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Towards an Industrial Action Plan

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STATUS OF INDUSTRY IN THE LEAST DEVELOPED COUNTRIES (LDCs)*

Prepared by

the UNIDO Secretariat

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PREFACE

Pursuant to the Paris Declaration and a Programme of Action adopted in the Second United Nations Conference on the Least Developed Countries (LDCs) held in Paris from 3 to 14 September 1990 UNIDO, with financial support from the Government of Italy, decided to organize a Workshop on industrial development in the LDCs. The aim of the Workshop is to review the status of industry and to analyze some key issues of industrial development in the LDCs. The proceedings of the Workshop will form the basis of an industrial action plan for the LDCs to be submitted to the Fourth Session of the General Conference of UNIDO in November 1991.

Key issues facing the process of fostering industry in LDCs have been identified for discussions during the Workshop. This paper examines the present status and development potential of industry in the LDCs. It looks at the status of industrialization as a system and an important component of socio-economic progress. Within this context, it also reviews the actual constraints on industrial growth in the LDCs. It also considers ways in which national and international linkages can be strengthened and improved for economic progress in LDCs. Analysis of the present status and problems of industry is followed by a summary of the main conclusions.

This paper has been prepared by the Regional and Country Studies Branch of UNIDO.

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1. PROGRESS AND PROBLEMS IN THE INDUSTRIALISATION OF LDCs

1.1. LDCs' status in global socio-economic development

According to a recent United Nations study, the disparities in economic and social development between developed countries and the LDCs are expected to widen markedly in the 1990s (see tables 1 and 2)[1]. Economic growth in the LDCs has been relatively poor in relation to their rate of population growth. Thus, not only has the gap with developed countries widened, but as a result, their average gross domestic product (GDP) per capita in 1990 was some 5 per cent lower than in 1970.

Table 1: Population and growth of GDP per capita, by economic region, 1960–1990*

Country group	Population (1988) Millions	Share in %	Average annual rate of growth of GDP per capita 1960–70	1970–80	1980–90	Per capita GDP 1960	1970	1980	1990
World	4,371***	100.0	3.2	1.9	1.3	1,601	2,191	2,647	3,000
Developed market economies	768	17.6	3.9	2.4	2.1	5,501	8,042	10,185	12,490
Eastern Europe and the USSR**	378	8.6	6.2	4.2	2.3	1,154	2,101	3,192	4,010
China	996	22.8	2.0	4.1	7.5	169	198	290	600
Developed countries	2,230	51.0	3.3	2.4	0.1	556	763	971	980
By regions:									
North Africa	88	2.0	8.2	1.2	-0.3	590	1,284	1,438	1,400
Sub-Saharan Africa	364	8.3	1.8	-0.4	-2.6	514	606	580	440
Western Asia	88	2.0	4.1	1.0	-4.3	2,478	3,700	4,180	2,730
South and East Asia	1,262	28.9	2.6	4.1	3.7	228	293	435	620
Latin America and the Caribbean	361	8.3	2.7	2.4	-1.1	1,409	1,831	2,320	2,090
Mediterranean	68	1.6	3.7	3.7	1.1	924	1,322	1,936	2,160
Least developed countries	312	7.1	1.1	-0.2	-0.3	227	254	249	240

Source: United Nations, "Global Outlook 2000 - An Economic, Social, and Environmental Perspective", New York 1990, p. 10

* At 1980 US dollars and exchange rates.
** Based on net material product (NMP)
*** Excludes a number of countries and territories, with a combined population of 79 million in 1980, for which income data are not available.

Table 2: GDP per capita levels and growth rates*

Country group	Growth rates GDP 1985–90	GDP 1990–2000	GDP per capita 1985–90	GDP per capita 1990–2000	GDP per capita 1985	GDP per capita 2000
World	3.3	3.5	1.6	1.8	2,770	3,580
Developed market economies	3.0	3.1	2.5	2.6	11,100	16,130
North America	2.9	3.0	2.0	2.3	12,750	17,780
West Europe	2.9	2.8	2.6	2.6	10,840	15,910
Other developed	4.2	3.9	2.8	3.0	9,150	14,200
Eastern Europe and the USSR**	2.7	3.6	1.9	3.0	3,650	5,370
China	8.0	5.6	6.6	4.2	430	900
Developing countries	3.4	4.3	1.0	2.0	920	1,200
Least developed countries	3.5	3.1	0.7	0.2	240	270

Source: United Nations, "Global Outlook 2000 - An Economic, Social, and Environmental Perspective", New York 1990, p. 11

* At 1980 US dollars
** Based on NMP

[1] The figures given in these tables were based upon official data up to 1988. For the period 1988-1990, preliminary estimates and project LINK and UN Secretariat assessments were used. World economic growth beginning in 1991 was projected using the Global Econometric Model (GEM) of the UN Secretariat on the assumption that long-term trends in macroeconomic indicators would be sustainable. This assumption was translated country by country into expected magnitudes for investment and investment efficiency. GDP growth was derived as the share of investment in GDP divided by the incremental capital output ratio (ICOR).

The speed and character of structural change varies worldwide, but certain trends can be noticed (see tables 3 and 4). There is a shift out of agriculture and a strong shift towards the service sector. The major forces behind structural change are: the development of new technologies and their rate of diffusion among industries and countries and changes in the organization of industrial activities (such as redeployment of industries due to comparative cost advantages). The creation of domestic capacities for the absorption and adaptation of new technologies for industry and agricultural activities is thus an important although costly policy for LDCs to pursue.

Table 3: Sectoral composition of GDP (in current prices and exchange rates), (in percentages)

Country group	Agriculture		Mining and quarrying		Manufacturing		Utilities		Construction		Services	
	1960	1987	1960	1987	1960	1987	1960	1987	1960	1987	1960	1987
Developed and market economies	6.4	2.7	2.7	2.0	30.4	23.1	2.6	3.0	5.7	5.8	52.2	63.3
Major industrialized economies a/	5.6	2.4	2.6	1.8	30.9	23.3	2.6	3.1	5.5	5.7	52.6	63.7
Other developed economies	12.5	4.7	2.8	3.3	26.3	21.05	2.3	3.0	7.3	6.6	48.9	60.6
Eastern Europe and the USSR b/	21.0	18.0			52.9 c/	50.5			9.7	9.4	16.4	22.1
China	38.2	33.8			42.4 d/	45.7 d/					19.4 e/	20.4 e/
Developing countries	31.5	16.0	3.9	5.7	16.8	21.0	1.0	2.4	4.9	5.8	42.0	49.1
Least developed countries	57.4	42.7	0.8	2.4	5.7	8.5	0.7	1.1	3.0	4.4	32.4	41.0

Source: United Nations, "Global Outlook 2000 - An Economic, Social, and Environmental Perspective", New York 1990, p. 34.

a/ North America, Europe and Japan.
b/ Composition of net material produced, data listed under 1987 relate to 1985.
c/ Data listed under 1960 relate to 1970.
d/ Includes mining, quarrying and utilities.
e/ Includes construction.

Table 4: Distribution of economic activity in the world market economy by major economic grouping, 1960-1987 (in %)

Economic grouping	Agriculture		Mining and quarrying		Manufacturing		Utilities		Construction		Services		GDP	
	1960	1987	1960	1987	1960	1987	1960	1987	1960	1987	1960	1987	1960	1987
World market economies	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Developed market economies	50.2	47.3	77.3	64.9	90.0	85.4	93.0	87.2	85.1	84.1	86.0	87.2	83.2	84.1
Major industrialized economies	39.3	36.6	68.3	51.1	81.3	75.2	84.1	76.3	73.1	71.9	77.1	76.5	74.0	73.3
Other developed economies	10.9	10.7	9.0	13.8	8.6	10.2	8.9	10.9	12.0	12.2	8.9	10.7	9.2	10.8
Developing countries	49.8	52.7	22.7	35.1	10.0	14.6	7.0	12.8	14.9	15.9	14.0	12.8	16.8	15.9
Least developed countries	5.5	4.2	0.3	0.4	0.2	0.2	0.3	0.2	0.5	0.4	0.7	0.3	1.0	0.5

Source: United Nations, "Global Outlook 2000 - An Economic, Social, and Environmental Perspective", New York 1990, p. 35

* Share of country groups in gross sectoral product of world market economies measured at current prices and exchange rates

For the developed countries, the structural changes represent a process of gradual adjustment and adaptation to technical advancement and higher incomes. However, in LDCs the process of industrialization has often been of an enclave type, i.e. large-scale industries were established which had no clear connexion with the rest of the economy. Other economic activities remained geared to traditional production and marketing patterns. The LDCs thus remained heavily dependent on the exports of primary goods which have a very low demand elasticity. Productivity growth in the services and agricultural sector has remained low, and in the foreseeable future productivity in most of these activities is unlikely to increase significantly. In general, there is neither the necessary diversity nor flexibility for a painless process of structural change. Structural change could be more easily accommodated if development strategies for the agricultural and manufacturing sectors were better attuned to each other.[2]

An important precondition for economic growth and structural change is capital formation. Faster economic growth is achievable through increase in investment and improvement in efficiency of capital use. Although the rate of capital formation in LDCs rose from less than 10 per cent of GDP in 1960 to about 17 per cent in 1980 before falling back to about 15 percent in 1987, investments remain significantly below the level in the developed and other developing countries. Taking into consideration the income per capita gap (see table 5 and figure 1), investment in LDCs has been low. Factors accounting for this trend, include financing difficulties resulting from the debt burden and commodity price fluctuations, all of which adversely affected investment allocation and reduced capital efficiency in a number of sectors in the LDCs.

Table 5: Indicators of investment and saving performance in the world economy, 1960-1987*

	Growth of GDP per capita**			Share of gross capital formation in GDP				Share of national saving in GDP				Share of external resources in GDP			
Economic group	1960-70	1970-80	1980-87	1960	1970	1980	1987	1960	1970	1980	1987	1960	1970	1980	1987
World market economies	3.0	1.5	0.4	21.0	22.8	23.6	21.5	21.1	22.9	23.5	21.4	0.0	-0.1	0.1	0.2
Developed market economies	3.9	2.4	1.9	21.5	23.1	23.1	21.3	22.2	23.6	22.8	21.4	-0.7	-0.7	0.3	-0.1
Major industrial economies	3.8	2.5	2.1	20.9	22.4	22.8	21.2	22.0	23.4	23.1	21.5	-1.0	-1.1	-0.2	-0.3
Other developed economies	4.2	1.9	1.1	24.7	27.4	24.4	21.7	23.8	25.0	21.6	20.8	-1.0	-2.3	-2.7	-0.8
Developing market economies	3.3	2.4	-0.5	19.1	21.2	25.6	22.8	15.8	18.5	26.1	21.0	3.3	2.8	-0.5	1.8
Least developed countries	1.1	-0.2	0.3	9.6	12.2	16.5	14.5	5.1	7.5	4.7	4.5	4.5	4.8	11.7	10.0

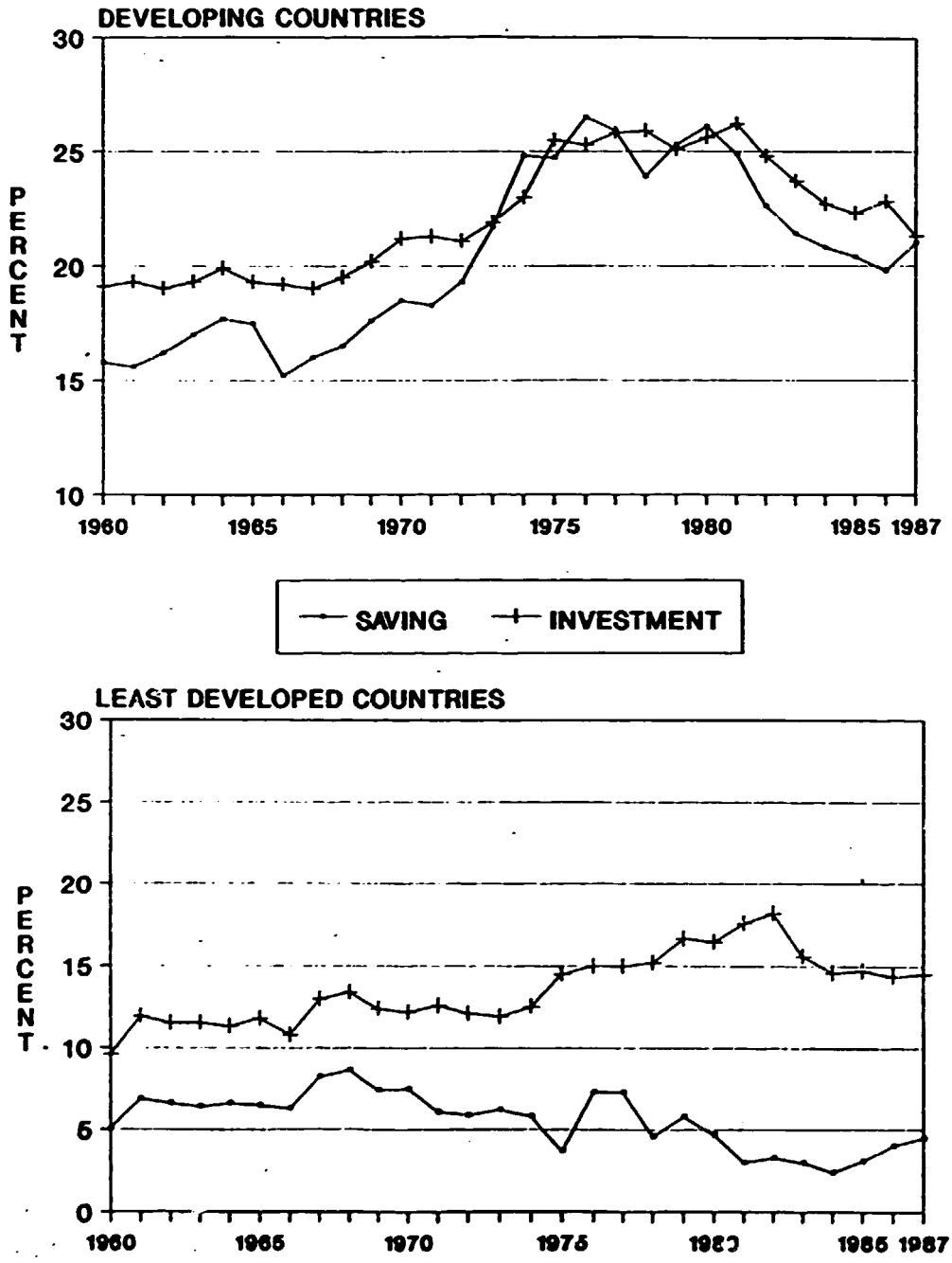
Source: United Nations, "Global Outlook 2000 - An Economic, Social, and Environmental Perspective", New York 1990, p. 36

* Percentage share of capital formation, gross national saving and external resources in GDP measured at current prices and exchange rates

** Measured at 1980 prices and exchange rates

[2] The changes in manufacturing share are not so marked and can be largely attributed to changes in relative prices

Figure 1: SHARES OF SAVING AND INVESTMENT 1960-1987



Source: United Nations, "Global Outlook 2000 - An Economic, Social, and Environmental Perspective, New York 1990, p. 24.

The most dynamic component of world trade during the period 1960 to 1989 was trade among the developed economies of North America, Western Europe and Japan/Asia. The almost insignificant share of LDCs in world trade (see table 6) shows how they lie at the periphery of the world economic system and is another indicator for their low level of development.

Table 6: Growth of exports and imports in the world economy, 1961 - 1987 a/
(at 1980 prices and exchange rate)

Country Group	Period	Exports	Imports	GDP b/	Gross national income
World	1961-70	8.1	8.2	5.2	5.3
	1971-80	5.3	5.7	3.8	3.8
	1981-87	3.9	4.3	2.6	2.7
Developed market	1961-70	8.1	8.9	4.9	5.1
economies	1971-80	6.0	4.6	3.2	2.9
	1981-87	3.7	4.5	2.5	2.8
Developing	1961-70	8.0	6.0	5.9	5.3
countries	1971-80	3.2	9.2	5.0	6.7
	1981-87	2.4	1.6	1.7	1.4
LDCs c/	1961-70	4.1	4.4	3.6	3.5
	1971-80	2.6	4.9	2.3	2.2
	1981-87	5.6	7.7	1.8	2.7

Source: United Nations, "Global Outlook 2000 - An Economic, Social, and Environmental Perspective", New York 1990, p. 37.

a/ Average annual rates of growth of exports and imports of goods and non-factor services measured at 1980 prices and exchange rates.
b/ For Eastern Europe and the USSR, NMP.
c/ Despite the relatively strong physical increase of exports originating in LDCs, value of exports increased by only 1.0 per cent p.a. in the 1980s compared with 7.0 per cent for all developing countries. This indicates that LDCs have suffered from a heavy fall in the prices of their exports. (See UNCTAD, The Least Developed Countries, 1989 Report, New York 1990, A. 14.)

1.2. The status of the manufacturing sector in LDCs

1.2.1. Levels of manufacturing in LDCs

The size of the manufacturing sector has explicitly entered into the definition of what is an LDC, where the fact of a small manufacturing sector (i.e. less than 10 per cent of GDP) is recognized as being one of the characteristics of an imperfectly developed economy, one where special efforts are needed at the national and international level for its survival and growth.

Overall the manufacturing base in LDCs is very small, also compared to developing countries in general. The LDCs, with a share in total developing countries' population of 14.2 per cent, were only able to produce 1.4 per cent of total developing countries' manufacturing value added (MVA) in 1988, this share having declined from a level of 2.5 per cent in 1970, while at the same time the share of LDCs in developing countries' population increased from 13.7 to 14.2 per cent (see table 7).

Table 7: Share of LDCs in MVA and population of developing countries in selected years in per cent

Year	MVA at constant 1980 prices	Population
1970	2.5	13.7
1975	2.1	13.7
1980	1.6	13.9
1985	1.5	14.1
1987	1.4	14.1
1988/estimate	1.4	14.2

Source: UNIDO, Handbook of Industrial Statistics 1990, Vienna 1990, Table 1.3., p. 29.

Even lower than the share in MVA of developing countries has been the export performance of manufactured goods originating from LDCs. The share of LDCs in total developing countries' exports of manufactured goods amounted to just 0.9 per cent in 1988, compared to 1.6 per cent in 1970 (see table 8).

Table 8: Percentage share of LDCs in manufactured exports of developing countries in selected years, at current prices

Year	1970	1975	1980	1985	1987
LDC	1.6	1.4	1.4	1.1	0.9

Source: UNIDO, Handbook of Industrial Statistics 1990, Vienna 1990, p. 29.

The share of the manufacturing sector in terms of GDP (in constant $US) has also stagnated in the LDCs in the past 20 years at around 7.7 per cent while globally it increased from 24.8 per cent in 1970 to 27.4 per cent in 1988 (see table 9). As can be seen from table 9, it was especially the African LDCs which saw a decline in the importance of manufacturing.

Table 9: Share of MVA in GDP in constant $US by selected country group, selected years, in percent

Group of Country	1970	1975	1980	1985	1987	1988
LDCs	7.8	8.1	7.7	7.7	7.7	7.7
African LDCs	8.7	8.0	7.2	6.9	6.9	6.9
Developing Countries	15.4	16.6	17.9	19.0	20.1	20.2
Centrally planned economies	39.8	44.0	47.2	49.1	49.7	49.6
Developed market economies	25.1	24.3	24.7	25.2	25.0	25.3
World	24.8	25.0	25.9	26.8	27.0	27.4

Source: UNIDO, Handbook of Industrial Statistics 1990, Vienna 1990, Table 1.5., p. 33.

If the share of the manufacturing sector in GDP is measured in current prices instead of constant prices, the value for LDCs as a group (and even for African LDCs) shows an increase (There has also been a significant decline of the MVA share of GDP in developed countries).

One possible explanation of these conflicting figures may be found in the fact that LDCs were not in a position to reap the same benefits from modern production technologies as developed countries. Developed market economies were not only able in absolute, but also in relative terms to increase the output of their manufacturing base (i.e. compared to other sectors of the economy), by means of increased economies of scale, use of more efficient production technologies etc. (as shown by the increasing share of MVA in constant $US) without allocating more of their total income to pay for that increased production (i.e. they were able to spend more on non-manufacturing items as shown by the decreasing share of MVA in current $US). To put it another way, according to these statistics the inflation affecting the industrial output of developed market economies must have been significantly less than price increases of other sectors of the economy (such as services).

The opposite has obviously been the case in LDCs. The manufacturing sector was, in terms of physical output, not able to expand more than the overall economy. At the same time a number of factors such as the protection of the domestic economies (quantitative import restrictions, import tariffs, etc.), political upheavals, price controls, as well as a variety of external factors have led to inefficiencies in the production process, increasing the relative prices of manufactured goods more than those of other sectors of the economy (such as agriculture). Devaluation patterns may also have played a part.

In any case the increase in MVA share in current prices is a modest one. Seen in the context of a very low growth in GDP, it is clear that the manufacturing sector in LDCs is far from being large or resilient enough to act as a driving force in development.

Table 10: Share of MVA in GDP in <u>current</u> $US by selected country group, selected years, in percent

Group of Country	1970	1975	1980	1985	1987	1988
LDCs	7.6	8.0	7.7	8.2	8.3	...
African LDCs	8.2	8.4	7.2	8.2	8.6	...
Developing Countries	...	7.7	17.9	18.4	19.9	20.0
Centrally planned economies	...	...	47.2	...	...	...
Developed market economies	28.2	25.8	24.7	22.8	23.0	22.9
World	...	...	25.9	...	...	...

Source: UNIDO, <u>Handbook of Industrial Statistics 1990</u>, Vienna 1990, Table 1.5., p. 33.

The indicator of manufacturing value added (MVA) per capita is another approximation to the degree of industrialization attained. For LDCs as a group, the average value of this indicator was around $US 20 in 1988. This contrasts with a value of more than $US 170 for all developing countries and more than $US 3060 for developed market economies (figures for 1988).[3]

While the average figure for MVA per capita of LDCs is already low, no fewer than 27 LDCs have a value below it. Only a very limited number of countries showed better results than the LDC average. Eight countries had a value between the LDC average and $US 40, and a final group of seven countries had values ranging from $US 40 to more than $US 100. Among this group of LDCs with the highest MVA/capita ratios (in current US$) were[4]: Western Samoa (109), Djibouti (83), Yemen (75)[5], Botswana (74), Haiti (55), Rwanda (50) and Vanuatu (43).

The growth rate of MVA provides another indicator of industrial progress. During the 1980s (1980-1988) the highest annual MVA growth rates of LDCs (at constant 1980 $US) were achieved by Vanuatu (25 per cent), Bhutan (15.0 per cent), Lesotho (12.5 per cent), Maldives (12.3 per cent), Yemen (10.8 per cent), Botswana (7.6 per cent), Cape Verde (7.1 per cent), Mauritania (6.6 per cent) and Mali (6.0 per cent).[6] These growth performances were the positive exception from the overall dismal performance of the LDCs in the last decade(s). The MVA growth rate of many LDCs did not surpass their population growth rates and some LDCs even experienced negative growth rates of their MVA such as Guinea, Guinea Bissau, Haiti, Liberia, Mozambique, Sao Tomé and Principe, Sierra Leone, Somalia and the United Republic of Tanzania. The growth rates are summarized in Table 11.

Table 11: Average annual MVA growth rates 1980–1990 (in constant 1980 US–$)[1]

MVA growth rate less than -5%	MVA growth rate -5% to 0%	MVA growth rate 0% to 3%	MVA growth rate 3% to 5%	MVA growth rate 5% to 10%	MVA growth rate more than 10%
No. of LDCs 3	No. of LDCs 6	No. of LDCs: 13	No. of LDCs 9	No. of LDCs 4	No. of LDCs 5
Djibouti	Guinea Bissau	Sudan	Burkina Faso	Mali	Yemen
Sierra Leone	Haiti	Chad	Equatorial Guinea	Cape Verde	Lesotho
Mozambique	Guinea	Myanmar	Laos[2]	Botswana	Maldives
	Tanzania	Togo	Nepal	Mauritania	Bhutan
	Liberia	Afghanistan[2]	Malawi		Vanuatu
	Sao Tome and Princip	Western Samoa	Benin		
		Somalia	Comoros		
		Niger	Ethiopia		
		Uganda	Rwanda		
		Gambia			
		Burundi			
		Bangladesh			
		Central Africa			

Source: UNIDO Global Econometric Database, Vienna 1991.

[1] Latest official data 1988, 1990 figures are based upon estimates/forecasts

[2] Latest official data 1981.

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[3] UNIDO, Handbook of Industrial Statistics 1990, Vienna 1990, Table 1.4., p. 30.

[4] Estimates according to UNIDO, REG Database, 1991.

[5] Combined figures for the Arab Republic of Yemen (MVA/capita US $ 91.6 and the Democratic Republic of Yemen (MVA/capita US $ 22.2) which were only united in 1990.

[6] UNIDO, Handbook of Industrial Statistics 1990, Table 2.1 Annual growth of MVA at constant 1980 prices, 1970-1988, p. 73 ff.

Although the actual figures vary depending on the actual statistical sources used, the overall picture seems to be very clear. It was the group of African LDCs which showed the worst performance. Whereas the LDCs as a group increased their MVA (at constant 1980 prices) on average by 2.4 per cent p.a. during 1980-88[7], the African LDCs did not reach even 60% of that growth rate, i.e. only 1.4 per cent p.a. Due to the high population growth rates in LDCs such increases signified an actual decline of MVA/capita, the average being 0.3 per cent p.a.; in African LDCs it even declined by 1.4 per cent (See table 12).

Table 12: **Annual growth of MVA by selected country group, at constant 1980 prices, 1970 - 1988**

	1970-1988	1980-1988
LDCs		
total MVA	2.0%	2.4%
MVA/capita	-0.6%	-0.3%
African LDCs		
total MVA	-1.2%	1.4%
MVA/capita	-3.8%	-1.4%
World		
total MVA	4.2%	3.6%
MVA/capita	2.3%	1.7%

Source: UNIDO, Handbook of Industrial Statistics 1990, Vienna 1990, Table 1.4., p. 32.

In other words, the economic progress achieved in terms of strengthening the industrial base of LDCs was on the whole very limited in the 1980s. It was only in the late 1980s that a recovery could be observed.[8] According to the UNIDO/REG Database the aggregated MVA of LDCs (in current $US), after a decline from 1980 to 1985, grew from 1985-1988 by 5.4 per cent p.a., which must already be considered as positive.[9] However, after the dramatic decline of the early 1980s even that recovery has been still far below the target rate of 9 per cent set out at the First Paris Conference on the Least Developed Countries in 1981.

Growth in MVA is not only an indicator of overall performance: it can also show to some extent the **resilience and flexibility of the manufacturing sector**, i.e. it can give some indications as to the ability of industry to

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[7] According to the Paris Declaration and Programme of Action of the Second United Nations Conference on the Least Developed Countries, A/CON/147/Misc.9, para.2, of 15 Sept. 1990, the MVA growth rate of LDCs was even only 2.2 per cent in the 1980s.

[8] See also UNCTAD, The Least Developed Countries 1989 Report, New York 1990, p. 22.

[9] According to UNCTAD, the average growth rate of MVA at constant prices was steadily growing from a low of 1.2 per cent in 1981-82 to 1.7 per cent in 1984-85, to 2.6 per cent in 1985-1986 and 3.5 per cent in 1986/87.
See UNCTAD, The Least Developed Countries 1989 Report, New York 1990, A-10.

respond positively to unfavourable circumstances and the ability to perform consistently.

A measure of general **consistency of performance** is given by an indicator that counts the number of years in which a non-negative growth is achieved. Of the LDCs, 23 show a positive growth of MVA for the whole period 1980-1988. These are the following countries: Bangladesh, Benin, Bhutan, Botswana, Burkina Faso, Burundi, Cape Verde, CAFR, Chad, Comoros, Equatorial Guinea, Ethiopia, Gambia, Lesotho, Malawi, Maldives, Mali, Mauritania, Myanmar, Nepal, Rwanda, Sudan and Yemen.

This type of consistently positive performances suggests that the manufacturing sector in these countries is sufficiently well established, even if not large, for it to be able to withstand cyclical downturns in the economy as a whole or changes due to external shocks, such as balance of payments crises, negative developments in world trade, internal crises etc. A further country, namely Djibouti, has witnessed continuously (small) positive growth rates over the years 1985-1988 which not only suggests an ability to recover but also indicates that it may have established a basis for stronger growth in the future.

Analysis of the other LDCs suggests that there is another group, which did not manage to achieve positive MVA growth in any of the years in question. This group includes Haiti, Sao Tomé and Principe, as well as the United Republic of Tanzania. These are countries where there has thus been a decade of decline in industrial performance, so much so that MVA is now on average 15 per cent lower than it was in 1980. This represents a major de-industrialization, where the countries' already fragile industrial base has been subjected to consistently unfavourable developments, almost certainly including capacity under-utilization and lack of replacement investment, let alone expansion. This group therefore is one that must be the target of particular attention in terms of rehabilitation efforts. However, this group includes several countries which have also been subjected to particular additional difficulties in terms of climatic disasters, wars and political upheaval. For this reason the problems of industry can only be addressed as a part of a consistent pattern of recovery measures which can address the socio-economic environment in which industrialization is to take place.

1.2.2. Sectoral composition of Manufacturing Value Added (MVA) in LDCs

Analysis of the data for LDCs shows, indeed, a very distinct bias towards only a few sub-sectors of manufacturing. Typically those sectors close to the final consumer such as food processing and clothing and textiles are the ones which are responsible for most of MVA (about 70 per cent). In 11 of 26 countries, the branches food processing and textiles constitute 50 per cent or more of MVA. In the remaining 15 countries, food processing by itself accounts for more than 50 per cent of MVA. Only in a few cases are other sub-sectors of manufacturing significantly large.

This concentration on a few sectors is reflected in the share of different industrial LDC sectors in total developing countries' MVA. The share of LDCs in total developing countries' MVA was 1.5 per cent in 1985. The least developed countries enjoyed an above average share especially in the following industrial activities: tobacco, textiles, food products as well as wood and cork products and non ferrous metals. Industrial activities in the

field of iron and steel, petroleum refineries, glass and chemicals were below average (see table 13).

The most important sub-sector of manufacturing in LDCs, almost without exception, is **food processing** with an average share of over 50 per cent of MVA. This share can in fact be has high as 83 per cent (in the case of Burundi). Even the lowest value is still 22.5 per cent (case of Malawi).[10]

Table 13: Share of the LDCs in the value added of all developing countries in selected branches, at constant 1980 prices, selected years

Branch (ISIC code)	1975	1980	1985	1986
Food products (311/2)	3.4	2.8	3.0	2.9
Tobacco (314)	4.0	4.0	3.7	3.4
Textiles (321)	3.8	3.4	3.2	...
Wood and cork products (331)	3.7	2.6	2.6	2.5
Industrial chemicals (352)	1.6	1.0	1.2	1.1
Other chemicals (352)	2.1	1.3	1.2	1.1
Petroleum refineries (353)	0.9	0.7	0.7	0.7
Glass (362)	1.4	0.8	0.9	0.9
Other non-metal.min.prods. (369)	2.9	1.4	1.6	1.6
Iron and steel (371)	1.1	1.0	0.7	0.6
Non-ferrous metals (372)	2.8	2.2	2.3	1.6
LDC share in total developing countries' MVA	2.1	1.6	1.5	1.4

Source: UNIDO, Handbook of Industrial Statistics 1990, Vienna 1990, Table 1.8., p. 42.

Textiles is almost always the next most important sector in manufacturing in LDCs. Like food processing, it is a sector close to final demand, with, at this level of aggregation, few backward or forward linkages to other productive sectors. Textiles (which includes garments and the leather industries such as footwear) has an average value of almost 16 per cent of MVA for the LDCs. However, there are at least three countries (Bangladesh, Mali, and Uganda) where is it the largest branch of manufacturing. The highest value for textiles is found in Mali, where it is almost 52 per cent of all manufacturing. Although not the largest branch, textiles has a high share in the manufacturing sector of Nepal, where it reaches a value of over 30 per cent, and in several countries such as Burkina Faso, Central African Republic, and Togo, it has values of over 20 per cent. There are also some countries, such as Burundi, the Gambia, Mauritania, Rwanda, Sierra Leone and Yemen, where the share of textiles is extremely low, i.e. 4 per cent or less, which points to a potential for increased production, although it would be based, as in most LDCs, on the domestic market.

Chemicals is another sector that for a number of LDCs is of considerable importance. Chemicals is more than 10 per cent of MVA in Yemen, Tanzania,

[10] Data 1988, UNIDO database.

Niger, Malawi, Mozambique, Ethiopia and Somalia. It is also relatively important for Bangladesh. On average it amounts to almost 9 per cent of MVA in LDCs.

The next most important manufacturing activity is **machinery and equipment**. On average it approaches 8 per cent of MVA. There are a few countries where it is a very important sub-sector: in Cape Verde it is 28.7 per cent of MVA, and in Haiti it is 23.6 per cent. In several African countries (Malawi, Mali, Mauritania, Rwanda Tanzania and Guinea Bissau), it lies between 10 and 20 per cent of MVA. However, in almost all cases, this production refers to very simple tools and equipment, not to capital goods.

1.2.3. Diversification of the manufacturing base in LDCs

Another approach to assessing the degree of progress achieved is to look at the extent to which diversification has taken place within the manufacturing sector. As stated before, LDCs - as a group - are characterized by a concentration of their manufacturing activities in a few sub-sectors.

A dispersion of MVA across a wider range of activities indicates, to some extent at least, the extent to which a complex and flexible manufacturing sector has developed. If the structure, on the other hand, is dominated by one or two large sub-sectors, then the industrial structure may be described as highly skewed. One indicator is the standard deviation of the shares of MVA formed by the ISIC 2-digit classifications which indicates the degree to which the activity in manufacturing is distributed across more than one sector. Note that it is not suggested that the shares should ideally be uniform in size, only that a high standard deviation will occur when one or two sectors (which as we have seen are usually foods and textiles) dominate the structure of manufacturing in the countries concerned.

Using this criterion it can be seen that progress in LDCs towards a more diversified manufacturing base has not been great. The most skewed manufacturing sector is to be found in Burundi, with Lesotho, Mauritania, Yemen, Equatorial Guinea and Sierra Leone also having a dispersion index above 20 in value. Highly concentrated industrial structures are also to be found in Botswana and Sudan. At the other end of the scale are countries such as Bangladesh, Haiti, Malawi, Uganda and Tanzania. In the case of Bangladesh, the strong chemicals sector has helped to diversify the manufacturing sector, and in Haiti substantial shares of MVA are reached by machinery, equipment and others. In Malawi it is the strong chemicals sector and Tanzania's dispersed industrial structure is attributable to the quite large shares of MVA held by chemicals and also by machinery and equipment. These countries had industrial structures almost as diverse as more advanced African countries such as Algeria, Egypt, Kenya or Zimbabwe. However, it has to be noted that the statistical figures do not indicate a strong positive correlation between the state of diversification and economic progress achieved. Strongly diversified LDCs such as Tanzania or Haiti have suffered dramatic declines in their MVA/capita whereas countries such as Lesotho, Yemen, Mauritania or Botswana with an overall low degree of diversification have been in the group of those LDCs that have shown the best results in the 1980s. This is not to say that a diversification strategy should not be followed, but it indicates that diversification per se (especially one which is not characterized by strong linkage effects) is certainly not a sufficient condition for economic progress.

In addition, it must also be noted that manufacturing production in LDCs is usually the product of a small number of enterprises, and the closure of a factory or the opening of a new one can affect the statistical picture dramatically. The case of the Central African Republic illustrates this point and also shows the vulnerability of industrial progress in an LDC. In 1980 the textile and clothing industry's share of total manufacturing output dropped from over one third to less than 12 per cent after financial difficulties had forced one factory to close. Value added from the textile and clothing industry seems to have completely disappeared, as do later achievements in machinery and chemical processing. The conclusion that may be drawn is that:

> "....structural fragilities rather than rigidities seem to have been the greatest of the problems encountered by the country in its relatively short history of industrialization".[11]

A discussion concentrated on statistical data in value added terms can on its own give only an imperfect picture of industry in LDCs. It does however indicate, in terms of general attainments and sub-sectoral focus, the aggregate condition of industry in LDCs. This is important because any discussion of prospects for industrialization in LDCs has to recognize the base point from which progress can take place. A small and undiversified manufacturing sector offers limited prospects for expanding linkages and generates few services of the kind needed by a newcomer. The figures indicate the rudimentary stage of industry in most LDCs. To the extent that new industries will need industrial inputs, they will be often dependent, at least initially, on external sources, and thus on access to foreign exchange resources.

Yet the establishment of new industries in LDCs must not be neglected, simply because so few industries exist at present. This is not to deny the utmost importance of rehabilitating existing industries when it is at all possible, in order that the capital and expertise so painfully acquired be not lost for good. Nor is it to imply that new industries must be large scale investment projects of the kind that have in the past been the usual focus of discussion at the international level. The kinds of new industries that are to be established will be largely decided, in the end, by entrepreneurs in the countries themselves (and in some cases by international investors also). Discussion of industrial strategies for LDCs, whether at the national or international level, has to give due attention to this fact, and to the need to provide the right kinds of guidance, incentives, assistance and support to those who will make the investment.

1.3 The status of the industrial system in LDCs

The following is a brief description of the approach to be used in this paper in assessing the problems and prospects of industrialization in LDCs. The distinction is made between raw material current inputs (from agriculture and mining), and industrial current inputs (from within the manufacturing sector). Other inputs include capital goods, and labour (distinguishing between skilled and unskilled). Sub-division of these categories into those of imported and domestic origin is also necessary. Issues in the supply of material inputs from the domestic market may be considered under three

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[11] UNIDO. Industry and Development. Global Report 1989/90. October 1989. Sales No.E.89.II.E.5

headings namely, inputs from agriculture, mining, and the manufacturing sector itself.

1.3.1 Inputs from agriculture and mining

In LDCs the agriculture sector is largely of a subsistence nature. Commercial agriculture is mostly of plantation cultures, for example cotton in Mali and Sudan, coffee in Burundi, Ethiopia and Uganda, jute in Bangladesh, and cocoa in Benin and Sao Tomé and Principe. The possibilities for processing of agricultural products in the manufacturing sector may be limited due to seasonal shortages or bottlenecks in transportation, distribution and storage systems. However the manufacturing sector has an important role to play in guaranteeing food supplies and in food security programmes, in that it can improve the conservation and distribution possibilities of food even within a rural area. Much activity of this kind (principally in the form of such activities as milling, drying, etc.) may already be carried out within the informal sector, and poor population groups whether rural or urban, may not have sufficient income to purchase food from formal sector industries.

Industrial processing of agricultural raw materials is not only a case of increasing value added. In some cases it can include the industrial processing of materials which are otherwise regarded as waste. Thus in Bangladesh the establishment of a Sheep Wool Development Center motivated owners to shear the sheep and use the wool for productive purposes. This then encouraged others to set up small industries, such as the production of hand-knotted woolen carpets.[12]

One measure of the suitability of the existing agriculture sector for the supply of inputs to manufacturing is the degree to which an exportable surplus exists. There may then be prospects of increasing value added through industrial processing of agricultural raw materials. From this point of view, the most promising countries would be Equatorial Guinea, Gambia, Malawi, Maldives, Mauritania, Sao Tomé and Principe, Togo, Uganda, Vanuatu and Western Samoa. In 1986 all of these had exports of agricultural products of at least $US 30 per capita. The highest was Maldives with $US 156, followed by Mauritania with $US 120. None of these are large countries in population terms, but they have all maintained, relative to their size, a high level of agricultural exports for many years.[13]

The position with respect to the mining sector is analogous in some respects to that of the agriculture sector, in that the presence of a strong mining exports pattern may indicate the possibilities in principle of increased value added due to mineral processing. The differences are however important also. In the first place there is little informal mining, and thus little competition for capital and labour resources. In the second place the pattern of ownership is very different to that of agriculture. Often part of an internationally integrated system of processing and distribution, the degree to which public policy can successfully encourage domestic raw material

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[12] "Promotion of hand knotted woolen carpet industry, DP/BGD/84/014, Technical Report: Evaluation report on handknotted woolen carpet training project." UNIDO, April 1986

[13] However, it should also be noted that the classification systems normally used for commodity trade do not fully reflect those used for economic activities. Thus many agricultural and mining commodity exports have already undergone a degree of industrial processing.

processing may be limited. Thirdly, it is rare for the mineral resources, if they exist at all, to be diversified. Domestic processing of the mineral resources cannot guard against a shift in technology or world market trends that reduce demand for the product. Finally, the different steps in the mineral processing chain offer, in general, fewer possibilities for small scale dispersed production and are often associated with higher investment costs than is the case for manufacturing in general. Mining and mineral processing require highly specialized equipment and other inputs which generally, are not feasible to produce in any LDC or in the developing countries in general. For all these reasons the consideration of mining inputs to the manufacturing system has to be viewed as a special set of problems as well as the more general problems associated with the supply of any material inputs to the manufacturing system in LDCs.

Taking the same kind of indicator as was used for agriculture in the preceding section, and looking at the mining exports per capita, yields a different set of results. Botswana has a very high value due to the export of diamonds.[14] Of the remaining LDCs, only Mauritania has mining exports per capita of any size ($US 90 in 1986). It is followed by Mauritania ($US 72), and Togo ($US 36). Niger, due to its uranium exports is at a similar level. The remainder of the countries have either no exports of this kind or their per capita value is very low indeed. Although mining activities may be said to be at on a small scale in LDCs, there are cases in which there are known mineral resources not yet exploited. In such cases, the prospect of downstream processing should be considered at an early stage. For instance, requests for prospecting licenses made to the Ministry of Mines should at once generate consideration by the Ministry of Industry of processing possibilities.

1.3.2 Inputs from the manufacturing sector itself

It is one characteristic of a modern industrial economy that many of the possible links between its different components do in fact take place, and that the different production and service activities in the economy depend on one another as suppliers and as markets. Indeed, the role of a manufacturing sector can be seen as providing several types of essential links so that the complex as a whole can have the maximum resilience to deal with external shocks and the maximum flexibility to take account of new opportunities. In some cases small and medium scale activity is seen as the best embodiment of these virtue, and is put forward as an appropriate policy choice for developing countries and particularly for LDCs. The point to be made here however is that diversification is the means by which the necessary flexibility can be achieved, and this is the principal reason for doing it: it offers long-term stability in a way in which an ill-considered employment generation policy, perhaps relying on only a few sectors, can never do.

A diversified manufacturing sector means that a wide variety of intermediate and final products are produced, and this means that new products may be developed because of the availability of the materials and components necessary for making them. The diversified manufacturing sector thus contributes to the availability of materials, the essential pre-condition for further development of industry. As Section 1.1 discussed, most LDCs have a

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[14] Estimated at over $1000 per capita in 1988, according to the Economist Intelligence Unit Country Report on Botswana, No.4, December 1989

highly skewed industrial structure, with a heavy concentration on food processing and on the clothing and textile sectors. The policy implications of such skewed structures are direct if in some cases unpalatable: they are that the necessary industrial inputs will have to be imported. In a few cases this can be achieved using sources within the region concerned. For this reason there are important grounds for encouraging regional co-operation. However it is quite usual that the countries of a regional co-operation framework have very similar industrial structures: the likelihood of being able to meet the input requirements of industrial development from within the sub-region are small.

There will be many LDCs and many essential products for which no solution of this kind is to be found. In the short term, responses to this problem will have to take the form of appropriate financing mechanisms with support from the international community. In general there is a need to make these specific to the needs of industry, rather than only balance of payments support, which has a natural tendency to reinforce the existing structure of foreign exchange use in a country and thus, for instance, to perpetuate the import structure of the commercial sector. This means that importers and wholesalers might continue to have preference for foreign exchange allocations, and the industrialist anxious to start something new may have difficulty in obtaining the necessary foreign exchange.

In general industry needs to be cordoned off from acute shortages of foreign exchange. This can be done through sector specific programme lending, through mechanisms such as export revolving funds, detailed commodity import programmes (which are sometimes a feature of bilateral assistance programmes), special balance-of-payments support schemes, and other methods. The need for foreign exchange allocations for intermediate inputs to be reviewed in the light of the potential for domestic or sub-regional production has demanding analytical and administrative implications. At the same time it is better to make some attempt at it than to have the allocations made without any reference to longer-term possibilities for their reduction. Finally on this subject it should be noted that the administrative overheads of any foreign exchange allocation system are heavy, and the allocation made is unlikely to be optimal. An adjustment to a free system cannot be made quickly, but it has to be a longer-term goal.

1.3.3 Labour

The problems of labour relate both to supply and to skills. In the absence of adequate transport and other infrastructure, there will be special constraints on the location of industry both in order to assure a reasonable supply of labour as well as to meet the normal transport requirements of the industry. The supply of labour will also be limited by characteristics of the regulatory framework such as the rights of workers and the responsibilities of the employer, as well as the degree to which women find it easy to enter the work force.

The skills problem is the most pervasive and far-reaching in its consequences. The lack of skills at every level, from professional engineers, managers and supervisory staff to technicians and experienced factory workers means that the industrial system not only operates imperfectly but that it does not act as the implicit training ground that an efficient industrial system constitutes. Unfamiliarity with correct practices and procedures continues. The problem of human resource development is one of the

principal focuses for international action in support of LDCs industrialization. Primary and secondary education development will also have an essential role in establishing the pre-conditions for industrial training and balanced human capital development.

Human resource development covers a wide range of activities both planned and autonomous. While it is the most crucial component of an industrial development strategy it is the most difficult to implement because of the number of targets concerned, the industrial work forces, actual and potential. The number of persons at present engaged in manufacturing activity in the LDCs is about 1.6 million[15]: all of these need some kind of training or skill upgrading to meet the requirements of world markets and technological change. The potential labour force, to meet the requirements of the hoped-for industrial expansion in many LDCs, will also need training. To this extent the foundations being laid at present by the educational systems suggest that the numbers under consideration are inadequate. Third level education figures for LDCs indicate that in total there are only about 740000 in third level education, while the total population of LDCs is 400 million. Of these students, the percentage taking science and engineering subjects was less than 10 per cent in three cases, between 10 and 20 per cent in 15 cases, between 20 and 30 per cent in 5 cases, and only in two cases was the share over 30 per cent (Guinea, where it was 66.9 per cent and Mozambique where it was 36.1 per cent). Given the fact that the number of successful students actually choosing a career in industry will be much lower than these totals would suggest, the prospect for improved professional scientific and engineering skills in LDCs are not good, and dependence on expatriate labour and the lack of new, high quality investment is likely to persist. Professional skills are by no means the only ones needed, naturally, and the need for training and apprenticeship schemes emerges from almost every industry analyzed by UNIDO.

1.3.4 Markets and supplies

The need for imports creates many difficulties in the context of industrial development in an LDC. As well as the obvious need for foreign exchange, there are also a number of associated hidden costs, in terms of delays and uncertainties, which are often such as to raise the price of the product to an uneconomic level. These arise from the choice between maintenance of inventories and delays in receipt of orders, as well as the difficulties of obtaining information for the purpose of selecting the best source of the needed goods. The fundamental problem of under-utilization of capacity is often associated with a shortage of spare parts for the machinery used. In some cases the need to maintain inventories of spares in order to overcome supply difficulties adds further to the overhead costs of production.

These problems are common to most developing countries, but they are exacerbated in LDCs because of widespread weaknesses in the physical and commercial infrastructure. These weaknesses are such as to make difficult not only the assurance of regular supplies and services, whether form within or outside the country, but also to make equally difficult the process of marketing and distribution of the products. The problems can be summarized under the following headings:

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[15] This is a rough estimate using a variety of sources: it excludes all those in informal manufacturing or in establishments whose total employment is below the national limit for inclusion in industrial censuses. Usually such censuses include only establishments with 5, 10, 20 or more employees.

Transport: this includes all types of transport, domestic and international;
Communications and information flows: this includes both telephone facilities and also media for information exchange such as newspapers, radio and television
Financial services: this includes banking facilities as well as insurance, accounting, etc.

Imports problems are analogous in many respects to export problems, in that they amount to a separation or imperfect connection with the fast moving international industrial system.

Exports of manufactures face therefore all the associated problems of transport, finance and payments difficulties together with the additional problem of marketing. By this is meant the identification of opportunities, the investment necessary for the preparation and development of an appropriate product, the financing of export credits, the selection of agents, etc. In practice the choices available may be very limited. It will usually not be possible to set up independent marketing and distribution channels. The only option may be to sell directly to a wholesaler in another country. The nearest the manufacturer may come to a feeling for the export market concerned may be if an international sub-contracting arrangement is entered into. Such arrangements are most common in the textile, clothing and footwear sectors. They allow for some contact with trends in tastes and fashions in the developed countries, and may also lead to improvements in quality through transfer of expertise from the purchaser. Nevertheless, these arrangements do not encourage development of the skills necessary to succeed in export markets. The experience of Haiti, for instance, where sub-contracting initially enjoyed dynamic growth, has been that it reinforces the country's dependency on the outside world and its vulnerability to external fluctuations. In effect, sub-contracting failed to generated the expected multipliers in Haitian industry and economy,[16] partly because, the necessary human and physical infrastructure was lacking.

The role of design and engineering services has been central to the success of international industry. Competition takes place on the basis of price, design and quality, and the degree to which LDCs can master these challenges will determine the extent to which their industrial systems can develop as part of the international system. The quality aspect is one in which action is of central importance because without a sufficient level there is no hope of winning and holding a market share. The quality issue in a sense underlies all others in that it is concerned with a basic mastery of the technology and the associated skills.

1.3.5 Agro-related industries: the case of metal-working

Linkages with agriculture and mining are, for the manufacturing sector, not only a matter of processing the raw materials that they produce. These sectors can use a wide variety of manufactured goods: careful attention to these possibilities in the industrialization process can give assured markets for the manufacturing sector and provide the other sectors with inputs for

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[16] "Presentation du Secteur Industriel Haitien" Ministère du Commerce et de l'Industrie, Direction de l'Entrepreneur et du Développement Industriel. Atelier sur l'Industrialisation des PMAs, Vienne, Autriche, 16-24 Novembre 1989.

which they would otherwise depend on imports. UNIDO has recently given extensive consideration to the metal working industry as it relates to the manufacturing of agro-related products. This has been done as an implementation of the programme approach being adopted by UNIDO to the task of defining the technical co-operation requirements of agro-industrial systems, both within the framework of the Programme for the Industrial Development Decade for Africa (IDDA 1 and IDDA 2) and also with respect to the Special Programme for the Industrial Development of Asia and the Pacific with special emphasis on the Least Developed Countries.[17]

Information on metal working and engineering facilities in African LDCs suggests ample potential for these branch. Forges, the rudimentary facilities of this branch are found in 26 African LDCs. Stamping facilities are, however, found in only five. Nine LDCs posses limited machine shop facilities, and 19 had none at all. Foundries were present in only 15 of the African LDCs, and mostly out of operation. Associated with these sparse metalworking facilities was a pattern of limited manufacturing capabilities in terms of agricultural tools and machinery. Thus, manufacturing facilities for hand tools were found in only 20 of the African LDCs. Facilities for the manufacture of animal-drawn equipments were found in only 9 African LDCs, and for simple power-operated machinery in only three of the countries (Malawi, Mozambique, and Tanzania).

From the point of view of agro-related metalworking industries, Asian LDCs may be divided into four groups.[18] The first are those with an active agro-related metalworking sector. This include Bangladesh and Nepal. The second group is of countries have or have had such a sector which is now dormant or working below capacity, or whose status is not known. This group includes Afghanistan, Lao Peoples Democratic Republic, Myanmar, and Yemen. The third group of countries, namely Bhutan, Vanuatu and Western Samoa are those with little or no experience in this sector but which, nevertheless, have potential. The fourth group of countries are those with very limited potential in this field, they include, Kiribati, Maldives and Tuvalu.

1.3.6 The industrialist and the investment decision

The above analysis of the industrialization system has to be supplemented by consideration of what an entrepreneur would call the "business conditions". By this he or she might mean the business climate (determined by government policy and the size and activity of other businesses) or else the degree to which infrastructure and essential services are available. These "conditions" powerfully influence the degree to which the simple industrial system described actually comes into being or functions effectively.

The conditions come into play at several points. Most notably the investment decision will be affected by the prevailing climate with respect to government views about the desirability of private investment or foreign private investment. But the effect of government policy is not only with respect to its overt aims. It is the quality of public administration, the

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[17] Adopted by the General Conference of UNIDO in November 1989 under resolution GC.3/Res.18.

[18] "Preparatory Phase of the Special Programme for the Industrial Development of Asia and the Pacific: Agro-Related Metalworking Industry Sector. Report. Prepared by Peter C.Baker, Consultant and Frederikke Roejkjaer, Associate Expert. UNIDO, 11 April 1990.

likelihood of approvals being granted, the speed of decision making and the flexibility of individual administrators which are each a major factor in determining the success of any investment and thus the firm's willingness to undertake it.

Many of these aspects of government administration also have important effects on current as well as capital activity. For instance, the decision whether to hire or fire labour is often one attended by many government regulations, which may include the need to obtain a permit of some kind before a worker may be dismissed or before an expatriate worker may be hired. Price controls, especially if they are selective and targeted towards popular consumer goods, mean that a manufacturer may be unable to pass on price increases earlier in the production chain, or may do so only after exhaustive enquiries and delays.

Import licenses and associated foreign exchange allocations are a frequent feature of the governmental regulatory framework which bear particularly hard on the manufacturing sector, which may be dependent on a range of essential imports that constitute intermediate inputs to the production process.

Production itself is still often regulated by a system of licenses. This may be intended to protect existing industries or to achieve some strategic priorities in industrial development. However its effect is often to discourage any investment or to foster inefficiency at the expense of the consumer. It is all the more regrettable that such areas as health, safety and environmental protection, in which government action is most crucial, are the ones in which the administrative framework seems at its weakest.

The second set of "conditions" relate to fundamental questions of the size and functioning of infrastructure and the service industries. Reliable power supply (electricity), transport and communications facilities are needed if the industries are to be efficiently supplied with their needed inputs and if domestic and external markets are to be successfully exploited. However the question cannot be considered only as one of a further set of necessary inputs (from the trade and services sectors) to the industry sector. The degree to which such facilities are present will also influence the investment decision. Moreover it will also determine information flows within the economy and thus the degree to which production is efficiently engaged in and the degree to which markets are effectively exploited. Knowledge of where needed inputs are cheaply available, knowledge about the presence of skilled labour within the community, and knowledge about the potential demand and the competition from other suppliers is of enormous importance for correct business decisions, but such knowledge can flow freely only if there are good communications (in the widest sense of the term) both within the country and with respect to the world outside.

Some foreign investment decisions are taken as a result of the special position an LDC finds itself in with regard to trade privileges. Thus considerable investment of Asian origin has taken place in Bangladesh, especially in the textile industry in order to take advantage of its MFA quotas.[19] Again, Lesotho, because of its access to EEC, United States and South African Customs Union (SACU) markets, has seen foreign investment in its

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[19] "Survey of Bangladesh" Financial Times, 26 March 1990

industry, especially in textiles.[20] Botswana has also seen export-oriented investment from transnational corporations, intended to take advantage of Botswana's status in MFA terms, its access to the regional market, and its ability to export to the EEC under the terms of the Lomé agreements. It is also attractive to investment because of its emerging domestic market.

Foreign direct investment (FDI) is not usually directed towards LDCs. In fact the majority of foreign direct investment takes place among developed countries, and even with respect to developing countries, it is concentrated on a small number. As far as LDCs are concerned, their share is very small and shrinking. In 1980, these countries received almost 3 per cent of total FDI to developing countries, and in 1986, this share had fallen to 1.4 per cent. In fact Botswana accounted for more than half the total inflows to LDCs, the only other significant recipients being Chad and Rwanda.[21] In spite of this, FDI is still a strategy target of an increasing number of LDCs as overall investment from other sources is decreasing as well.[22] Policy instruments for its achievement include incentives such as tax remissions, free repatriation of profits and capital, provision of facilities, etc. Bangladesh, Gambia, Liberia, Sudan and Togo are among those countries which are creating export processing or free trade zones. However in some quarters there is still a trend away from industrial investment in Africa, at least: it is reported that nearly one-third of British companies[23] and about a quarter of French companies[24] with industrial investments in Africa disposed of their holdings during the last decade, and they are unlikely to return for the time being because of the overall unfavourable economical and political environment in those countries, in spite of more open attitudes to foreign investment in African countries and in spite of the new emphasis on the importance of the private sector both at the governmental and inter-governmental level.

One notable development in recent years in foreign investment mechanisms has been the growth of country funds and investment trusts specializing in developing countries. This has been at least partly due to the search on the part of investors for emerging markets in which the prospects for capital gains are thought to be greater than in the developed countries. These funds have largely specialized in the emerging industrial economies of Asia, such as Thailand, Malaysia, Singapore, Taiwan Province of China, etc. However a recent Commonwealth Fund includes two LDCs (Bangladesh and Botswana) in its

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[20] "Lesotho benefits from distorted trade environment" Financial Times, 4 October 1989

[21] "Foreign Direct Investment Flows to Developing Countries: Recent Trends, Major Determinants and Policy Implications". Background Study for the Special Advisory Group to the Director-General of UNIDO, Regional and Country Studies Branch, UNIDO, March 1990

[22] In the LDCs the share of investment (gross fixed capital formation plus increase in stocks) in GDP decreased from a level of 19 per cent in 1980-1983 to a level of 15 per cent in the period 1984-1987, according to UNCTAD.
UNCTAD, The Least Developed Countries 1989 Report, New York 1990, p. A-11.

[23] "UK companies sell African investments" Financial Times 28 June 1990.

[24] "Meeting Point- Jacques Pelletier, France's Minister for Co-operation", The Courier, No.117, September-October 1989, p.2

target countries.[25] and a new Himalayan fund is targeted to investment in Nepal and Bangladesh as well as India and Sri Lanka.[26] Country funds can be seen as one possible mechanism by which the foreign exchange earned by expatriate nationals of LDCs might be mobilized for economic development in the home country (as is the case at present with funds specializing in developing countries such as India). Nevertheless, the investment problem for LDCs is not only one of mobilizing the necessary foreign exchange for the initial investment. The need for management expertise and continuing support to meet recurrent costs means that mechanisms of the kind described would need to be elaborated to take account of these requirements.

1.3.7 Transport

Transport issues for LDCs are not wholly separable into domestic and international aspects. Firstly, there is dependence in all cases on imported fuel. Secondly, many facilities, such as airports, airlines, and ports, play a dual role, providing both internal and external links. Thirdly, investments in any new international facility, such as a port or an airport, requires corresponding investment in improving the national infrastructure if it is to be effective.

With respect to transport facilities, LDCs are seriously disadvantaged. The national airlines of LDCs have on average about 6.5 aicrafts. This average is in fact distorted by a few larger national fleets such as those of Ethiopia (49) Nepal (18) and Sudan (15). In fact, 17 of the national airlines have three planes or fewer. Having a national airline can in principle allow for the linking of industry in more disadvantaged areas of the country with growth centers: externally, it can help in promoting exports and improving marketing communications. But fleets of the size mentioned, especially in geographically remote and dispersed areas, and with due allowances for downtime for maintenance purposes, mean that little can be achieved in this direction. Air transport is, however, the only practical alternative in many cases to overcome the kinds of locational and commercial isolation of industry in LDCs. Just how great this isolation is may be seen in terms of the connexions available in flights to the main economic centres of New York, Brussels, and Tokyo. No direct flights are available from any LDC to New York, for 17 LDCs, two change of planes are necessary. With respect to Brussels, only 7 LDCs had a direct connection, 25 needed one change of planes and 10 needed two changes. For Tokyo, no direct flights are available, one change of plane is needed in 29 cases and two changes in the remaining 13 cases. The practical effect of this is that, taking stopovers and the infrequency of most services into account, that a potential investor from one of the commercial centres mentioned will have an appreciable degree of extra difficulty in assessing a potential investment in an LDC, let alone the difficulty of monitoring the progress of an investment on a regular basis. Equally, the industrialist in an LDC interested in exporting to developed countries will find the extra time needed because of the poor air connexions to be a further deterrent to an already difficult undertaking, both from the point of view of visits to potential markets and the shipping of products by airfreight.

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[25] "Equity fund set up for emerging exchanges" Financial Times, 30 May 1990

[26] "Himalayan fund aims to raise Dollars 100 million" Financial Times, 13 June 1990.

Apart from these difficulties, the costs of air connexions are also an issue. The average business class return air fare from LDC capitals to commercial centres in developed countries is $US 3050.[27] Not only are such fares high in relation to the incomes in LDCs, but they are often associated with foreign exchange restrictions such as to make air travel even more difficult as a means of promoting increased exports by direct contact with the markets.

Air freight rates are another burden on export possibilities: consideration of available rates suggests that they may be subject to several anomalies and inconsistencies at least as far as the LDCs are concerned. For instance the rates per kilogram for shipments to New York are successively reduced for amounts in excess of 100 kg, 200 kg, 300 kg and 1000 kg. This is true for any LDC as origin. But with Brussels as the destination, such reductions are by no means uniformly available, especially not for the larger quantities. The result is that for many LDCs, especially African countries, marginal rates are not very different between the two destinations. In several cases where the geographical distance is considerably less, the rate charged is nevertheless more. Given the preponderance of LDC trade with the EEC, this result suggests that the degree to which manufactured exports may be disadvantaged should be carefully examined. A study of the effect of international transport costs and industrial development in the African LDCs (which used sea freight rates) has shown that even for coastal countries the transport factor may significantly erode a cheap labour advantage, but that for land-locked countries the effect may be catastrophic. Apart from a concentration on products with a high value to weight ratio, other conclusions drawn include that of the need to engage in processing activities that increase that ratio.[28]

1.3.8 Communications and Media

Whether within an individual enterprise or in an entire economy, the free flow of information is essential in order to optimize the allocation of resources and avoid inefficiencies. It also provides basic signals to entrepreneurs as to market requirements, available technologies and investment opportunities, and is therefore essential for the longer-term and self-sustaining process of industrialization. In practice, the information flow will be partly influenced by the transport system and the degree to which people are in contact with one another. Population density and the degree of urbanization are thus some fundamental variables for assessing the possibilities for industrial expansion. In addition, the internal road and rail networks, and the availability of cars and other forms of transport are also relevant. In general the importance of infrastructure has to be recognized not only from the point of view of the immediate needs of industry for the provision of supplies and the serving of markets, but also for the contribution it makes to the flow of information.

Other factors in this regard include the availability of telephones and media, especially such as newspapers. With respect to telephones, there are

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[27] This is the arithmetic mean of all business class fares from LDC capitals to New York, Brussels, and Tokyo.

[28] Livingstone, I. "International transport costs and industrial development in the least developed African countries." Industry and Development No.19, October 1986,UNIDO, Sales No. E.86.II.B.5

sharp differences among the LDCs. Presumably, because of their small geographic size and relatively high degree of urbanization, small countries such as Djibouti, Kiribati, Sao Tomé and Principe, Tuvalu, Vanuatu and Western Samoa are relatively well supplied with telephones (fewer than 100 per telephone). Other LDCs have a considerably worse figure. Expansion of this essential service in LDCs would offer opportunities for local manufacture of several inputs, especially in such items as poles, cables, fixing materials, etc.

Newspapers represent an important communication possibility, but most LDCs are badly supplied with them. At least nine LDCs have no daily newspaper, and only in Botswana, Myanmar and Lesotho are the circulation figures above 10 per 1000 of population. Expansion of printing and publishing activities would represent an important manufacturing contribution to overall growth, would have potential backward linkages to pulp and paper industries, and would make a significant long-term impact on the flow of information and the development of markets.

A related problem in connexion with the media is that of access to foreign media and journals. These are important sources of information on external markets, supply and demand possibilities of raw materials, patterns of industrial organization, availability of technologies, and, in fact, much information that is vital both for the individual industrialist and for the national policy maker. Yet the circulation of foreign media is often restricted, sometimes for foreign exchange reasons. Ordinary international or business newspapers, as well as trade and specialist journals, are hard to come by in many LDCs. UNIDO has for many years been building up its information systems and networks on technologies and investment opportunities, establishing focal points in each country and answering a growing stream of enquiries from all developing countries. But it is clear that such activity has to be complemented at the national level by encouraging the dissemination of industry related journals and media in LDCs. UNIDO would be ready to co-operate with publishers and bilateral agencies in such an activity.

Industrial capacity under-utilization is a characteristic of industry in many developing countries, and LDCs are no exception. Some of the causes include machine breakdown and shortages of raw materials or spare parts. However, a frequent cause of under-utilization of capacity is the absence of a stable and reliable electricity supply. Electricity capacity installed in LDCs is very limited in relation to the population: the average for all LDCs is 23 kW per 1000 inhabitants, while for developing countries as a whole the figure is 156. Since many industrial processes and machines are totally dependent on electric power, no substitution to other forms of energy is possible as in the case of households. Given the inadequate levels of installed generation capacity, the systems frequently become overloaded, and breakdowns are common. In the absence of electricity from the national grid, many manufacturing firms in LDCs use petrol or diesel powered generators, which means that they are ultimately dependent on a resource from outside the country with which foreign exchange costs are associated. The wider energy questions relating to environmental degradation and depletion of resources must form part of any detailed analysis of the energy question in LDCs, but form the point of view of the needs of industry it is clear that there is a strong case for renewed concentration on the expansion of the national grid systems. It can also be said that exploitation of hydropower resources, such

as is possible in at least 14 of the LDCs,[29] would also provide a stimulus to manufacturing activity, even in such areas as poles and cables, but in some cases also in the form of construction materials and simple turbine components.

1.3.9 International linkages

Linkage of LDCs industry with the international economic system involves a number of forms. The most obvious is foreign trade, whether with respect to the supply of imports for industrial inputs or to the production of manufactures for export. Other forms of international linkage include the use of expatriate labour, especially for skills in short supply nationally, technology transfer, foreign direct investment, and the acquisition of foreign services. These might be in such industrial service areas as testing, design, marketing, advertising, accounting, insurance and finance. These are increasingly important inputs into modern manufacturing and the international industrial system. As far as LDCs are concerned, their access to them is very limited. Even when they are available locally, they are often not used. For instance in Haiti, the neglect of local engineering and management consultancies by industrialists has been specifically noted.[30] In some cases this is understandable: thus in Bangladesh local manufacturers of refractories, tableware and heavy-clay products still rely on overseas testing laboratories: the Bangladesh Institute of Glass and Ceramics has facilities that are not being fully utilized, because of a lack of trained personnel.[31] But in general, a neglect of local services and expertise has been observed in technical co-operation activities in LDCs.[32]

One important example of the significance of international services for industry is given by the banking system. Increasingly, the international banks from developed countries put themselves forward as providers of a wide variety of financial services, including strategic management advice, the formation of joint ventures, capital markets activity, export credits, treasury management etc. Many have invested heavily in communication systems and in acquisitions of related firms in investment management, stockbroking, insurance, etc., not to speak of those banks that take direct equity holdings in industry and are to a considerable degree involved in the long-term planning and development of those industries. Yet these banks have a minimal presence in LDCs: banks from OECD countries are to be found in only 17 of the countries. The reasons for this may have more to do with a desire for national control of the banking sector, because analysis of the remaining countries shows that usually if there is no bank from an OECD country there is no foreign bank at all. Only in three cases where there is no bank from an OECD country is there any foreign bank present. Apart from government regulation, there may also be an inadequate perception of market possibilities on the part of the international banks. It is nevertheless to be regretted

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[29] UNCTAD. The Least Developed Countries.1989 Report.United Nations Sales No.E.90.II.D.4, p.34

[30] Ministère du Commerce et de l'Industrie, op.cit.

[31] "Analysis of Raw Materials for Non-Metallic Mineral Based Industries. DP/BGD/85/006.Bangladesh." UNIDO DP/ID/SER.B/534, 28 July 1986

[32] UNDP "Technical Co-operation in the Development of the Least Developed Countries".A/CONF/147/PC/3/Add.9, TD/B/AC.17/31/Add.9, 21 February 1990

that dialogue between LDCs and international banks is concerned largely with debt rescheduling: there is scope for discussion of how these institutions could make a sustained and long-term commitment to the development of industry and the economy as a whole through closer involvement in the day to day business life of the countries to whom their money has been lent. Access to international advice and services provided by these banks could make an important contribution to efficiency and export performance of industry in the LDCs.

There is an associated problem under this heading which bears particularly hard on the development of links between LDCs and the international industrial system. This is of the costs with respect to foreign exchange transactions. These are sometimes regarded as excessive even among developed countries, but for the LDCs, the costs of moving between national currencies and those needed for international trade, such as the US dollar, can be very significant. A comparison of the bid and offer rates between LDC and hard currencies suggests that on average the spread applied for all LDC currencies is 81.59 per cent of the bid price. This compares with a spread of 2.17 per cent for the currencies of the seven largest OECD economies (G7 countries). Moreover, the LDC average conceals further discrepancies: if one removes currencies tied to a currency of regional importance (such as the CFA Franc) then the spread for the remaining currencies is on average 142.9 per cent. Such spreads are so high that they can have only a deterrent effect, and it would seem that this question would bear closer examination[33]. The results might suggest that reconsideration of such obstacles to transactions between LDCs and other countries is seriously necessary and would be of benefit to all parties concerned.

[33] The figures are based on rates obtained in Vienna, Austria, and will certainly be influenced by the regular volume of transactions involving LDC currencies and the Austrian schilling.

2. CONCLUSIONS

The preceding sectors have presented an overview of the manufacturing sector in LDCs. The generally low levels of industrial development are seen to be mirrored by a marginalization of LDCs as far as the world economic system is concerned, particularly from the point of view of trade and investment linkages. The conditions for industrial growth have been reviewed, and it has been seen that few of the necessary accompaniments for manufacturing expansion are at a sufficiently advanced stage. Infrastructure, transport, communications both internally and as they affect international linkages, are inadequate. More information flows are necessary for market growth. Linkage development both within manufacturing and with other sectors is at a rudimentary stage and would benefit from being a focus of national and regional strategies.

The need for diversification and the enhanced role of small and medium industry and entrepreneurship will in turn call for a re-evaluation of the role of government in industry, the methods used for strategy formulation and the points of intervention by the national authorities. The question of human resource development, particularly with respect to entrepreneurship skills, will, however, be of special relevance to national policy. Another question will be that of providing the necessary technical skills for an industrial sector whose detailed composition in sectoral terms cannot easily be predicted, since it will be based on the actions of individual entrepreneurs.

Given the complexity of the issues in LDCs industrial development, and the magnitude of the task, the role of international co-operation will be a decisive one. This co-operation will include not only the gradual economic integration of LDCs in sub-regional or regional groupings, but also the further growth of co-operation between developed and developing countries. A new concentration will be needed on the involvement of local industry in LDCs in this process, both in terms of dialogue and of closer participation in development co-operation. As has been seen, the needs of industry will require a diverse and flexible response both from national governments and the international community.