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16641

Distr.
RESTRICTED

PPD/R.12
18 November 1987

ENGLISH

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

THE TEXTILE INDUSTRY IN NICARAGUA: DEVELOPMENT PROSPECTS AND RESTRUCTURING NEEDS*

Prepared by the

Regional and Country Studies Branch

Studies and Research Division

R. Jenkins

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PREFACE

The Regional and Country Studies Branch carries out economic research in response to requirements for analyses and information for industrial policy-making in individual developing countries.

This study on the Nicaraguan textile industry was supported by the Government and aims at assessing the country's competitiveness in national and international markets, its technological status and market prospects. On this basis it is attempted to identify broad requirements for restructuring of this industrial subsector and to outline supporting policy options.

The study was carried out by a team consisting of Ralf M. Mohs (UNIDO staff member), Rhys Jenkins and Walter Crowther. On the basis of the investigations of the team, Mr. Rhys Jenkins prepared this report in consultation with UNIDO staff.

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ABBREVIATIONS

CMEA	Council for Mutual Economic Assistance
CRIES	Coordinadora Regional de Investigaciones Economicas y Sociales
EEC	European Economic Community
ENAL	Empresa Nacional de Aldogon
FAO	United Nations Food and Agricultural Organization
INEC	Instituto Nacional de Estadisticas y Censos
INIES	Instituto Nicaraguense de Investigaciones Economicas y Sociales
MICE	Ministerio de Comercio Exterior
MIND	Ministerio de Industria
SPP	Secretaria de Pla ificación y Presupuesto

EXECUTIVE SUMMARY

The textile industry is a crucial sector of the Nicaraguan economy and is destined to play an important part in the development of the manufacturing sector. It currently accounts for over 6 per cent of manufacturing value added and almost 12 per cent of manufacturing employment. The industry has grown rapidly since the Revolution in terms both of physical output and employment. However, despite this impressive growth record, the current state of the industry displays a number of weaknesses. These are most apparent in the area of foreign trade where the industry does not adequately cover the domestic demand for textile products, nor is it able to compete on international markets. As a result this industry, in which Nicaragua appears to have the potential for developing a comparative advantage, is currently a substantial net user of foreign exchange.

A closer analysis of supply conditions in the textile industry explains why this is the case. Although physical productivity in the industry appears fairly high compared to other developing countries, such figures are misleading because of the low quality of the product. Labour productivity in the industry is also low.

There are a number of reasons for this low performance. Machinery is largely obsolete, partly because of the age of many machines and partly because often even machinery of a recent vintage does not incorporate the most up-to-date technology available at the time. Partly because of the age of the machinery and partly because of a number of other factors full utilization of capacity in Nicaragua is impossible. The problems due to the age of machinery are compounded by the lack of spare parts as a result of the shortage of foreign exchange for imports, and the difficulties created by the U.S. trade embargo. Low quality also affects production levels, for instance because of yarn breakages which lead to frequent stoppages in weaving.

A further factor contributing to low performance is the high level of absenteeism and labour turnover in the industry. These partly reflect defence requirements, but are also a consequence of the low level of wages in the formal sector of the economy and the rapid growth of the informal sector. Other problem areas include the conditions of buildings which are generally poorly constructed and often lack insulation or climate condition controls, the poor layout of machinery, poor housekeeping and inadequate or non-existent quality control. Finally, the industry suffers from a lack of technical input because of the shortage of textile engineers in Nicaragua.

Although the existing textile industry in Nicaragua is not internationally competitive, Nicaragua does enjoy the basic conditions for developing a comparative advantage in textiles. This is particularly so in spinning where the country enjoys an adequate supply of good quality raw materials at competitive prices, and cheap labour. Once a competitive spinning industry has been developed, then it should also be possible to develop an efficient weaving industry.

The ability of the Nicaraguan textile industry to compete internationally depends not only on the efficiency of the industry itself, but also on a number of government policies which relate both to the cost and availability of key inputs and the level of the exchange rates.

At present the local demand for textiles and textile products is considerabley greater than the domestic supply. This deficit is partly covered by imports, but there is considerable evidence that even with these imports there is an unsatisfied demand. Although some existing projections exaggerate the level of demand that is likely to be reached by the end of the century, the gap between domestic production and domestic demand is likely to widen considerably. Therefore, unless there are major new investments in textile production, there will be increasing shortages of textile products or an unacceptably high level of imports by the industry.

In the longer term a number of potential export markets for Nicaraguan textiles can be considered. However, before exports can be considered, a number of prior conditions need to be satisfied, including guaranteed high and unvarying quality; guaranteed delivery dates; guaranteed weights for yarn etc. Although fuller market surveys are required in order to identify specific products and markets, there seem to be possibilities for export to the Soviet Union as part of counter-trade deals, of woven cloth to Cuba, and of denim to the European Economic Community.

The report concludes that the Nicaraguan textile industry as it exists today is in need of major restructuring. It also finds that because a considerable proportion of the yarns, cloth and garments consumed in Nicaragua are still imported and demand levels are well below those that would be expected given Nicaragua's level of Gross Domestic Product per capita, considerable potential exists for expansion of production for the domestic market. In the short term a rehabilitation programme for the existing plants is required. Priority should be given to the rehabilitation of FANATEX and this should be used as a model and a training ground for the rehabilitation of other mills.

In the longer term a substantial expansion of the textile industry is recommended. This corresponds to the current priorities of national economic strategy with its emphasis on production to meet the needs of national defence and to supply basic consumption goods to the mass of the population, as well as to save foreign exchange. On the basis of demand projections up to the year 2000, it is proposed to build three new weaving mills, a new knitting mill and a new spinning mill before the end of the century, as well as re-equipping and expanding some of the existing firms.

For this strategy to be successful, it is not sufficient merely to build up the capacity for increased textile production in Nicaragua. It is also necessary for a number of complementary policies to be adopted in relation to training, foreign trade, labour and industrial planning. However, if these are implemented, there is every reason to expect that Nicaragua could have a thriving textile industry by the end of the century, covering a large part of domestic requirements, and also exporting certain selected products.

Chapter I: AN OVERVIEW OF THE NICARAGUAN TEXTILE INDUSTRY

The Nicaraguan economy is currently in a serious crisis. This provides the context within which the present situation in the textile industry must be analysed. It also poses major constraints on the restructuring of the textile industry which must be recognized in any recommendations for policy in the short-to-medium term. In the longer term it is to be hoped that the immediate economic and political problems can be resolved opening up the possibility of more major developments in the textile industry.

1.1 The Macro-Economic Context

The Gross Domestic Product which grew in the first years after the 1979 Revolution, has declined continuously since 1983, so that by 1986 it was 6 per cent lower than in the peak year of 1983 (see Table I.1). Falling real output has been accompanied by accelerating inflation, growing balance of payments deficits, increasing foreign debts and a large budget deficit. These economic difficulties are in part the result of the conflict in the region which requires a large part of government expenditure to be devoted to defence, of unfavourable external circumstances including deteriorating terms of trade for Nicaragua's principal exports, and of the disruption to traditional trade patterns as a result of the U.S. trade embargo imposed in 1985.

Table I.1 Macro-economic indicators

	GDP (mn.C$, at constant 1980 prices)	Exports (mn $)	Imports (mn $)	Trade Balance (mn $)	Foreign Debt (mn $)	Change in Consumer Price Index (%)	Fiscal Deficit (% GDP)	Terms of Trade (1980 =100)
1979	n.a.	566.6	360.2	206.4	1,136	48.2	13.3	n.a.
1980	20,799	450.4	887.2	-436.8	1,571	35.3	9.2	100
1981	21,914	499.8	999.4	-499.6	2,163	23.9	12.4	88
1982	21,735	405.8	775.5	-369.8	2,578	24.8	13.6	79
1983	22,738	428.8	806.9	-378.1	3,263	31.1	30.0	69
1984	22,382	385.7	826.2	-440.5	3,901	35.4	24.8	74
1985	21,468	298.6	891.9	-593.4	4,495	219.5	22.2	66
1986	21,377[a/]	218.6	880.0	-661.4	n.a.	657.0	17.0	65

Source: Secretaria de Planificacion y Presupuesto; INEC, Anuario Estadistico de Nicaragua, 1983, 1985; CEPAL, Estudio Economico de America Latina y el Caribe, 1985, Nicaragua, LC/L390/Add.12.

a/ Estimate.

The total cost of the war in terms of reduced production is estimated by the Nicaraguan Government at $150 million in 1986 (Plan Economico, 1987). It is also estimated that more than 45 per cent of government expenditure goes on defence if all the relevant items are included (CEPAL, Estudio Economico de America Latina y El Caribe, 1985, Nicaragua, p.27, no.11). Exports have fallen to less than 40 per cent of their 1979 level, while imports, although reduced from their peak of $1000 million in 1981 are now four times the value of exports. As a result there is a chronic shortage of foreign exchange in Nicaragua which makes the generation of new sources of foreign currency earnings and savings in expenditure on imports a major priority. The government's economic strategy for the period up to 1990 sees maximisation of exchange earnings or savings on the one hand and guaranteeing the supply of basic goods to the population on the other as central (Plan Economico, 1987). The fact that imports in 1986 were at almost the same level as in 1980 with virtually no growth in GDP, indicates that very little import substitution has taken place since the Revolution, and that considerable scope for import savings may still exist.

Exports of primary products which traditionally accounted for the bulk of Nicaragua's foreign exchange earnings have declined drastically since 1979 (Table I.2). Earnings from the two major export crops, coffee and cotton, fell by a quarter and a third respectively between 1979 and 1985, entirely as a result of a fall in production. Beef exports too have fallen significantly partly through reduced production and partly because of increased domestic consumption. For the same reasons too, sugar exports are well down on their peak levels and only bananas have held up relatively well despite the need to switch exports from the United States to Europe after May 1985.

Table I.2 Evolution of major traditional exports

	1979	1980	1981	1982	1983	1984	1985
Bananas (mn$)	6.4	8.4	20.9	9.8	14.8	11.9	16.5
(boxes)	5,637	5,694	4,938	2,276	4,288	4,168	4,466
Coffee (mn$)	158.5	165.7	136.4	124.0	153.7	122.4	117.9
(lbs)	120,400	100,000	114,500	101,200	142,300	89,200	86,600
Cotton (mn$)	135.7	30.4	121.9	87.2	109.5	133.8	91.1
(lbs)	247,000	42,700	162,400	135,100	172,600	180,900	146,000
Beef (mn$)	93.5	58.6	21.2	33.8	31.4	17.6	10.9
(lbs)	78,260	45,052	20,176	32,047	31,332	19,825	12,703
Shrimps (mn$)	21.7	26.8	17.9	21.7	16.8	12.6	12.9
&lobster (lbs)	8,301	7,549	5,049	4,478	2,879	2,225	2,618
Sugar (mn$)	19.6	20.5	48.7	36.4	31.5	20.9	6.9
(lbs)	197,400	134,800	207,800	206,600	237,600	222,000	115,600

Source: INEC, Annario Estadistico de Nicaragua, 1983, 1985.

The priorities of government strategy at the present time, namely defence, the generation and saving of foreign exchange and the production of basic consumption goods for the population, mean that the textile industry is a particularly crucial sector of the Nicaraguan economy. A significant part of the industry's output goes directly into the defence effort in the form of uniforms, blankets, canvas etc. The continued dependence of Nicaragua on imports of yarn, cloth and garments also means that the industry has considerable potential for saving foreign exchange. Thirdly, as a major exporter of cotton, the development of the textile industry could in the longer term offer a way of generating greater value added in Nicaraguan

exports through forward integration. Finally it provides the inputs required to satisfy one of the basic needs of the population, the need for clothing. Future developments in the textile industry are therefore likely to play a central role in the evolution of the Nicaraguan economy.

1.2 The Textile Industry and the Nicaraguan Economy

1.2.1 Development and growth

The textile industry, for the purpose of this study, has been defined to include those firms which engage in spinning yarn and weaving and knitting cloth and in finishing processes. As can be seen in Table I.3, there are a total of eleven firms in the industry, all of which belong to the public sector, the Area de Propiedad del Pueblo (APP). Outside the textile industry there are five APP firms producing garments, as well as 44 medium-sized firms and 128 small firms in the private sector.

Table I.3 Firms operating in the textile industry

	Spinning	Weaving	Knitting	Finishing	Gross Value of Production 1985 (mn C$)
FANATEX	/	/		/	1,051.2
TEXNICSA	/	/		/	757.5
TEXLASA	/	/			114.9
LAS 3F		/			113.4
PROSAN		/		/	167.1
NICARAO		/	/	/	145.7
TRICOTEXTIL			/	/	138.0
HILANICA			/	/	104.7
NICATEX			/	/	53.3
COTEXMA			/	/	153.0
FIBRATEX			/	/	31.2

Source: INEC; UNIDO mission.

There are two large integrated mills with spinning, weaving and finishing departments, each employing more than a thousand workers, FANATEX and TEXNICSA. The only other firm to have its own spinning department is TEXLASA which produces industrial cloth for covering tobacco plants and baling cotton. There are six knitting factories of which one, Nicarao, also has limited weaving facilities. The industry is completed by two specialized producers, PROSAN producing sanitary and medical products and LAS 3F making laces and elastic.

At present the textile industry is very much concentrated in and around Managua, with TEXLASA, near Granada some 40 kilometres from the capital, the furthest afield. The Government is anxious to reduce the excessive concentration of population in Managua in recent years and is actively encouraging the development of new textile factories in other parts of the country in order to promote decentralization.

The textile industry was established in Nicaragua as an industrial activity in the early 1950s, however these were relatively minor operations and the two main manufacturing companies were formed in the 1960s. At the

outset machinery was purchased second-hand, largely from the USA, at the time of the closure of many US plants in the fifties and sixties. In many cases this machinery is still in operation so that equipment dates from 1915 through to 1965 with an average age of 35 to 40 years.

The formation of the Central American Common Market in 1960 gave a substantial boost to industrial investment in the area and led to an expansion of intra-regional trade. Within the Common Market the main centres for textile production were Guatemala and El Salvador which exported textiles on a significant scale to the rest of the region. Nicaragua on the other hand was a net importer of textiles from the rest of Central America.1/

Nevertheless the Nicaraguan textile industry grew rapidly in the period before the Revolution averaging 8 per cent per annum in real terms between 1950 and 1978. However production was particularly seriously disrupted during the Revolution and in 1979 fell to the lowest level for a decade. One of the two largest factories, TEXNICSA, was bombed during the last days of the Somoza regime and did not begin production again until 1981. A number of other factories also suffered damage during this period.

It was not until 1981 that production began to recover and it was 1983 before pre-1979 levels were attained. Since 1983 there has been a marked difference in the development of output of woven and knitted cloth. Woven cloth output has been stagnant and if anything has declined from its peak in 1983. On the other hand, output of knitted cloth has grown rapidly, at almost 20 per cent per annum in physical terms between 1983 and 1986 (see Table I.4). A large part of this increase in output has been due to the establishment of a new firm Cotexma which began production in 1984, and the reactivation of FIBRATEX. Another rapidly growing sector has been the production of socks with most production being supplied again by COTEXMA.

Table I.4 Production of textile products, 1978-86

	Woven Cloth (000's yds2)	Knitted Cloth (000's yds2)	Socks (000's pairs)
1978	11,454)	2,550	n.a.
1979	6,841) Fanatex	1,335	n.a.
1980	8,783) only	3,330	n.a.
1981	18,164	3,315	824
1982	20,376	3,040	874
1983	27,461	4,865	718
1984	26,486	5,769	1,977
1985	25,897	6,177	2,078
1986	26,425a/	8,354	3,036

Source: MIND, Rama Textil and UNIDO Mission estimates.
a/ Estimate.

In value terms production has grown since recovering pre-1979 levels in 1983, at an average rate of 11 per cent per annum, well above the long-term growth rate of the 1960s and 1970s. This has been achieved despite considerable difficulties in obtaining supplies of spare parts and needles for knitting machines and numerous other production problems.

1/ CEPAL, Industrialización en Centroamerica, 1960-1980, Estudios e Informes de la CEPAL, 30, Santiago, 1983).

1.2.2 Significance

Despite its rapid growth in the 1960s and 1970s the textile industry declined as a share of total industrial production in the period before the revolution as other branches, particularly intermediate goods such as chemicals and consumer durables increased in importance.1/ This was accentuated in 1979 and 1980 because the textile industry was amongst those most badly affected by the disruption and destruction of the final stages of the revolution.

However from 1980 onwards the industry's share of manufacturing value added and of Gross Domestic Product rose substantially to account for over 6 per cent of the manufacturing sector and 2 per cent of GDP by 1985 (see Table I.5)

Table I.5 Share of textile industry in Manufacturing Value Added and Gross Domestic Product 1980-1985 (mn C$)

	(1) GDP	(2) Manufacturing	(3) Textiles	(3)/(1) %	(3)/(2) %
1980	21,892	3,942	110.1	0.5	2.8
1981	24,483	5,238	201.5	0.8	3.8
1982	28,349	7,209	365.3	1.3	5.1
1983	32,872	8,452	492.4	1.5	5.8
1984	45,018	13,419	707.2	1.6	5.3
1985	115,404	38,202	2,366,7	2.1	6.2

Source: INEC; SPP.

The industry's share of the gross value of industrial production has also tended to increase since the revolution (Table I.6). While this is not suprising in the period up to 1983, given the severe disruption suffered by the industry, it is striking that the upward trend has continued beyond that date. Between 1983 and 1986 the textile industry had the third-fastest rate of growth of any Nicaraguan industry in real terms, and the largest absolute increase in output in any industry. In fact the total increase in the value of textile production in this period was greater than the increase in the output of manufacturing industry as a whole - in other words, non-textile industrial output fell, while textile production continued to grow rapidly.

Table I.6 Share of textile industry in Gross Manufacturing Production, 1980-1985 (mn C$)

	Textiles	Manufacturing	Share (%)
1980	237.3	5,534.9	4.3
1981	372.1	12,846.3	2.9
1982	602.1	15,703.8	3.8
1983	807.3	17,286.6	4.7
1984	1,113.1	24,663.6	4.5
1985	3,185.6	61,748.8	5.2

Source: INEC.

1/ C. Brundenius, Estrategia del Desarrollo Industrial en Nicaragua, 1979-84, Managua, INIES/CRIES, Cuadernos de Pensamiento Propio, 1985.

The share of the textile industry in manufacturing value added has been significantly higher than its share in the gross output of manufacturing in the 1980s, indicating a higher than average ratio of value added to output in the industry. The ratio of value added to production has also tended to increase since the Revolution, showing a tendency for the industry to become more vertically integrated.

1.2.3 Employment

Employment in the textile industry has grown rapidly since 1980 from a share of about 3000 to about 5000 workers in 1985 (Table I.7). While this is still a very small proportion of the total economically active population, its share has shown an upward trend. In terms of the estimated economically active population in manufacturing, the upward trend has been marked, from less than 3 per cent in 1980 to 4.5 per cent in 1985, while in terms of formal sector employment in manufacturing (defined as those firms included in the Encuesta Anual de la Industria Manufacturera) the industry accounted for almost 12 per cent of employment in 1985.

Table I.7 Share of textile industry in manufacturing employment and economically active population, 1980-85

	Economically active population[a/] (1)	EAP in manufact-uring (2)	Manufact-uring employment[b/] (3)	Textile employment (4)	(4)/(1) % (5)	(4)/(2) % (6)	(4)/(3) % (7)
1980	872,900	107,400	45,040	3,001	0.3	2.8	6.7
1981	905,200	106,800	47,472	3,379	0.4	3.2	7.1
1982	938,800	110,800	40,712	3,424	0.4	3.1	8.4
1983	973,500	115,800	39,111	4,131	0.4	3.6	10.6
1984	1009,500	122,100	45,073	4,420	0.4	3.6	9.8
1985	1047,000	111,000	41,763	4,987	0.5	4.5	11.9

Source: Secretaria de Planificacion y Presupuesto; INEC.
a/ Includes small-scale enterprises with less than ten employees.
b/ Excludes small-scale enterprises.

The textile industry has made a major contribution to increased employment in the manufacturing sector since the Revolution. Over half the increase in the economically active population in manufacturing between 1980 and 1985 is accounted for by textiles, and although this may be exaggerated by the drop in total manufacturing in 1985, there is no doubt that its contribution has been substantial. Comparisons in terms of industrial census data are complicated by the wider coverage of the 1980 and 1981 surveys but taking the period 1982 to 1985 employment in the textile industry has increased by a larger absolute amount than total employment in the formal manufacturing sector.

Comparing Tables I.5 and I.7 it can be seen that the textile industry has a substantially higher share of manufacturing employment than of value added throughout the 1980-1985 period. This reflects the relatively labour-intensive nature of production compared to manufacturing as a whole. Thus the considerable contribution made by the textile industry to employment growth in manufacturing industry reflects both the rapid increase in production and the labour-intensive nature of production.

1.3 The Textile Industry and International Trade

It is striking that despite being a major producer of cotton, Nicaragua is a net importer of both textile products and clothing. Although textile imports have been cut back from the very high levels immediately after the Revolution, they have continued at around US $30 million a year since 1982, while exports have fallen to a tenth of this level (Table I.8). There is also a steady stream of clothing imports, although this is partly offset by garment exports which almost compensate for imports. Nevertheless given the availability of good quality cotton and the low cost of labour in Nicaragua there are a priori reasons for supposing that the country could enjoy a comparative advantage in textiles and clothing which is not reflected in the current pattern of imports and exports.

Table I.8 Textile and clothing imports and exports (mn $)

	Imports		Exports		Trade Balance	
	Textiles	Clothing	Textiles	Clothing	Textiles	Clothing
1979	22.8	3.4	11.2	0.2	-11.6	-3.2
1980	65.7	10.5	6.6	0.5	-59.1	-10.0
1981	48.8	3.5	4.5	1.1	-44.2	-2.4
1982	30.2	3.3	3.4	0.4	-26.8	-2.9
1983	29.8	3.3	3.7	3.2	-26.1	-0.1
1984	32.3	3.1	4.5	2.7	-27.8	-0.4
1985	32.1	5.7	2.7	1.8	-29.4	-3.9

Source: INEC, Anuario Estadistico de Nicaragua.

In addition to the negative trade balance in textile products, it must also be recognised that local textile production in Nicaragua is a net user of foreign exchange (Table I.9). Despite the local availability of raw cotton, the industry has traditionally been a heavy user of imported inputs. In part this reflected the lack of integration between the agro-export sector and the industrial sector, so that Nicaragua exported raw cotton and imported yarn and polyester to produce cloth. It also reflects the dependence of the textile industry on imports of expensive dyes and chemicals, and on foreign spare parts.

Table I.9. Imports and exports by textile firms ('000 US $)

	Exports	Imports	Trade Balance
1980	648.1	4,510.1	-3,862.0
1981	745.0	4,395.7	-3,650.7
1982	489.7	9,190.6	-8,700.9
1983	458.9	13,534.4	-13,075.5
1984	631.2	11,129.6	-10,498.4
1985	681.8	6,965.1	-6,283.3
1986	652.0	10,203.7	-9,551.7

Source: MIND.

Table I.10 shows the dependence of the different branches of the Nicaraguan textile industry on imported raw materials. In 1980 and again in 1983 and 1984, imported raw materials accounted for more than a fifth of the gross value of production in weaving and although there was a sharp fall in this ratio in 1985, this was at least partly a result of the substantially overvalued exchange rate at which imports were available to the textile industry. In knitted cloth on the other hand there is evidence of real progress in reducing dependence on imported raw materials from over a third of the value of output in the early 1980s.

Despite such progress textile production in Nicaragua continues to have a high import component. Over the last four years each square yard of woven cloth produced in Nicaragua has required direct imports of US $0.6 in foreign exchange. This does not include indirect imports, incorporated into locally purchased inputs. In 1986 the textile industry accounted for almost 5 per cent of the imports required by the industrial sector. This was only slightly lower than the industry's share in manufacturing output in the same year. It scarcely needs emphasizing that this reflects a high degree of dependence on imports for an industry whose basic raw material, cotton, is available locally.

Table I.10 Imports of raw materials as share of gross value of production, 1980-85

	Woven cloth (3211)	Knitted cloth (3213)	Other (3219)
1980	0.22	0.41	0.32
1981	0.14	0.29	0.27
1982	0.12	0.32	0.34
1983	0.22	0.22	0.30
1984	0.22	0.14	0.26
1985	0.02	0.14	n.a.

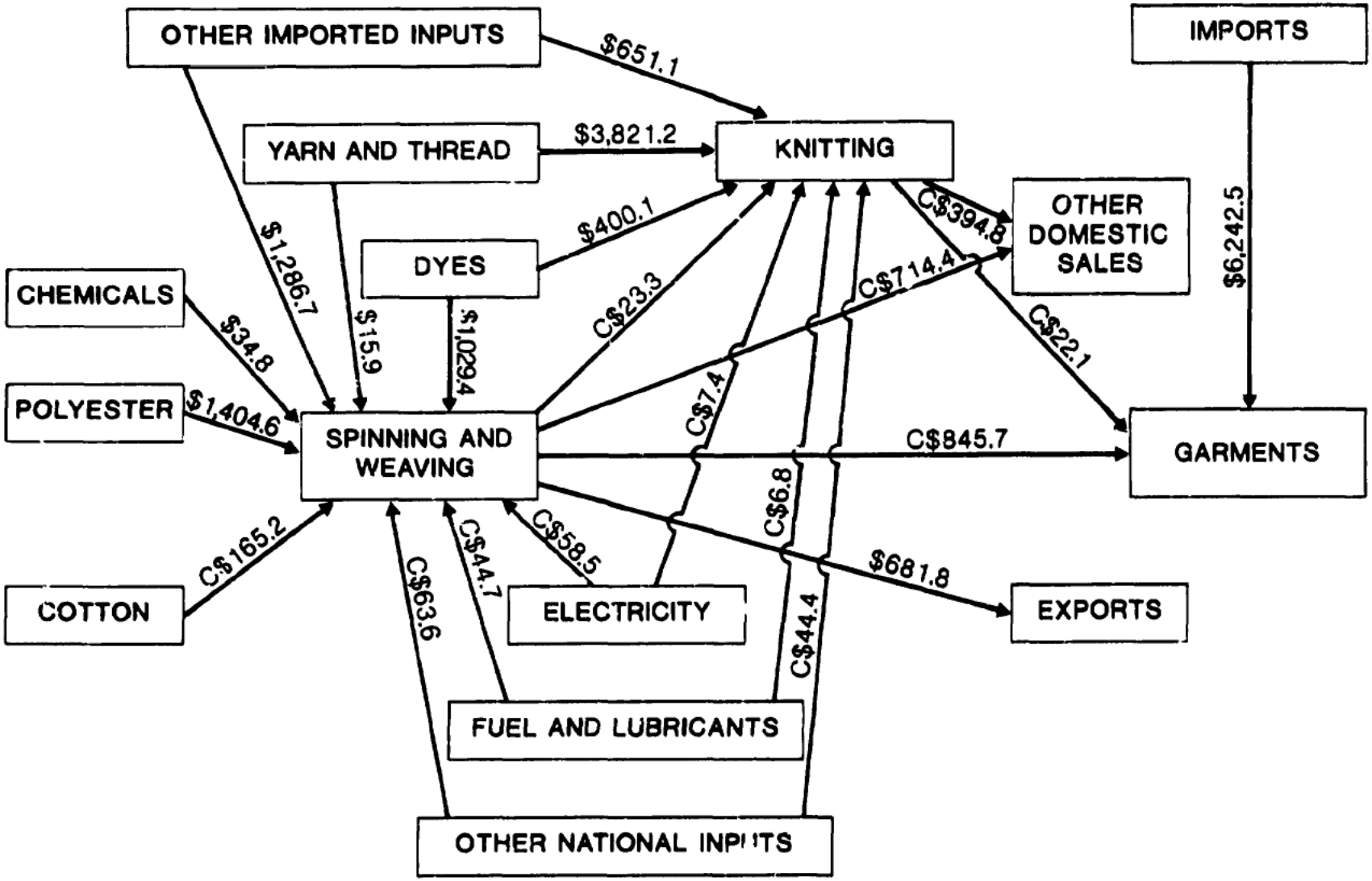
Source: INEC, Encuesta Anual de la Industria Manufactuera.

The other side of the coin is the very low level of exports achieved by the textile industry. Since 1980 only two firms PROSAN and LAS 3F have exported regularly and over the last three years these have only amounted to some $650,000 a year, almost exactly the same level as was achieved in 1980 (Table I.9). This is not even sufficient to pay for the industry's requirements of dyestuffs and chemicals. As a result the industry shows a substantial trade deficit.

1.4 The Structure of the Textile Complex

Figure I.1 shows the major flows within the Nicaraguan textile industry in 1985. The spinning and weaving sector and the knitting sector are distinguished, but to avoid excessive complication the integrated spinning and weaving firms (FANATEX, TEXNICSA and TEXLASA) are treated together with the more specialized weavers (PROSAN and LAS 3F).

The figure highlights the considerable reliance of the industry on imported inputs. In the case of the spinning and weaving industry the most important imported inputs are polyester and dyestuffs. The knitting industry relies heavily on imports of yarn and thread and dyestuffs as well as spare parts such as needles.



Source: UNIDO Mission on the basis of data from MIND and INEC.

Note: Domestic flows in millions of cordobas
Imports and exports in thousands of US dollars

Figure 1.1 Structure of the Textile Complex, 1985

The main national input into spinning and weaving is of course cotton which accounts for roughly half of the total local purchases in the industry. The other major single items are electricity and fuels and lubricants which between them account for about 50 per cent of local inputs. Other locally bought inputs include certain locally produced chemicals such as caustic soda and sodium hipoclorite and starch for sizing.

Within this section of the industry there are some flows between firms, particularly the supply of limited quantities of yarn and thread from the spinning plants to the specialized producers PROSAN and LAS 3F.

The knitting sector obtains some of its inputs, mainly yarn, from the firms in the spinning and weaving industry. However the bulk of yarn used comes from abroad. The industry also uses rather less electricity and fuel and lubricants than the spinning and weaving industry. As a result local purchases are a less important share of total purchases in this sector.

Over half the output of the spinning and weaving industry goes to the garment industry. Of this more than half the cloth goes to small scale producers, over a quarter to the medium-sized industry and about a sixth to the state-owned garment producers of the APP. The rest of the industry's output goes partly to the armed forces and partly to direct sales to the public and to other areas of the state sector such as hospitals and for industrial uses. A very small proportion of total output is exported.

Most of the firms in the knitting industry operate their own making up departments and the bulk of output therefore goes directly for sale to the consumer. Two firms, COTEXMA and FIBRATEX, produce knitted cloth for sale. They sell partly to NICARAO and partly to the garment industry. There are no exports from this part of the industry.

In addition to locally produced woven and knitted cloth, the local garment industry also relies heavily on imports. In 1985 the garment firms in the APP imported inputs valued at $3.4 million while small-scale industry was allocated $2.8 million for imports. Over a quarter of the cloth used by small-scale producers was imported in 1985 and this represented a significant fall in imports from previous years when more than half of all the cloth was imported.

In 1985 and again in 1986 19 per cent of the cloth produced by FANATEX and TEXNICSA was for the armed forces.

1.5 Conclusion

Despite an impressive growth record and its important place within Nicaragua's industrial structure and development strategy, this overview of the textile industry indicates a number of potential weaknesses. These are most evident in the area of foreign trade where the industry does not adequately cover domestic demand nor is it able to compete on international markets. Thus an industry in which Nicaragua appears to have the potential for developing a comparative advantage is currently a substantial net user of foreign exchange.

This situation is a legacy of the agro-export model of the period before the Revolution and the specific nature of the industrialization process that occurred within the framework of the Central American Common Market, in the sixties and seventies. Although new investments since 1980 have somewhat

modified this structure it has not been sufficient to fundamentally restructure the local textile industry, serving rather to extend it in certain limited directions.

CHAPTER II: SUPPLY CONDITIONS IN THE NICARAGUAN TEXTILE INDUSTRY

2.1 Structure of the Industry

The textile industry in Nicaragua is made up of eleven firms of which three are integrated spinning and weaving operations, one has both weaving and knitting, two are specialist producers one of medical and sanitary products and the other of cords and laces, and five are knitters some of which also include cutting and making up of garments.

The two largest firms in terms of employment and production are FANATEX and TEXNICSA, each employing over 1000 workers. Most of the other firms employ between 200 and 400 workers with the exception of two of the smaller knitters, NICATEX and FIBRATEX with 130 and 60 workers respectively (see Table II.1).

Within the flat cloth section of the industry there is a degree of specialization. TEXLASA produces low count cotton yarns (8s and 18s) and industrial cloth used in covering tobacco plants and baling cotton and for matress coverings: NICARAO produces raised cotton, cheesecloth and towels: TEXNICSA produces low count 100% cotton yarns, while the cotton/polyester yarns are produced by FANATEX. FANATEX specializes mainly in shirtings and trouserings while TEXNICSA produces canvas and sheetings as well as trouserings and other products.

In knitting, four firms, NICARAO, TRICOTEXTIL, HILANICA and NICATEX have garment-making operations as well as knitting, while two firms, COTEXMA and FIBRATEX produce knitted cloth for sale to other producers. COTEXMA and NICATEX also produce socks.

2.2 Productivity

In order to evaluate the current state of the Nicaraguan textile industry and the prospects for international competitiveness, it is useful to compare the levels of productivity achieved with those found in other countries. From Table II.2 it appears that productivity in both spinning and weaving in Nicaragua is similar to that found in a number of other developing countries. In spinning, productivity is similar to that of Brazil and considerably better than in Mexico, although well behind the levels attained in the Republic of Korea and Taiwan Province. Output per spindle year was somewhat lower than the average.

In terms of weaving Nicaragua's productivity level appears even better with one of the highest levels of output per loom-hour amongst developing countries and an output per year above the world average. However, these comparisons paint an over-rosy picture of the situation of the textile industry.

The misleading nature of these figures can be seen if the industry averages are disaggregated by firm (Tables II.3 and II.4). It then appears that the highest level of productivity is achieved by TEXLASA, a firm which operates machinery that is on average over forty years old. What these crude productivity comparisons fail to take into account are the construction of cloth and the counts of yarn being produced. TEXLASA apparently has a high level of productivity because it produces low-count yarns and low-density cloth, so that the weight of yarn and the area of cloth produced give an artificially inflated indication of performance.

Table II.1 (a) Main manufacturers

Company	Labour complement			Total spindles installed	Weaving looms		
	Total	Administration	Production		Apparel: Trousers	Apparel: Shirting	Indust.' 1.
FAMATEX	1,475	386	1,089	20,160	279	68	70
TECNISCA	1,269	211	1,058	18,212	158	-	213
TEXLASA	281	70	211	2,654	-	-	47
NICARAO	255	87	168	-	-	-	66
Subtotal	3,280	754	2,526	41,026	437	68	396
PROSAM	341	66	275	-	-	-	65
LAS 3 F.	188	67	121	-	-	-	25
TOTAL	3,809	887	2,922	41,026	437	68	486

Source: Rama Textil, Managua 1987.

- Woven cloth

Production mts/yr.		Hours/ week	Cloth types
Planned 1986	Actual		
10,000,000	8,160,000	135.5	Shirtings, drills (trousering), denim, sheeting
8,870,000	5,710,000	135.5	Drills (trousering), mosquito, poplin, lona
4,440,000	3,538,000	93.5	Bale cloth, mattress covers, tobacco covering
1,206,000	801,000	93.5	Mosquito, duster cloth (raised), towels
24,516,000	18,209,000	-	
Nappies (doz 3.6) Gunze 3,690,000	2,877,000	93.5	Hidro-fil cotton, sanitary towels, nappies, curitas
44,263,000	41,717,000	93.5	Cords, laces, elastic waist bands, etc.
24,516,000 (woven)	18,209,000 -25.7%	445	

Table II.1 (b) Knitted cloth and garments

Company	Labour complement			Machines			Production 1986			Hours/Week			Raw material	End product
	Total	Production	Administration	Circ.	Circ. socks	Garment making	Circ.	Circ. socks	Garment making	Circ.	Circ. socks	Garment making		
TRICOTEXTIL	243	170	73	14	-	116			Total 2,033,000 (2,192,000)	77.5	-	47.5	Cotton yarn	Knitted cloth, garments
MILANICA	221	165	56	18		64			Total 2,234,000	93.0	-	47.5	Cotton yarn	Knitted cloth, garments
NICATEX	130	92	38	17	51	39	280 (147)	548 (579)	Total 872,000 (751,000)	72	47.5	47.5	Cotton yarn, lycra, nylon	Knitted cloth, socks, garments
COTEXMA	370	228	142	16	80	-	1,950,000 (2,300,000) mts.	3,274.7 Prs. (2,456.2)	-	77.5	77.5	-	Cotton yarn, lycra, nylon	Knitted cloth, socks
FIBRATEX	60	33	27	30	-	-	1,087,000 (522,000)	-	-	90			Poly/cot yarn	Poly/cot cloth
Total	1,024	688	336	95	131	219	Garments Pairs Metres	5,886.7 3,823.5 3,321.5	(5,847.7) (3,035.9) (3,095.8)	410	125	142.5		

Notes: TRICOTEXTIL: 3 stopped - no spare parts
19 stopped - no spare parts.
MILANICA: 5 stopped - no spare parts
12 not installed.
NICATEX: 3 stopped - no spare parts
18 stopped - no spare parts.
FIBRATEX: 8 stopped - no spare parts.

Figures in (brackets) denote actual production registered for 1986.
Those not in brackets denote planned production for 1986.

Excluding TEXLASA reduces the average for the industry considerably. In the case of weaving this comes down to 21,876 square meters per loom hour (see Table II.4). Similarly in the case of spinning, the exclusion of TEXLASA would reduce the average somewhat. However, this would still tend to exaggerate the level of productivity in the industry because none of the firms produce high-count yarns.

Table II.2(a) International comparison of spinning productivity, 1982 (selected countries)

Country	Kg/spindle/year	Working hours/year	Kg/working hour
Nicaragua a/	112	6,600	.017
Mexico	80	6,200	.013
U.S.A.	126	6,200	.020
Brazil	108	6,000	.018
France	154	5,200	.030
Italy	138	5,200	.027
F.R. Germany	206	5,200	.040
U.S.S.R.	153	4,500	.034
Turkey	105	7,200	.015
Egypt	111	8,000	.014
P.R. China	138	n.a.	n.a.
India	65	6,145	.011
Japan	102	6,184	.016
Republic of Korea	222	8,270	.027
Pakistan	104	5,500	.019
Taiwan Province	218	8,200	.027
World Total	133	n.a.	n.a.

Table II.2(b) International comparison of weaving productivity, 1982 (selected countries)

Country	m2/loom/year	Working hours/year	m2/loom/working hour
Nicaragua a/	25,539	6,400	4.0
Mexico	22,423	6,200	3.6
U.S.A.	36,842	6,400	5.8
Brazil	15,432	5,200	3.0
France	21,720	4,800	4.5
Italy	17,968	5,000	3.6
F.R. Germany	34,096	5,000	6.8
U.S.S.R.	29,411	n.a.	n.a.
Turkey	17,872	7,200	2.5
Egypt	23,631	7,500	3.2
P.R. China	32,754	n.a.	n.a.
India	28,439	6,500	4.4
Japan	13,602	5,800	2.3
Republic of Korea	20,200	8,148	2.5
Pakistan	14,136	5,800	2.4
Taiwan Province	30,655	8,200	3.7
World Total	22,252	n.a.	n.a.

Source: UNIDO, Restructuring of the Mexican Textile Industry: Requirements and Policy Options, UNIDO/IS.595, 1986; and Tables II.3 and II.4.

a/ Nicaragua data refers to 1985.

Table II.3 Spinning productivity by firm in Nicaragua, 1985

Firm	Kg/spindle/year	Working hours/year	Kg/spindle/hour
FANATEX	91	6,535	.014
TEXNICSA	154	6,652	.023
TEXLASA	259	6,275	.041
Industry average	112	6,600	.017

Source: UNIDO mission estimates on the basis of data from MIND and the firms.

Table II.4 Weaving productivity by firm in Nicaragua, 1985

Firm	m2/loom/year	Working hours/year	m2/loom/hour
FANATEX	25,221	6,535	3.86
TEXNICSA	20,029	6,652	3.01
TEXLASA	92,102	6,275	14.68
NICARAO	12,084	4,479.5	2.70
Industry average	25,539	6,400	3.99
Average (excl. TEXLASA	21,876	6,400	3.41

Source: UNIDO mission estimates on the basis of data from MIND and the firms.

There is, however, a further factor which makes such indicators misleading. Current shortages in Nicaragua mean that the pressure to produce the maximum possible output is paramount. Planning sets physical production targets for firms within the APP. As a result, as one general manager commented, "our objective is to produce as much as possible within the conditions of the moment, every metre or kilo produced being one less to the need."

With such an overwhelming emphasis on the volume of yarn and cloth produced and with the limited capacity available to produce textiles, it is not surprising that these physical indicators of production are relatively high. The reverse side of this, however, is the very low quality of the product.

This can be illustrated with data from FANATEX, not because it is the worst case, quite the contrary, but because of the data which was made available. In spinning "ends down" per 1000 spindle hours are quoted as 168 plus, four times international standards for ring-spun cotton yarn. Similarly NEPS (small entanglements of fibres), thick places and thin places are many times higher than international standards (see Appendix I FANATEX). Similar problems of low quality also affect the production of cloth.

If labour productivity rather than machine productivity is measured then the situation in Nicaragua does not seem very favourable. Taking the textile industry as a whole, value added per person employed is lower in Nicaragua than in most other Latin American countries (see Table II.5). Taking physical output it is clear that productivity in Nicaragua is currently well below the levels that are internationally acceptable. Spinning productivity in a small mill should be of the order of 8 kilogrammes per operator hour for Ne.24 yarn and 11 kilogrammes for Ne12.4. In 1985 the levels achieved in the two main spinning plants in Nicaragua were between 3 and 4 kilogrammes per operator hour, and even these figures may be exaggerated (see Table II.6). A similar

situation exists in weaving where a minimum sized mill could produce roughly 40 square metres of apparel cloth per operator hour. In Nicaragua in contrast output per operator hour was only 8 square metres in TEXNICSA and less than 16 in FANATEX (see Table II.6).

Table II.5 Value added per employee in the textile industry in Latin America, 1982 ('000 US $)

Nicaragua	9.2
Brazil	11.8
Chile	13.1
Dominican Republic	13.2
El Salvador	8.4
Mexico	10.7
Venezuela	17.6

Source: UNIDO, Handbook of Industrial Statistics, 1986, Table 5.

Table II.6 Labour productivity in the Nicaraguan textile industry, 1985

	Workers	Output per worker per year	Output per worker hour
TEXNICSA			
spinning (kgs)	313	8,199	3.7
weaving (m2)	408	17,820	8.0
FANATEX			
spinning (kgs)	254	7,195	3.3
weaving (m2)	308	34,147	15.7

Source: UNIDO on the basis of data in MIND, Dirección de la Rama Textil, Protocolo, 1986.

It is not necessary to look far to find the reasons for the low levels of productivity in the Nicaraguan textile industry, and the remainder of this chapter seeks to identify them. Some of these problems can be reduced and, where appropriate, measures for their amelioration will be proposed in Chapter V. Others are more deeply rooted structural problems however, and little can be done in the context of the existing industry to alter these.

2.3 Technolcgical Level

2.3.1 Spinning and weaving

With relatively few exceptions, machinery is largely obsolete, requiring costly maintenance, operating at slow speeds and producing sub-standard products. In many cases it will need to be replaced. Moreover, some of the more recent additions of machinery including both looms and spinning in FANATEX and TEXNICSA incorporate obsolete technology when compared with equipment available at the time of installation (1983 and 1985/6).

With the exception of the new spinning frames from the Soviet Union installed at TEXNICSA in the early 1980s, all the spindles in Nicaragua are at least 10 years old, and more than 40 per cent of all spindles are more than

twenty years old. Technology is exclusively ring spinning although it is proposed to build a new open-end plant in Esteli in the near future. Compared to other developing countries, Nicaragua has a higher proportion of spindles over ten years old than any other country apart from the People's Republic of China (Table II.7). A number of countries including Mexico, Egypt and India have a higher proportion of spindles that are less than three years old than Nicaragua has under ten years.

Table II.7 Age distribution of textile machinery in selected developing countries, 1983 (%)

Country	Spindles			Looms		
	0-3yrs	3-10yrs	>10yrs	0-3yrs	3-10yrs	>10yrs
Nicaragua a/	0	8.5	91.5	0	16.6	83.4
Brazil	5.4	30.0	64.6	1.3	6.7	92.0
Mexico	9.3	16.8	73.9	6.4	11.6	82.0
Turkey	3.7	24.2	72.0	5.5	10.5	84.0
Egypt	13.9	33.2	52.9	11.6	17.9	70.5
P.R. China	0.2	0.7	99.1	0.1	0.1	99.8
India	9.5	19.4	71.1	4.0	5.5	90.5
Rep.of Korea	4.8	40.2	55.0	26.0	42.4	31.6
Pakistan	3.8	14.0	82.2	0.7	13.5	85.8
Taiwan Province	7.3	14.5	78.2	13.8	29.8	56.4

Source: UNIDO, Restructuring of the Mexican Textile Industry: Requirements and Policy Options, UNIDO/IS.595, Table 21; MIND, Rama Textil-Vestuario.
a/ Data for Nicaragua refers to 1987.

The situation is similar but not quite as marked in weaving. Again the most advanced technology, shuttle-less looms, is not currently in use in Nicaragua. 150 UTA looms imported from Czechoslovakia in 1983 are the most recent to be installed in the industry, although many of these are currently stopped because of technical problems. Of the remaining looms, more than half are over 20 years old, and the others close to that age. The proportion of looms over ten years old is not that different from that found in some other developing countries such as Mexico, Turkey and Pakistan and lower than in India and the People's Republic of China (Table II.7). However, compared to the dynamic East Asian countries, the Republic of Korea and Taiwan Province, there is a very large gap in technology.

The specialist producers, PROSAN and LAS 3F also operate with relatively old machinery although some of the special machinery for packing, cutting and adhesive coating in PROSAN is relatively modern by Nicaraguan standards (10 to 15 years old).

2.3.2 Knitwear

The knitwear and CMT (Cut, Make and Trim) sector of industry is made up almost exclusively of circular knit machines, of which 95 are large diameter machines, and 131 small diameter machines. More than half of the machines are coarse gauge large diameter circular machines (approximately gauge 18) which may have produced products of types not required in the local market and which with some adaption still produce products of excessive weight. The type of machines reflects the market demands of the 1960s and 1970s when heavy weight tubular fabrics were in demand, i.e. synthetic jersey fabrics. By 1974-75

demand ceased for this product. The balance of machines are of finer gauge (22-26-28) from which single knit lines are produced, i.e. underwear, T-shirts etc.

As a whole the industry has little uniformity, consisting of a multitude of differing makes and types typical of companies which purchased second-hand machinery.

Contrary to the weaving sector, machinery appears relatively well cared for, in spite of the lack of facilities provided in largely non-purpose built plants, i.e. no air-conditioning, no lighting etc. The exceptions to this are the operations of TRICOTEXTIL and COTEXMA which are purpose-built plants, well laid out and demonstrate these conditions in the products which they both produce albeit with difficulty, i.e. spare part shortages, less than good raw materials.

With the exception of COTEXMA and TRICOTEXTIL, the equipment available for the dyeing and finishing of knitwear is either obsolete, in extremely poor condition, or unsuitable for processing. An investigation of the prospects for improvement and replacement must be made in which the centralization of processing might be considered.

2.4 Capacity Utilization

Partly because of the age of much of the equipment and partly because of a number of other factors, full utilization of capacity in Nicaragua is impossible. In FANATEX for instance 18 per cent of all spindles were not operating because of a lack of spare parts, 12 per cent of looms and some of the equipment in the finishing section, including both sanforizing machines. Similarly in TEXNICSA about a third of all looms were not operating because of shortages of yarn and other problems. The achieved efficiency rating in weaving in the firm was only 40 per cent compared to the international norm of around 80 per cent. Production in spinning too has experienced problems due to the poor condition of machinery, lack of maintenance personnel and shortages of spare parts, so that output is only about 70 per cent of capacity.

One indicator of the problems in achieving high levels of capacity utilization is the failure of most firms to meet their production targets. Since these targets themselves may not involve full utilization of capacity, the shortfall can be regarded as a minimum estimate of the degree of excess capacity. Table II.8 shows that the problem is particularly marked in the weaving industry where two firms fell short of their targets by a third and three more by around a fifth. Only the specialist producer 3F was within striking range of its production target. The overall shortfall in woven cloth was around a quarter. The situation was rather better in knitting where two firms, TRICOTEXTIL and MILANICA exceeded their production targets. The smallest firm, FIBRATEX, performed very badly producing less than half of its planned output. In aggregate, however, this section performed quite well almost achieving targets in garments, falling short by 7 per cent in knitted cloth and by a fifth in socks.

Some of the reasons for low capacity utilization and failure to meet production targets have already been mentioned. These include the age and general condition of much of the equipment in the industry. This problem is accentuated by the lack of spare parts as a result of shortages of foreign exchange for imports, the age of many machines which mean that spare parts are no longer readily available for them, and the difficulties created by the U.S. trade embargo. A quarter of the looms and almost a third of the spindles in the industry are of U.S. manufacture, as are many other machines. The problem

of obtaining spare parts has led to the canibalising of machine parts in order to keep a part of the capacity in operation.

Table II.8. 1986 Production as percentage share of programmed level

FANATEX	81.6	TRICOTEXTIL	107.8
TEXNICSA	64.4	COTEXMA	70.2
TEXLASA	79.3	HILANICA	105.2
NICARAO	66.5	NICATEX	86.0
LAS 3F	94.2	NICARAO	74.2
PROSAN (gauze only)	78.0	FIBRATEX	48.9
WOVEN CLOTH	74.3	GARMENTS (knitted)	99.3
		SOCKS	79.4
		KNITTED CLOTH	93.2

Source: Table II.1.

The low quality discussed above also affects the level of production. For instance poor quality yarn leading to breakages causes frequent stoppages in weaving, so that looms are stopped a high proportion of the time.

A further problem is the lack of necessary inputs, particularly yarn. Almost all the yarn for the knitting industry must be imported and this is not necessarily always available in the quantity and at the time desired. Even in the weaving industry this may also be a problem. TEXNICSA had more than a fifth of its looms stopped at one stage in 1986 because of the lack of yarn.

The fact that capacity is not balanced in the existing mills means that bottlenecks in certain areas may lead to underutilization of capacity in others. One indication of this problem is the fact that in some firms some areas of production are operating three shifts while others may only be working two or even one shift.

Finally loss of output also occurs because of power cuts which interrupt production. Such cuts are common in Managua where most of the factories are located. It is not something that can be resolved in the context of the textile industry alone but it does reflect the difficulties which the general context creates for the industry.

2.5 Labour

Workers and management created a good impression, being enthusiastic and keen to improve their conditions of work and the product(s) manufactured. This is particularly noticeable in the efforts made to keep machinery in operation and in the work of the "Innovadores". However, both absenteeism and high labour turnover are problems in the textile industry.

Absenteeism is generally high at 18-25 per cent of the labour force. A part of this absenteeism is regarded as justified caused by military requirements and other factors but it nonetheless creates production problems. Two companies had relatively low levels of absenteeism of 8 per cent - 12 per cent, and this appeared to be the result of good management and reasonable although not ideal working conditions.

Labour turnover is a major problem in Nicaraguan industry and it is particularly severe in the textile industry. In the first six months of 1986 the average turnover in nine textile firms was 40 per cent of the labour force, double the average for a sample of forty firms and three times the

level recorded in the food industry (Table II.9). This represents an annual rate of labour turnover of over 80 per cent and some firms have reported a turnover of 100 per cent a year.

Table II.9 Labour turnover in a sample of firms in Nicaragua, January - June, 1986

	No.of firms	Workers	Hirings	Quits	Turnover(%)
Services	8	37,630	5,751	6,657	17.7
Construction	10	10,922	2,924	3,707	33.9
Textiles	9	3,468	1,858	1,418	40.9
Food	13	3,291	330	455	13.8
TOTAL	40	55,311	10,863	12,237	22.1

Source: SPP, Nicaragua, Plan Economico Nacional, 1987.

High rates of turnover are again partly a result of defence requirements. However, they have been accentuated by the low level of wages in the formal sector and the growth of the informal sector. Real wages in the textile industry as in manufacturing generally have fallen drastically in recent years. The introduction of the Sistema Nacional de Organizacion de Trabajo y los Salarios (SNOTS) in 1983 was intended to reduce labour turnover by standardizing wages for similar work. However, since the SNOTS only applies to the "official" economy there has been a problem as a result of the gap between income levels here and in the parallel economy. Thus firms have found it difficult to retain labour in the face of the higher incomes to be earned in informal commercial activities and this has led to problems of labour shortages in production activities.1/

The problem has been particularly marked in the textile industry because in addition to the general fall in real wages, the decision to stop payments in kind to workers in 1985 led to a further fall in real income. Such payments dated from before the Revolution and in both the major textile firms (FANATEX and TEXNICSA) they came to 115 per cent of the average money wage.2/ When these payments were halted, FANATEX lost an entire shift of workers.

High labour turnover is a problem because of the need to repeatedly train new workers. While this need not be a problem if turnover is concentrated amongst the least skilled categories of workers, where turnover is as high as in the textile industry, skilled and semi-skilled workers are also likely to be affected. In so far as this is a general problem affecting the entire "official" economy in Nicaragua, global measures such as increased wages within the SNOTS or policies to restrict the growth of the "parallel" economy are necessary. In so far as the problem is particularly acute in the textile industry there may be scope for specific measures to reduce turnover in this sector. However, the design of such measures will require a more detailed analysis of the reasons for high turnover. In so far as these are similar to the reasons for high rates of absenteeism, measures to improve working conditions might prove an effective way of reducing turnover.

1/ see R. Stahler-Sholk, Empleo, Salarios y Productividad en la Revolucion Popular Sandinista, mimeo, CRIES, 1986 for a fuller discussion of these issues.

2/ R. Stahler-Sholk, Pago en Especie, mimeo, CRIES, 1985.

A further labour aspect which affects productivity in the textile industry is the high level of manning found in the industry. Table II.10 compares the average allocation of spindles per operative found in FANATEX with that for ring-spun yarn in other Latin American countries and the United States. With the exception of the extremely low levels found in Bolivia, the levels in other Latin American countries were between a third higher and double that found in Nicaragua.

Table II.10 Manning levels in Nicaragua compared to other countries

Country	Spindles per operative
Nicaragua (FANATEX)	1,344
Venezuala	1,900
Colombia	2,750
Ecuador	1,776
Bolivia	750
Chile	2,110
Peru	2,000
U.S.A.	7,000

Source: UNIDO Data Base.

High manning levels in Nicaragua are no doubt partly a result of the quality problems mentioned above and the high end breakages etc. to which they give rise. There may also be a reluctance to lay-off workers when production is below planned levels.

2.6 Buildings

With the exception of 4 plants (1 weaver, 2 knitters, 1 garment maker) buildings are generally unsuitable for the purpose for which they are used, being poorly constructed, largely without insulation and devoid of climate condition controls; even where some air-conditioning equipment exists, its functioning is deficient and falls short of that which allows efficient functioning of the installed equipment and even less in the case of modern high speed equipment, nor does it provide comfortable working conditions for operatives. Temperatures of 35o - 40o, 90o R.H. were encountered against recommended conditions for spinning polyester and blended yarns on the cotton system of:

Card room 24-28° / 50-54% R.H.

Spinning 25-30°C / 50-65% R.H.

In most cases buildings had no or few hung ceilings which excludes the possibility of installing effective air-conditioning equipment, in one case the "finishing" was housed in a 3-sided building with part brick and wire net walls.

2.7 Machinery Layout

In an industry where 60 per cent of the time is taken up with the movement of materials from machine to machine, it is essential that both machines and services are laid out in the most economical manner, reducing down-time and transportation to its practical minimum. Since some of the

textile factories in Nicaragua were not purpose built, they are often seriously deficient in this regard, TEXNICSA for example was originally a sugar refinery, subsequently converted to produce textiles.

Good layout is also essential in the knitting industry, particularly in the CMT section where improved layout and positioning of the sewing machines can result in increased productivity. Two exceptions to the general poor layout in the knitting industry are TRICOTEXTIL and COTEXMA.

2.8 Housekeeping

The general state of the factories in terms of cleanliness and working conditions is for the most part deplorable with the exception of some knitters/garment makers. This gives rise to conditions in some cases which are positively dangerous.

2.9 Quality Control

There is a lack of adequate and effective programmed quality control of raw materials, intermediate processing, and end products. Current manufacturing operating conditions do not allow for overall quality control. Only two firms, FANATEX and TEXNICSA, have quality control laboratories. They suffer from a number of problems including technical inadequacy, machine deficiency, inappropriate location, incomplete programming etc. None of the other weavers had a quality control laboratory.

A similar situation exists in the knitting industry where no firm had the facilities for undertaking the minimum tests on material (yarn) or end products. Insufficient attention was paid to quality both during processing and of the end-product.

2.10 Technical Capacity

The industry suffers from a lack of technical input. Currently there are very few textile engineers in Nicaragua and the general technical capacity within the industry is low. Shortages of technical personnel is a problem both for decision-taking regarding new plant and equipment where excessive reliance may be placed on assessors who are not impartial, and also for the adequate operation of the existing mills.

2.11 Summary of Company Assessments

2.11.1 Method of assessment

Providing an assessment of the manufacturing plants visited and their current operating facilities, the following assessment method was used (two examples):

Type of buildings:

A. - 100% Excellent, i.e. insulated, modern building of sound design and first quality materials, with wide pillarless spans, excellent floor surfaces, lighting and services, adequate air-conditioning.

B. - 80% Good, i.e. typical underdrawn ceilings, of good quality and partial insulation.

C. - 60% Adequate, i.e. industrial buildings with excessive pillars and without insulation.

D - 40% Passable, i.e. buildings which give a minimum of protection to plant and machinery.
E - 20% Inadequate, i.e. poor, lightweight buildings, warehouse type.

Classification of machinery:

A - 100% Excellent machinery of recent date compares with new machinery for technology and productivity, 1975 - 1986.
B - 80% Good, i.e. conventional machinery of relatively recent date, 1972 - 1986.
C - 60% Adequate conventional machinery produced in the 1960s with renovation of essential parts, 1960 - 1969.
D - 40% Passable conventional machinery produced in the 1950s, possible renovation, 1950 - 1960.
E - 20% Inadequate pre-1950 machinery unsuitable for complete renovation. In special cases, e.g. conversion to high-production carding, utilising heavy-weight antique cards of standard makes, pre-1950.

2.11.2 Company assessments

Table II.11 summarizes the overall assessment of each of the textile companies (for more details see Appendix I). This table summarizes a number of different aspects of the companies operations, and gives an unweighted index of their overall performance.

It can be seen that within the flat goods sector FANATEX and the two specialized producers, PROSAN and LAS 3F, stand out while in knitting the best performances are those of COTEXMA and TRICOTEXTIL. In these firms, all aspects of their operation are at least adequate (except for the air conditioning in PROSAN and LAS 3F) and some are good. The other firms, however, have operations which are at best passable and in many cases seriously inadequate.

Table II.11 Company assessments

Factory	Buildings	Air cond-itioning	Spinning	Pre-paration for weaving	Weaving - Knitting	Finishing	Average of first six columns
FANATEX	85	85	60	75	80	75	76
TEXNISCA	60	35	50	55	70	60	55
TEXLASA	55	0	30	20	20	-	25
NICARAO ex. knitting	25	0	15	20	20	5	14
PROSAN	80	45	-	60	65	75	65
3 F.	75	45	-	75	65	-	65
TRICO-TEXTIL	80	60	-	-	67	80	71
HILANICA	50	0	-	-	-	40	30
NICATEX	50	0	-	-	40	40	32
COTEXMA	90	60	-	-	85	90	81
FIBRATEX	75	0	-	-	70	75	55
ENAYES	85	0	-	-	-		

CHAPTER III: THE POTENTIAL FOR INTERNATIONAL COMPETITIVENESS

3.1 Introduction

As was seen in the last chapter, the textile industry as it exists in Nicaragua today is not internationally competitive in terms of either quality or productivity. A number of reasons were suggested why this was the case including the age and general condition of the machinery, shortages of spare parts, the inadequacy of many factory buildings, high levels of labour turnover and absenteeism, and the lack of adequate and effective quality control. This does not, however, mean that the conditions do not exist for the development of an internationally competitive textile industry in Nicaragua in the future.

In section 2 of this chapter, the lack of competitiveness of the Nicaraguan textile industry is confirmed by examining in more detail the cost structure of FANATEX which was identified in the previous chapter as the best of the integrated textile factories in Nicaragua. In section 3 it is shown that Nicaragua does have the basic cost conditions for the development of an efficient textile industry which could compete in terms of price with those of other countries. Finally in section 4, a number of ways in which government policies influence the competitiveness of textile production are considered.

3.2 Cost Conditions in the Existing Textile Industry

Any comparison of production costs in Nicaragua with those of other countries is made difficult by the multiple exchange rate system that has been in force since 1981. In February 1985 a devaluation established an exchange rate of C$28 to the dollar for exports while imports of essential consumption goods, raw materials and spare parts came in at C$20:1, oil at C$28:1 and capital goods at C$40:1. In addition exchange houses were allowed to operate at a far higher parallel exchange rate. Implicit exchange rates for agricultural exports were determined by the government through the establishment of guaranteed producer prices, while manufactured exports were given a more favourable exchange rate than was generally available (such non-traditional exports generally were able to exchange 75 per cent of their foreign exchange earnings at the official rate and 25 per cent at the parallel rate).

It is clear that the exchange rate of C$28 to the dollar represented a substantial overvaluation and this remained the case after a further devaluation of the official rate to C$70:1 at the beginning of 1986. Under these circumstances, it is of interest to know how much it costs to save $1 of foreign exchange in the textile industry.

In order to do this the 1985 cost structure of FANATEX, considered to be the most efficient integrated textile mill in Nicaragua was taken (see Table°III.1). Information was available on direct imports of raw material and parts by FANATEX. In addition the indirect imports required to produce certain locally bought inputs, particularly fuel and lubricants and electricity were calculated on the basis of information provided by the Secretaria de Planificacion y Presupuesto. Converting the indirect imports used by FANATEX at the official rate of 28:1 and adding this to the firm's direct imports plus the foreign exchange that would have been earned had the raw cotton used by FANATEX been exported, the total foreign exchange cost of the firm's output in 1985 came to around US$5.6 million (see Table III.2).

Table III.1. Cost structure of FANATEX, 1985

	Total Cost (mn C$)	% imported	Indirect Imports (mn C$)	Direct Imports ('000 $)
Cotton	64.7			2,194.0a/
Polyester, dyes & chemicals	66.4			2,119.5
Direct labour	29.6			
Indirect labour	89.0			
Minerals and supplies	3.3			
Depreciation	0.5			
Fuel & lubricants	24.7	34	8.4	
Repairs & maintenance	11.1			254.2
Electric energy	34.3	42.85	14.7	
Stationery etc.	5.6	35	2.0	
Other costs	64.9	n.a.		
Sales costs	20.2	6.2	1.3	
Administrative costs	22.2	12.1	2.7	
Social charges	60.0			
TOTAL	547.0		29.1	4,567.7

Source: FANATEX; Rama Textil (MIND); SPP.
a/Calculated as the foreign exchange that would have been earned if cotton had been exported at the average price in 1985 of US$62.38 per quintal (100 lbs).

Table III.2 Total costs and imports of FANATEX, 1985[a/]

	C$mn	$US '000
Total cost	547.0	
Total imports	157.0	5,607.0
Local value added	390.0	
Cost of importing equivalent fabric		8,067.7
Foreign exchange saving		2,460.7

Source: Table III.1
a/ Imported inputs have been converted to domestic currency at the official exchange rate of C$28 to US$1.

Local production costs in the same year totalled C$390 million. To have imported the 9,491,405 square metres of fabric produced by FANATEX would have cost over US$8 million giving a net saving of foreign exchange of almost $2.5 million.1/ The cost of saving $1 of foreign exchange in terms of local currency was therefore in the order of C$158.5. This was considerably in excess of the official exchange rate, and also in excess of the cost of generating a dollar of foreign exchange (net) through exporting

1/ This assumes an import price of US$0.85 per square metre. This is the price at which dyed cloth has been imported to Nicaragua from the USSR.

cotton which was estimated at C$62.8 in the agricultural year 1984-5.1/

3.3 Prospects for International Competitiveness

The problems which have led to the high cost of saving foreign exchange in the Nicaraguan textile industry today are not necessarily relevant when it comes to analysing the potential for future development in the industry. In order to highlight this point, this section compares the cost of a planned new spinning plant in Nicaragua with data for a hypothetical plant in a number of other countries, both developed and less developed.

The data for Nicaragua were derived from the revised version of the planned spinning plant at Esteli. This was compared with a hypothetical plant consisting of approximately 10,000 Rieter Ring Spindles with an output of 230 kg of 100% cotton, 1 3/32" staple length, Ne24 carded yarn per hour. The output mix of the Esteli plant was converted in weight terms to make it comparable to the standard plant and all costs were measured per kilogramme produced so that comparisons would not be affected by the greater size of the Esteli plant. Cost data for Esteli reflect the projected situation in 1994 when the project attains full capacity operation.

Data for the international comparison refer to costs in 1985, while those for Esteli are 1986 estimates and have been converted into dollar at the exchange rate in force in June/July 1986 for manufactured exports i.e. C$290 to US$1. The cotton price has been taken as that quoted internationally in January 1987 ($1.40 per kg).

Comparing costs in Nicaragua with those in other countries, a number of features stand out (see Tables III.3 and III.4). First of all, at the exchange rate for exports, wage rates in Nicaragua are considerably lower than in the other countries covered giving it a considerable advantage in terms of labour costs. Secondly energy costs are lower in Nicaragua than elsewhere but this is a reflection of government price policy and the import of inputs for the electricity industry at the official exchange rate of C$28 to the US dollar, rather than genuine low cost energy. Finally good quality cotton is available to the industry at competitive prices. Indeed in so far as the implicit exchange rate for cotton exporters is less than the incentive exchange rate for manufactured exports, cotton is made available to local textile producers at below international rates (see the next section for a further discussion).

One factor which operated unfavourably in Nicaragua was the number of operating hours per year of only 6,504 (see Table III.3). Although higher than in the Federal Republic of Germany and Japan, this was considerably below the levels achieved in other developing countries, particularly the Republic of Korea and to a lesser extent India and Brazil. This lower level of operation means that plants could not be utilized as fully and costs are correspondingly higher.

However, the overall impression is that because of the availability of good quality raw materials at competitive prices, and of cheap labour, Nicaragua has the potential for an internationally competitive spinning industry. This conclusion can be extended to the weaving industry where labour costs and yarn account for a significant proportion of the total cost of cloth, so that once an internationally competitive spinning industry is established, it would be possible to develop a competitive weaving sector.

1/ T. Evans, La Generación y Apropriación del Excedente Economico en el Subsistema de Algodon, Managua, CRIES, 1986.

TABLE III.3 Cost Factors, Spinning ($),

	Brazil
Hourly wage Skilled Persons	2.32
Hourly wage Machine Tender	1.50
Hourly wage Unskilled Persons	1.12
Operating hours/year	7248
Cost of electric Power (Kwh)	.02
Cost of Building (M^2)	481.23
Annual Building Maintenance %	1.0
Depreciation Period Machinery (years)	10
Depreciation Period Accessories (years)	5
Depreciation Period Buildings (years)	25
Customs/Sales Tax (% of machinery)	-
Capital Interest Rate (%)	28.0

* Nicaragua: 1986, converting at export incentive
( ) = converting at 627,5C = 1$ (export

XRs 1987 (February)

Brazil	: ?	Germany	: 1.80
India	: 12.82	Japan	: 152.70
Korea	: 829.87		

1985*

Germany	India	Japan	Korea	Nicaragua	USA
8.12	.76	9.61	2.49	0.43	9.50
7.58	.67	4.56	1.14	0.27	7.50
7.18	.59	4.16	.95	0.19	6.10
5500	7875	6264	8400	6504!	6900
.05	.06	.07	.06	.01	.04
369.13	193.35	592.76	181.38	344.83	580
1.0	1.0	1.0	1.0	(159.36)	1.0
10	10	10	10	10 (incl 3 grace years)	10
5	5	10	10	5 (incl 2 grace yrs)	7
30	25	35	55	see machinery	30
-	-	-	-	-(?)	-
7.2	18.0	7.4	11.5	30	.5

rate of 1$ = 2/90C
incentive rate 1987)

XRs (1985)	1$ =	
Brazil	: 3,351.00	Cos
Germany	: 2.98	Dm
India	: 12.18	Rs
Japan	: 249.15	Yen
Korea	: 247.15	Won
Nicaragua	: 290.00	C

TABLE III.4 Costos Totales de Produccion de Hilo

Elemento de Costos	Paises				US$ per Kg		
	Brazil	Alemania	India	Japan	Korea	Nicaragua	EEUU
Desperdicios	0.1023	0.1253	0.0858	0.1134	0.1144	0.1022	0.0970
Trabajo	0.1225	0.3386	0.0669	0.2156	0.0914	0.0476	0.3368
Energia	0.0463	0.1242	0.1470	0.1797	0.1560	0.0456	0.0988
Materiales Auxiliares	0.0498	0.0323	0.0455	0.0438	0.0362	0.0827	0.0358
Capital (deprec. & interes)	0.7071	0.3718	0.3615	0.3597	0.2564	0.3502	0.3568
Meteria Prima (algodon)	1.4070	1.6870	1.2070	1.5440	1.5550	1.4000	1.3450
Costos Totales	2.4350	2.6792	1.9137	2.4962	2.2094	2.0283	1.2702
(index: Alemania = 100)	(90.9)	(100.0)	(71.4)	(93.2)	(82.5)	(75.7)	(84.7)
Estimates using Febr.'87 XRs		3.25	1.88	3.03	1.83	(2.03)	(2.27)

Estructura de Costos

%

Materia Prima

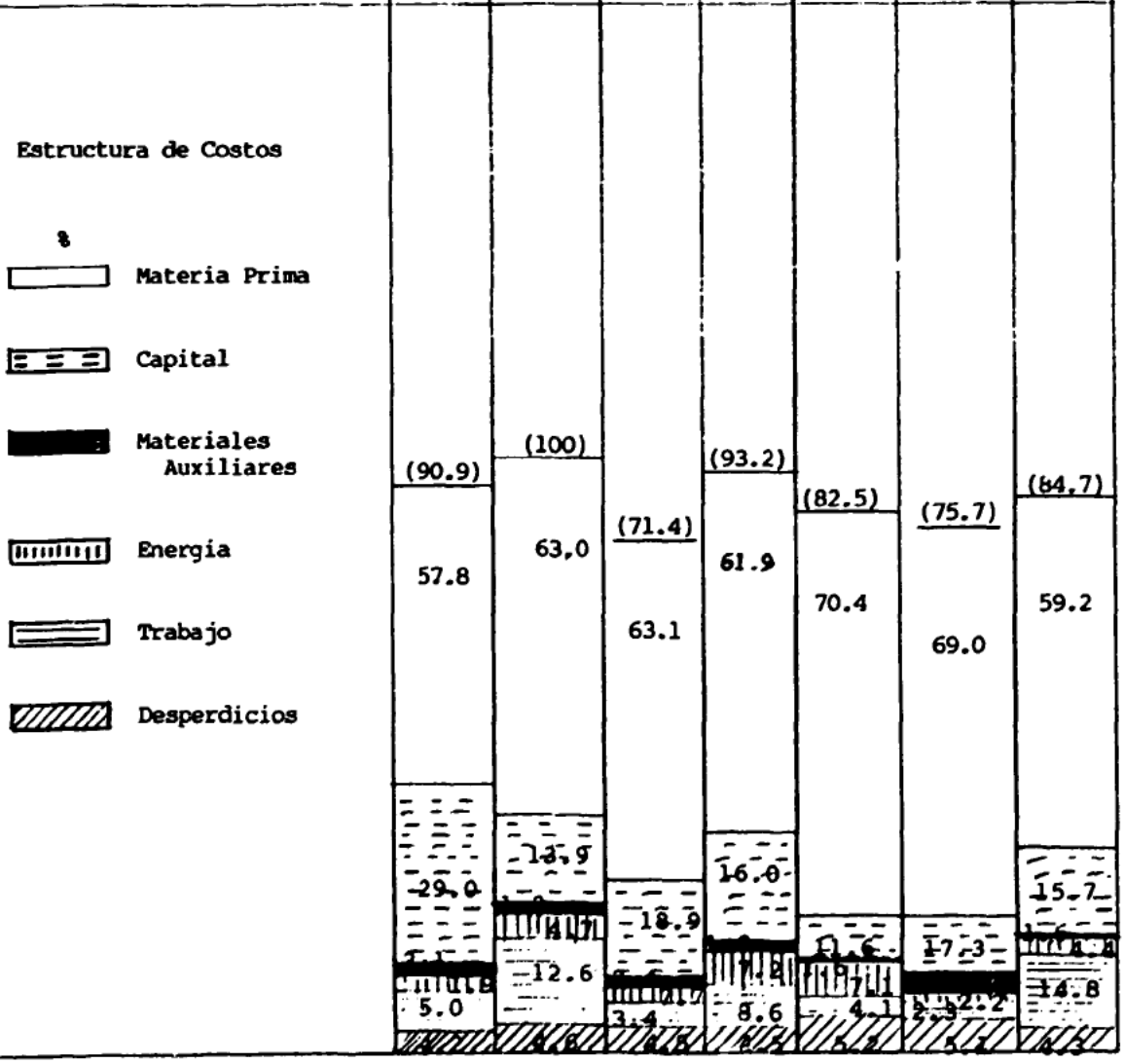
Capital

Materiales Auxiliares

Energia

Trabajo

Desperdicios



3.4 Government Policy and International Competitiveness

The ability of the Nicaraguan textile industry to compete internationally depends not only on the efficiency of the industry itself, but also on a number of government policies which relate both to the cost and availability of key inputs and the level of the exchange rate.

The supply of cotton to the industry is crucial here. The textile firms are supplied with cotton by ENAL (Empresa Nicaraguense de Algodon) a state monopoly which purchases the cotton crop from the producers. The cotton harvest takes place between December and March. At the beginning of each year a monthly supply programme is worked out with the textile industry. As a result a certain proportion of the total crop is set aside for local production and is not made available for export. Since the early 1980s, this proportion has fluctuated at around 5 per cent to 6 per cent of total production, although with the sharp decline in cotton production over the past three years and the planned recovery of domestic cotton consumption to the peak levels of 1983-4, it is expected that the share of local production will exceed 10 per cent for the first time in the agricultural year 1986-7 (see Table III.5). Since ENAL's first obligation is to supply the domestic industry, and the share of local production which is required for this is still relatively small, there are no problems concerning an adequate quantity of raw materials.

Table III.5 Cotton production and consumption by the textile industry, 1980-81 - 1986-7 ('000 lbs)

	Production	Domestic Consumption	Ratio %
1980-81	164,650	6,379	3.9
1981-82	138,740	7,400	5.3
1982-83	175,360	8,500	4.8
1983-84	188,110	11,150	5.9
1984-85	150,500	8,661	5.8
1985-86	110,200	6,597	6.0
1986-87	88,400	12,278	13.9

Source: ENAL.

The second question is the quality of the available raw materials. There is no doubt that in general Nicaraguan cotton is of good quality as can be gauged from the large proportion of the crop that is exported to the demanding Japanese market. The cotton is divided into 15 types and into 3 main groups in terms of quality (Table III.6). High grade and intermediate grade cotton each account for around 40 per cent of total output and low grade for about 20 per cent. There is no reason to believe that the quality of the cotton supplied by ENAL to the local textile industry is any lower than that of the cotton which it sells on the international market. The textile firms are able to request the quality of cotton which they require. In 1985-86 more than 85 per cent of their purchases were of the top six grades of cotton, and in the programme for 1986-87, 80 per cent of sales to the textile mills were to be of these grades. In order to develop a competitive industry, it is important that ENAL is not tempted to allocate lower quality cotton to the domestic industry in an attempt to maximize its foreign exchange earnings by exporting all the best quality cotton, something that tends to happen with some other crops such as coffee.

Table III.6 Quality of Nicaraguan cotton

	Fibre length (inches)	Thickness (micronaire)	Resistance (Pressley)
High grade	1 1/16 - 1 1/32	3.5 - 4.9	89 - 90
Intermediate grade	1 1/32 - 1	3.5 - 4.9	78
Low grade	1	intermediate	intermediate

Source: MIND, Protocolo, Annex 32.

The third aspect of cotton supply is the price at which it is sold to the textile mills. Nicaragua operates a system of guaranteed prices to agricultural producers which are determined on the basis of production costs and a mark-up. These prices are not in any way linked to the world market prices at which products are exported. Since 1980-81, producer prices for cotton have been consistently higher than the international price when converted at the official exchange rate, and this gap has tended to widen over time.1/ This has led to increasing exchange losses which have to be covered by the Central Bank printing money.

The price charged to the textile mills for raw cotton is based on the producer price plus a mark-up for insurance and storage costs. This obviously implies a far higher price level at the official exchange rate than the international level of cotton prices. In 1985-6, the price of locally produced cotton was C$96.50 per lb, more than three times the world price, while in 1986-7 it was expected to rise to C$250 per pound. With the 1986-7 crop already sold on the future markets at an average price of US 40.7 cents per pound, this gives an implicit exchange rate for cotton of over C$60 to the dollar, compared to C$240 to the dollar in 1985-6.

The high level of domestic cotton prices (when converted at the official exchange rate) has three potentially damaging effects. First, in so far as cotton can be substituted by other materials available on better terms, it may discourage the use of local cotton. Polyester is imported into Nicaragua at a preferential exchange rate. This makes polyester considerably cheaper in terms of local currency, despite the fact that the international price of cotton is lower than that of polyester. For example, in 1985 imported polyester cost the local textile firms roughly C$17 per pound, compared to a producer price of C$24.50 for cotton. Thus, while explicit government policy is to encourage substitution of cotton for polyester, the relative prices of natural and synthetic fibres tend to work in the opposite direction. Of course, whether this results in practice in the substitution of polyester for cotton will depend on whether the textile firms are able to obtain foreign exchange to import polyester. The point being made here is that in order to minimize costs, firms do have an interest in slowing down the substitution of polyester by cotton if they are able to do so.

A second problem raised by the high cost of locally produced cotton is its knock-on effects on the cost of yarn produced locally. While this may not be too much of a problem at present, when most yarn is used within the firms in which it is produced and very little is sold to other textile firms, it may become a more serious problem in any attempt to substitute more yarn by domestic production. Imported yarn at official exchange rates is considerably

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1/ T. Evans, La Generación y Apropiación del Excedente Economico en el Subsistema de Algodon, Managua, CRIES, 1986, Table 10.

cheaper than domestically produced yarn. In 1985 cotton yarn imported from Guatemala cost approximately C$45 per pound, compared to a price of C$74 per pound for domestically produced yarn.

A third potential adverse effect of the high level of domestic cotton prices is its effect on export competitiveness. In order to be able to export textile products it is necessary that the exchange rate received for manufactured exports be well above the exchange rate for permitted imports. Given the minimal level of textile exports at present, this does not constitute a significant problem. However, were the Nicaraguan Government to expand textile capacity in the future with a view to exporting a part of total output, it will be essential for the exchange rate for manufactured exports to be kept at a low enough level to make such exports competitive. Given the high proportion of the total cost of yarn which is accounted for by raw materials, it is desirable for the exchange rate for manufactured exports to be at least as favourable as the implicit exchange rate reflected in the producer price for cotton. This was in fact the case both in 1986 (manufactured exports C$290 to US$1; cotton C$240 to US$1) and 1987 (C$627.5 to US$1 and C$614 to US$1). However, this seems to have been more by accident than by design and there is no guarantee that a favourable exchange rate would exist in the future. If Nicaragua wishes to enter world textile markets on a stable, long-term basis in the future, it is essential that considerable attention should be devoted to the exchange rate.

Government policy also influences the cost of other inputs into the textile industry. As was seen above, the two most important local inputs are electricity and fuel and lubricants. Both these have prices set by the Government. At present, these prices are relatively low, reflecting in part the high proportion of imported inputs which they obtain at the official exchange rate, and in part the government's price control policy. In 1985 diesel was sold at C$85 a gallon, equivalent to $3 a gallon at the official exchange rate, but much less at a more realistic exchange rate, while electricity cost C$2.80 per kilowatt hour or 10 US cents at the official exchange rate. This compared to a price of 4 or 5 US cents in the United States and Western Europe.

International competitiveness in the textile industry is not only a matter of price and quality, but also a matter of being able to meet delivery dates. Here a major problem faces the Nicaraguan textile industry. Given the dependence of the industry on key imports such as dyes, chemicals and spare parts the ability of the industry to deliver punctually depends on these imports being made available to the textile firms as and when they require them. The tremendous scarcity of foreign exchange and the bureaucratic system of foreign exchange allocations makes it very difficult to achieve this objective.

The current system for allocating foreign exchange involves the programming of foreign exchange requirements in connection with the annual plan. The Secretaria de Planificacion y Presupuesto in consultation with the various ministries draws up a preliminary plan involving growth targets and foreign exchange allocations. The Dirección de Planificación of the Ministry of Industries (MIND) divides its allocation between the various industrial branches (e.g. the Rama Textil-Vestuario) which they, in turn, assign to individual firms or use to direct imports for distribution to small-scale industry.

The Central Bank then draws up a foreign exchange plan for the year divided into quarterly periods, indicating when foreign exchange is required,

the kind of foreign exchange available (hard currency, tied credits) etc. Firms then make weekly requests for the release of foreign exchange from their allocation, via the branch for the Comite de Divisas of MIND. This draws up priorities and forwards them to the Central Bank for presentation to the Comisión de Emergencia de Divisas made up of the President or Vice-President of the Central Bank and respresentatives of the main importing Ministries and organizations (e.g. INE, the state electricity enterprise). This Comisión draws up a proposal on the basis of the competing claims of the various importing organizations. Finally, the proposals go for approval to the Comisión de Asignación de Divisas, chaired by the President of the Republic with representatives of the Central Bank, Ministry of Foreign Trade (MICE) and the Secretaria de Planificación y Presupuesto. Allocations are then made in accordance with the availability of foreign exchange as reported to the Central Bank.

This procedure can be time-consuming. When foreign exchange is available, it may take 15 to 20 days to obtain approval and for a firm to be informed that it can undertake the required imports. If foreign exchange is particularly scarce at any time, or there are many competing demands and a request is not given the highest priority, a request can take as long as three months.

Such delays are obviously unacceptable if a firm is to compete in international markets and to meet tight delivery dates. In recognition of this problem a proposal has been put forward to create a new organization FOPEX (Fondo de Promoción de Exportaciones) which would be a much more flexible instrument for allocating small amounts of foreign exchange to firms which are going to be able to export. The Central Bank proposed an initial funding of $15 million for FOPEX with self-financing of further activities through export earnings. A number of firms would be selected as having export prospects and therefore being eligible for foreign exchange from FOPEX. At the time of writing, FOPEX had not begun operations, but if it manages to keep to its original conception as a flexible means of making foreign exchange available quickly to non-traditional exporters, then it should prove an effective means of resolving the problems posed by delays in allocating foreign exchange through regular channels. It is important therefore that any new textile factories which intend to export part of their output should have access to the FOPEX facility.

CHAPTER IV: DEMAND PROSPECTS FOR THE TEXTILE INDUSTRY

4.1 Consumption Trends in Textile Products

4.1.1 Cloth

The total consumption of cloth for the Nicaraguan market is made up of the sum of domestic cloth production plus imports of cloth and cloth products minus exports of cloth and cloth products. Data for the period 1978 to 1985 shows that immediately after the Revolution there was a sharp increase in domestic cloth consumption, with the level in 1980 more than double that which existed immediately before the Revolution, reflecting, no doubt, the increased purchasing power of the mass of the population (Table IV.1).

Table IV.1 Apparent consumption of cloth in Nicaragua 1978-1985 ('000 yd2)

	1978	1979	1980	1981	1982	1983	1984	1985
WOVEN								
Imports	12167.4	12271.8	33537.0	17821.0	8164.0	9041.1	10548.7	14974.1
Exports	5867.6	2002.2	1195.0	678.8	160.0	1600.6	1410.8	708.7
Production	11454.0	6841.0	8782.5	18164.0	20376.0	27461.0	26486.0	25897.0
Consumption	17753.8	17110.6	41124.5	35306.2	28380.0	34901.5	35623.9	40162.4
KNITTED								
Imports	9157.9	15814.3	17244.3	12103.6	5253.4	8209.4	5113.2	3363.9
Exports	159.3	130.2	181.8	65.3	8.8	8.7	232.5	307.1
Production	2550.0	1335.0	3330.0	3315.0	3040.0	4865.0	5769.0	6177.0
Consumption	11548.6	17019.1	20392.5	15353.3	8248.6	13065.7	10649.7	9233.8
TOTAL								
Consumption	29302.4	34129.7	61517.0	50659.5	36664.6	47967.2	46273.6	49396.2
Consumption p.c.	11.95	12.77	22.51	17.94	12.57	15.69	14.63	15.10

Source: MIND, Dirección General Rama Textil-Vestuario, Estrategia 2000, Managua, 1983; Table I:4 above; UNIDO on the basis of MICE data.

Although it was not possible to maintain the very high levels of consumption of 1980 in subsequent years, nevetheless apparent consumption has been maintained at between 45 and 50 million square yards per annum (with the exception of 1982). This has meant a level of per capita consumption of around 15 square yards a year in this period.

The general increase in consumption compared to 1978 disguises rather different behaviour in the two main types of cloth, woven and knitted. Whereas there has been a doubling of consumption of woven cloth, the consumption of knitwear is lower than in 1978 despite the much more dynamic behaviour of domestic production in this sector. This may reflect the growing importance of production for the army and the fact that a much higher proportion of flat goods go to meet defence needs.

4.1.2 Yarn

The growth of local cloth production has meant an increased demand for yarn since the Revolution. Unfortunately detailed information on apparent

consumption of yarn is not available. However, it may be inferred from the level of mill consumption of natural and synthetic fibres in Nicaragua and the volume of imports that the total consumption of yarn increased from around 4.5 thousand metric tons immediately after the Revolution to around 6 million tons by the mid-1980s (see Table IV:2).

Table IV.2 Consumption of yarn in Nicaragua ('000 tons)

	Domestic Production	Imports	Total
1980	3.44	0.97	4.41
1981	3.53	1.00	4.53
1982	3.35	0.94	4.29
1983	n.a.	1.41	n.a.
1984	4.68	1.25	5.93
1985	4.54	1.66	6.20

Source: FAO, World Apparel Fibre Consumption Survey, 1983 and 1985; MIND; MICE.

This increased demand for yarn was met partly through an increased level of imports of yarn and partly through an expansion of domestic production. Spinning capacity increased from between 4 and 4.5 thousand metric tons in 1981 to between 5 and 6 thousand tons by 1986.1/ Actual local production levels were some way below maximum capacity and in the mid 1980s were running at about 4.5 million tons. Imports which were well over a thousand tons a year continued to account for a significant part of the total supply of yarn and made up the bulk of yarn used in the knitting industry.

The domestic supply of yarn is clearly insufficient to meet local demand. Moreover even if the spinning industry were to operate at full capacity to produce almost 6 thousand metric tons a year of yarn, this would not be sufficient to guarantee the yarn required for full capacity operation in the weaving and knitting industries. It has been estimated that in order to operate at full capacity, 8.5 thousand metric tons of yarn would be needed with the weaving industry accounting for roughly three-quarters and the knitting industry for a quarter of the total demand. There would therefore be a shortfall of over 2.5 thousand metric tons, concentrated particularly in counts Ne 24 and 30.2/

Another way to look at the current demand for yarn is to consider the current demand for imports. The growth of direct imports of yarn since the early 1980s has already been commented upon. However there are also indirect imports of yarn in the form of imported cloth and clothing. In recent years such imports have contained a further 2 thousand metric tons of yarn which enter the Nicaraguan market (Table IV.3). Thus directly plus indirectly imported yarn in Nicaragua amounts to between 3 and 4 thousand tons, almost equal to the level of domestic yarn production.

Thus, whether looked at from the point of view of operating at full capacity in the weaving and knitting industry, or from the point of view of

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1/ The figures for 1981 are taken from MIND, La Industria Textil: Sus Caracteristicas y Perspectivas, October 1982; and those for 1986 from MIND, Determinación del Consumo de Hilaza de Algodon, April 1986 and MIND, Protocolo Nicaraguense-Sovietico, July 1986.

2/ See MIND, Determinación del Consumo de Hilaza de Algodon, April 1986.

substituting current imports, there is considerable demand for yarn in the Nicaraguan textile industry.

Table IV.3 Yarn imports (kilogrammes)

	Direct	Indirect (cloth & clothing)	Total
1980	970,356	6,206,107	7,176,463
1981	997,506	3,684,601	4,682,107
1982	939,848	1,539,340	2,479,188
1983	1,407,216	2,108,212	3,515,428
1984	1,254,579	1,813,262	3,067,841
1985	1,658,255	2,197,377	3,855,632

Source: UNIDO estimates based on MICE data.

4.2 Projections of Domestic Demand for the Nicaraguan Textile Industry

4.2.1 Previous studies

There have been two major studies which have attempted to calculate the potential demand for textiles in Nicaragua to the year 2000. The first by Ingenial S.A. carried out in October 1981 formed the basis for the document "Estrategia 2000" of the Dirección General de la Rama Textil-Vestuario of the Ministry of Industry, 1983. The second was carried out by PROISA in 1985 and is commonly referred to as "Ropero".

The two studies employ a similar methodology basing their demand calculations on an assumed minimum wardrobe for each inhabitant, the length of life of each article of clothing, and the total population of Nicaragua divided according to age and sex. In addition the Ingenial study assumes different consumption patterns for urban and rural inhabitants. A summary of the results of the two studies can be seen in Table IV.4.

Table IV.4 Demand projections for Nicaraguan textiles, 1985-2000

	Estrategia 2000			Ropero		
	Woven ('000 yd2)	Knitted ('000 yd2)	Socks ('000 dozen prs)	Woven[a/] ('000 yd2)	Knitted ('000 kg)	Socks ('000 kg)
1985	60,200	9,809	405.0	99,824 (93,656)	1,961.8	450.2
1990	72,769	11,700	483.5	118,122(110,373)	2,326.8	532.4
1995	86,586	13,895	574.7	137,880(128,625)	2,741.5	623.0
2000	98,310	16,427	679.2	158,661(148,312)	3,186.9	717.8

Source: MIND, Dirección General Rama Textil-Vestuario, Estrategia 2000, Managua 1983; PROISA, Ropero, Managua, 1986.

a/ Figures in brackets exclude industrial cloth which are not included in the Estrategia 2000 projections.

From this it can be seen that the projections of the PROISA study are considerably higher than those of Ingenial S.A. 1/ There are several

1/ In discussions with the UNIDO team, PROISA officials emphasized that their study contained illustrative calculations for their model rather than projections.

reasons for this. First the Ropero study includes textiles sold for industrial uses, whereas the earlier study does not, but even where these are excluded a considerable gap remains. As already pointed out, the Ingenial S.A. study distinguished between urban and rural inhabitants and assumed a lower level of textile demand on the part of the latter. On the other hand, the PROISA study did not assume a lower demand in rural areas. Finally, the overall level of textile demand per inhabitant assumed by PROISA was higher.

Perhaps more significant than the quantitative differences between the two studies are the similarities in approach between them. Rather than being demand projections in the conventional sense in which demand is related to variables such as income per capita and population growth, they illustrate targets which it would be necessary to attain in order to provide each inhabitant with a certain minimal standard of clothing. In a fully centrally planned economy in which the state allocates production targets and is responsible for the distribution of output such an approach makes more sense than one based on estimating elasticities of demand. On the other hand, in a mixed economy of the kind that exists in Nicaragua such an approach is more problematic.

The fundamental problem is that with a mixed economy the output required to satisfy the basic need of the entire population may be quite different from actual demand. In a mixed economy there is no guarantee that the entire population will have a sufficiently high level of income to satisfy its basic needs for clothing, in which case actual demand will fall short of the levels predicted on the basis of such calculations. On the other hand, given the persistence of considerable income inequality and the existence of a market for textile products, some inhabitants will consume more than the basic minimum incorporated in the target, and unless this is offset by others consuming less because of an inadequate level of income, the demand will exceed the predicted level.

As a result of these factors, such estimations of future demand need to be considered carefully, and if possible contrasted with the results derived from other methods. Given the recent turbulent political and economic history of Nicaragua, it is unlikely that analysis of past trends in textile consumption, income and population will provide any useful relationships. An alternative approach, however, is to consider the evidence from other countries in order to provide an international standard for comparison.

There is, in general, a close relationship between a country's level of GNP per capita and its consumption of textile fibres per capita. A simple linear regression on data for 19 developed and developing countries in 1983 found the following relationship between the two variables:

$$Y = 3.2 + 0.00127X \qquad R2 = 0.88$$

where Y = fibre consumption (Kgs per inhabitant)
X = GNP per capita, 1983 US$ 1/

On this basis Nicaragua with a per capita GNP in 1983 of $756 should have had a consumption of 4.16 kilogrammes of fibre per inhabitant. In practice, however, although per capita fibre consumption was 4.2 kilogrammes in the year of peak textile consumption, 1980, it fell considerably after that.2/ The

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1/ UNIDO, Restructuring of the Mexican Textile Industry: Requirements and Policy Options, UNIDO/15.595, 1986, Annex II.

2/ FAO, World Apparel Fibre Consumption Survey, 1985.

estimated level of per capita fibre consumption fell to 2.4 kilogrammes in 1982, before recovering again to 2.9 kilogrammes by 1985. The 1985 level of per capita consumption was roughly 70 per cent of what would have been expected given Nicaragua's level of income per capita. If Nicaragua had achieved the level of fibre consumption which corresponded to its per capita income, it would have consumed over 70 million square yards of cloth. In other words, the actual apparent consumption of cloth in Nicaragua in 1985 represented a shortfall of 20 million square yards.

The existing demand studies for Nicaragua have been made in terms of area of cloth. In order to make use of comparative international data it is necessary to convert these estimates into kilogrammes of fibre equivalent per head of population. Table IV.5 does this for the Ropero estimates. To calculate the total weight of cloth demanded, the projected output of each type of cloth is multiplied by its weight in grammes per square metre, for woven cloth. The projections for knitted cloth including socks are already in terms of weight. The total weight of cloth demanded is then converted into fibre equivalent on the assumption that wastage is 14 per cent in transforming raw materials into yarn and 8 per cent in converting yarn into cloth. This gives a projected demand for fibre which rises from just over 22 million kilogrammes in 1990 to almost 30 million kilogrammes in 2000 (Table IV.6). The implied consumption per capita is calculated using INEC projections of the Nicaraguan population to the year 2000. Not surprisingly in view of the methodology adopted, this gives a per capita level of consumption which is constant at 5.7 kilogrammes a head in 1990, 1995 and 2000.

Table IV.5 Conversion of demand projections by type of woven cloth to kilogrammes, 1990 - 2000

Cloth	grms/sq.m	Demand in '000m2			Demand in '000Kgs		
		1990	1995	2000	1990	1995	2000
Panal	132	3931.8	4346.5	4681.8	518.9976	573.738	617.9976
Lanilla	137	45.8	45.8	45.8	6.2746	6.2746	6.2746
Sabana	145	19568.3	22408.1	25405.0	2837.403	3249.174	3683.725
Pijama etc	104	44255.7	51947.0	60726.0	4602.592	5402.488	6315.504
Tabaco	60	2545.6	3091.1	3803.8	152.736	185.466	228.228
Mosquiter	72	2761.5	3160.6	3450.1	198.828	227.5632	248.4072
Colchon	137	1984.2	2326.3	2695.2	271.8354	318.7031	369.2424
Toalla	461	1752.8	2062.5	2403.8	808.0408	950.8125	1108.151
Falda etc	245	18808.5	22229.2	26001.7	4608.082	5446.154	6370.416
Frazada	158	1435.7	1656.9	1892.1	226.8406	261.7902	298.9518
Paca	120	1948.7	2319.9	2319.9	233.844	278.388	278.388
Gasa	34	6500.0	6500.0	6500.0	221	221	221
TOTAL		105538.6	122093.9	139925.2	14686.47	17121.55	19746.28

Source: UNIDO on the basis of PROISA, Ropero.

Table IV.6 "Ropero" demand projections converted to kilogrammes ('000Kg)

	Woven	Knitted	Total	Fibre equivalent	Fibre equivalent per capita
1990	14,686	2,874	17,560	22,194	5.73
1995	17,122	3,404	20,526	25,943	5.71
2000	19,746	3,883	23,629	29,865	5.71

Source: Tables IV.4 and IV.5.

A more approximate estimate of demand was obtained from the projections in "Estrategia 2000". It was assumed on the basis of available information that the average weight of each type of cloth was 100 grammes per square yard for light woven cloth, 200 for heavy woven cloth, 150 for knitted cloth, 420 grammes per dozen for socks, 50 grammes per square yard for tobacco cloth, 100 for baling and 115 for mattress coverings.1/ Using the same wastage factors as before, this gave a total demand in terms of fibre equivalent which rises from 15.7 million kilogrammes in 1990 to 20.7 million kilogrammes by the year 2000 (Table IV.7). Per capita fibre consumption is 4.1 kilogrammes in 1990 and 1995, falling slightly to 3.9 kilogrammes in 2000. This paradoxical result reflects the fact that no assumption was made concerning the growth of demand for industrial cloth.

Table IV.7 "Estrategia 2000" demand projections converted to kilogrammes ('000 Kg)

Cloth	Weight(gr/yd2)	1990	1995	2000
WOVEN				
Light	100	5,118	6,092	7,133
Heavy	200	4,318	5,132	5,397
Knitted	150	1,755	2,084	2,465
Socks	420gms/doz	203	241	285
Tabaco	50	500	500	500
Paca	100	333	333	333
Colchon	115	230	230	230
TOTAL		12,457	14,612	16,343
Fibre equivalent		15,744	18,468	20,656
Per capita fibre equivalent		4.07	4.07	3.93

Source: UNIDO on the basis of MIND, Dirección General Rama Textil-Vestuario, Estrategia 2000, Managua, 1983.

It is interesting to compare these estimates with international levels. These suggest that the levels of per capita consumption projected in "Estrategia 2000" are on the low side, since they imply levels of per capita consumption which correspond to the current levels of per capita income in Nicaragua, and which have been achieved in the past even.2/ On the other hand, the levels implied in the Ropero study appear to be over-optimistic. On the basis of international comparisons, a per capita consumption of 5.71 kilogrammes is expected at a level of GNP per capita of US$1,976 at 1983 prices, more than two and a half times the current level of Nicaragua's GNP. The only major Latin American country which had achieved a level of fibre consumption in excess of this figure in 1983 was Argentina. It therefore seems highly unlikely that Nicaragua would achieve such a level by the year 2000, let alone 1990.

Thus it seems that the estimates of "Estrategia 2000" are minimal estimates, provided there is no drastic fall in income levels in Nicaragua, while those contained in the Ropero study, desirable though they may be in

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1/ Although the main demand projections did not include industrial cloths, they were added in here for completeness.

2/ This is equally true if cloth consumption is calculated in terms of square yards per capita. The projections imply per capita consumption of around 22 square yards in the 1990s, while the level achieved in 1980 was already 22.5 square yards.

terms of adequately clothing the entire population, are not attainable given the likely growth of national income between now and the end of the century.

4.2.2 Alternative projections of demand for textiles in Nicaragua

To make a more realistic assessment of demand prospects it is necessary to make two major adjustments to the existing projections. First the level of demand in the year 2000 is likely to be somewhere between the two extremes assumed in the existing projections. Secondly, on the assumption that income per capita will grow in the 1990s then it is reasonable to assume that per capita demand for textiles will also rise over time.

Given the current economic and political difficulties of Nicaragua, it is unlikely that per capita income in 1990 will be any higher than it was in 1980. Therefore it seems reasonable to assume a level of demand per capita in 1990 at roughly the same level as was attained in 1980, i.e. 4.2 kilogrammes of fibre equivalent. This would give a total consumption of 16.3 million kilogrammes equivalent to roughly 102.4 million square yards of cloth. If, however, there is no recovery in per capita income levels between now and the end of the decade or these decline even further, then the demand projection of "Estrategia 2000" are likely to be fairly close to the mark.

The average of the two existing estimates of demand for the year 2000 gives a level of textile demand of 25,260,000 kilogrammes of fibre equivalent or 4.8 kilogrammes per capita. This would bring Nicaragua close to the levels of per capita consumption in Colombia in 1983 (5.0 kilogrammes per capita). It is the level that would be expected at a GNP per capita of US $1250 which could be achieved with a recovery of 1980 levels by 1990 and a subsequent average annual growth of 4 per cent which is in line with the rates achieved in the 1960s before the Managua earthquake and the political upheavals of the 1970s. Converting this figure to fabric gives a total production in the year 2000 of 157.3 million square yards. In the more pessimistic case where per capita fibre consumption by the year 2000 only exceeded the level achieved in 1980 by a rather limited amount - 4.3 kilogrammes per head - then cloth consumption would be rather lower at 141 million square yards.

The estimate for demand in 1995 is obtained through interpolation assuming a constant rate of growth of demand in the 1990s. The low and high estimates of demand in 1990, 1995 and 2000 in Table IV.8 give a more realistic picture of the range within which future demand for cloth in Nicaragua is

Table IV.8 Alternative projections of demand for cloth, 1990-2000
('000 yd2)

	1990	1995	2000
Low estimate			
Woven	88,100	103,674	122,000
Knitted	11,700	14,910	19,000
Total	99,800	118,584	141,000
High Estimate			
Woven	90,395	110,938	136,150
Knitted	12,005	15,938	21,160
Total	102,400	126,876	157,310

Source: UNIDO estimates; see text for an explanation of the assumptions on which these estimates are based.

likely to fall than earlier studies, because they take into account the level that is likely to be attainable given the country's per capita income, and also take into account the effects of future growth in per capita income.

The projections of cloth demand made above imply the apparent consumption of demand for yarn, whether supplied directly as yarn or indirectly as imports of cloth and garments. Table IV.9 derives the total demand for yarn, calculating forward from the weight of fibre consumed. The demand in 1990 is between 13.6 and 14 million kilogrammes, rising to between 19.5 and 21.7 million kilogrammes by the end of the century. Interpolating it is estimated that the total demand for yarn in 1995 will be between 16.3 and 17.4 million kilogrammes.

Table IV.9 Projections of demand for yarn 1990-2000 (mn Kgs)

	1990	2000
Population	3,870,818	5,261,317
Low estimate		
Fibre consumption p.c.(Kg)	4.1	4.3
Total fibre consumption (mn Kg)	15.9	22.6
Yarn equivalent (mn Kg)	13.6	19.5
High estimate		
Fibre consumption p.c. (Kg)	4.2	4.8
Total fibre consumption (mn Kg)	16.3	25.3
Yarn equivalent (mn Kg)	14.0	21.7

Source: UNIDO mission estimates.

These estimates will of course overestimate the demand for domestically produced or imported yarns to the extent that part of the demand for cloth or garments is met by imports. Thus in calculating the expected domestic demand for yarn account will have to be taken of the extent to which domestic demand for cloth and clothing is covered by domestic supply. More detailed analysis of the demand for yarn will therefore have to await the discussion of the strategy for textile production in Chapter V.

4.2.3 Conclusion

The alternative demand projections made in this Chapter are only indicative estimates designed to give a rough impression of the likely evolution of domestic demand to the end of the century. As such, no attempt has been made to disaggregate demand into different types of cloth, other than to distinguish between woven and knitted cloth. More detailed analysis would clearly be necessary in order to have an idea of the specific types of cloth for which demand is likely to grow most rapidly etc. However, what the rojections do suggest is that some past estimates have tended to exaggerate the future demand for cloth and should therefore not be used as a basis for future policy towards the industry.

Nevertheless, whether one compares the current Nicaraguan situation with other countries with roughly similar levels of GNP per capita, or with the amount reuired to adequately clothe the entire population, it is clear that a substantial unsatisfied demand for textile products exists in Nicaragua today. According to one estimate the supply of woven cloth was only about 40 per cent of that required to satisfy the needs of the population in 1985.1/

1/ MIND, Protocolo, Anexo 2.

Even if the standard of comparison taken is the level of consumption in other countries with a similar income per capita to that of Nicaragua, there appears to be a shortfall of some 30 per cent.

Given the extreme shortage of foreign exchange, a large deficit of this kind can only be covered through increased domestic production. In order to substitute current imports of textile products and to satisfy the shortfall of supply, it would be necessary to increase Nicaraguan textile production by anything from 33 million square yards to more than double that figure. Given that the lower figure is more than the current level of domestic production in Nicaragua, the scale of the problem can be easily envisaged.

4.3 International Markets

In the light of the long-term comparative advantage which Nicaragua could enjoy in textile products, given a suitable restructuring of the industry and the interest shown in exports by government representatives, this section considers the major foreign markets to which Nicaragua might be able to export textiles in the foreseeable future. In view of the U.S. trade embargo and the breakdown of the Central American Common Market, three main areas are considered as potential markets - the CMEA countries of Eastern Europe (including the USSR), Cuba and the European Economic Community.

Before discussing the likely demand for Nicaraguan textiles in these markets, it is worth emphasizing a number of general points regarding textile markets. First of all, there is no possibility of entering the export field on an ad hoc basis, for instance when the industry has a surplus of yarn, cloth or garments. It is necessary either to plan for export or not to attempt to export. The former implies studies of the requirements of potential markets in terms of design, type, colour and quality.

In order to export yarn successfully, a supplier must be able to meet the following conditions:

(i) Guaranteed high and unvarying quality;
(ii) Guaranteed delivery dates;
(iii) Guaranteed weights; and
(iv) Adequate range of counts, plies and twists.

Yarn should not be offered to international markets such as the EEC until these conditions can be consistently and faithfully adhered to. Until potential buyers appreciate the quality of Nicaraguan yarn it will be necessary to offer the yarn at a discount below world prices. Over time the product will eventually attain its full market value providing the pre-conditions are satisfied.

Similar considerations also apply in the case of cloth exports. Grey goods are sold on their construction 1/ and yarn quality (lack of defects). Therefore, strict supervision and quality classification is an indispensible requirement at the mill level. The main market for fabric is for grey cloth, because of the rapid changes in fashion which make it impossible to meet delivery dates from factories which are located a long way from the market. Customers therefore usually prefer to maintain stocks as appropriate which can be drawn upon, dyed, printed and finished, often in the buyer's country.

1/ A wide variety of loom state cloth i.e. grey cloth is sold internationally. Appendix III shows a small proportion of the fabrics which are available on the market with the bulk going into standard construction of 20x20, 60x60, 30x30 and 68x68 for print goods.

4.3.1 CMEA (excluding Cuba)

Since the U.S. trade embargo was imposed in 1985, there has been a substantial reorientation of Nicaragua's foreign trade towards the CMEA countries and the EEC. In 1986 over half Nicaragua's imports came from the CMEA countries, however the region still only accounts for about 14 per cent of Nicaragua's exports.1/ In the light of this extremely unbalanced trade relations, it is of interest to consider the potential of the CMEA countries as a market for Nicaraguan textiles.

Up to now the textile industries of the CMEA countries have developed limited links with the developing countries. The most important market is of course the USSR which accounts for the bulk of the region's consumption and imports of textile products. In October 1985 the Comprehensive Programme for the Development of the Production of Consumer Goods and the Sphere of Services emphasizes the development of foreign trade and links with developing countries in particular.2/ Currently developing countries account for about 10 per cent of Soviet textile and clothing imports.3/

Because of the large internal market, imports of textile products to the USSR are substantial in absolute terms. As can be seen from Table IV.10, imports of the two product groups of most interest to Nicaragua have grown substantially since 1970, although in the case of cotton yarn there was a sharp drop in 1984. Developing countries now account for two-thirds of Soviet imports of cotton fabrics, but it is recognized that there is scope for increasing this share. Currently the largest developing country supplier to the USSR is India.

Table IV.10 Imports of cotton textiles to the USSR, 1970 - 1984

	Cotton Yarn ('000 metric tonnes)	Cotton Fabrics (mn. metres)
1970	56.3	154.6
1975	67.8	181.1
1980	111.5	226.8
1984	18.7	358.9

Source: UNIDO, Recent Developments and Structural Changes in the Textile and Clothing Industry of the USSR, Table 2.4, 1987.

Given the large volume of Soviet imports, there are obviously possibilities for Nicaragua to export to the USSR at some date in the future, without causing any disruption to either domestic production or other developing country suppliers. Moreover, since the USSR has been an important supplier of machinery to the Nicaraguan textile industry in the recent past and is likely to continue to be one for the foreseeable future, such exports

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1/ SPP, Plan Economico Nacional, 1987

2/ UNIDO, Textile and Clothing Industries in CMEA Countries: Plans and Trends of Restructuring, forthcoming.

3/ UNIDO, Recent Developments and Structural Changes in the Textile and Clothing Industry of the USSR, 1987.

might constitute part of a buy-back agreement for the supply of equipment. Arrangements of this kind already exist between the European members of CMEA and its non-European members.

Possibilities of exports to the other European CMEA countries are more limited because of the smaller size of their markets and lower levels of imports (Table IV.11). They are also limited by the fact that the other two CMEA countries which are important suppliers of textile machinery to Nicaragua, Czechoslovakia and the German Democratic Republic are, unlike the Soviet Union, themselves net exporters of textile products.

Table IV.11 Imports of cotton fabrics to CMEA member countries, 1970-83 (mn. sq. metres)

	1970	1980	1981	1982	1983
Bulgaria	50.1	14.8	16.9	13.8	10.3
Hungary	28.8	23.0	30.3	36.6	36.1
GDR	84.3	18.7	2.7	25.9	44.2
Polandl	40.2	88.7	48.0	10.4	101.0
Romania	29.6	34.3	18.2	12.5	4.6
Czechoslovakia a/	5.7	11.3	11.4	10.1	11.6

Source: UNIDO, Textile and Clothing Industries in CMEA Countries: Plans and Trends of Restructuring, forthcoming, Table 32.
a/ Imports in million metres.

4.3.2 Cuba

Since 1979 Nicaragua has developed much closer ties with Cuba and already exports garments (jeans) to its caribbean neighbour. There is also a significant market in Cuba for textile imports as Table IV.12 shows. Although Cuban imports have declined since 1980, they are still substantial, exceeeding the current level of output of the Nicaraguan textile industry.

Table IV.12 Imports of woven cotton fabrics to Cuba, 1980-83 ('000 square metres)

1980	74,777
1981	63,682
1982	59,183
1983	44,722

Source: UN, Yearbook of International Trade Statistics, 1984.

The high level of textile imports to Cuba reflects the inadequate local production capacity. In some years, when foreign exchange has been available, Cuba has imported textile products from Spain, Japan and Hong Kong in small quantities, but generally it has had to rely on supplies from other CMEA countries.

Cuba does not import yarn on a significant scale, so that current export prospects are likely to be confined to fabrics and clothing. Given the geographical proximity of Cuba compared to that of the other potential markets for exports being considered here, were Nicaragua in a position to expand export of cotton fabrics and of clothing, further exploration of the possibilities of expanding exports to Cuba should be given a high priority.

4.3.3 The European Community

Whereas exports to the European members of CMEA or to Cuba are likely to be made through bilateral government arrangements, the EEC represents the largest market economy open to Nicaraguan exports. In view of the nature of this market it will be analysed in greater detail than those of the centrally planned economies.

The member countries of the EEC participate in the Multifibre Arrangement which restricts imports of textiles and clothing from developing countries. Nicaragua is not currently one of the countries which is subject to quotas under the MFA because it is not a significant exporter. No restrictions are placed on imports from countries which are not main suppliers. Such suppliers are treated on a surveillance basis and importers have to request import licences. Once a country becomes a significant supplier in any particular product group, it is invited to negotiate an agreement of self-restraint.

The four major markets for textiles within the EEC are the UK, France, the Federal Republic of Germany and Italy.

There are substantial imports of both fine (Ne 24-50/12-25 tex) and coarse (Ne 3-24/25-75 tex) yarns into the four countries and particularly into the Federal Republic of Germany and Italy. While there is considerable intra-EEC trade, imports from third countries are also significant.

Of the specific fabrics which Nicaragua might consider exporting, by far the largest and fastest growing market is in denim. Imports to the four countries more than doubled between 1984 and 1986 and are currently running at over 100,000 tonnes a year. Although at present the United States is the biggest supplier of denim to France, the Federal Republic of Germany and Italy, developing countries such as Hong Kong are important suppliers to the UK.

Imports of most other cotton fabrics have not grown significantly or have even declined over the last few years. Italy is the major importer of coarse shirting fabrics and sheetings, while the UK leads in fine shirtings and together with France in grey cotton drill.

Fuller market surveys would be necessary in order to determine the specific products which Nicaragua could export to the EEC. However, on the basis of existing information, it would seem that both cotton yarns and denim fabrics would be particularly worth considering.1/

1/ See Appendix II for details of delivery and agency terms, packing and shipping for the EEC market.

CHAPTER V: TOWARDS A STRATEGY FOR THE DEVELOPMENT OF THE NICARAGUAN TEXTILE INDUSTRY

5.1 Objectives

As was indicated in Chapter I, the current economic and political situation of Nicaragua has led to the government adopting a number of priorities for production in the current (1987) Economic Plan. These are sectors which will generate net savings in foreign exchange, those which produce goods and services for the defense of the country and those that produce basic consumption goods for the mass of the population. Despite the scarcity of external resources, the government has also attempted to ensure the availability of foreign exchange to import parts which are necessary to maintain existing productive capacity and to guarantee resources for investment projects which are due to be completed this year.

Within these general objectives, the main lines of industrial policy have been to encourage the reactivation of non-traditional exports which have fallen from US $177 million in 1977 to US $36.4 million in 1985, to guarantee an adequate supply of basic consumer goods, and to reduce the very high levels of labour turnover.1/ In 1987 industrial exports are programmed to increase by 60 per cent.

In pursuing these objectives, the Ministry of Industry is seeking to rationalize the industrial sector. This involves a number of measures including substitution of imports to save foreign exchange, specialization and complementation, and the search for new export markets.

In the textile industry the strategy for 1987 has concentrated particularly on saving foreign exchange, specialization and complementation. The main measures proposed to save foreign exchange are to produce more grey and unfinished cloth because of the shortage of dyes; to substitute locally produced yarn from TEXNICSA II for imports; to make increasing use of national "escolantes"; to produce shuttles locally with Cuban technical assistance; and to substitute sodium hipocholorite (hipoclorito de sodio) for hydrogen peroxide. Plans for specialization and complementation include increased production of "panal" and "manta" in TEXNICSA; production of "manta" in EXLASA and NICARAO, stopping production of "lanilla", "frazada" and mattress cloth in the latter; merger of HILANICA, NICATEX and NICARAO with the first two specializing in garment production and the last in cloth; and use of 50/50 nylon and cotton mixture in socks.2/

Plans for increasing exports are not emphasized in the case of the textile industry. Currently only two firms export, PROSAN and LAS 3F. In 1987 exports are programmed at almost US $950,000 compared to just over $650,000 in 1986. In the light of the analysis of this report, both of the current state of the Nicaraguan textile industry, and of the considerable unsatisfied demand that exists locally for textile products, it would be unrealistic to expect significant exports either from the main producers of woven cloth or from the knitting mills in the short term.

In the short to medium-term, therefore, the priorities for the Nicaraguan textile industry must be to establish a viable modern industry able to

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1/ MIND, División General de Planificación, Cifras Directivas para Elaboración del Programa Industrial, 1987.

2/ MIND, División General de Planificación, Programa de Racionalización, 1987.

supply the growing internal demand and substituting for imports. It must be emphasized that there are no "short-cut" solutions. Although there is a need for foreign exchange to pay for imports of machinery, spare parts, chemicals and dyestuffs, entering the export field with sub-standard products or on an ad hoc basis is not a feasible solution.

Because of its key role in supplying the armed forces and mass consumption, it is necessary to increase the available supply of textile products while keeping down the cost in terms of foreign exchange. In the short term it is not possible to open new plants, except for those already in the pipeline, so that any increase in production must come from the rehabilitation of existing capacity. Moreover any reduction in import costs must come either from substituting locally available raw materials and products for those that are currently imported, or by reducing the price of current imports.

In the medium-to-long term, i.e. into the 1990s, it is possible to plan in terms of the installation of new plants to produce both yarn and cloth. Many of the constraints which make it virtually impossible for the existing textile industry to export such as the age of machinery, inadequate quality control, unsuitable buildings and poor layout can be overcome when new mills are built. However, more general industrial problems such as the lack of technical knowledge and high labour turnover have to be tackled directly if exports are to become a reality.

5.2 The Short-Term Strategy

There are two major emphases which can be highlighted in the short-term strategy. The first is the need to increase the level of output attained from existing firms through a programme of rehabilitation. The second is the need to reduce import costs per unit of output in order to conserve scarce foreign exchange.

5.2.1 Rehabilitation strategy

It is clear from Chapter II that the Nicaraguan textile industry is currently producing well below its potential capacity. An immediate priority therefore is the rehabilitation of a number of the existing plants. In carrying out such a rehabilitation programme, the mission team believes that considerable attention should be given to issues of quality control which are woefully neglected at present. This is not simply because of a desire to produce a better finished product, although of course this is desirable in itself, but also because poor quality raw materials and intermediate products have an adverse effect on productivity levels and the total output produced, e.g. because of the high number of "ends down" in spinning and breakages in weaving.

(a) The general approach

As a first step towards a rehabilitation programme, the following measures should be taken:

A. Identify precise requirements of each company:

i. Building needs - repairs, air-conditioning, flooring, cleaning etc.;
ii. Reconditioning of current equipment, replacement of parts;
iii. Replacement of machinery where no reconditioning is possible, e.g. too old, no spares available;

iv. Estimate cost and production implications;
v. Estimate effect of machine and/or company shut-down where no alternative exists;
vi. Plan and introduce production planning, production engineering;
vii. Introduce quality control programmes at each plant together with appropriate standards and tolerances.

B. Undertake for each company a "Company Audit", establishing a clear basis of all internal data, namely:

- organization;
- manufacturing:
- technology;
- marketing;
- finance and costing

which implies collecting and preparing data and facts from all departments: Sales, manufacturing, purchasing, material, management, finance and accounting, controlling, organization, information and personnel.

The objectives of this company audit would be: To find resources and productivity reserves; to establish size of cost reduction targets; to define quality improvements; to show means of improvement in raw material yield; to improve energy costs, costs for water, dyestuffs and chemicals; and to improve cost and efficiency aspects of information systems.

C. On this basis, review and develop corporate plans in order to exploit the strength of the company.

D. Undertake a marketing analysis of domestic and export markets providing facts on the company's business position relative to the products to be manufactured.

In this process assistance might be sought in establishing for each company the priorities and cost prior to commencing the rehabilitation, as well as in the supervision, planning and execution of feasibility studies, tender (machinery) evaluations etc.. Assistance is also required in the implementation of production and quality control systems which should be introduced on a two-fold basis of:

1. Training
2. Implementation.

In this way quality control can begin to have effect whilst operating conditions are being improved.

(b) Specific application 1/

In order to illustrate further the general approach to rehabilitation recommended above, FANATEX is used as an example and as a candidate for rehabilitation.

The prime objective is to bring about operating conditions which allow processing to be carried out giving the best possible opportunity to produce good quality yarns which conform to international standards.

1/ Further recommendations for rehabilitation of existing plants can be found in the company assessments in Appendix I.

Operating conditions:

1. Climatic control within tolerable limits;
2. Reconditioning of all machinery through
   (a) adequate supply of spare parts;
   (b) introducing immediate maintenance schedules, including preventive maintenance planning;
   (c) introducing and implementing complete quality control programmes;
   d) establishing optimum production levels with efficiencies geared to a satisfactory quality of end product (yarn/cloth) with the present machinery;
   e) instituting tests and controls from raw materials to finished product, in order to identify deficiencies within raw materials and machinery;
   f) establishing standards and tolerances for each stage of production.

The mill control programme would include:

1. control of raw materials, cotton grade, micronaire, fibre strength, maturity, stable and moisture content;
2. in-process tests:
   a) weight and uniformity of lap;
   b) weight, uniformity, neps at card, drawframe combs, weight in cans;
   c) yarn count, eveness, elongation;
   d) slasher size concentration, stretch;
   e) cloth construction, weight, strength, etc.

Laboratory equipment must be calibrated and maintained within a standard atmosphere. In using quality control, communication between laboratory and machine/department supervisors is essential. Collecting data is useless, unless there is immediate application of results and correction of "off-standard" products.

Production standards:

1. Calculate a mill balance.
2. calculate the production and efficiency of each machine or group of machines;
3. size of laps, bobbins or packages; and
4. elaborate standards of speed or settings.

Waste control:

1. Establish basis for wastes;
2. classification; and
3. standards of percentages for waste.

Machinery maintenance:

1. Machine inventory;
2. preventive maintenance plan; and
3. programme for regular cleaning of both plant and machinery.

The Mill Balance/Company Audit

It is a pre-requisite that a company audit be undertaken immediately for the selected companies in order to identify the precise requirements of the plant and its buildings, for repair, reconditioning and/or replacement.

With the mill balance management will put into action an "order of priority plan" together with a time-scale schedule, which will detail each programme of rehabilitation in each section and machine. A step-by-step approach to each of the problems should be made, covering identification of the problem, preparatory planning and implementation combined with quality control and statistical measuring of results.

The reorganization of existing plants to achieve optimum results is possible and desirable. It is necessary to create favourable conditions for both worker and machine, i.e. air-conditioning, lighting, machine layout. The second is the practical aspect of nep reduction (2000+ versus 120), end breaks (168+ versus 50), overhead cleaners not operating, analysis of loom stops, patrolling systems.

Consideration shouid be given to the sub-contracting of such a programme to UNIDO, this being a time-saving and more efficient method of obtaining results within specified time limits.

The project (FANATEX) should serve as a model and training ground for management and for other plants which require renovation.

TEXNICSA

A similar renovation/rehabilitation plan is required for TEXNICSA with the added provision of a policy decision with respect to the value of rehabilitation on a temporary versus permanent basis. The added complication of a new spinning plant being currently erected make this decision more difficult.

TEXLASA

Rehabilitation/renovation should not be attempted prior to the clear definable projects having been evaluated for FANATEX and TEXNICSA, i.e. assuming some machinery may be disposed of from these plants, which could be incorporated into TEXLASA.

NICARAO

The company is not considered to be a candidate for renovation, its deficiencies in buildings, machinery, etc. being too great and would inevitably involve high capital outlays.

PROSAN/LAS 3F

Both companies manufacture special products, i.e. hidro-fil-cotton, sanitary towels, cords, laces and narrow elastic fabrics.

Company audit is recommended for each company in order to determine and programme requirements. In the case of PROSAN where weaving takes place, the possibility of utilizing replaced looms and/or other equipment should be explored.

Knitting Sector

Much of the discussion of the rationalization of the knitting industry in Nicaragua has revolved around the question of concentrating the industry in one or two installations, e.g. COTEXMA and/or TRICOTEXTIL. It is recommended that prior to making decisions for amalgamation of any of the companies operating in the knitting sector, detailed market research be carried out to establish the population's most urgent requirements. Comparative consumer studies relating to countries with similar climate and social conditions can also provide a basis for assessment of the market.

From the information derived from the market study it will be possible to allocate the machines available to the most advantageous location and to identify the needs where production or type, (machine), or gauges of the knitting machines are deficient against requirements.

A number of considerations make the wisdom of concentrating production in this sector questionable. First given the large diversity of makes and models of equipment in the industry, there are few benefits to be obtained from concentrating them all under one roof. An alternative which could be considered is to establish small workshops of some six machines where one person is knitter, mechanic and foreman, who together with one other person can run the machines (2 persons per shift).

Secondly much of the existing machinery is so old that removal to a different location could result in serious, perhaps irreparable damage. Thirdly the problem of obtaining and retaining labour in a highly technical sector, which are already considerable, would assume even greater significance as a result of concentration and would require the organization of training programmes. A final consideration is that a large number of existing machines are of coarse gauge 18s whose end product is of minor commercial use. Finer gauge machines are required in Nicaragua.

These observations are generalizations and a considered investigation is required to arrive at any firm conclusions. There is no doubt that one or more plants may be closed with some benefit. At the present time priority must be given to quality control, production control, reconditioning of existing equipment suitable for market needs, replacement and additional knitting machines and adequate dyeing and finishing equipment.

Quality control should be introduced as a priority project for the whole industry. As a general rule each company should make provision for testing of yarn (delivered) in terms of yarn count, twist (T.P.M.) coarse length, yarn tension, etc. Where piece dyeing is carried out "rubbing tests", shrinkage, wash tests etc. should be applied. Testing, which involves expensive equipment might reasonably be centralized at a local laboratory or in one factory where a main laboratory for the knitwear industry might be installed, and which may provide a service to the whole industry on a fee-paying basis.

Also in the light of the extremely poor condition and obsolete technology in finishing (with the exception of COTEXMA and TRICOTEXTIL), centralization of this process should be considered. It is recommended that priority be given to improving the facilities at COTEXMA and TRICOTEXTIL with regard to machinery, installations, quality control and production techniques.

5.2.2 Reducing import costs

Some steps have already been taken to substitute local materials for imports in the textile industry. However, there is still a high level of dependence on imported dyes and chemicals. Efforts should continue to find local substitutes where possible for imported inputs. Currently the most important imported inputs are yarns, dyes and polyester.

(a) Yarns

Imports of yarns can only be reduced in a substantial way in the longer term, when new spinning facilities come on stream. Imports of polyester will continue, even in the long term, because the small size of the Nicaraguan market does not justify local production. The need for polyester imports can, however, be reduced by increasing the cotton content of locally produced fabrics.

(b) Polyester

Synthetic fibres have accounted for between 16 and 18 per cent of mill consumption of fibres in Nicaragua since the mid-seventies. This is considerably lower than the share of synthetic fibres in world production which in the 1980s has been running at over a third.1/ It is also lower than the proportion found in many other Latin American countries. Nevertheless, it is slightly higher than the proportion of mill consumption in Cuba and in some other developing countries such as the People's Republic of China and India.

The share of synthetics in domestic consumption of textile products is at roughly the same level, so there is no reason to suppose that an increase in the proportion of synthetic fibres will take place as further import substitution occurs in the industry. The crucial question, therefore, is whether it is possible to increase the proportion of cotton used in the fabrics currently produced in Nicaragua. Table V.1 lists the major products which currently use synthetic fibres. It can be seen that these are fairly small in number. Moreover measures are already afoot to reduce the proportion of synthetic fibres in some of these products, e.g. increasing the proportion of cotton in socks to 50 per cent. One area where there may be scope for increased use of cotton is in shirtings. Currently only FANATEX produces shirtings, with a 65 per cent cotton/35 per cent polyester blend. There is no 100 per cent cotton shirting produced in Nicaragua and this should be considered as should increased cotton content to 75 or 80 per cent.

Given the prices at which Nicaragua is able to buy polyester and at which it sells cotton, considerable savings in foreign exchange can be made by substituting locally produced cotton. In the first quarter of 1986, Nicaragua imported more than 300 metric tons of polyester from the USSR at a price of US $1.74 per kilogramme (78.9 US cents a pound). In 1986 the average price which Nicaragua received for its cotton exports was 38.4 US cents a pound, so that for each pound of polyester substituted by cotton, there would be a net foreign exchange saving of 40.5 US cents. If half the polyester imported in this period was substituted for by cotton, there would have been a net saving of foreign exchange of US $136,000 during the quarter. Even a less ambitious scheme involving the substitution of 20 per cent of polyester imports would have saved well over US $50,000 (see Table V.2). On an annual basis a net saving of between US $200,000 and $500,000 would have been achieved.

1/ GATT, Textiles and Clothing in the World Economy, Geneva, 1984.

Table V.1 Main products using synthetic fibres in the Nicaraguan textile industry

FANATEX	
Trousering	50% cotton, 50% polyester
Shirtings	65% cotton, 35% polyester
NICATEX	
Bloomers	100% polyester
Socks	100% nylon
COTEXMA	
Socks	100% nylon
Socks	50% nylon, 50% cotton
TRICOTEXTIL	
Shirts	50% cotton, 50% polyester

Source: MIND, Protocolo.

Table V.2 Savings from substituting cotton for polyester 1986 (1st Quarter)

Polyester c.i.f. import price (US cents per lb)	78.9
Cotton f.o.b. export price (" " " ")	38.4
Net foreign exchange saving (" " " ")	40.5
Polyester imports 1st Quarter 1986 (lbs)	674,167
Net saving by 50% cotton substitution (US$)	136,519
Net saving by 20% cotton substitution (US$)	54,608

Source: UNIDO on the basis of data from MICE, ENAL and FANATEX.

In 1986 FANATEX, the only company importing polyester fibre, used a mix of 62 per cent cotton and 38 per cent polyester. The less ambitious saving illustrated above could be achieved by cutting the share of polyester to just over 30 per cent, while the more ambitious targets would require a reduction in polyester content to just under 20 per cent. It should be possible to exceed the less ambitious target through increasing the proportion of 100 per cent cotton shirtings, to substitute for some of the current production of 65 per cent cotton, 35 per cent polyester shirtings.

The extent of the savings which can be obtained in the future by substituting cotton for polyester will of course depend on the evolution of cotton and polyester fibre prices. International prices for polyester have been higher than cotton prices in the recent past. The gap is increased for Nicaragua by a number of factors. First its cotton exports should be valued f.o.b., while its polyester imports need to be valued at c.i.f. prices. Secondly, the severe shortage of foreign exchange means that Nicaragua is forced to resort to credit lines in order to import polyester and, as a result, cannot shop around, and therefore pays prices which are higher than those available on the open market. Thirdly, the shortage of foreign exchange also puts pressure on the country to sell its cotton on the future markets at times when prices are depressed, so that it may not always obtain the going market price. In the light of these factors, it is very unlikely that Nicaragua would lose foreign exchange by substituting locally produced cotton for polyester, and if relative prices are near 1986 levels, substantial savings can be made.

(c) Dyes

Imports of dyes continue to be a large factor in the foreign exchange costs of the textile industry. Over the past four years an average of US $1.6 million was spent on imported dyes (Table V.3). It is proposed to reduce dye imports in 1987 by producing more grey and loom state cloth, however this does not really offer any long term solution. Given the small scale of Nicaraguan demand for individual dye products, it is probably not feasible to begin local production on a significant scale either.

Table V.3 Imports of dyes 1983-6 ('000 $)

1983	3,317.5
1984	386.0
1985	1,429.5
1986	1,367.6

Source: MIND; MICE.

In the case of dyes, therefore, efforts should be concentrated on reducing the cost of those dyes which are currently imported. At present the greater part of the dyes used in the Nicaraguan textile industry are imported from two Swiss chemical companies. These are expensive dyes and a thorough search for substitutes and alternative quotations from other foreign suppliers might reveal considerable potential savings. It is recommended that the Ministry of Industry in conjunction with MICE undertake an investigation into this issue.

5.3 Medium and Long-Term Strategies

In the medium and long term, investment in new capacity will be necessary in order to cover the growing demand for textiles and in order to reduce the level of imports. In order to develop a strategy for the textile industry to the end of the century, it is necessary to estimate the future balance between demand and domestic supply and the degree to which local production should meet domestic demand, as well as the extent to which exports may develop. In what follows the evolution of the balance between supply and demand is estimated for woven cloth, knitted cloth and yarn, and on this basis proposals are made for future investment in the industry.

5.3.1 Woven cloth

In order to calculate the projected deficit in woven cloth, it is necessary to first estimate the future capacity of the industry in the period 1990 to 2000. It is assumed that between now and 1990 a rehabilitation of the plants of FANATEX, TEXNICSA and TEXLASA will take place, as a result of which the total supply of cloth in that year will be of approximately 32-34 million square yards. This is roughly the level of production which was programmed for 1986, but actual production fell well short of this target. It will involve putting looms which are currently stopped in FANATEX and TEXNICSA back into operation. It is assumed that there will not be any production of woven cloth at NICARAO by 1990 because of the extreme age of existing machinery. To achieve an output in the range projected will require an average annual increase in production of between 5 per cent and 6.5 per cent over 1986 levels.

In view of the age of the existing looms in TEXLASA and some of the looms in TEXNICSA, the production capacity of these two firms is likely to decline in the 1990s. The projected supply of cloth from existing firms for 1995 and

2000 is therefore as indicated in Table V.4. These are set against the demand projections from Chapter IV to calculate the estimated deficit in the availability of woven cloth in the absence of major new investments. As can be seen in the table, the deficit ranges from 54,000 - 58,000 in 1990 to between 96,000 and 112,000 by 2000.

Table V.4 Supply and demand of woven cloth 1990 - 2000 (mn sq. yds)

	1990	1995	2000
Demand	88 - 90	104 - 111	122 - 136
Supply	32 - 34	28 - 30	24 - 26
Deficit	54 - 58	74 - 83	96 - 112
Target coverage	37%	50 - 55%	70%
Target supply	32 - 34	50 - 60	85 - 95

Source: UNIDO mission estimates.

It would be unrealistic to propose a strategy which would involve covering the entire deficit with local production by 1995 or even 2000. However, unless either severe shortages of cloth or growing levels of imports are to occur, major new investments in textile production will be required in the 1990s.

Since new investments planned now will not materialize in production before 1990, the projected supply is unlikely to exceed the range 32 - 34 million square yards in that year. Given the projected demand, this will cover around 37 per cent of total demand. The Nicaraguan Government wishes to achieve a minimum coverage of 70 per cent of demand for the major textile products by the year 2000.1/ In order to achieve this through a gradual increase in the coverage by local production, it is necessary to attain a level of coverage of 50 to 55 per cent in 1995.

On this basis total local production of woven cloth should reach between 50 million and 60 million square yards in 1995 and 85 million to 95 million by the year 2000. In order to achieve the lower ends of these ranges, it would be necessary to have in full operation one new textile plant with a weaving capacity of around 20 million square yards by 1995, and two further plants coming on stream before the end of the century. If, in addition, obsolete machinery in the existing mills is replaced, then it will be possible to achieve production levels towards the higher end of the range.

More detailed demand projections are required in order to determine the exact product mix for these new plants. In a second stage of the Esteli Project, however, the establishment of a weaving plant as one of the new plants to be constructed might be worth considering.

It would of course be possible to seek to cover a higher proportion of domestic demand by the year 2000 through a more ambitious programme of plant construction. Assuming the availability of loans for such investments, the main constraint on such a strategy is the limited number of technically qualified personnel in Nicaragua able to prepare, implement and supervise such projects. It is therefore desirable to limit the number of new textile projects being planned at any one time.

1/ MIND, Protocolo, p.2.

5.3.2 Knitted cloth

In 1986 the estimated production of knitted cloth in Nicaragua was around 8.4 million square yards. Of the six firms in the industry, NICARAO had its knitting plant stopped in 1986, NICATEX was only working one shift, and the remaining four were working two shifts. A major constraint on full capacity operation in the industry at present is the shortage of foreign exchange to import yarn and spare parts, particularly needles. With TEXNICSA II coming into production, it will be possible in future to supply the knitting industry with locally produced yarn, removing the major constraint, while giving priority to imports of spare parts will enable existing capacity to be more fully utilized.

Introducing three-shift working in three of the firms (TRICOTEXTIL, COTEXMA and FIBRATEX) would enable the industry to produce almost 12 million square yards of cloth by 1990. Further increases in output in the 1990s will require the expansion of existing plants and the opening of at least one new plant. Given the age and unsuitability of machinery at NICARAO, HILANICA and NICATEX these have a limited future and will need re-equipping or replacing by new plants in the 1990s. Therefore the available capacity will decline to 9.4 million square yards in 1995 and 2000 (Table V.5).

Table V.5 Supply and demand of knitted cloth, 1990 - 2000 (mn. sq. yds.)

	1990	1995	2000
Demand	11.7 - 12.0	14.9 - 15.9	19.0 - 21.2
Supply	11.8	9.4	9.4
Deficit	0.2 - (0.1)	5.5 - 6.5	9.6 - 11.8
Target coverage	100%	100%	100%

Source: UNIDO mission estimates.

In order to meet the shortfall in supply, it is proposed to expand capacity at COTEXMA and FIBRATEX in the early 1990s and to consider the construction of a new knitting mill before the end of the decade.

It is not proposed to make specific recommendations concerning the type of knitted cloth to be produced in any extension of existing facilities or new plants which are to be built. This will depend on the results of the market survey already proposed. However, in the light of the large number of machines of coarse gauge 18s which exist in Nicaragua, it is recommended that new facilities concentrate on finer gauges.

5.3.3 Yarn

In the light of the planned production of woven and knitted cloth in Nicaragua from 1990 to 2000, it is now possible to make an estimate of the local demand for yarn which this creates. The total amount of yarn required to meet the demand for all textile products in Nicaragua to the year 2000 was estimated in Table IV.9. However, this is an overestimate to the extent that part of the demand for textile products will be met by imports. Table V.6 indicates the demand for yarn implied by the planned coverage of demand by local production assumed in Tables V.4 and V.5. This shows the demand for

yarn rising from around 6,000 metric tonnes in 1990 1/to possibly as much as 16,000 metric tonnes in the year 2000.

Table V.6 Supply and demand of yarn, 1990 - 2000 ('000 metric tonnes)

	1990	1995	2000
Demand	6 - 6.2	8.9 - 10.4	14.4 - 16.0
Supply	8	11.7	11.0
Deficit	(1.8) - (2.0)	(1.3) - (2.8)	3.4 - 5.0
Target coverage	100%	100%	100%

Source: UNIDO mission estimates.

By 1990 the new spinning plant at TEXNICSA with a capacity of 3,100 metric tonnes is expected to be in full operation. It is thought unlikely that the total output of the existing plants at FANATEX, TEXNICSA and TEXLASA will exceed 5,000 metric tonnes in 1990, although some estimates put the capacity rather higher. By 1995 the new spinning plant at Esteli will be producing at its full capacity of 5,000 metric tonnes. Against this additional capacity, it is anticipated that there will be some reduction in capacity at TEXLASA and TEXNICSA where some of the equipment is rather old. Thus the total supply available is expected to reach 11,700 metric tonnes in 1995, falling back to 11,000 metric tonnes by 2000.

These projections indicate a surplus of yarn production in Nicaragua of 1,800 to 2,000 metric tonnes in 1990 and between 1,300 and 2,800 metric tonnes in 1995. By the end of the decade, however, this will have turned into a deficit of 3,400 to 5,000 metric tonnes.

In the light of the surplus of yarn that is likely to emerge in the late 1980s and early 1990s, two possibilities suggest themselves. The first is a more rapid expansion of cloth production than has been assumed hitherto. The second is to export yarn to the tune of around 2,000 metric tonnes a year.

The first option requires further investment in new plant, and given the lead-time required to bring new facilities into production, would not affect the demand for yarn in 1990. Therefore with this strategy, there would still be a surplus of yarn to dispose of in the early 1990s.

Given the difficulties already mentioned of entering export markets on a short-term basis, it does not seem desirable to attempt to export a surplus for a few years, while waiting for domestic demand to build up. On the other hand, with increasing production from Esteli from 1991 to 1994, it should be possible to maintain a significant level of exports from the late 1980s through to the mid-1990s. Moreover, by building further capacity ahead of demand in the late 1990s through opening another plant of around 5,000 metric tonnes of capacity, exports would continue through to the year 2000, particularly if some obsolete spinning machinery was replaced at the same time.

1/ This is rather lower than the MIND estimate of the amount of yarn required in order that all the consuming firms could operate at full capacity which was estimated at 8,500 metric tonnes. (MIND, Determinacion del Consumo de Hilaza de Algodon). This partly reflects the fact that not all firms are likely to be operating at full capacity in 1990.

Such a strategy has a number of attractions. Exports of yarn in the early 1990s would partly cover the continuing cost of cloth imports in this period. Secondly, it opens the possibility of entering into a buy-back arrangement for the construction of a new spinning plant in the mid-1990s, thus reducing the debt incurred and saving limited foreign exchange.

It is, therefore, recommended that Nicaragua should aim at achieving substantial yarn exports throughout the 1990s. The analysis of Chapter IV suggests that foreign markets exist for cotton yarns of the type that could be produced in Nicaragua.

The markets to which Nicaragua should aim to export yarn depend on a number of factors. It will depend on the willingness of equipment suppliers to enter into buy-back agreements. This seems most likely to occur in arrangements with suppliers from the CMEA countries. It will also depend on the implicit prices for yarn which would be set in such deals. With coarse yarns being imported to the EEC at around $3 per kilogramme, the alternative of exporting to Western markets to earn hard currency should also be explored.

5.3.4 Location

It will also be necessary to determine the areas in which new textile plants are to be located. At present there is a heavy concentration of the textile industry in and around Managua. The expansion of the industry therefore gives an opportunity to decentralize production to other parts of the country. This may be highly desirable in view of the very heavy concentration of industry and population in Managua, and the stresses imposed on the urban infrastructure by recent growth.

The Nicaraguan Government has indicated the desirability of locating new firms in the following areas - Region I, Region II, Region IV and Region VI.1/ Of these regions Region II has the advantage of being Nicaragua's primary cotton growing area where many of the ginning plants are located, while Region IV has the highest concentration of garment making firms outside of the Managua area (Table V.7). Region VI has a substantial number of medium-sized clothing firms, so that mills located in these two regions would have the advantage of being near to potential customers. Finally, Region I already has a planned spinning mill to be built at Esteli so that any new plants built in the area would benefit from the associated external economies.

Table V.7 Geographical distribution of clothing industry

	Medium industry	Small-scale industry	Total
Region I	0	12	12
II	2	25	27
III	27	28	55
IV	8	26	34
V	0	6	6
VI	6	14	20
Special Zone	1	17	18
TOTAL	44	128	172

Source: MIND, Rama Textil-Vestuario.

1/ MIND, Protocolo, Anexo 31.

Thus it can be seen that each of the four Regions considered has something to be said for it. Decisions on the location of new mills should also take into account the availability of other inputs such as electricity and water. In view of the importance of suitable levels of temperature and humidity for productivity and quality in the textile industry, and the high cost of controlling temperatures, the suitability of the climatic conditions should also be taken into consideration.

5.4 Complementary Policies

So far this chapter has focussed on specific strategies for the rehabilitation and the expansion of the Nicaraguan textile industry. However, for these strategies to be successfully implemented it will be necessary to follow a number of other policies to rectify some of the major weaknesses which are present in the industry today.

5.4.1 Technical capacity

A crucial problem is the lack of adequate technical capacity in the industry. If the textile industry is to be a priority sector for industrial development in Nicaragua in the future, it is necessary to significantly increase the level of indigenous technological capability. At present Nicaragua has very few trained textile engineers. More trained personnel in this area are necessary both for the operation of existing plants and also in order to evaluate new machinery and plan the new mills which are going to be required. Since training of technical manpower is a long drawn-out process it is necessary to embark on this process as soon as possible so that adequately qualified personnel are available in the 1990s.

The development of technical capacity should be an integral part of any plan for the development of the textile industry. In the short term, however, this is likely to be an area in which technical assistance is required. Where new plants are being contemplated, a major problem is the availability of sufficient, impartial information on the merits of alternative technologies and equipment. Mistakes in terms of equipment choice, plant layout, cooling systems etc. can be extremely expensive at this stage, since they will affect the viability of the project throughout its life.

In view of the fact that a number of new textile mills are likely to be built in the next few years, advantage should be taken of this to build up a team of technicians able to evaluate technical alternatives, negotiate with suppliers, carry out market research, appraise projects and bring on stream new mills. Clearly in the initial stages such a team would need outside support, but over a number of years, on the basis of its growing experience, would become increasingly capable of standing on its own. It is important that such a team develops specific expertise in the textile industry, its products and technology and is not expected to diffuse its efforts over a wide range of industries.

It is also important that when new mills are built, adequate technical assistance and sufficient training of the local personnel be given. In the past insufficient attention has been given to this aspect which has resulted in problems with new equipment performing well below capacity. Thus 50 Czech looms at FANATEX are stopped because of technical problems and the local management and workforce does not appear to have the necessary expertise to run and maintain them. Similarly, lack of sufficiently trained maintenance personnel at TEXNICSA has meant that new imported spinning equipment is operating at levels far below its potential.

In the difficult conditions which exist in the texile industry, and in Nicaraguan industry generally, as a result of the shortages of spare parts and the age of much of the machinery, local mechanics have exercised considerable ingenuity in finding "ad hoc" solutions to technical problems. This, of itself, should be recognized as a contribution to the development of local technical capacity. More formal training of the kind recommended above should not be seen as a substitute for this kind of expertise, but should rather be complementary to it.

5.4.2 Foreign trade policies

Since it is proposed that in future a more significant part of the output of the textile industry be exported than at present, it is important that the general policy framework be consistent with such a goal.

This means, in the first place, that careful attention must be paid to the relationship between the prices paid by the textile mills for their inputs and the exchange rate at which the proceeds from exports are converted into Cordobas. In the specific case of the spinning mills which are likely to account for the more important portion of exports, this means ensuring that the dollar-cordoba exchange rate implied by the producer price for cotton is no higher than that which is obtained by exporting yarn.

It is also necessary to have a flexible system which enables firms to export, and where necessary to import equipment or materials required to produce those exports. The FOPEX offers the possibility of doing this, and textile firms should be able to take advantage of this system.

There are also many situations in which lack of spare parts for a particular item of equipment is reducing production for the domestic market. There is a danger of putting too much emphasis on building new plants or re-equipping existing mills, because it is often easier to get credits for major investment projects than for imports of specific spare parts. In allocating scarce free foreign exchange ("divisas liquidas") therefore it is desirable to give a high priority to imports of such parts, particularly where it can be shown that they constitute a major bottleneck.

5.4.3 Labour

The high levels of labour turnover and absenteeism were commented upon in Chapter II. While these are partly due to general factors which affect Nicaraguan industry as a whole, the levels in the textile industry are particularly high. Absenteeism is a problem if a lack of workers at any particular time prevents planned levels of production being achieved. High labour turnover is a problem because it means new workers are continually having to be brought in to the industry and this may have a deleterious effect on productivity levels.

The need for training was emphasized above. However, there is little point in devoting time and effort to training if within six months, almost half the labour force has left to be replaced by completely unskilled workers. In order to develop a more highly skilled workforce, therefore, it is necessary to reduce the very high rates of labour turnover which exist at present. While this partly requires a general realignment of income levels between the formal and the informal sectors to prevent the movement of labour out of productive activities, there may be other changes which could also contribute to a reduction in labour turnover.

Concrete recommendations on ways of achieving this end would require a more detailed analysis of the reasons for such high levels of turnover in the textile industry. However, it has been noted that considerable differences exist in levels of absenteeism and labour turnover between textile firms. Casual observation suggests that firms with relatively good working conditions and efficient management have lower rates of turnover. The conditions in other firms with high temperatures, high noise levels etc. are extremely unpleasant, and high turnover is hardly surprising. If more careful investigation confirms these impressions, then it would be advisable to give some attention to improving working conditions both in rehabilitating existing plants and building new ones.

It should also be noted that a significant proportion of the labour force in the textile industry is female. Any analysis of the reasons for high labour turnover and absenteeism should therefore take into account the different incidence of absenteeism and turnover according to gender, and any specific reasons which may account for absenteeism and turnover amongst women workers.

5.4.4 Improved planning procedures

This report has emphasized the need to raise standards of quality in the textile industry. Current low levels of quality are partly a result of the objective situation of the industry and the economy - old machinery, lack of spare parts, shortages of textile products etc. - but are also reinforced by the planning system and its emphasis on physical production targets. As is well known, such planning systems tend to lead to a neglect of all other aspects of output.

If quality is to be improved, some way must be found both of giving workers an incentive to produce a better quality product, and to the firms involved to improve quality and not just maximise production. It may be possible to do this in the context of the greater autonomy proposed for APP firms in the Plan Economico Nacional, 1987. This area of planning is one where some expert assistance could be extremely useful.

5.5 Conclusion

This report has analysed the recent development of the Nicaraguan textile industry and its current situation. On this basis it has concluded that the industry as it exists today is in need of major restructuring. Many of the existing firms operate with obsolete equipment in totally unsuitable buildings with wholly inadequate facilities in terms of temperature control and waste disposal. Moreover there is a generally low level of technical capacity in the industry, and a lack of trained workers accentuated by high levels of labour turnover. As a result, the industry produces well below its capacity, and standards of quality are extremely low.

Nevertheless, the fact that a considerable proportion of the yarns, cloth and garments consumed in Nicaragua today are still imported, and that demand levels are currently well below those that would be expected given Nicaragua's level of Gross Domestic Product per capita, means that considerable potential exists for expansion of production for the domestic market. Furthermore, as a major producer of good quality cotton for the world market, Nicaragua has the raw material base to become an exporter of yarns and cloth.

A preliminary evaluation of the existing textile mills in Nicaragua was caried out by the UNIDO team. On the basis of this evaluation, certain recommendations have been made concerning the rehabilitation of the industry

in the short-term.1/ It is recognized that the poor condition of some operations, their equipment and facilities make serious rehabilitation efforts uneconomic. Although these mills may continue producing for several years, because of the social contribution which they make in terms of employment, they will sooner or later cease operation. It is proposed that FANATEX, as the integrated mill in best overall condition, should be a priority for rehabilitation and that the rehabilitation programme at FANATEX should be used as a model and a training ground for rehabilitation of other mills.

In the longer term a substantial expansion of the textile industry is recommended. This corresponds to the current priorities of national economic strategy with its emphasis on production to meet the needs of national defence and to supply basic consumption goods to the mass of the population, as well as to save foreign exchange. On the basis of demand projections up to the year 2000, it is proposed to build three new weaving mills, a new knitting mill and a new spinning mill (in addition to the Esteli project) before the end of the century, as well as re-equipping and expanding some of the existing firms.

These proposals should be regarded as the minimal expansion required in the textile industry in order to meet the general policy goals stated above. To the extent that further financial resources, and particularly foreign exchange, are available, more ambitious plans could be considered. However, there should be a degree of caution in considering a more rapid expansion of the industry because of the limited local technical capacity to implement projects, and the need to build up this capacity gradually over time.

As was emphasized in the last section, it is not sufficient merely to build up the physical capacity for increased textile production in Nicaragua. For this strategy to be successful, it is necessary for a number of other policies to be adopted as well in relation to training, foreign trade, labour and industrial planning. However, if these are implemented, there is every reason to expect that Nicaragua could have a thriving textile sector by the end of the century, covering a large part of domestic requirements, and also exporting certain selected products.

1/ See Appendix I.

BIBLIOGRAPHY

- C. Brundenius, Estrategia del Desarrollo Industrial en Nicaragua, 1979-84, Managua, INIES/CRIES, Cuadernos de Pensamiento Propio, 1985.
- CEPAL, Estudio Economico de America Latina y el Caribe, 1985, Nicaragua, LC/L390/Add.12.
- CEPAL, Industrialización en Centroamerica 1960-1980, Estudios e Informes de la CEPAL, 30, Santiago, 1983.
- T. Evans, La Generación y Apropiación del Excedente Economico en el Subsistema de Algodon, Managua, CRIES, 1986.
- FAO, World Apparel Fibre Consumption Survey, 1985.
- GATT, Textiles and Clothing in the World Economy, Geneva, 1984.
- INEC, Anuario Estadistico de Nicaragua, 1983 and 1985.
- MIND, División General de Planificación, Cifras Directivas para Elaboración del Programa Industrial, 1987.
- MIND, Determinación del Consumo de Hilaza de Algodon, April 1986.
- MIND, Dirección General Rama Textil-Vestuario, Estrategia 2000, Managua 1983.
- MIND, La Industria Textil: Sus Caracteristicas y Perspectivas, October 1982.
- MIND, División General de Planificación, Programa de Racionalización, 1987.
- MIND, Protocolo Nicaraguense-Sovietico, July 1986.
- PROISA, Ropero, Managua 1986.
- SPP, Nicaragua, Plan Economico Nacional, 1987.
- R. Stahler-Sholk, Empleo, Salarios y Productividad en la Revolución Popular Sandinista, mimeo, CRIES, 1986.
- R. Stahler-Sholk, Pago en Especie, mimeo, CRIES, 1985.
- UN, Yearbook of International Trade Statistics.
- UNIDO, Handbook of Industrial Statistics, 1986.
- UNIDO, Textile and Clothing Industries in CMEA Countries: Plans and Trends of Restructuring, forthcoming publication.
- UNIDO, Recent Developments and Structural Changes in the Textile and Clothing Industry of the USSR, 1987.
- UNIDO, Restructuring of the Mexican Textile Industry: Requirements and Policy Options, UNIDO/IS.595, 1986.