 1,500 tons, more than two-thirds of which is met from imports. No clear trend, upwards or downward, is evident, however. The cordage market in all other countries of the sub-region is unlikely to exceed 3,500 tons and the total figure for the sub-region of 5,000 tons might well be an over-estimate. In any case the bulk of this demand is being met currently on a national basis in several countries of the region, partly on a handicraft basis and partly on a basis of factory output. (Ethiopia and S. Rhodesia have several factories). In any case, some of this demand will be so variegated in specifications, that it will have to be met to some extent from imports. In short, the import substitutive demand in the sub-region presently does not exceed 2,000 tons, and it would be unrealistic to work on the basis of a figure of more than 3,000 tons against the present heading for 1975.

18. The main market for cordage industries based on the utilization of sisal would thus be dependent upon export outlets. Entrepreneurial interest in this area has been absent until recently and the new developments in 1964 and 1965 (these are reviewed below) do not add up to patterns similar in volume either to Mexico or Portugal. Given the immediate market prospects - of severe competition in a possibly shrinking international market in a ten-year view - it is of some doubt whether major growth (say around the order of 50,000 to 75,000 tons of cordage output per year) can come about in the foreseeable future without the state assuming an active role as initiator, financier and bearer of risks.

19. The main economic justifications for urging rapid growth of cordage industries would be somewhat as follows:

- (a) The net effect would be to up-grade sisal exports by 36 per cent or so than would be the case otherwise, although this would vary from year to year;

- (b) The gross capital: output ratio being high in the case of cordage industries (1:2.5 to 1:3.2 could be regarded as a fair current range based on extrapolations of current data for new sisal spinning factories in Tanzania) the net upgrading of the raw material value by 36 per cent would imply a recovery of the initial foreign exchange outlay within two years, at the outside;
- (c) Cordage prices tend to be more stable than the prices of sisal and the implicit enhancement of stability in export earnings would be of immense benefit to the economies of Tanzania and Kenya in particular. The next table provides an indication of the different variability of the two price levels.

TABLE 8

Comparison between Raw Material and Finished Product
Prices - 1960 to 1963

| | <u>1960</u> | <u>1961</u> | <u>1962</u> | <u>1963</u> |
|--------------------------------|-------------|-------------|-------------|-------------|
| Raw Material ^{1/} | | | | |
| Prices (£s. per ton) | 102.1 | 90.0 | 100.5 | 144.3 |
| 1960 = 100 | 100 | 88 | 98 | 141 |
| Finished Product ^{2/} | | | | |
| Prices (£s. per ton) | 149 | 157 | 154 | 184 |
| 1960 = 100 | 100 | 105 | 103 | 123 |

- (d) Considering all factors together - such as wage rates, comparatively simple technology, possibility of setting up an ultra-modern plant, and abundant supply of raw material which will be marginally cheaper because of savings in transport costs - there is a fair chance that cordage industries of Tanganyika and Kenya might emerge among the lowest cost of producers in the world over a period of time.

^{1/} Average annual price of BEA Sisal No.1, c.i.f. European ports.

^{2/} Average annual price (mid-value of a narrow range) of standard baler and binder twines finer than 225 feet.

20. Limited recognition of the latter kind of possibilities is in fact now taking place. In October 1964 a baler twine factory was inaugurated in Dar-es-Salaam with an annual output of 4,000 tons. The first output of twine has now been exported and the initial market response has been regarded satisfactory. Another factory, capable of handling an annual intake of 3,000 tons of sisal fibre, was also expected to come into production early in 1965. A third factory, larger than either of the two plants mentioned earlier, is planned for Tanga and is likely to commence operations by the beginning of 1966.

21. The three factories represent various kinds of entrepreneurial interest. The first factory is owned by a subsidiary company of a large rope interest from the United Kingdom. In the second factory West German interests are involved; and the third factory is planned by resident Asian interests who also run a sisal estate.

22. The amounts of investment in fixed capital are, respectively, £250,000, £300,000 and £500,000. The total capacity for cordage might be placed in the neighbourhood of 12,000 tons.

Perspectives for 1975

23. In the light of the preceding discussion, setting out perspectives for 1975 is in the main a matter of encouraging private enterprise on the one hand and of programming and other participation by the governments immediately concerned, namely Tanganyika, Kenya, and Madagascar, on the other. It is also a matter of setting sights, as it were, and of organizing capacities.

24. The subsequent exercise uses a target figure of 60,000 tons for 1975, and the only claim made for the figure is that it is not unreasonable in comparison to the industries set up in recent years by Mexico and Portugal, and seems to be well within the international market potential of 1975.

25. On the assumption that the growth of cordage industries should be spread over all the producing countries of the sub-region, the following distribution of capacities and units is offered as a basis of consideration.

TABLE 9

Perspective for Cordage Industries - 1975

| Country | Existing Capacity (by early 1960) No. of Capacity Units (Annual) | | Margin of Expansion by Existing units | Additional Capacity Required by 1975 No. of Capacity Units (Annual) | | Total ^{2/} Capacity by 1975 |
|----------------------|---|----------------------|--|---|----------------------|--|
| | No. of Units | Capacity (Annual) | | No. of Units | Capacity (Annual) | |
| Kenya | 1 | 600 ⁺ | 1,000tons | 3-4 | 12,000tons | 13,600tons |
| Tanganyika | 3 | 12,000 | 8,000 | 5-6 | 18,000 | 38,000 |
| Uganda ^{1/} | - | - | - | 1 | 4,000 | 4,000 |
| Madagascar | - | - | - | 1 | 4,000 | 4,000 |
| | 4 | 12,600 | 9,000tons | 10-12 | 38,000 | 59,600 |

or say 60,000tons

26. What would be the various implications of such a development?

27. First of all, investment in fixed capital would be around £5 million.

On the basis of an average price of £109.2 per ton, the cordage industry would consume around 62,000 tons (including wastage) of sisal fibre valued at £6.77 million. On the basis of the corresponding average price for the finished product (£163.7 per ton) gross output would come to £9.82 million.

28. Secondly, conversion of (say) 62,000 tons of fibre into 60,000 tons of cordage will result in a net increase in export proceeds of £2.67 million. (This is calculated after making an allowance of £10 per ton of finished product for all foreign exchange implications, including remittance of dividends on expatriate investment, remittance of expatriate salaries, stores and spares, etc., of non-domestic origin). In other words, exports of cordage would yield 39.44 per cent more than the export of fibre which went into its manufacture would have fetched.

⁺ Estimated.

^{1/} Uganda is not currently a producer of sisal to the tune of more than 1,000 tons. However, major developments have been announced including one very large scheme.

^{2/} All capacity estimates are inclusive of a small margin of idle capacity around 5 per cent.

29. Thirdly, investment in fixed capital will come to around £5 million. Employment of operatives would be in the region of 4,000, that is, around £1,250 (or US\$3,500) per workplace created. This is undoubtedly expensive but an expert industry has to be geared to the rigours of a world market and has to be judged in these terms.

30. Finally, the net foreign exchange outlay involved in setting up such an industry (at the rate of 75 per cent of the total fixed capital expenditure, £5 million) would be £3.75 million, and the annual net rate of increase proceeds of £2.67 million will cover it in one and a half years of full-scale operation.

CHAPTER III

Bags and Bagging Materials

The Market

31. The market for bags and bagging materials in the sub-region averaged 40,625 tons during 1955 to 1957. In the most recent biennium for which estimates can be made, 1962 to 1963, the market was only 10.51 per cent higher, around 45,000 tons.

32. The comparatively slow growth may be explained along several lines. In the first place, insofar as imports of foodstuffs as distinguished from local production have risen the demand for bags has failed to benefit. In the second place, the handling of materials has been undergoing significant changes throughout the sub-region. Mauritius handles a portion of its sugar now on a bulk basis; silos for handling grain have come into existence in several countries; and throughout the region cement is now mostly handled in paper bags. None of these examples is in itself pervasive, but taken together these tendencies amount to a fair-sized and continuing erosion of the direct relationship between bulk products and bagging materials. In the third place, it is possible that the rise in the cost of bagging materials, either as a result of the growth of high-cost home industries and/or imposition of higher tariffs to protect these national industries might have accentuated the inhibiting effect of the preceding factors on the rate of growth of demand.

33. In any case, the fact remains that the production of grains, other agricultural produce and cement in the sub-region has grown by perhaps 25 to 30 per cent over 1955 to 1963, whereas consumption of bags and bagging materials has risen by less than 11 per cent. The next table stresses country-wise variations in the picture and at the same time brings out the fact that the pattern is fairly general.

TABLE 10

Total Consumption of Bags and Bagging Materials - 1955 to 1963

| | <u>1955-1957</u> <u>(Average)</u> | <u>1961</u> | <u>1962</u> | <u>1963</u> |
|------------------------------|--------------------------------------|-------------|-------------|-------------|
| Tanganyika | 6,470 tons | 7,500 tons | 7,890 tons | 7,550 tons |
| Kenya | 13,670 | 9,000 | 9,700 | 10,000 |
| Uganda | | 6,000 | 6,260 | 6,000 |
| Madagascar | 2,875 | 2,880 | 3,540 | 3,300 |
| Mauritius | 2,335 | 1,650 | 1,750 | 2,000 |
| S. Rhodesia | | | | |
| Malawi | 10,605 | 10,000 | 10,000 | 10,000 |
| Zambia | | | | |
| Ethiopia | 4,670 | 6,000 | 6,000 | 6,000 |
| Total for Countries above | 40,625 tons | 34,030 tons | 45,140 tons | 44,850 tons |

Source: Import statistics as worked out by Industrial Development Corporation of Zambia.

34. It might be noted, to anticipate some of the later reasoning, that countries like Ethiopia and Madagascar (with a more positive uptrend in growth) are primarily dependent upon locally manufactured bags from palm fibre and pakka, and not on imported jute sacking and hessian.

The Present State of Bagging Industries

35. The current state of the manufacture of bags and bagging materials is reviewed in the next table.

TABLE 11

Manufacture of Bags and Bagging Materials in the
sub-region - 1955 to 1963

| Country | 1955 to 1957 (Average) | 1958 | 1962 | 1963 |
|------------|---------------------------|--------|--------|--------|
| Kenya | 6,020 tons | 7,400 | 8,000 | 8,000 |
| Ethiopia | 1,600 | 1,990 | 3,895 | 4,850 |
| Madagascar | 2,605 | 2,930 | 3,200 | 3,200 |
| Mauritius | 1,925 | 1,450 | 1,500 | 1,500 |
| Total: | 12,150 | 13,770 | 16,595 | 17,550 |

36. Production in the sub-region thus amounts to less than 40 per cent of consumption.

37. The bag industry in Kenya is comprised of a single factory, the East Africa Bag and Cordage Co. Ltd., at Ruiru near Nairobi. The bulk of its output consists of bags for coffee, tea, maize, etc. The factory also manufactures cloth for coffee drying, for packing pyrethum and also for use in the tea industry. A small export market for buffing and polishing cloth in Australia is also catered to by the factory, as well as a larger market in matting and carpeting made from sisal.

38. The main fibres used by the Kenya factory are jute (for mixing in bag manufacture) to the tune of 25 per cent of its requirements and the balance in phornium tenax and sisal.

39. The Ethiopian industry consists of three factories which manufacture sacks of different kinds. These factories mostly use doum palm fibre in a suitable admixture with imported kenaf and imported jute. An approximate breakdown for 1963 would be in the ratio of 50:50 for the home-grown doum fibre and the imported fibres. The factories are located one each in Asmara, Akaki and Addis Ababa.

40. The industry in Madagascar is comprised of one factory at Majunga, and its output covers nearly the entire demand for sacks in the country. The factory manufactures sacks made out of a local fibre called 'pakka' (urena lobota) in admixture with imported jute.

41. The industry in Mauritius produces sacks for the sugar industry and utilizes the entire fibre production of the island in admixture with imported jute. The production has to be supplemented by import of jute bags and hessian.

42. Four generalizations might be made at this stage about the bagging industries in the sub-region.

43. Firstly, as of now the sub-region is almost wholly lacking in the production of 'soft' fibres like jute, kenaf^{1/} or Mesta. Such production as exists is confined to limited areas and is in rather limited quantities.

44. Secondly, the attempt to use a hard fibre like sisal, even in suitable admixture, is circumscribed by several factors. For one, sacks made chiefly out of sisal are heavier, less closely woven and less pliable than sacks made out of jute and similar fibres. (Pliability is a problem to some extent even with doum fibre bags). Moreover, the use of hooks in loading and unloading does not favour sisal sacks because the aperture made by the hook has a habit of spreading instead of re-closing as in the case jute bags.

45. Thirdly, in each case the local industry has needed special measures of permanent assistance in one form or another to offset its higher costs of production.^{2/} In Ethiopia, this help from the State takes the shape of a

1/ From time to time encouraging reports of experiments with kenaf have made their appearance in several countries of the region, such as Tanganyika and Southern Rhodesia. But various problems, such as mechanical methods of retting the fibre, have bogged down progress.

2/ One principal factor in the higher cost of production is the cost of fibre. Thus, in a recent year the f.o.b. price of a ton of Indian jute sacks was US\$283.19 per ton. During the same period the f.o.b. price of a ton of sisal fibre alone was US\$285.88. Considering the fact that sisal bags tend to be heavier, the raw material content of a pure sisal bag would be twice as expensive as that of a jute bag. These figures would vary from year to year and from one country to another but sum up the fundamental cost problem of the bagging industry in the sub-region when based on indigenous fibres.

very high customs duty (19.53 US cents per kilo plus 13 per cent ad valorem) which amounts to an incidence of around 53 per cent over the 1963 average c.i.f. price. In Kenya a special agreement with tea plantations ensures the offtake of bags and prices are pegged higher in a regulated link-up with the prices of imported sacks. In Mauritius, the state-owned factory is run at a loss and offtake of bags is ensured only by a collective agreement with sugar mill owners. In Madagascar, the intricacies of the Franc zone and a higher customs tariff are effective barriers to imported goods.

46. Fourthly, as a consequence, national manufacture of bagging has hitherto functioned on grounds other than commercial viability in international cost terms at any rate. Considerations involved have ranged from import-saving to the desire to help particularly backward parts of the country by the creation of some economic opportunities for employment. Many of these factors might be justified on larger economic grounds and on the basis of extra-economic considerations. But it is doubtful whether a sub-regional industry, such as is proposed in the next section, directed towards reducing current dependence on imported jute goods could be based on similar considerations consistent with reasonable cost levels (it should be realized that insofar as the imported jute goods are merely packing for exports they are an important element in the general cost effectiveness of the countries of the sub-region).

Perspectives for a sub-regional industry

47. As was seen earlier, current production of bags and bagging materials in the sub-region amounts to 17,550 tons out of a total market around 45,000 tons. The scope for import substitution is thus seen, in the largest sense of the term, at 27,000 tons and if some of the shortfall on account of non-reporting countries were made good, this figure might rise to as much as 30,000 tons. However, in view of the tendency of several countries in the sub-region to raise national industries on a-economic considerations, noted earlier, the market for import-substitution has to be seen in considerably lower terms. A further consideration lies in the factors tending to inhibit the over-all rates of growth of the market for bags.

48. The next table sets out the over-all sub-regional projections for 1970 and 1975 on an approximate basis with these factors in view.

TABLE 12

Perspectives for Bagging Industries : 1970 and 1975

| | <u>1963</u> | <u>1970</u> | <u>1975</u> |
|--|--|--|--|
| A. Over-all market | 45,000 tons | 50,000 tons | 60-75,000 tons |
| B. National Production from (mainly) local fibres | 17,550 tons | 30,000 tons | 35-40,000 tons |
| C. Balance scope for import substitution (A-B) | 27,450 tons 30,000 tons ^{1/} | 20,000 tons 23,000 tons ^{1/} | 25-35,000 tons 28-38,000 tons ^{1/} |

49. In the above table the figures for 1970 have a larger basis in validity because the incidence of substitutive measures of various kinds can be seen more definitively as a continuation, more or less, of trends in the preceding period. The figures for 1975 are steeped in uncertainty on two grounds. First of all, the impact of substitutive trends could become vastly enlarged and secondly, the possible emergence of kenaf as a viable, abundant source of raw material within the sub-region might shift the growth of the fibre industries to a raw material oriented pattern.

50. The proposals in this section are therefore based on the 1970 perspective. The over-all market is expected to grow on a rather modest basis, a shade over 11 per cent, over the seven years. This is roughly comparable to the performance over 1955 to 1963 and does not make any assumption about increased impact of substitutive practices. Even if the latter were to occur, it would not affect the market of 50,000 tons very much especially if the sub-region becomes more nearly self-sufficient in foodgrains.

^{1/} Inclusive of estimate for countries for which details were not available for 1963.

51. The next variable in the picture is the growth of national production on the basis of indigenous fibres. Expansion plans are on the anvil in Ethiopia, where in addition a new sisal development is being laid out with a view to creating supplies for a bag factory. These, together, might well total 5-6,000 tons of additional output. There is a plan to set up a sack factory with a capacity of 1,500 tons per annum (based on doum palm fibre) in Zambia. Less specific interest in local fibre utilization has been expressed in several other countries of the sub-region. If it is assumed that countries will prefer utilising their own fibre production (which is otherwise in several cases a valueless product) in the first place, this part of the growth in bagging production will determine the scope of bagging industries coming up wholly on the basis of imported fibres. To the extent to which the projection under this heading (30,000 tons) is an over-estimate or under-estimate there will be a spillover into or detraction from the third category, namely "Balance Scope for Import Substitution".

52. The range under the last heading is placed at 20/23,000 tons. It is proposed that this be met by setting up two sub-regional projects - one for the manufacture of jute sacks and sacking; and one for the manufacture of hessian. Both projects should be based, it is felt, on imported raw jute, one of the cheapest fibres^{1/} in the world and which in any case forms the basis of current pattern of import.

53. The proposed plants should cater to a sub-regional market (except insofar as it is met by industries based on high-cost local fibres). The scale of operations is so designed as to compare with the larger jute mills of India and to attain the maximum spread of overheads, on the one hand and to achieve the maximum worker and machine efficiency on the other. The objective would be to create a jute mill complex in the sub-region, which works on the basis of machinery and layout vastly superior to the general

^{1/} In addition raw jute has entered world trade to the tune of 825,000 to 960,000 tons a year in recent years.

run of established Indian mills, the world's largest exporters, and which secures better man: machine ratios to compensate for lower wage costs in Indian jute mills. Given competitive importing of raw material (the prices of which are set by a world market, and in any case the raw material exports take place in the largest part from Pakistan), the exercise should result in prices as competitive^{1/} as those of Indian mills. The paragraphs below set out the broad contours of such an exercise.

54. The total output, it is proposed, should be distributed in two plants on a basis roughly comparable to current demand patterns:

(a) a sacking and sacks plant with an annual output of 15,000 tons, and

(b) a hessian and other jute cloth plant with an annual output of 6,000 tons.

55. The location of these plants is partly a matter of choice, except that over-all transport cost considerations would probably favour a country like Mauritius or/and another suitable location along the coast line, to be determined in a detailed feasibility study.

56. Below are set out some of the financial and other implications of the proposals made. The price and turnover data is obviously variable, depending upon prices of raw jute and finished products, and the cost assumptions are made on the better Indian basis worked out on the basis of export prices.

^{1/} Considering the basic fact that raw material costs will be higher in the sub-region (the distance to be travelled by the raw material is greater and its volume will now have to be larger to allow for some wastage in manufacture), prices competitive with Indian mills imply manufacturing costs which are marginally (say 3 to 4 per cent) lower than those of Indian mills. This should be no great burden if two things are appreciated. Indian machineries are old, and costs vary widely within exporting Indian mills. Significantly, Pakistan has built up, since 1947, an industry whose annual output exceeds 316,000 metric tons starting from a negligible amount. As a matter of fact, it is arguable that the experience of the Pakistan industry is more directly relevant to the kind of exercise undertaken here.

| | 15,000-ton Sacking Plant | 6,000 ton Hessian Plant |
|---|--|---|
| A. Annual output | 15,000 ton | 6,000 tons |
| B. Annual turnover | US\$ 4.51 million, @ \$300.84 per ton | US\$ 2.47 million, @ \$ 411.55 per ton |
| C. Cost of raw material per ton of finished product | US\$173.74 | US\$200.00 |
| D. Cost of Raw Material | US\$ 2.61 million | US\$ 1.2 million |
| E. Manufacturing Cost per ton of finished product, inclusive of profits and depreciation | US\$127.10 | US\$211.55 |
| F. Foreign Exchange costs of all kinds (including remit- tances, etc.) per ton | US\$207.30 | US\$280.00 |
| G. Foreign exchange savings | | |
| - per ton | US\$93.54 | US\$131.55 |
| - for annual output (A) | US\$1.4 million | US\$ 0.79 million |
| H. Investment in Fixed Capital | US\$ 7.50 million | US\$ 2.50 million |
| I. Foreign exchange portion of (H) @ 75 per cent | US\$ 5.63 million | US\$ 1.88 million |
| J. Recovery Period of Initial Foreign Exchange Outlay - $I \div G$ | A little over 4 years. | Approximately 2.4 years |

57. The investment patterns above are based on recent quotations and estimates, and should be considered tentative.