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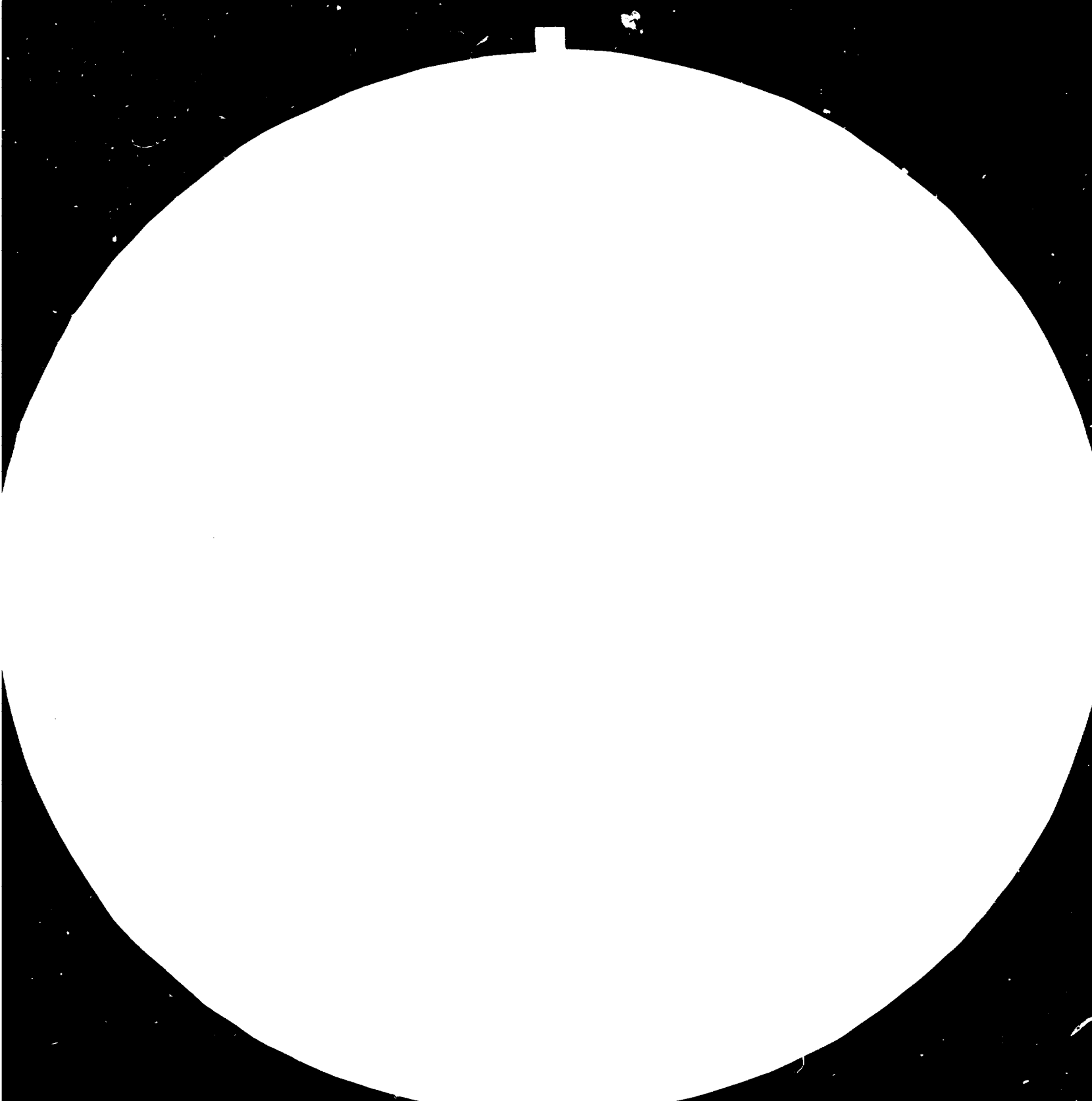
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P.C. DHALL
July 1984

**UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION**

VIENNA

13904

STUDY
ON
CAPITAL GOODS INDUSTRY
IN
SOUTH ASIA

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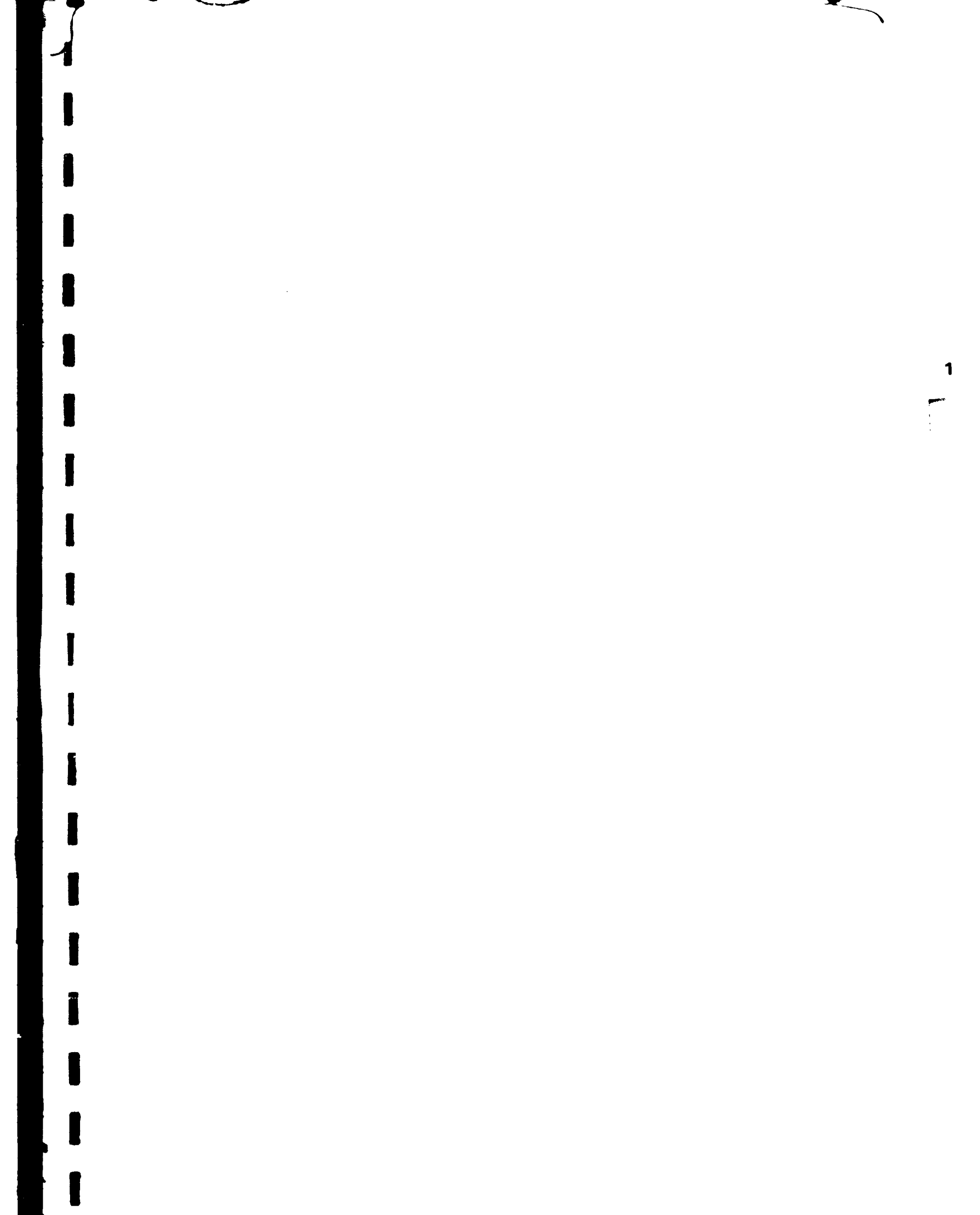
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SECTION - 1

INTRODUCTION

INTRODUCTION

1. Economic and Social Commission for Asia and the Pacific (ESCAP) covers the most populous and largest region of the world. The region comprises both developed and developing countries. The developed countries are Australia, Japan and New Zealand. The developing countries or areas are Afghanistan, Bangladesh, Burma, Fiji, Hong Kong, India, Indonesia, Malaysia, Mongolia, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka and Thailand.
2. Twenty years ago, the economic level of most developing countries in this region, measured in terms of per capita GDP, was less than U.S. \$ 200, the regional average being U.S. \$ 145. During the last two decades, however, the average per capita GDP of the developing countries increased considerably, reaching U.S. \$ 261 in the late seventies. Over the years, this region attained an economic growth rate of 8.6 per cent, 6.7 per cent and 2.9 per cent in the industrial, service and agricultural sectors respectively.
3. The structure of employment in different sectors has also changed during the last two decades. The share of those employed in the agricultural sector to the total employed, fell from 74 per cent in 1960 to 60 per cent in 1978; the shares of those employed in industry and in the service sector increased from 8 to 13 per cent and 18 to 27 per cent, respectively.
4. Though the overall annual targets of 5 per cent for the First United Nations Development Decade and 6 per cent for the Second Decade were accomplished essentially at the regional level, 40 per cent of the developing ESCAP countries registered a growth rate less than 5.5 per cent during the period 1960-1978. Sectoral targets of 8 per cent per annum for industrial growth and 4 per cent for agricultural growth had been set for the Second Decade. Though the industrial growth target was met at the

regional level, most developing ESCAP countries especially the South Asian countries (Afghanistan, Bangladesh, India, Iran, Nepal, Pakistan and Sri Lanka) recorded lower rates of growth.

5. Both the Lima Declaration and the International Development Strategy for the Third United Nations Development Decade (1980's) call for a further acceleration of industrialisation. The Lima Declaration fixed a target for developing countries to increase their share to 25 per cent of the world industrial production.
6. To achieve the Lima target, and further to ensure the doubling of per capita income in the countries having low income by the year 2000, the ESCAP Regional Development Strategy projected growth rates as shown in Table 1.1.

Table 1.1 PROJECTED GROWTH RATES IN 1980's

Region	Percentage Growth Per Annum			
	GDP	Agriculture	Industry	Industrial Exports
South Asia	5.7	3.6	8.2	...
East and South East Asia	7.5	3.0	9.9	...
ESCAP (Developing countries)	6.7	3.5	8.9	8.0

7. In order to formulate proper strategies, policies and action plans for achieving the set targets, a joint UNIDO/ESCAP preliminary study (Phase I) was conducted. This study identified six fast growing and promising groups of industries, namely ISIC - 351, 371, 382, 383, 384 and 385.
8. The Study (Part of Study Phase II) which forms this report, covers the following three groups of industries in the South Asian countries under ESCAP :
 - ISIC 382 - Non-Electrical Machinery
 - ISIC 383 - Electrical Machinery
 - ISIC 384 - Transport Equipment

9. The major objectives of this study are :
- o Reviewing in brief and analysing past developments (1970-80), the present situation, and the future trends and prospects (1985-90) in the mechanical, electrical and transport equipment industries.
 - o Identifying possibilities of progressive entry, extension, modernisation and development of local capacities.
 - o Identifying constraints and obstacles, if any.
10. Findings of the Study and recommendations are summarised below :
- o The South Asian region needs an integrated approach for its economic development. Capital goods can not only accelerate the pace of industrialisation but can also help in increasing the productivity of the agriculture sector which is very low at present. Use of irrigation pumps, fertilisers and high yielding variety of seeds is getting more popular. Selective mechanisation of the farming methods is showing rising trends. Demand for agriculture tractors is rising.
 - o Production of capital goods in the region is very low. In addition to paucity of technical manpower, manufacturing technology, availability of raw materials and poor infrastructural facilities, inadequate domestic capital formation is also one of the common constraints faced by the countries in the South Asian region. Inflow of finances from international bodies and other developed countries is imperative, if these countries are to meet the growth rate set by ESCAP.
 - o Keeping the above constraints in view, it is recommended that Afghanistan, and Nepal should not only set up facilities for up-keep of capital goods but also gradually develop industries like machine shops, foundries,

garages, etc. Sri Lanka and Bangladesh should develop general purpose assembly plants and ancillary units for partial or complete production of components for capital goods thereby reducing the cost of imports. Iran and Pakistan are required to develop their existing capital goods manufacturing facilities to increase the local production and aim at reducing imports. In the case of India, under-utilisation of the existing capacities will have to be removed by updating the technology and modernisation. There is also a need for improving the availability of basic raw materials and goods such as steel, cement, etc.

11. Notations Used

In general, three dots (...) indicate that data are not available or are not separately reported. Throughout the report a dash (-) indicates that the amount is nil or negligible. Asterisk mark (*), wherever present, indicates that the data presented are provisional.

SECTION - 2

REVIEW OF PAST DEVELOPMENT
AND PRESENT STATUS

REVIEW OF PAST DEVELOPMENT
AND PRESENT STATUS

1. Almost all the nations covered in this study are primarily agriculture based. Measured at 1975 prices, the contribution of agriculture to GDP in these nations varied from 10 per cent in the case of Iran to as high as 62 per cent in the case of Nepal in 1978. The industrial sector's average contribution to GDP in the same year was around 22 per cent in all the countries except Iran where it was as high as 54 per cent, coming mainly from petroleum production.
2. The contribution of the developing ESCAP region to the total industrial output in the region was only about 26 per cent in 1978. Among the developing South Asian countries the significant contributors were India, Iran and Pakistan. In 1978, these three nations contributed 28.8 per cent, 10 per cent and 4.2 per cent respectively towards production by the manufacturing industry in the developing ESCAP region. Afghanistan and Sri Lanka each had a very meagre share.
3. While the growth rate of the total manufacturing sector in the developing ESCAP region was 7.5 per cent (1970-79) the fabricated metal products, machinery and equipment industry (ISIC 38) registered a growth rate of 11.3 per cent - the highest in the manufacturing sector. Growth rate of selected manufacturing industries in the developing ESCAP region are presented in Exhibit-1.
4. Average growth rates of GDP and the manufacturing sub-sector during the period 1970-78 for the countries in the region are presented in Exhibit-2. The manufacturing growth rates recorded by most of the

EXHIBIT : 1

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

GROWTH RATE OF SELECTED MANUFACTURING INDUSTRIES IN THE
DEVELOPING ESCAP REGION (1970-79)

Sl. No.	ISIC Group	Industry	Growth Rate (%)	Share in Manufacturing Production (1979) (%)
1.	385	Professional & Scientific Equipment; Photographic and optical goods	15.3	0.7 ^a
2.	383	Electrical Machinery	14.7	7.4 ^a
3.	313	Beverages	13.1	3.4
4.	351	Industrial Chemicals	11.4	4.1 ^a
5.	362	Glass	10.6	1.0
6.	369	Other non-metallic mineral products	10.5	4.3
7.	384	Transport Equipment	10.3	4.7 ^a
8.	382	Non-electrical Machinery	10.0	3.6 ^a
9.	354	Coal and Petroleum Products	9.9	0.7 ^a
10.	323	Leather and Leather Products	9.4	0.4
11.	371	Iron and Steel	9.0	3.9 ^a

a : Developed ESCAP region registered a much greater share than the Developing ESCAP region

Source : New Perspectives for Industrialisation, ESCAP, E/ESCAP/IHT/6/10 dated August 23, 1982.

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AVERAGE ANNUAL GROWTH RATE OF GDP AND
MANUFACTURING SUB-SECTOR : 1970-78

Country	% Growth in GDP ^a	% Growth in Manufacturing
Afghanistan	3.9	3.0
Bangladesh	3.6	9.6
India	3.2	4.6
Iran	5.8	10.1
Pakistan	4.1	3.3
Sri Lanka	4.9	6.6

a - at 1975 market prices

Source : New Perspectives for Industrialisation, ESCAP,
E/ESCAP/IHT.6/10 dated August 23, 1982

South Asian countries during 1960-1970 was higher than that for 1970-78. Though the reasons for decline in the growth rate were different for each country, in most cases the common factors were the increase in oil price, growing population and the domestic constraints.

5. Share of manufacturing sub-sector in GDP for the countries in the region is presented in Exhibit-3. The graphical representation of manufacturing sub-sector's share in GDP presented in Exhibit-4 clearly shows the absence of a steady growth. In the case of Afghanistan, mining, electricity, gas and water have also been included in manufacturing. In the case of Sri Lanka there is a sharp decline in the output of manufacturing sub-sector. A large portion of Sri Lanka's income is derived from the cultivation, processing and export of the agricultural commodities - tea, rubber and coconuts. On an average about 50 per cent of Sri Lanka's manufacturing output is derived from the agro-based industries such as beverages, tobacco, food products, textile, etc. The decline in the share of manufacturing was accompanied by a steady increase in the share of construction, and electricity, gas and water.

6. Share of the non-electrical, electrical and transport equipment manufacturing industries in manufacturing output for Bangladesh, India, Iran and Sri Lanka are shown in Exhibits-5 through 8 respectively. For other countries this could not be computed as the data available was incomplete. In almost all the countries, agro-based industries such as textiles, food products and tobacco were the major contributors to the manufacturing value added. In the case of Iran petroleum products accounted for almost 50 per cent of the value added by manufacturing.

Status of the capital goods sector in each country is discussed in the following sub-sections.

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STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

MANUFACTURING AS PER CENT OF GDP

Country	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Afghanistan*	19.9	20.8	21.4	20.8	22.7	23.1	22.0	...	...	...
Bangladesh	6.0	6.7	7.6	8.2	7.2	7.1	7.1	7.5	7.5	...
India	14.1	15.6	15.6	16.1	15.9	17.0	17.9	17.2	17.2	...
Iran	12.4	10.0	10.7	10.8	11.8	...	...	...	6.1	...
Nepal	9.7	10.0	4.0	4.0	4.3	4.0	3.8	4.0	3.8	3.9
Pakistan	16.0	15.9	16.7	16.6	16.4	16.0	15.8	16.5	16.9	16.7
Sri Lanka	...	...	24.6	23.6	25.5	22.6	19.8	18.2	16.6	...

* Manufacturing includes Mining and Electricity, Gas & Water

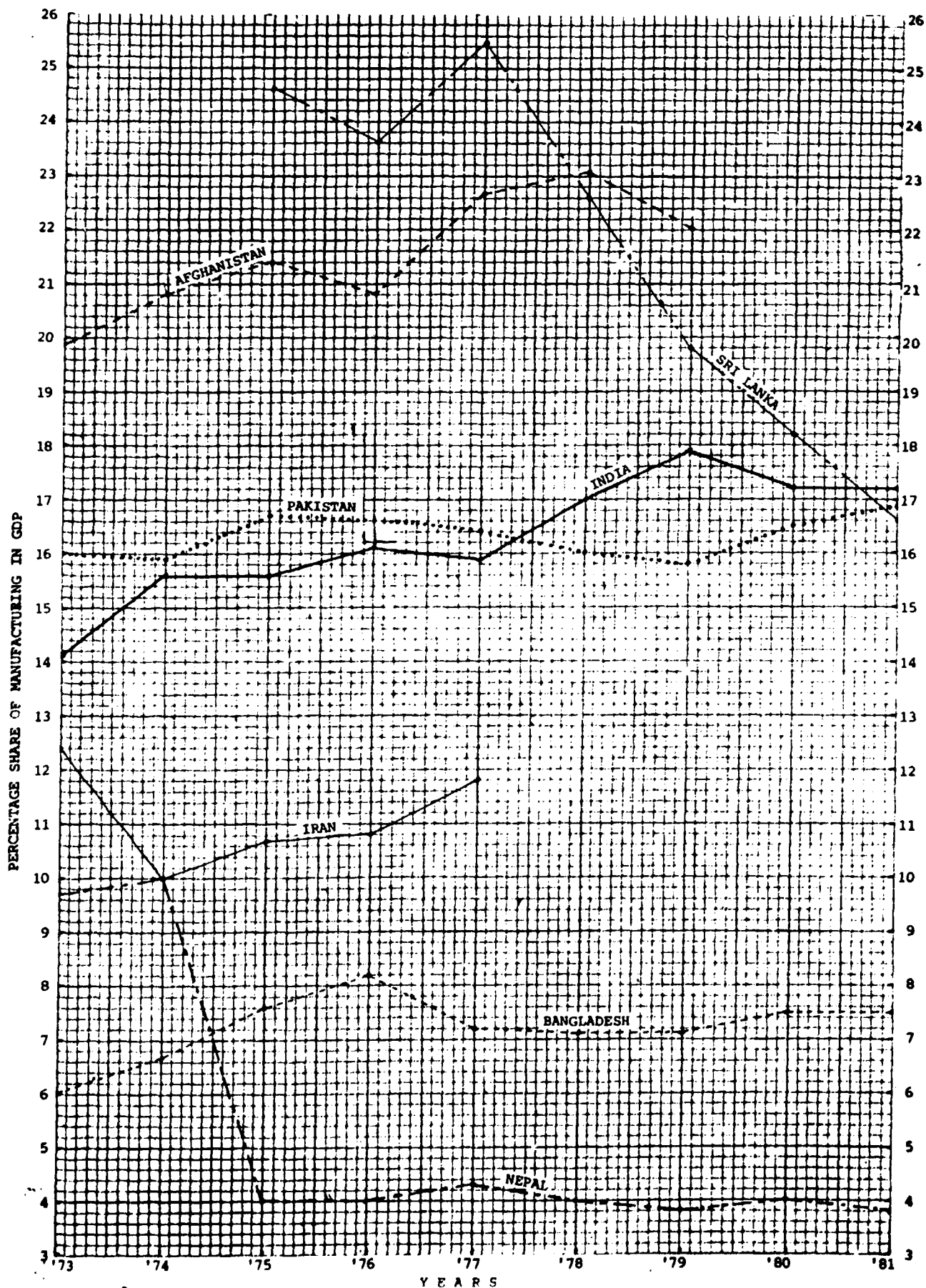
Source : 1) Indicators of market size for 131 countries, Dec. 9, 16 & 23, 1983, Business International

2) Key Indicators of Developing Member Countries of ADB, ADB, April 1983

3) Yearbook of National Accounts Statistics, Part-I and Part-II, United Nations, 1975 - 1980

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
 STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PERCENTAGE SHARE OF MANUFACTURING IN GDP



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SHARE OF CAPITAL GOODS INDUSTRY IN MANUFACTURING - BANGLADESH

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
A. GROSS OUTPUT AS PERCENTAGE OF MANUFACTURING OUTPUT										
382 Non-electrical Machinery	0.8	0.6	...	0.8	0.3	0.7	0.5	0.7	0.5	0.6
383 Electrical Machinery	1.1	1.0	...	1.0	0.5	1.0	1.2	2.7	2.5	2.5
384 Transport Equipment	1.0	0.3	...	0.7	0.3	1.6	1.7	2.0	2.0	1.3
B. VALUE ADDED AS PERCENTAGE OF MANUFACTURING VALUE ADDED										
382 Non-electrical Machinery	0.9	0.5	...	0.8	0.3	0.7	0.6	2.0	0.5	0.5
383 Electrical Machinery	1.2	1.1	...	1.3	0.5	1.4	2.0	4.0	3.0	2.8
384 Transport Equipment	1.3	0.2	...	0.6	0.3	1.4	1.3	3.2	2.6	1.9

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

SHARE OF CAPITAL GOODS INDUSTRY IN MANUFACTURING - INDIA

	1970	1973	1974	1975	1976	1977	1978
A. GROSS OUTPUT AS PERCENTAGE OF MANUFACTURING OUTPUT							
382 Non-electrical Machinery	5.5	7.3	6.1	6.1	6.4	6.1	6.1
383 Electrical Machinery	5.3	6.0	5.7	6.1	6.1	5.6	5.8
384 Transport Equipment	6.7	6.0	5.6	5.2	5.2	4.7	5.2
B. VALUE ADDED AS PERCENTAGE OF MANUFACTURING VALUE ADDED							
382 Non-electrical Machinery	6.8	5.2	7.7	8.1	8.7	8.6	8.2
383 Electrical Machinery	6.2	8.3	6.9	7.7	7.1	7.3	7.1
384 Transport Equipment	8.2	7.6	7.1	7.0	7.1	6.9	7.3

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STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

SHARE OF CAPITAL GOODS INDUSTRY IN MANUFACTURING - IRAN

	1971	1972	1973	1974	1979	1980
A. GROSS OUTPUT AS PERCENTAGE OF MANUFACTURING GROSS OUTPUT						
382 Non-electrical Machinery	1.3	2.4	2.7	2.6	2.8	3.1
383 Electrical Machinery	6.3	5.6	6.7	6.8	7.3	4.9
384 Transport Equipment	9.5	11.7	9.8	9.0	8.3	7.5
B. VALUE ADDED AS PERCENTAGE OF MANUFACTURING VALUE ADDED						
382 Non-electrical Machinery	1.1	2.2	2.4	2.4	2.0	2.6
383 Electrical Machinery	6.2	7.1	7.5	7.4	8.3	4.8
384 Transport Equipment	9.3	6.8	6.4	5.8	5.2	4.9

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PERCENTAGE SHARE OF GROSS OUTPUT OF CAPITAL GOODS
INDUSTRY IN MANUFACTURING - SRI LANKA

Year	382 Non-Electrical Machinery	383 Electrical Machinery	384 Transport Equipment
1970	4.8	3.7	1.0
1971	4.2	3.7	1.0
1972	3.3	4.0	0.9
1973	3.2	3.9	1.0
1974	2.5	3.5	1.0
1979	0.7	2.4	2.3

A F G H A N I S T A N

AFGHANISTAN

7. Afghanistan is a land-locked country in Central Asia with an area of about 647,500 sq. km. The mid-year population of the country in 1980 was 15.94 million. During the period 1970-1979, the population increased at a rate of 2.6 per cent. Of the total labour force in 1970, 67.4 per cent were engaged in agriculture, 8.3 per cent in industry, and 24.3 per cent in services. In 1979, the GDP of Afghanistan at constant prices of 1965 was 141.3 billion Afghanis. The share of agriculture in GDP decreased from 65 per cent in 1973 to 59 per cent in 1979, whereas the share of construction went up from 2.3 per cent in 1973 to 5.4 per cent in 1979. Manufacturing, mining, electricity, gas and water supply together contributed 22 per cent to the GDP in 1979, as compared to 20 per cent in 1973. The per capita GDP measured in 1975 U.S. \$, increased from 85 in 1970 to 103 in 1980.

8. Industry is small and dates back only to the 1930's. The whole of Afghanistan had 143 establishments in 1974 with about 28,000 employees. Private industry is limited to consumer goods like textiles and leather goods, for the domestic market. The large enterprises are reserved for the public sector. Cotton textile production is the main industry in Afghanistan, employing about 51 per cent of the labour force engaged in manufacturing and accounting for 50 per cent of the total manufacturing gross output. The textile industry in Afghanistan also includes rayon textile manufacturing factories. Other industries are cotton ginning, fruit preservation, tanning, sugar refining, oil extraction and leather goods manufacturing establishments. A number of establishments are located in Kabul for the manufacture of leather boots, marble ware, furniture, glass, bicycles and plastics. A large machine shop has been established to manufacture spares for motor vehicles. A cotton-seed oil extraction

plant, a large modern cotton textile factory, a beet sugar plant and a fruit canning plant have been set up with foreign assistance. New industrial enterprises that are being set up include cement plants, carpet making, small vehicle assembly and textile plants.

9. The number of industries manufacturing non-electrical, electrical and transport equipment is negligible. Almost the entire requirement of these equipment is imported. In 1977, U.S. \$ 9.2 million worth of non-electrical machinery was imported. The major imports in this category were of power-generating machinery, agriculture machinery, and textile and leather machinery. The imports of electrical machinery in 1977 valued at U.S. \$ 14.9 million, mainly comprised electricity distribution equipment, telecommunications apparatus, domestic electrical equipment, batteries and accumulators. The transport equipment imported in 1977 was worth U.S. \$ 28.6 million. Passenger cars, buses, trucks, chassis and frames were the prominent imports in the category. It may be observed that, of the total imports of machinery and transport equipment in 1977, the import of electrical and transport equipment constituted 83 per cent.
10. Break-up of GDP, characteristics of the manufacturing sector and statistics on the imports of capital goods are presented in the following pages.

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STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

GDP BY KIND OF ACTIVITY^a - AFGHANISTAN

(In Thousand Million Afghanis)
 Fiscal Year Beginning 21st March

Sl.No.	Activity	1973	1974	1975	1976	1977	1978	1979
1.	Agriculture, Hunting, Forestry and Fishing	77.6	80.3	83.0	86.6	77.3	82.0	84.0
2.	Mining and Quarrying							
3.	Manufacturing	23.7	26.1	28.6	29.3	30.4	33.2	31.1
4.	Electricity, Gas and Water							
5.	Construction	2.7	2.7	3.8	5.7	6.9	8.6	7.6
6.	Wholesale and Retail Trade, Restaurants & Hotels	10.1	10.7	11.3	11.8	11.1	11.5	11.1
7.	Transport, Storage & Communication	3.3	4.0	4.8	5.3	6.0	6.1	5.7
8.	Finance, Insurance, Real Estate and Business Services	1.8	1.9	2.0	2.1	2.0	2.1	1.8
9.	Community, Social and Personal Services							
	Total	119.2	125.7	133.5	140.8	133.7	143.5	141.3

^a : at constant prices of 1965

Source : Yearbook of National Accounts Statistics Part 1 and Part 2, 1980
 - United Nations

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIAAFGHANISTAN : CURRENCY EXCHANGE RATES

(Afghanis per U.S. Dollar)

<u>Year</u>	<u>Average Exchange Rate</u>
1970	45.000
1971	45.000
1972	45.000
1973	45.000
1974	45.000
1975	45.000
1976	45.000
1977	45.000
1978	45.000
1979	43.604
1980	44.278
1981	49.679
1982	...

Source : Key Indicators of Developing Member Countries of ADB,
ADB, April 1983.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

CHARACTERISTICS OF MANUFACTURING SECTOR - AFGHANISTAN

Sl.No.	Characteristic	Unit	1973	1974
<u>3 MANUFACTURING</u>				
1	Number of Establishments	Numbers	136	143
2	Average number of persons engaged	Numbers	22743	28138
3	Wages & Salaries of Employees	Million Afghanis	...	715.3
4	Gross Output	Million Afghanis	...	6496.2
<u>321 TEXTILES</u>				
1	Number of Establishments	Numbers	38	36
2	Average number of persons engaged	Numbers	12555	14243
3	Wages & Salaries of Employees	Million Afghanis	...	290.4
4	Gross Output	Million Afghanis	...	3252.8

contd...

EXHIBIT : 11

Sl.No.	Characteristic	Unit	1973	1974
<u>381 METAL PRODUCTS</u>				
1	Number of Establishments	Numbers	12	15
2	Average number of persons engaged	Numbers	1390	1442
3	Wages & Salaries of Employees	Million Afghanis	...	40.8
4	Gross Output	Million Afghanis	...	362.7

Source : Asian Business Directory, 1978
- Kothari & Sons

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

IMPORTS OF SELECTED CAPITAL GOODS - AFGHANISTAN

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1971	1972	1973	1974	1975	1976	1977
71	NON-ELECTRICAL MACHINERY	2204	3773	1446	3626	3346	3620	5431	9210
711	Power Generating Machinery	...	...	...	...	...	142	...	1272
7111	Steam Generating Boilers	...	...	...	...	...	11	...	...
7112	Boiler House Plant	...	...	...	...	...	4	...	...
7113	Steam Engines	...	...	...	...	...	1	...	51
7115	Internal Combustion Engines	...	...	...	...	...	81	...	1220
712	Agricultural Machinery	127	49	10	533	402	559	...	920
7121	Agricultural Machinery for Soil Preparation	72	34	7	492	69	53	...	52
7122	Agricultural Machinery for Harvesting, etc.	12	...	...	...	...	34	...	153
7123	Milking Machines, etc.	...	...	...	...	...	4	...	...
7125	Tractors	25	...	...	...	...	417	...	700
7129	Agricultural Machinery, N.E.S.	18	...	...	...	...	51	...	18
714	Office Machines	85	...	...	...	...	38	...	447
7141	Typewriters, etc.	60	...	...	...	...	1	...	369
7142	Calculating Machines, etc.	...	...	...	...	...	36	...	77
7149	Office Machines, N.E.S.	...	...	...	...	...	1	...	1
715	Metal Working Machinery	136	72	152	1017	10	50	...	32
7151	Machine Tools for Metal Working	136	72	152	1017	...	12	...	17
7152	Metal Working Machines, other than Machine Tools	...	...	...	...	...	38	...	15
717	Textile and Leather Machinery	588	292	233	599	1102	1532	2974	2699
7171	Textile Machinery	204	...	...	...	284	877	2148	649
7172	Leather Machinery, etc.	...	...	...	...	...	55	...	56
7173	Sewing Machines	384	137	725	425	772	599	788	1994
718	Machines for special industries	...	...	...	...	...	68	...	291
7181	Paper mill machinery, etc.	...	...	...	...	...	...	...	6
7182	Printing Machinery, etc.	...	...	...	...	...	18	...	149
7183	Food Processing Machines	...	...	...	...	...	31	...	138
7184	Construction and Mining Machinery	...	...	...	...	...	5	...	...
719	Machinery & Appliances, N.E.S.	1239	3281	918	1438	1506	1230	1263	3541
7191	Heating and Cooling Equipment	...	...	...	...	...	109	...	97
7192	Pumps and Centrifuges	314	...	...	...	...	484	...	387
7193	Mechanical Handling Equipment	...	...	...	...	...	1	...	43
7194	Domestic Appliances	74	...	...	...	...	7	...	8
7195	Powered Tools, N.E.S.	1	...	...	...	...	52	...	9
7197	Ball, Roller Bearings, etc.	...	...	...	...	...	2	...	...
7199	Parts and Accessories, N.E.S.	...	...	...	...	880	576	927	2997
72	ELECTRICAL MACHINERY	2607	2312	2955	3294	5384	6459	12602	14915
722	Electrical Power Machinery and Switchgear	69	...	...	...	...	39	...	514
7221	Electrical Power Machinery	64	...	...	...	...	32	...	195
7222	Switchgear, etc.	5	...	...	...	...	7	...	319

contd...

EXHIBIT : 12

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1971	1972	1973	1974	1975	1976	1977
723	Equipment for Distributing Electricity	172	155	356	171	907	1041	4770	2344
7231	Electrical Insulating Equipment	172	155	356	171	75	407	...	555
724	Telecommunications Apparatus	979	777	690	510	1975	1465	2841	3455
7241	T.V. Broadcast Receivers	...	...	...	...	...	...	...	9
7242	Radio Broadcast Receivers	854	649	628	363	1808	1415	2794	3398
7249	Telecommunication Equipment, N.E.S.	29	...	...	...	...	51	...	47
725	Domestic Electrical Equipment	137	...	...	...	617	1015	593	1497
726	Electro-Medical Apparatus, etc.	...	...	...	...	...	1	...	6
7261	Electro-Medical Apparatus	...	...	...	...	...	...	...	6
7262	X-Ray Apparatus	...	...	...	...	...	1	...	...
729	Other Electrical Machinery	1037	915	1408	2087	1753	2898	4342	7100
7291	Batteries and Accumulators	871	797	1168	1670	1330	2119	2855	5372
7292	Electric Lamps	142	...	...	...	...	609	...	1053
7293	Thermionic, etc. valves and tubes	...	...	...	...	...	4	...	...
7294	Automotive Electrical Equipment	...	...	...	...	...	2	...	31
7295	Electrical Measuring Instruments	...	...	...	...	...	45	...	200
7296	Electro-Mechanical Handtools	...	...	...	...	...	3	...	306
7299	Electrical Machinery, N.E.S...	18	...	...	...	...	117	...	138
73	TRANSPORT EQUIPMENT	7512	9745	8711	9750	10499	24351	10912	28553
731	Railway Vehicles	...	...	...	...	...	...	...	...
732	Road Motor Vehicles	6996	9219	8538	9410	9812	23771	10025	26522
7321	Passenger Motor Cars	1950	1296	2492	2096	1082	2121	2316	5766
7322	Buses (Including Trolley Buses)	413	567	235	876	1236	13281	924	11030
7323	Lorries and Trucks	...	2	1	...	2563	1004	1066	3169
7324	Special purpose lorries, etc.	...	...	...	...	...	...	...	5
7325	Road Tractors	...	...	...	...	...	...	...	1
7327	Other Chassis with Engines	...	...	...	...	...	...	...	1
7328	Bodies, Chassis, Frames, etc.	3230	4913	4125	3986	4565	7097	5459	6190
7329	Motor Cycles, etc. and their parts	88	...	...	...	...	268	...	360
733	Road Vehicles, not motorized	516	526	173	348	687	579	887	2032
7331	Bicycles, etc.	397	439	158	...	683	575	881	2022
7333	Trailers, etc.	119	...	...	...	...	...	...	...
	TOTAL MACHINERY AND TRANSPORT EQUIPMENT	12323	15830	13112	16670	19229	34430	29025	52679

Source : Yearbook of International Trade Statistics, 1975-1981
- United Nations

BANGLADESH

BANGLADESH

11. Bangladesh has an area of 143,998 sq. km. and is one of the most populous nations in the world. Its mid-year population in 1980 was 88.66 million. Bangladesh is a predominantly agriculture based economy. Of the country's GDP of 163.3 billion Bangladesh Taka at current prices in 1979-80, the share of agriculture was 53 per cent and that of manufacturing was 7.3 per cent. In 1972-73 agriculture and manufacturing contributed 57.8 per cent and 6.4 per cent respectively to GDP.

12. The important industries in Bangladesh are jute, cotton textile, paper and food products manufacturing industries. The single largest industry in Bangladesh is the jute industry. Textile industry comprising jute, cotton textile and other textiles contributed about 33 per cent to the total value added by the manufacturing sector in 1979 and employed almost 68 per cent of the labour force engaged in the manufacturing sector. The machinery and transport equipment industry employed only 3.2 per cent of the labour force engaged in manufacturing and contributed 5.24 per cent to the value added by manufacturers in 1979. Even the few industries that existed underwent a radical change after the liberation of Bangladesh. Jute and cotton textiles and sugar mills were nationalised. Also the government limited the role of private sector to small and medium-sized units.

13. *Non-electrical Machinery* : The non-electrical machinery manufacturing industry comprising about 95 establishments employed 3760 persons in 1979. The gross output of the industry and the value added at current prices were Tk 148 million and Tk 54 million respectively in 1979. The value added by the non-electrical machinery manufacturing industry in 1979 was only 0.53 per cent

of value added by the total manufacturing sector. Major items manufactured under this category include stoves, cookers, sewing machines, hardware, diesel engines, garden tractors, etc.

A wide range of non-electrical machinery is imported which include power-generating machinery, tractors and other agricultural machinery, metal working machines, textile and leather machinery, construction equipment, heating and cooling equipment, pumps, etc. Of the total imports of non-electrical and transport equipment in 1979, valued at U.S. \$ 372 million, the share of non-electrical machinery was about 52 per cent. In the same year non-electrical machinery worth U.S. \$ 80,000 were exported.

14. *Electrical Machinery* : The electrical machinery manufacturing industry is primarily engaged in the manufacture of items like electric motors, fans, transformers, switchgear, electrical accessories and fittings. It employed about 5370 persons in 45 establishments in 1979. Gross output of the industry was Tk 671 million in 1979. The value added by the industry in 1979 was Tk 285 million and formed 2.79 per cent of the value added by the total manufacturing sector. Electrical equipment such as electric power machinery, switchgear, telecommunications equipment, batteries and accumulators worth U.S. \$ 907 million were imported in 1979.
15. *Transport Equipment* : The transport equipment manufacturing industry composed of 22 establishments employed 3750 persons and had a gross output of Tk 353 million in 1979. The industry's Tk 196 million contribution formed 1.92 per cent of the value added by manufacturing.

Transport equipment manufactured comprise tankers, railway wagons, jeeps and bicycles. In 1980, 46,000 bicycles were manufactured in the country. Bangladesh also has a number of

repair workshops for repairing rail coaches, engines, etc. Major imports under transport equipment include rail coaches, passenger cars, automobile engines, bicycles, ships and boats. The value of imports of transport equipment in 1979 was U.S. \$ 89 million.

16. GDP by kind of activity, statistics related to imports and exports are presented in the following pages.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

GDP BY KIND OF ACTIVITY AT CURRENT PRICES - BANGLADESH

(In Billion Bangladesh Taka)

(Fiscal Year Ending 30 June)

Sl.No.	Kind of Activity	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1.	Agriculture	26.10	41.50	78.62	57.34	53.67	72.25	78.74	93.30	95.43	101.69
2.	Mining	2.90	4.27	8.38	8.18	8.66	9.40	10.32	12.51	15.01	16.49
3.	Manufacturing										
4.	Electricity, Gas & Water	0.13	0.12	0.13	0.19	0.23	0.24	0.26	0.37	0.43	0.59
5.	Construction	1.53	2.90	5.66	5.51	5.81	6.16	7.23	9.29	11.30	13.08
6.	Trade	3.83	6.51	10.98	10.75	10.38	12.83	15.63	19.05	20.81	22.73
7.	Transport & Communications	3.36	4.37	5.64	6.63	7.33	8.82	9.55	11.52	16.33	22.76
8.	Finance	0.56	0.65	1.01	0.97	1.00	1.03	1.45	1.83	2.02	2.24
9.	Public Administration	0.95	1.80	2.46	2.83	3.35	3.46	3.57	4.23	8.14	8.66
10.	Others	5.75	8.97	12.86	15.07	14.93	16.10	18.02	20.35	23.18	25.44
	Total	45.11	71.09	125.74	107.46	105.36	130.29	144.77	172.45	194.65	213.68*

* Provisional

Source : Key Indicators of Developing Member Countries of ADB, ADB, April 1983.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIABANGLADESH : CURRENCY EXCHANGE RATES

(Taka per U.S. Dollar)

<u>Year</u>	<u>Average Exchange Rates</u>
1971	7.761
1972	7.595
1973	7.742
1974	8.113
1975	12.019
1976	15.347
1977	15.375
1978	15.016
1979	15.552
1980	15.454
1981	17.987
1982	22.118

Source : Key Indicators of Developing Member Countries of ADB,
ADB, April 1983.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

BRANCH CHARACTERISTICS OF CAPITAL GOODS SECTOR - BANGLADESH

Sl.No.	Characteristic	Unit	1973	1974	1975 ^a	1976	1977	1978 ^a	1979 ^a
382 NON-ELECTRICAL MACHINERY									
1.	No. of establishments	Nos.	68	65	90	91	102	87	95
2.	Average number of employees	Thousand Nos.	2.17	2.17	3.34	3.53	3.71	3.23	3.70
3.	Wages & Salaries of employees	Million Taka	6.3	8.0	13.2	17.5	18.3	20.3	26.3
4.	Gross output (producers' prices)	Million Taka	23.3 ^a	26.6	62	81	130	110	148
5.	Value added (producers' prices)	Million Taka	11.6	11.4	27	29	48	44	54
383 ELECTRICAL MACHINERY									
1.	No. of establishments	Nos.	16	21	29	31	43	46	45
2.	Average number of employees	Thousand Nos.	1.13	0.81	1.91	2.65	4.11	4.34	5.35
3.	Wages & Salaries of employees	Million Taka	5.1	4.5	9.7	17.1	33.1	50.0	65.8
4.	Gross output (producers' prices)	Million Taka	30.2	39.7	95	195	514	553	671
5.	Value added (producers' prices)	Million Taka	18.4	18.8	53	95	283	245	285
3832 RADIO, TELEVISION, ETC.									
1.	No. of establishments	Nos.	5	6	6	7	10	13	10
2.	Average number of employees	Thousand Nos.	0.15	0.2	0.32	0.39	1.22	1.32	1.53
3.	Wages & Salaries of employees	Million Taka	0.7	1.4	1.8	3.3	12.9	19.0	22.7
4.	Gross output (producers' prices)	Million Taka	4.0	15.0	19.0	34.0	244	...	172
5.	Value added (producers' prices)	Million Taka	1.6	6.8	9.0	18.0	154	...	58
384 TRANSPORT EQUIPMENT									
1.	No. of establishments	Nos.	19	19	37	33	22	21	22
2.	Average number of employees	Thousand Nos.	1.29	1.19	4.98	11.3	4.55	4.06	3.72
3.	Wages & Salaries of employees	Million Taka	3.5	5.0	31.2	65.8	28.5	33.0	38.5
4.	Gross output (producers' prices)	Million Taka	20.2	26.7	146	275	392	457	353
5.	Value added (producers' prices)	Million Taka	7.8	10.9	54	69	223	208	196

contd..

EXHIBIT : 15

Sl.No.	Characteristic	Unit	1973	1974	1975 *	1976	1977	1978 *	1979 *
3841 SHIP BUILDING AND REPAIRING									
1.	No. of establishments	Nos.	5	2	12	8	3	3	4
2.	Average number of employees	Thousand Nos.	0.58	0.28	3.86	9.58	2.57	2.35	2.47
3.	Wages & Salaries of employees	Million Taka	1.1	0.8	25.5	51.2	16.2	20.4	27.5
4.	Gross output (producers' prices)	Million Taka	8.3	1.2	90	213	156	204	241
5.	Value added (producers' prices)	Million Taka	2.7	1.0	35	22	199	182	44
3843 MOTOR VEHICLES									
1.	No. of establishments	Nos.	5	6	14	14	11	8	9
2.	Average number of employees	Thousand Nos.	0.32	0.35	0.48	0.85	1.42	1.07	0.58
3.	Wages & Salaries of employees	Million Taka	1.3	2.1	2.5	10.1	8.4	7.5	4.2
4.	Gross output (producers' prices)	Million Taka	3.4	11.2	11	22	199	182	44
5.	Value added (producers' prices)	Million Taka	2.7	5.2	8	...	98	70	17
3 MANUFACTURING									
1.	No. of establishments	Nos.	1985	1441	1417	2560	2464	2792	2749
2.	Average number of employees	Thousand Nos.	180.63	314.71	293.21	373.92	362.11	392.33	399.60
3.	Wages & Salaries of employees	Million Taka	510.4	1308.7	1299.0	1765.7	1787.5	2393.5	3267.8
4.	Gross output (producers' prices)	Million Taka	3066.2	7800.4	9098.3	16259	19377	22509	26889
5.	Value added (producers' prices)	Million Taka	1369.0	4148.9	3781.3	5118 ^a	6929 ^a	8075	10221

* Provisional

a - Excludes 361 - Pottery, China, etc.

Source : Yearbook of Industrial Statistics, 1980
- Volume I, United Nations

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

IMPORTS OF SELECTED CAPITAL GOODS- BANGLADESH

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1975	1976	1977	1978	1979
71	NON-ELECTRICAL MACHINERY	52293	67401	66931	120404	192460
711	Power Generating Machinery	13107	12577	15668	16574	21265
7111	Steam Generating Boilers	...	...	270	303	5488
7112	Boiler House Plant	...	...	...	...	512
7113	Steam Engines	...	...	...	...	15
7114	Aircraft Engines	...	...	...	...	7
7115	Internal Combustion Engines	...	...	14290	15516	14176
7116	Gas Turbines	...	...	...	...	773
7117	Nuclear Reactor	...	...	...	...	...
7118	Engines, N.E.S.	...	...	...	...	294
712	Agricultural Machinery	4260	1050	1990	4256	5339
7121	Agricultural Machinery for Soil Preparation	...	...	...	...	179
7122	Agricultural Machinery for Harvesting, etc.	...	...	...	...	350
7123	Milking Machines, etc.	...	...	...	...	122
7125	Tractors	...	...	...	...	3634
7129	Agricultural Machinery, N.E.S.	...	...	...	...	1046
714	Office Machines	...	...	...	...	1300
7141	Typewriters, etc.	...	...	...	...	664
7142	Calculating machines, etc.	...	...	...	...	231
7143	Statistical machines	...	...	...	...	224
7149	Office Machines, N.E.S.	...	...	...	...	269
715	Metal working machinery	...	2463	1571	3616	4950
7151	Machine tools for metal working	...	...	...	...	4407
7152	Metal working machines, other than machine tools	...	...	...	...	543
717	Textile and Leather Machinery	10640	14517	20879	34453	39237
7171	Textile Machinery	...	...	20542	33463	37610
7172	Leather Machinery, etc.	...	...	...	...	102
7173	Sewing Machines	...	...	...	...	1445
718	Machines for special industries	3204	5420	7277	9157	33908
7181	Paper Mill Machinery, etc.	...	...	...	563	4795
7182	Printing Machinery, etc.	...	...	...	...	2822
7183	Food Processing Machines	...	...	...	...	4029
7184	Construction and Mining Machinery	...	...	1588	3509	20700
7185	Mineral Crushing Machinery, etc.	...	...	...	...	1553
719	Machinery & Appliances, N.E.S.	19773	29758	18124	58591	86380
7191	Heating and Cooling Equipment	...	...	1494	3028	14169
7192	Pumps and Centrifuges	...	...	3668	7082	12506

contd..

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1975	1976	1977	1978	1979
7193	Mechanical Handling Equipment	...	...	1356	9084	8720
7194	Domestic Appliances	...	...	...	...	16
7195	Powered tools, N.E.S.	...	...	...	...	1949
7196	Other non-electric machines	...	...	...	...	1872
7197	Ball, Roller Bearings, etc.	...	...	...	...	2677
7198	Machinery & Appliances, N.E.S.	...	...	...	6084	19837
7199	Parts & Accessories, N.E.S.	...	...	9778	25671	24634
72	ELECTRICAL MACHINERY	26190	29459	22056	51145	90684
722	Electrical Power Machinery and Switchgear	11115	15768	5464	18811	54791
7221	Electrical Power Machinery	6626	11159	5435	13755	42646
7222	Switchgear, etc.	...	4576	39	5055	12145
723	Equipment for Distributing Electricity	2488	1406	2035	11000	4617
7231	Electrical Insulating Equipment	2180	888	394	7649	2986
724	Telecommunications Apparatus	7654	5174	6299	8108	16781
7241	T.V. Broadcast Receivers	...	...	...	...	646
7242	Radio Broadcast Receivers	...	...	...	...	821
7249	Telecommunication Equipment, N.E.S.	...	...	5756	7885	15314
725	Domestic Electrical Equipment	...	...	...	...	1597
726	Electro-Medical Apparatus, etc.	...	...	...	...	308
7261	Electro-Medical Apparatus	...	...	...	...	87
7262	X-Ray Apparatus	...	...	...	...	221
729	Other Electrical Machinery	4325	5385	7210	10006	12591
7291	Batteries and Accumulators	...	...	...	...	2830
7292	Electric Lamps	...	...	...	...	300
7293	Thermionic, etc. valves and tubes	...	...	...	...	82
7294	Automotive Electrical Equipment	...	...	...	...	500
7295	Electrical Measuring Instruments	...	...	...	...	352
7296	Electro mechanical handtools	...	...	...	...	323
7299	Electrical Machinery, N.E.S.	...	...	4205	6517	8203
73	TRANSPORT EQUIPMENT	22936	39568	29889	65620	89205
731	Railway vehicles	5285	6948	4801	24512	20872
7313	Other Railway Locomotives	...	...	...	...	369
7315	Railway passenger cars	...	...	...	10942	12409
7316	Railway freight cars	...	...	...	...	14
7317	Parts of locomotives, etc.	...	...	4074	6550	7186
732	Road Motor Vehicles	10845	18371	18858	32194	43860
7321	Passenger Motor Cars	3550	5274	6949	13398	11285
7322	Buses (Including Trolley Buses)	...	...	...	...	3083
7323	Lorries and Trucks	...	...	...	...	4233
7324	Special purpose lorries, etc.	...	...	...	...	547

contd..

EXHIBIT 16

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1975	1976	1977	1978	1979
7327	Other chassis with engines	...	...	...	7730	15462
7328	Bodies, chassis, frames, etc.	2954	6615	7035	5502	6789
7329	Motor cycles, etc. and their parts	...	...	...	...	2461
733	Road vehicles, not motorized	1726	2803	3807	4540	9576
7331	Bicycles, etc.	...	...	3601	3776	7383
7333	Trailers, etc.	...	...	...	...	2193
734	Aircraft	...	...	...	...	299
7349	Airships, balloons, etc.	...	...	...	...	299
735	Ships and boats	5080	11734	2233	3163	14598
7353	Ships, other than warships	-	996	1256	2610	9706
7358	Ships, etc. for breaking up	...	...	...	...	1012
7359	Ships and boats, N.E.S.	...	...	...	...	3879
	TOTAL MACHINERY AND TRANSPORT EQUIPMENT	101419	136428	118796	245249	372357

Source : Yearbook of International Trade Statistics, 1975-1981
 - United Nations

EXHIBIT : 17

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIAEXPORTS OF SELECTED CAPITAL GOODS - BANGLADESH

(F.O.B. value in '000 U.S. Dollars)

SITC Code	Product Group	1979
71	NON-ELECTRICAL MACHINERY	81
711	Power-Generating Machinery	3
7115	Internal Combustion Engines	3
712	Agricultural Machinery	2
7125	Tractors	2
714	Office Machines	9
7149	Office Machines, N.E.S.	9
715	Metal Working Machinery	59
7151	Machine Tools for metal working	59
718	Machines for special industries	3
7182	Printing machinery, etc.	3
719	Machinery & appliances, N.E.S.	4
7191	Heating & Cooling Equipment	1
7199	Parts and accessories, N.E.S.	3
72	ELECTRICAL MACHINERY	2588
722	Electrical Power Machinery & Switchgear	30
7221	Electrical Power Machinery	30
723	Equipment for distribution of electricity	2551
7231	Insulated wire and cable	2551
724	Telecommunications apparatus	5

contd..

EXHIBIT : 17

(F.O.B. value in '000 U.S. Dollars)

SITC Code	Product Group	1979
7249	Telecommunication Equipment, N.E.S.	5
729	Other electrical machinery	2
7294	Automotive electrical equipment	2
73	TRANSPORT EQUIPMENT	560
732	Road motor vehicles	157
7321	Passenger motor cars	145
7323	Lorries and trucks	8
7328	Bodies, chassis, frames, etc.	4
733	Road vehicles, not motorized	16
7331	Bicycles, etc.	16
734	Aircraft	386
7349	Airships, balloons, etc.	386
	TOTAL MACHINERY AND TRANSPORT EQUIPMENT	3229

Source : Asian Industry in Figures - UNIDO

INDIA

INDIA

17. India is the second largest country in Asia having an overall land area of 3,287,588 sq. km. It had a population of 683.81 million according to the 1981 census making it the second most populous country in the world. The labour force was about 33 per cent of the total population as estimated during the 1971 census. Of the total workforce, almost 72 per cent was in the agricultural sector and about 10 per cent in the manufacturing sector. In 1978, of the total employment in the manufacturing sector, employment in non-electrical machinery, electrical machinery and transport equipment manufacturing sub-sectors was 5.97, 4.43 and 6.09 per cent respectively.

Share of manufacturing in GDP has risen from 13 per cent in 1970-71 to 15.6 per cent in 1978-79. Share of agriculture in GDP for the corresponding years were 43.3 per cent and 34.2 per cent respectively.

18. INDUSTRY

Indian engineering industry has achieved a continuous growth over the years and has emerged as the ninth industrial power in the world. It also has the third largest reservoir of technical and scientific manpower in the world.

- (a) India has now reached self-sufficiency in the manufacture of capital goods particularly the plant and equipment required by most of the major industries like cotton textiles, jute, sugar, chemicals, paper, cement, electrical and a wide range of consumer goods.
- (b) In the capital goods sector India has achieved remarkable growth. The production range includes ships, locomotives, vehicles, general purpose and sophisticated special purpose machine tools, power generators, industrial machinery, agricultural machinery and implements, office equipment, etc.

19. Statistics relating to the branch characteristics of the three industries viz., non-electrical, electrical and transport equipment, the production, imports and exports and the break-up of GDP by activities are presented at the end of this sub-section.

20. NON-ELECTRICAL MACHINERY

The Indian industry is capable of manufacturing a variety of non-electrical machinery for all industries. Products manufactured include agricultural implements, industrial machineries, machine tools, etc. The industry employed 384,000 persons in 1978. Gross output of the non-electrical machinery manufacturing industry was 24,858 million rupees and value added by the industry was 6,641 million rupees in 1978.

- (a) *Steam Turbines* : Total installed capacity for manufacture of high speed steam turbines in the year 1982 was 195 Nos. Against this the actual production in 1982 was 127 Nos., thus resulting in a capacity utilisation of about 65 per cent. At present there are three manufacturers engaged in manufacture of high speed steam turbines. The capacity of the turbines manufactured was generally upto 3 MW, though a few turbines of capacities upto 80 MW have been made by a public sector enterprise.

As regards turbines used in electric power generation, a public sector manufacturer is capable of manufacturing turbines upto 500 MW. Production of high rating turbines for electric power generation in 1978-79 and 1979-80 were 1694 MW and 1490 MW respectively.

- (b) *Diesel Engines* : Production of diesel engines went up from 55,000 units in 1963 to 156,981 units in 1982. Indian manufacturers have made considerable progress in the manufacture of diesel engines. The industry is capable of manufacturing engines upto 27,500 H.P. The engines are used as prime movers for pump sets, tractors, electrical generators, locomotives, boats and ocean going vessels. Engines manufactured also include turbocharged and supercharged versions. Exports of diesel engines and parts have gone up from 2.1 million rupees in 1959-60 to 478 million rupees in 1979-80. Diesel engines are exported to a number of developing countries in South East Asia, West Asia and Africa and to developed countries such as the U.K., Federal Republic of Germany, U.S.A., etc.
- (c) *Agricultural Machinery and Implements* : The capacity of agricultural tractors manufactured in India range from 10 HP to 75 HP. Majority of the tractor manufacturers are in the private sector. Indian industry also manufactures power tillers, ploughs, spades, shovels, hoes, threshing machines, combine harvesters, etc. These are mainly manufactured in the private sector by large and small-scale industries.
- (d) *Machine Tools* : There are about 143 large-scale manufacturers of machine tools of which three are in the public sector. These three units account for about 50 per cent of the total machine tool production. In addition there are as many as 300 small-scale manufacturers of machine tools in the country. The Indian industry manufactures both general purpose and special purpose machine tools covering a wide range of metal cutting, metal forming, physico-mechanical processing, machining centres, NC and CNC machines.

Imports as per cent of total consumption have come down from 89 per cent in 1955 to 14 per cent in 1978. Exports have gone up from 38,000 rupees in 1959-60 to 250.9 million rupees in 1979-80.

- (e) *Industrial Machinery* : India has been manufacturing a variety of industrial machinery for over two decades. Plant and machinery are manufactured for cement, pulp and paper, fertiliser, food processing, textile, rayon, rubber, tea, sugar, dairy, oil, leather, tobacco, construction and other industries. Almost the entire range of machinery required by these industries are manufactured in the country except for certain sophisticated special purpose equipment.

Textile and allied machinery manufactured include sophisticated ring frames, screen printing machines, dyeing machines, dryers, etc.

Indian manufacturers can produce complete sugar plants of 6000 TCD capacity and paper and pulp plants of 250 TPD capacity. Cement machinery are manufactured upto 3000 TPD capacity.

Earthmoving and construction machinery like scrappers upto 20 cubic yards capacity, crawler tractors upto 275 HP, dumpers upto 50 tonnes and a variety of conveyors, shovels and excavators are manufactured.

- (f) *Pumps and Compressors* : There are 54 manufacturers of pumps in the large- and medium-scale sectors and about 400 manufacturers in the small-scale sector engaged in the manufacture of pumps. Types of pumps manufactured include centrifugal, multi-stage, radial, split case, self priming, submersible, rotary, reciprocating and a variety of special purpose process pumps. Centrifugal pumps of discharge upto 22,000 cubic meter/minute, pressures upto 200 kg/cm² and

reciprocating pumps of discharge capacity upto 42 cubic meter/minute and pressures upto 420 kg/cm² are manufactured in the country.

Types of air and gas compressors manufactured include rotary, reciprocating and screw types. The capacity of gas compressors manufactured for process industries range upto 54,000 cubic meter/hr and that of air compressors upto 7,500 cubic meter/hr.

21. ELECTRICAL MACHINERY

The electrical machinery manufacturing industry in India comprising about 2882 manufacturers in 1978 employed 285,000 persons. The gross output of the industry and the value added were 23,508 million rupees and 5,747 million rupees in 1978.

- (a) *Rotating Machinery* : There are 37 units in the organised sector and about 250 small-scale units engaged in the manufacture of electric motors in 1982. India manufactures all types of AC, DC and FHP motors for domestic, agricultural and industrial applications. Motors upto 20,000 KW used in rolling mills are manufactured in the country. Thermal and hydro generators upto 200 MW and alternators upto 235 MW are manufactured in India. The manufacturing range is being expanded to cover 500 MW thermal turbo generators.
- (b) *Transformers and Switchgears* : There were 34 manufacturers of power and distribution transformers in 1982 in the organised sector. In addition, there were a number of manufacturers in the small-scale sector manufacturing distribution transformers of low ratings. Transformers for voltages upto 400 KV are manufactured in India. The switchgear industry in India has entered the field of SF₆ and vacuum circuit breakers and is capable of manufacturing control panels and switches for all applications.

- (c) *Cables and Conductors* : The range of cables and conductors manufactured include paper insulated lead covered and polyethylene cables, PVC insulated cables, AAC/ACSR conductors, etc. Exports of wires and cables have gone up from 20,000 rupees in 1959-60 to 132.9 million rupees in 1979-80. These exports are made to a number of African and South and South East Asian countries.
- (d) *Other Electrical Goods* : India is also self sufficient in manufacturing a number of other electrical goods such as lamps, fans, batteries, etc. Fluorescent, infra red, halogen, sodium vapour, mercury vapour and other special types of lamps are produced. Value of exports of fans have gone up from 7.2 million rupees in 1959-60 to 128.9 million rupees in 1979-80.
- (e) *Radio and Television Receivers* : In 1982 there were 8 manufacturers of radio receivers and 11 manufacturers of TV receivers in the organised sector. In addition, a sizable quantity of radio and TV receivers are assembled by a large number of small-scale operators. India is also manufacturing colour TV sets, video recorders and cassette players, radio and TV components, picture tubes, etc.
- (f) *Other Electronic Goods* : Other electronic goods manufactured in India include telephones, communication equipment and other sophisticated equipment for applications in defence, space and atomic energy. Computers, microprocessors, electric and electronic typewriters and other office equipment, sound recording and reproducing equipment and a variety of active and passive electronic components are also manufactured.

22. TRANSPORT EQUIPMENT

Indian industry is equipped to manufacture all types of equipment for water, rail and road transport. The industry employed about 392,000 people in 1978 and the gross output of the industry in 1978 was 21263 million rupees. The value added by the industry was 5924 million rupees in 1978.

- (a) *Shipping* : India has well established ship building and repairing facilities for ocean going vessels. There are about six major ship building units capable of building navy ships, merchant/cargo ships, luxury passenger liners, dredgers, trawlers, submarines, tugs, etc. The Indian ship building industry is capable of building ships upto 85,000 dwt. The majority of Indian ship building capacity is in the public sector. There are a number of private ship yards constructing harbour crafts and inland vessels. The Indian industry is also geared to manufacture a variety of ship ancillaries. The exports of coastal vessels and ships have gone up from 5,000 rupees in 1964-65 to 153.36 million rupees in 1979-80.
- (b) *Railway Equipment* : India is in a position to manufacture railway engines, coaches and wagons of various types. Though the railway engines and wagons are manufactured in both public and private sectors, rail coaches are built only by two public sector undertakings. The types of engines manufactured in the country include steam, diesel and electric. India has also been manufacturing railway signalling equipment, rails and other allied items for over two decades.

(c) *Road Transport* : Indian manufacturers of road transport vehicles have been manufacturing different types of vehicles over the last 40 years.

There were 8 manufacturers engaged in the production of commercial vehicles in 1982 with an annual installed capacity of 103,000 Nos. Major manufacturers are in the private sector. Production of commercial vehicles went up from 16,033 in 1957 to 88,400 in 1982. Indian manufacturers have started manufacturing turbo-charged and multi-axle vehicles.

There were 4 manufacturers of passenger cars in 1982 all in private sector. Recently some of these manufacturers have gone in for foreign collaboration to improve their product quality and performance. Another public sector plant has recently commenced production of passenger cars and light commercial vehicles in collaboration with Suzuki of Japan.

The two Indian manufacturers of jeeps, both in private sector, with an installed capacity of 18,750 Nos. per annum produced 21,400 vehicles in 1982. Jeeps of both petrol and diesel versions are made in India.

Ordnance factory also manufactures trucks and jeeps for the use of military forces.

There were 33 manufacturers engaged in the manufacture of two-wheelers and three-wheelers in 1981. The products manufactured include motorcycles, scooters, mopeds and three-wheelers. Production of these have gone up from 17,374 Nos. in 1960 to 623,600 Nos. in 1982. Exports of scooters and three-wheelers went up from 9 million rupees in 1974-75 to 52 million rupees in 1977-78.

A large number of units in the private sector are being set up to manufacture a variety of two-wheelers. Some of these have collaboration with leading manufacturers in the world.

Indian automobile industry is also manufacturing all kinds of components and spares required for the vehicles.

- (d) *Bicycles* : An important mode of transport in rural India is bicycles. The production of bicycles has gone up steadily from 2.48 million Nos. in 1974 to 4.6 million Nos. in 1982. Exports of bicycles have also shown a phenomenal growth. The value of exports went up from 1.69 million rupees in 1959-60 to 408.64 million rupees in 1979-80.

Hindustan Aeronautics Limited, a public sector company, has been manufacturing helicopters, fighter planes and trainer aircraft for over two decades.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

GDP BY KIND OF ACTIVITY AT CURRENT FACTOR COST -- INDIA

(In Billion Rupees)

(Fiscal Year: Beginning 1 April)

Sl.No.	Kind of Activity	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1.	Agriculture	199.6	269.9	290.5	298.5	294.9	326.5	335.4	343.7	426.4	470.9
2.	Mining	4.3	4.9	7.0	8.8	10.1	11.2	12.2	15.2	17.6	31.4
3.	Manufacturing	63.8	75.7	98.6	103.8	115.2	128.6	147.9	169.9	197.0	224.7
4.	Electricity, Gas & Water	4.9	5.3	6.8	8.4	11.0	12.5	14.9	17.0	18.8	24.2
5.	Construction	23.2	24.2	26.4	32.9	39.1	45.4	46.7	46.6	54.8	62.3
6.	Trade	48.6	60.3	81.1	92.1	96.0	109.8	117.5	139.4	178.3	200.3
7.	Transport & Communications	22.3	24.9	31.3	35.2	41.6	45.4	52.9	57.5	64.2	76.6
8.	Finance	26.1	30.1	35.2	41.2	47.2	52.5	58.5	65.5	74.9	84.7
9.	Public Administration	19.8	22.2	28.6	32.4	34.5	36.9	40.7	45.9	54.2	63.2
10.	Others	20.2	22.5	27.4	30.5	35.0	38.5	43.1	48.1	56.6	66.2
	Total	432.4	537.7	632.6	683.7	714.8	807.3	869.7	948.7	1142.7	1304.7

Source : Key Indicators of Developing Member Countries of ADG, ADG, April 1983

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIAINDIA : CURRENCY EXCHANGE RATES

(Rupees per U.S.Dollar)

<u>Year</u>	<u>Average Exchange Rate</u>
1970	7.500
1971	7.501
1972	7.594
1973	7.742
1974	8.102
1975	8.376
1976	8.960
1977	8.739
1978	8.193
1979	8.126
1980	7.863
1981	8.659
1982	9.455

Source : Key Indicators of Developing Member Countries of ADB,
ADB, April 1983.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PRODUCTION OF SELECTED COMMODITIES

Sl. No.	Industry	Accounting Unit	<u>NON-ELECTRICAL MACHINERY</u>							<u>INDIA</u>			
			<u>ISIC - 382</u>	1975	1976	1977	1978	1979	1980	1981	1982		Capacity Utilisation
										No. of Installed Units	Production Capacity		
1.	Diesel Engines	Nos.	129626	...	136051	140189	144931	176473	175993	31	313300	156981	50
2.	Petrol/Kerosene Engines	Nos.	42840	36072	40193	53598	46267			4 ^b	117000 ^b	41681 ^b	35.6 ^b
3.	Motorised Scrapers	Nos.	18	46	31	45	...			1 ^b	150 ^b	65 ^b	43.3 ^b
4.	Combine Harvesters	Nos.	...	...	30	168	424			1 ^b	600 ^b	204 ^b	34.4 ^b
5.	Agricultural Tractors	Nos.	32441	36675	34729	53046	60142	67624	84320	15	90000	68067	76
6.	Power Tillers	Nos.	6366	1573	1767	2125	2488	2096	2656	5	16000	2522	16
7.	Machine Tools	Million Rs.	1038.5	1169.3	1096	1211.2	1560	1860	2340	143	2900	2700	93
7.1	Automatics	Nos.	463	423	345	537	...	...	...	...	...	...	...
7.2	Boring Machines	Nos.	149	126	107	107	...	...	...	...	...	...	...
7.3	Broaching Machines	Nos.	16	18	44	19	...	...	...	...	...	...	...
7.4	Drilling Machines	Nos.	2338	2418	2070	1929	...	...	...	...	...	...	...
7.5	Gear Cutting Machines	Nos.	78	36	41	33	...	...	...	...	...	...	...
7.6	Grinding Machines	Nos.	1617	2497	2702	892	...	...	...	...	...	...	...
7.7	Lapping, Honing & Polishing Machines	Nos.	80	28	70	75	...	...	...	...	...	...	...
7.8	Capstan & Turret Lathes	Nos.	427	327	402	470	...	...	...	...	...	...	...
7.9	Lathes	Nos.	4110	3406	3429	3701	...	...	...	...	...	...	...
7.10	Milling Machines	Nos.	924	948	968	983	...	...	...	...	...	...	...
7.11	Planing Machines	Nos.	20	19	15	27	...	...	...	...	...	...	...
7.12	Presses	Nos.	615	576	466	439	...	...	...	...	...	...	...
7.13	Sawing Machines	Nos.	321	195	157	167	...	...	...	...	...	...	...
7.14	Shaping Machines	Nos.	297	252	253	297	...	...	...	...	...	...	...

contd..

Sl. No.	Industry	Accounting Unit	1975	1976	1977
7.15	Shearing & Sheet Metals Machines	Nos.	258	231	142
7.16	Slotting Machines	Nos.	29	46	45
7.17	Screwing & Threading Machines	Nos.	79	48	26
7.18	Hammer & Forging Machines	Nos.	69	65	70
7.19	Die Casting Machines	Nos.	28	18	16
7.20	Foundry Moulding Machines	Nos.	134	92	110
7.21	Wood Working Machines	Nos.	399	481	203
7.22	Plastic Working Machines	Nos.	108	107	140
7.23	Can Making Machines	Nos.	326	231	159
7.24	Wire Working Machines	Nos.	90	60	140
7.25	Machinetool Accessories	Million Rs.	96.8	136.5	113.9
7.26	Portable Electric Pneumatic Tools	Million Rs.	49.9	51.8	50.9
7.27	Hydraulic & Pneumatic Equipment	Million Rs.	41.9	46.3	62.3
7.28	Machinetools (MKS)	Million Rs.	99.2	105.5	88.2
8.	Sugar Mill Machinery	Million Rs.	280	377.6	402.7
9.	Cement Mill Machinery	Million Rs.	70	90.7	209.5
10.	Boilers	Million Rs.	1200	1483.4	1873.6
11.	Gas Cylinders LPG	Million Rs.	140	48.1	13.7
12.	Mining Machinery	Million Rs.	72.9	144	133.8
13.	Chemical Machinery	Million Rs.	442.6	673.9	688.8
14.	Ceramic Machinery	Million Rs.	...	...	10.9

EXHIBIT :20

1978	1979	1980	1981	1982			
				No. of Units	Installed Capacity	Production Capacity	Capacity Utilisa- tion
210	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...
47	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...
116	...	...	...	...	...	...	...
99	...	...	...	...	...	...	...
147	...	...	...	...	...	...	...
234	...	...	...	...	...	...	...
94	...	...	...	...	...	...	...
176.9	...	...	...	...	...	...	...
50.0	...	...	...	...	...	...	...
93.8	...	...	...	...	...	...	...
91.8	...	...	...	...	...	...	...
332.4	319.9	242.3	282.5	27	573.5	374.5	65
361	284.8	350.5	374.5	14	685	468.5	68
1933	2463.1	2787.7	3438	...	3800	3981	105
49.8	58.7	...	...	...	...	...	...
225	240	352.5	435.9	...	500	634	127
719.9	744.5	1004.8	1218.3	...	2000	1275	64
9.3	4.6	5.4	10.5	5	30	18.4	61

contd..

EXHIBIT 20

Sl. No.	Industry	Accounting Unit	1975	1976	1977	1978	1979	1980	1981	1982			
										No. of Installed Units	Production Capacity	Capacity Utilisation (%)	
15.	Food Processing Machinery	Million Rs.	14.7	6.7	6.7	28.1	23.9	22.9	28.7	13	57	15.4	27
16.	Bottling Plants	Million Rs.	...	...	6.5	6.3	26.2	22.5	...	3 ^a	30 ^a	27.1 ^a	90 ^a
17.	Packaging Machinery	Million Rs.	...	...	10.7	18.4	18.4	33.9	35.2	12	70	22.3	32
18.	Rubber Machines	Million Rs.	...	...	79	60.4	75.0	102.5	95.2	16	195	123.7	63
19.	Tea Machinery	million Rs.	27.4	31.0	32.5	38.1	33.7	40.4	...	6 ^a	50 ^a	35.2 ^a	78 ^a
20.	Weighing Machines	Million Rs.	61.6	79.0	72.2	58.0	61.6	67.5	...	6 ^a	100 ^a	79.4 ^a	79 ^a
21.	Oil Mill Machinery	Million Rs.	8.5	7.1	6.5	7.3	6.5	12.6	...	9 ^a	20 ^a	13.5 ^a	68 ^a
22.	Dal & Flour Mill Machinery	Million Rs.	...	...	2.2	2.0	1.8	1.5	...	3 ^a	5 ^a	0.42 ^a	3 ^a
23.	Pesticide Equipment	Million Rs.	...	...	23.4	36.6	36.0	43.1	...	1 ^a	60 ^a	57.4 ^a	96 ^a
24.	Leather Machinery	Million Rs.	7.0	1.3	3.9	14.9	3.3	6.8	6.3	7	50	10.7	21
25.	Tobacco Machinery	Million Rs.	11.8	10.3	13.8	23.8	20.1	22.2	...	2 ^a	45 ^a	38.3 ^a	85 ^a
26.	Rice Mill Machinery	Million Rs.	7.0	15.5	21.6	19.7	21.6	31	...	3 ^a	40 ^a	33.5 ^a	64 ^a
27.	Synthetics & Detergent Machines	Million Rs.	...	...	2.1	2.7	8.1	36.4	...	3 ^a	40 ^a	16.2 ^a	41 ^a
28.	Oil & Gas Firing Equipment	Million Rs.	6.3	6.3	6.6	6.9	5.7	6.6	...	6 ^a	8 ^a	9.8 ^a	122 ^a
29.	Biscuit & Bread Making Machinery	Thousand Rs.	1280	500	140	172	490	360	...	2 ^a	2800 ^a	...	...
30.	Razor Blade Machinery	Thousand Rs.	1720	3950	-	-	206	281	...	2 ^a	5000 ^a	256 ^a	5 ^a
31.	Metallurgical Machinery	Million Rs.	343.4	133.7	129.9	106.2	123.8	463.2	630	...	800	650	81
32.	Gears & Gear Boxes	Million Rs.	...	...	164.9	184.4	185.9	230	...	52 ^a	400 ^a	346.4 ^a	87 ^a
33.	Textile Machinery	Million Rs.	...	...	530	639	1153	1953	2491.2	...	3400	2200	65

contd..

EXHIBIT : 20

Sl. No.	Industry	Accounting Unit	1975	1976	1977	1978	1979	1980	1981	1982			
										No. of Installed Units	Production Capacity	Capacity Utilisation (%)	
34.	Printing Machinery	Million Rs.	31.7	29.4	28.9	46	73.1	83.4	107.8	11	150	148.7	99
35.	Paper and Pulp Machinery	Million Rs.	194.3	150.1	133.8	255	305.8	366.1	237	...	440	321	73
36.	Dairy Machinery	Million Rs.	46.1	50.5	64.2	84.6	77.3	102.9	87.8	14	180	81.4	45
37.	Spray Drying Plants	Million Rs.	116.3	5.6	4.1	20.7	42.7	41.8	...	3 ^a	50 ^a	39.4 ^a	79 ^a
38.	Construction Machinery	Million Rs.	36	47	42.1	46.6	47.9	59.9	...	13 ^a	100 ^a	88.8 ^a	89 ^a
39.	Rayon & Synthetic Machinery	Million Rs.	82.3	105	111.6	119.7	208.3	259.9	...	10 ^a	250 ^a	321 ^a	128 ^a
40.	Drilling Equipment	Million Rs.	80	121.8	199.6	153.8	74.8	230.5	252.5	16	385	182	47
41.	Excavators	Nos.	103	189	141	170	207	...	...	4 ^b	305 ^b	234 ^b	76.7 ^b
42.	Fork Lift Trucks	Nos.	473	434	569	663	596	...	...	6 ^b	1380 ^b	908 ^b	65.8 ^b
43.	Mobile Cranes	Nos.	152	140	282	272	253	...	...	11 ^b	1342 ^b	296 ^b	22.1 ^b
44.	Dumpers	Nos.	313	261	320	448	469	...	...	4 ^b	688 ^b	497 ^b	72.2 ^b
45.	Crawler Tractors	Nos.	373	446	407	323	263	...	...	4 ^b	700 ^b	286 ^b	40.9 ^b
46.	Loaders	Nos.	87	89	185	184	317	...	...	5 ^b	405 ^b	322 ^b	79.5 ^b
47.	Pumps	Thousand Nos.	287	288	359.6	372.2	358.5	...	280.73	54	700	440	65
48.	Air/Gas Compressors	Nos.	5981	6754	7944	10053	12293	...	...	11 ^b	15320 ^b	16112 ^b	105 ^b
OFFICE EQUIPMENT													
49.	Typewriters	Thousand Nos.	49.6	58.3	64.5	82.8	91.8	94.1	81.7	5	146	116	80
50.	Calculators	Million Rs.	1026.4	2485.8	42.5	34.1	46.6	993.8	969.1	7	...	826	...
51.	Sewing Machines	Thousand Nos.	265.8	360.7	318.6	244.9	335.8	341.1	343	4	473	326	69
52.	Domestic Refrigerator	Thousand Nos.	108.9	107.1	141.4	178.3	209.7	277.8	316	...	339	350	103
53.	Room Airconditioner	Thousand Nos.	8.6	15.3	20.7	21.3	25.9	26.2	32.2	...	49	30	61
54.	Airconditioning & Refrigeration Equipment	Million Rs.	114.6	...	162.7	177.8	...	161	...	21 ^a	305.7 ^a	240.9 ^a	79 ^a

a - Figures relate to 1981 b - Figures relate to 1980

Source : 1) Handbook of Statistics - Association of Indian Engg. Industry, 1977 - 1983

2) The Economic Scene - Tata Economic Consultancy Services (March 30, 1980)

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PRODUCTION OF SELECTED COMMODITIES

ISIC - 383

ELECTRICAL EQUIPMENTINDIA

Sl. No.	Industry	Accounting Unit	1975	1976	1977	1978	1979	1980	1981	1982			
										No. of Installed Units	Production Capacity	Capacity Utilisation (%)	
1.	Power & Distribution Transformers	Million KVA	13.3	13.8	17.3	18.5	28.7	19.2	23.2	34	30	20.2	67
2.	L.T. Circuit Breakers including MCCB	Nos.	14896	16330	13754	15708	...	...	31160	22	58970	34430	58
3.	H.T. Circuit Breakers	Nos.	7920	8310	6700	7050	7956	8811	10924	21	19950	9805	49
4.	House Service Meters (SP & PP)	Thousand Nos.	1648	1736	1938	2382	2810	3821	3163	...	...	3060	...
5.	Electric Motors	Million HP	3.4	3.5	4	4.1	3.8	3.9	6.2	37	6.3	4.8	76
6.	Motor Starters & Contactors	Thousand Nos.	916.9	924.7	871.4	775.1	1008.7	1154.1	1460	...	...	1521	...
7.	Winding Wires & Strips	Metric Tonnes	18768	19718	20858	25168	23389	25463	24040	38	45150	24818	55
8.	ACC/ACSR Conductors	Tonnes	43267	84027	65605	62483	72019	74375	68820	47	156306	51630	33
9.	PVC/VIR Cables	Million Core Mts.	380.5	483.5	479.9	524.9	503.8	491.4	462.9	25	1400	480	34
10.	PVC/PILC/XLP Power Cables	Km.	14355	17383	19480	15746	3476	25061	21760	19	45803	21200	46
11.	Coaxial Cables	Km.	3495	2939	2529	2744	...	2100	2141	1	4200	3562	85
12.	Dry Core/Jelly Filled Telecommunication Cables	Km.	...	...	10655	11781	...	8923	12280	3	33000	30320	92
13.	GLS Lamps	Million Nos.	127	159	160.8	178.6	204.9	201.9	243	17	256.5	272.4	106
14.	Fluorescent Tubes	Million Nos.	17.1	16.9	17.7	20.6	23.3	27.6	31.2	12	33.4	32.2	99
15.	Dry Cells	Million Nos.	551	594	621.8	804	856.9	991.4	1033	13	1504	1158	77
16.	Storage Batteries	Million Nos.	1.34	1.4	1.63	1.65	1.66	1.57	1.99	9	2.7	2.0	74

contd..

EXHIBIT : 21

Sl. No.	Industry	Accounting Unit:	1975	1976	1977	1978	1979	1980	1981	1982			
										No. of Units	Installed Capacity	Production Capacity	Capacity Utilisation (%)
17.	Electric Fans	Million Nos.	2.17	2.38	3.41	3.00	3.72	4.12	4.1	17	4.9	4.0	83
18.	Radio Receivers	Thousand Nos.	1520	1677	1813	1919	2139	1683	1919	8	....	1563	....
19.	T.V. Receivers	Nos.	43300	48135	63821	60310	76211	86817	114566	11	....	125172	....
20.	Amps/Stereo/P.A. Equipment	Nos.	4052	3950	7689	7688	5938	4002	....	6 ^a	12770 ^a	7608 ^a	60 ^a
21.	Record Players	Thousand Nos.	113	89	99	111	133	99	202	4	....	104	....
22.	Tape Recorders	Nos.	5297	22780	47633	68717	36009	39738	27950	5	....	41468	....
23.	Telephones	Thousand Nos.	364.3	408.5	437.7	366.5	421	....	....	3 ^a	427 ^a	353 ^a	83 ^a
24.	Transistors/Diodes	Million Nos.	59.8	52	64.7	77.4	52.3	109.3	57	9	...	110	...
25.	T.V. Picture Tubes	Thousand Nos.	70	60	90.9	141	199	259	240	5	...	334	...
26.	Transmitting Tubes	Thousand Nos.	10	9	10.4	10.1	8.9	10.4	7	1	...	9	...
27.	Cathode Ray Tubes	Nos.	1000	1000	1162	1617	2306	3066	....	2	....	3208	....
28.	Microwave Tubes	Nos.	200	2600	190	255	249	250	149	1	...	276	...
HEAVY ENGINEERING													
29.	Industrial Furnaces Electric arc melting and induction furnaces, induction heating equipment and heat treatment furnaces	Million Nos.	...	...	120	122.6	....	78.2	102.3	14	197	150	76
30.	Lifts	Nos.	655	771	696	886	862	866	992	....	1500	960	65

^a : Figures relate to 1981

Source : i) Handbook of Statistics, Association of Indian Engg. Industry, 1977 - 1983
ii) Indian Electrical Manufacturers' Association

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PRODUCTION OF SELECTED COMMODITIES

ISIC - 384

TRANSPORT EQUIPMENT**INDIA**

Sl. No.	Industry	Accounting Unit	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982			
												So. of Installed Units	Capacity	Production	Capacity Utilisation(%)
1.	Ship Building	Million Rs.	...	569.4	595.8	1288.2	876.1	561.7	561.7	...	...	...	...	...	...
2.	Railway Wagons	Thousand Nos.	11.5	9.2	10.2	11.3	13.1	11.1	12.5	...	13.1	...	30	12	40
3.	Commercial Vehicles	Thousand Nos.	44.9	40.6	42.7	46.7	41.2	51.6	58.6	65.9	87.3	8	103	88.4	86
4.	Passenger Cars	Thousand Nos.	39.9	36.8	23.3	31.8	38.3	34.6	29.3	30.5	42.4	4	53	42.6	81
5.	Jeeps	Thousand Nos.	13.1	10.0	8.2	6.9	9.6	11.0	12.3	17.3	19.3	2	19	21.4	112
6.	Motorcycles	Thousand Nos.	150.2 ^a	54.1	69.7	73.3	67.0	86.8	87.0	101.5	110.5	5	160	130	81
7.	Scoters	Thousand Nos.	...	85.6	101.6	152.6	160.4	168.0	153.5	210.1	201.4	13	334	249	75
8.	Three-wheelers	Thousand Nos.	11.3	12.7	12.1	18.9	18.4	19.2	17.1	26.5	24.8	3	40	30.6	77
9.	Mopeds & Scooterettes	Thousand Nos.	...	29.2	34.2	36.5	37.5	43.8	65.7	109.0	188.4	12	321	214	67
10.	Trailers	Thousand Nos.	...	2.5	1.7	1.8	3.2	2.5	2.5	2.9	...	...	...	...	...
11.	Bicycles	Million Nos.	...	2.5	2.3	2.6	3.2	3.4	3.9	3.8	5.1	16	...	4.6	...

^a Includes Mopeds & Scooters

Source : Handbook of Statistics, Association of Indian Engineering Industry, 1977 - 1983.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

BRANCH CHARACTERISTICS OF CAPITAL GOODS MANUFACTURING SECTOR - INDIA

Sl. No.	Characteristic	Unit	1970	1973	1974	1975	1976	1977	1978
382 NON-ELECTRICAL MACHINERY									
1.	No. of establishments	Nos.	6011	4713	4808	5449	5881	6203	6327
2.	Avg. number of persons engaged	Thousand Nos.	303	324	335	342	348	384	384
3.	Wages & Salaries of employees	Million Rs.	1111	1706	2098	2325	2571	2973	3231
4.	Gross output (factor values)	Million Rs.	7130	13579	14856	16921	20150	21909	24858
5.	Value added (factor values)	Million Rs.	2257	2404	4745	5197	6308	6090	6641
6.	Gross fixed capital formation (total)	Million Rs.	...	...	...	...	...	1342*	817*
3825 OFFICE, COMPUTING, ETC.									
1.	No. of establishments	Nos.	...	81	125	119	80	95	92
2.	Avg. number of persons engaged	Thousand Nos.	...	10	14	16	8	8	8
3.	Wages & Salaries of employees	Million Rs.	...	61	99	149	62	77	80
4.	Gross output (factor values)	Million Rs.	...	267	519	790	260	308	334
5.	Value added (factor values)	Million Rs.	...	114	258	325	117	125	145
6.	Gross fixed capital formation (total)	Million Rs.	...	...	...	...	...	25*	- 5*
383 ELECTRICAL MACHINERY									
1.	No. of establishments	Nos.	1714	2380	2340	2390	2596	2740	2882
2.	Avg. number of persons engaged	Thousand Nos.	217	252	254	261	267	274	285
3.	Wages & Salaries of employees	Million Rs.	996	1526	1922	2159	2252	2562	2732
4.	Gross output (factor values)	Million Rs.	6914	11150	13844	16774	19180	20996	23508
5.	Value added (factor values)	Million Rs.	2064	3842	4252	4938	5196	5225	5747
6.	Gross fixed capital formation (total)	Million Rs.	...	...	...	...	...	853*	850*

contd..

Sl.No.	Characteristic	Unit
3832 RADIO, TELEVISION, ETC.		
1.	No. of establishments	Nos.
2.	Avg. number of persons engaged	Thousand Nos.
3.	Wages & Salaries of employees	Million Rs.
4.	Gross output (factor values)	Million Rs.
5.	Value added (factor values)	Million Rs.
6.	Gross fixed capital formation (total)	Million Rs.
384 TRANSPORT EQUIPMENT		
1.	No. of establishments	Nos.
2.	Avg. number of persons engaged	Thousand Nos.
3.	Wages & Salaries of employees	Million Rs.
4.	Gross output (factor values)	Million Rs.
5.	Value added (factor values)	Million Rs.
6.	Gross fixed capital formation (total)	Million Rs.
3841 SHIP BUILDING & REPAIRING		
1.	No. of establishments	Nos.
2.	Avg. number of persons engaged	Thousand Nos.
3.	Wages & Salaries of employees	Million Rs.
4.	Gross output (factor values)	Million Rs.
5.	Value added (factor values)	Million Rs.
6.	Gross fixed capital formation (total)	Million Rs.
3843 MOTOR VEHICLES		
1.	No. of establishments	Nos.
2.	Avg. number of persons engaged	Thousand Nos.
3.	Wages & Salaries of employees	Million Rs.
4.	Gross output (factor values)	Million Rs.
5.	Value added (factor values)	Million Rs.
6.	Gross fixed capital formation (total)	Million Rs.

EXHIBIT : 23

1970	1973	1974	1975	1976	1977	1978
....	305	354	437	475	483	525
....	51	55	56	61	62	67
....	315	414	438	498	566	631
....	1543	2040	2230	2675	2980	3325
....	604	803	824	915	1000	1045
....	....	....	....	....	150*	295*
3239	1600	1680	2152	2204	2348	2528
499	391	395	356	340	356	392
1995	2201	2650	2729	2719	3026	3625
8749	11235	13607	14396	16411	17028	21263
2747	3536	4431	4460	5165	4933	5924
...	...	....	....	....	898*	8271*
92	178	167	112	136	143	154
28	46	59	33	34	39	48
125	322	379	277	294	411	503
368	983	1202	1089	1460	1201	1714
153	415	548	450	503	449	756
....	....	....	....	...	173*	300*
240	523	569	990	1021	1023	1113
100	122	125	128	129	133	141
521	830	1031	1111	1171	1261	1524
3779	5810	7403	8340	9538	9578
1021	1692	2158	2347	2865	2683	3132
....	450*	785*

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contd..

Sl.No.	Characteristic	Unit	1970	1973	1974	1975	1976	1977	1978
3 MANUFACTURING									
1.	No. of establishments	Nos.	64428	60889	61165	68259	77628	81169	84311
2.	Avg. number of persons engaged	Thousand Nos.	4859	5139	5408	5662	5868	6222	6432
3.	Wages & Salaries of employees	Million Rs.	15668	22174	27059	30261	31442	35834	39446
4.	Gross output (factor values)	Million Rs.	130412	185805	244472	276828	314299	358633	406546
5.	Value added (factor values)	Million Rs.	33362	46399	62010	64152	72872	71228	81147
6.	Gross fixed capital formation	Million Rs.	1781	---	---	---	---	21244	30450

* Provisional

Source : Yearbook of Industrial Statistics - Vol.I, United Nations, 1975 - 1980

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

IMPORTS OF SELECTED CAPITAL GOODS - INDIA

(Figures in '000 U.S. \$)

SITC Code	Product Group	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
71	NON-ELECTRICAL MACHINERY	339009	370767	354595	477408	530094	599357	703067	789204	830705	861598
711	Power Generating Machinery	27486	39223	46554	52256	53115	71121	67964	109867	91826	104959
7111	Steam Generating Boilers	7114	5388	12461	19221	15393	18066	12438	16016	30538	26428
7112	Boiler House Plant	134	.....	.....	.....	.....	77	.....	.....	.....	1542
7113	Steam Engines	3710	4291	7554	9117	6760	9382	10864	27770	18181	21219
7114	Aircraft Engines	3304	11880	8898	4706	6968	12956	.....	.....	.....	4071
7115	Internal Combustion Engines	11313	16296	14574	16511	22389	27014	26093	46295	27841	40621
7116	Gas Turbines	482	...	...	.....	.....	263	.....	.....	.....	13130
7117	Nuclear Reactors	1021	...	...	...	...	796	.....	.....	...	533
7118	Engines, N.E.S.	409	...	...	...	...	2566	...	...	...	7407
712	Agricultural Machinery	32987	42593	24170	21490	10904	8414	23665	10069	16835	12142
7121	Agricultural Machinery for Soil Preparation	3808	7236	5224	7460	3141	2774	...	...	...	1195
7122	Agricultural Machinery for Harvesting, etc.	496	.....	.....	.....	...	144	...	...	...	863
7123	Milking Machines, etc.	1013	.....	.....	.....	...	857	.....	.....	.....	545
7125	Tractors	25280	28363	14165	8567	4507	4032	17187	7540	945	8188
7129	Agricultural Machinery, N.E.S.	2390	...	.....	.....	.....	608	.....	.....	...	1331
714	Office Machines	3122	8109	5990	10441	8968	12296	.....	.....	.....	28241
7141	Typewriters, etc.	499	.....	.....	.....	.....	240	.....	.....	...	368
7142	Calculating Machines, etc.	736	.....	.....	.....	.....	1394	.....	.....	...	2401
7143	Statistical Machines	501	.....	.....	.....	.....	2816	.....	.....	...	9463
7149	Office Machines, N.E.S.	1787	.....	.....	.....	.....	7844	.....	.....	...	16009
715	Metal Working Machinery	25633	31619	37609	27868	37743	45195	46413	45947	58922	67340
7151	Machines Tools for Metal Working	19234	24163	26358	21867	29848	40804	36962	37253	43147	53901

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SITC Code	Product Group	1970	1971	1972
7150	Metal Working Machines, other than Machine Tools	6399	7456	11251
717	Textile & Leather Machinery	15728	19969	25573
7171	Textile Machinery	14673	18348	24285
7172	Leather Machinery, etc.	537	...	...
7173	Sewing Machines	519	...	...
718	Machines for Special Industries	40614	41119	38698
7181	Paper Mill Machinery, etc.	3016	5433	...
7182	Printing Machinery, etc.	10118	...	...
7183	Food Processing Machines	1450	11653	14054
7184	Construction & Mining Machinery	21667	20885	16104
7185	Mineral Crushing Machinery, etc.	4363	...	...
719	Machinery & Appliances, N.E.S.	193438	188135	176002
7191	Heating & Cooling Equipment	43529	37724	33988
7192	Pumps & Centrifuges	10170	11355	14916
7193	Mechanical Handling Equipment	5511	5272	6800
7194	Domestic Appliances	68	...	...
7195	Powered Tools, N.E.S.	7128	9242	10326
7196	Other Non-Electric Machines	1598	...	...
7197	Ball, Roller Bearings, etc.	11860	16052	14450
7198	Machinery & Appliances, N.E.S.	54595	35835	17403
7199	Parts & Accessories, N.E.S.	58979	74427	75236
72	ELECTRICAL MACHINERY	89142	123251	152624
722	Electrical Power Machinery & Switchgear	39180	49232	59296
7221	Electrical Power Machinery	28258	36049	46439
7222	Switchgear, etc.	10922	13184	12856

EXHIBIT : 24

(Figures in '000 U.S. \$)

1973	1974	1975	1976	1977	1978	1979
6001	7895	4390	...	...	...	13439
27266	25169	25356	20462	37032	48090	62508
26028	23070	22285	16354	24969	40128	51656
...	...	1382	...	...	...	6038
...	...	1688	...	...	...	4814
41309	55766	68554	115609	137850	129072	105018
...	...	9158	...	...	...	29993
...	...	8074	...	...	...	14996
9674	10238	4622	...	...	...	5341
20317	30190	43592	96905	79740	81256	50362
...	2255	3108	3805	27808	13807	4326
296779	338429	368473	421648	434585	473991	481389
67295	46309	52927	78529	98230	93761	82108
17515	31540	35056	33502	55431	78635	77952
7009	7983	11450	17736	22861	17676	18114
...	...	65	...	...	...	...
17318	27248	23070	19807	23073	39116	28378
...	...	2333	...	...	...	5322
14556	18242	21104	20027	23321	26400	43835
56795	88893	81217	105434	71703	63283	69784
113100	115469	141201	143727	135428	149316	155897
155582	180544	232214	179413	230680	242739	288789
57930	74487	86854	71815	72346	62655	72922
38335	47998	53668	43401	43766	38953	36870
19595	26489	33186	28415	28579	23701	36051

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SITC Code	Product Group	1970	1971	1972	1973
723	Equipment for Distributing Electricity	3766	15365	22067	19353
7231	Electrical Insulating Equipment	3007	14260	20921	17750
724	Telecommunication Apparatus	14490	21634	28782	26413
7241	T.V. Broadcast Receivers	231	...	...	...
7242	Radio Broadcast Receivers	1530	...	...	...
7249	Telecommunication Equipment, N.E.S.	12729	19469	26710	24453
725	Domestic Electrical Equipment	340	...	...	...
726	Electro-Medical Apparatus, etc.	3231	...	...	...
7261	Electro-Medical Apparatus	1315	...	...	...
7262	X-Ray Apparatus	1916	...	...	...
729	Other Electrical Machinery	28135	33830	38699	47453
7291	Batteries & Accumulators	989	...	...	...
7292	Electric Lamps	479	...	...	...
7293	Thermionic etc. Valves & Tubes	2120	...	...	...
7294	Automotive Electrical Equipment	1796	...	...	...
7295	Electrical Measuring Instruments	4008	5208	7188	5142
7296	Electro-Mechanical Hand tools	85	...	...	...
7297	Electron & Proton Accelerators	108	...	...	...
7299	Electrical Machinery, N.E.S.	18551	22659	24084	34666
73	TRANSPORT EQUIPMENT	62110	110163	97011	121630
731	Railway Vehicles	24399	30650	21494	30315
7311	Railway Locomotives, Steam/Electric	28	...	...	...
7313	Other Railway Locomotives	1696	...	...	...
7315	Railway Passenger Cars	...	...	...	...

EXHIBIT 24

(Figures in '000 U.S. \$)

1974	1975	1976	1977	1978	1979
13183	15373	...	...	...	7294
9956	7947	...	...	...	3004
38421	43436	31584	50766	43404	56139
...	2193	...	...	...	6
...	1759	...	...	...	26
33735	39494	29479	49893	43001	56106
...	980	...	...	...	3109
...	4072	...	...	...	3502
...	1752	...	...	...	1057
...	2319	...	...	...	2446
49887	81499	63972	94316	108533	145823
...	2281	...	...	...	1857
...	1538	...	...	...	3059
...	5548	...	...	...	18970
...	1202	...	...	...	14850
8696	8394	7909	16657	27340	35814
...	140	...	...	...	673
...	16	...	...	...	...
32922	62381	47359	59854	58720	70600
150540	151746	136332	214586	325836	312852
35141	31285	29294	17122	12493	24830
...
...	60	353
...

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contd...

EXHIBIT : 2A

(Figures in '000 U.S. \$)

SITC Code	Product Group	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
7316	Railway Freight Cars	27	.....	.....	.....	.....	259	.....	.....	...	...
7317	Parts of Locomotives, etc.	12649	30246	19199	29674	35054	30966	24230	15469	9795	24478
732	Road Motor Vehicles	30437	43011	39076	40896	55536	59292	49716	44618	53576	77893
7321	Passenger Motor Cars	1191	.....	.....	.....	.....	457	.....	.....	.....	528
7322	Buses (including trolley buses)	10	.....	.....	.....	.....	37	.....	.....	.....	332
7323	Lorries & Trucks	396	.....	.....	.....	.....	601	.....	.....	.....	473
7324	Special Purpose Lorries, etc.	285	.....	.....	.....	.....	426	.....	.....	.....	7351
7325	Road Tractors	341	.....	.....	.....	.....	258	.....	.....	.....	6392
7326	Chassis with Engines for Road Motor Vehicles	.....	.....	.....	.....	.....	167	.....	.....	.....	.....
7327	Other Chassis with Engines	15	.....	.....	.....	.....	289	.....	.....	.....	1024
7328	Bodies, Chassis, Frames, etc.	25977	35722	35266	36255	50965	56232	42315	39756	48863	61776
7329	Motor Cycles, etc. and their Parts	2222	...	.....	.....	.....	826	.....	.....	.....	16
733	Motor Vehicles, not motorised	135	...	...	...	...	271	.....	.....	.....	2046
7331	Bicycles, etc.	108	...	...	...	...	149	...	.....	.....	431
7333	Trailers, etc.	27	...	...	...	...	122	...	.....	.....	1615
734	Aircraft	14970	40943	33115	43275	57152	54825	59915	145583	234195	185416
7341	Aircraft, heavier than air	726	.....	.....	.....	10793	6622	...	26205	92008	81488
7349	Airships, Balloons, etc.	14244	37359	32961	43184	46359	48203	59915	119378	142187	103929
735	Ships & Boats	2169	3319	.....	.....	.....	6073	2129	6296	25128	22667
7353	Ships, other than Warships	40	...	.....	.....	.....	4482	.....	.....	.....	7898
7358	Ships, etc. for breaking up	1294	...	.....	.....	.....	.....	.....	.....	.....	1638
7359	Ships & Boats, N.E.S.	834	2184	...	...	.....	1581	.....	.....	.....	13131
	TOTAL MACHINERY & TRANSPORT EQUIPMENT	490261	612181	604230	754628	861178	983317	1018812	1234470	1399280	1463240

Source : Yearbook of International Trade Statistics - United Nations, 1975 - 1981

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

EXPORTS OF SELECTED CAPITAL GOODS - INDIA

(F.O.B. Values in '000 U.S.\$)

SITC Code	Product Group	1970 ^a	1971	1972	1973	1974	1975 ^a	1976	1977	1978	1979 ^a
71	NON-ELECTRICAL MACHINERY	36991	36329	37377	49492	94931	134076	123274	153878	...	204617
711	Power Generating Machinery	6930	7693	11768	14847	29091	34696	36310	49261	...	57873
7111	Steam Generating Boilers	502	...	...	...	...	1108	...	...	...	8758
7112	Boiler House Plant	...	...	...	...	...	204	...	...	...	27
7113	Steam Engines	2	...	...	...	...	141	...	...	...	252
7114	Aircraft Engines	...	...	...	...	...	...	...	...	...	29
7115	Internal Combustion Engines	6426	6563	10562	11345	27353	32861	35099	43210	...	48548
7116	Gas Turbines	...	...	...	...	...	...	...	...	...	...
7117	Nuclear Reactors	...	...	...	...	...	...	...	...	...	...
7118	Engines, N.E.S.	...	...	...	...	...	382	...	...	...	258
712	Agricultural Machinery	694	...	...	...	...	3826	...	...	...	4591
7121	Agricultural Machinery for Soil Preparation	239	...	...	...	...	1597	...	...	...	2501
7122	Agricultural Machinery for Harvesting, etc.	318	...	...	...	...	817	...	...	...	526
7123	Milking Machines, etc.	...	...	...	...	...	123	...	...	...	930
7125	Tractors	...	...	...	...	...	658	...	...	...	465
7129	Agricultural Machinery, N.E.S.	136	...	...	...	...	631	...	...	...	167
714	Office Machines	2675	...	...	...	...	6220	...	...	...	1298
7141	Typewriters, etc.	119	...	...	...	...	169	...	...	...	534
7142	Calculating Machines, etc.	1	...	...	...	...	346	...	...	...	47
7143	Statistical Machines	2324	...	...	...	...	4346	...	...	...	28
7149	Office Machines, N.E.S.	231	...	...	...	...	1360	...	...	...	690
715	Metal Working Machinery	2994	...	...	...	6568	8363	13772	20465	...	28434
7151	Machine Tools for Metal Working	2785	...	...	...	...	7489	...	...	...	25785

contd...

SITC Code	Product Group	1970 ^a	1971	1972	1973
7152	Metal Working Machines, other than Machine Tools	289	...	...	...
717	Textile and Leather Machinery	10262	8995	6521	5544
7171	Textile Machinery	9609	8221	5748	5040
7172	Leather Machinery, etc.	48	...	...	...
7173	Sewing Machines	605	...	...	...
718	Machines for Special Industries	1581	...	...	...
7181	Paper Mill Machinery, etc.	99	...	...	...
7182	Printing Machinery, etc.	94	...	...	...
7183	Food Processing Machine	315	...	...	...
7184	Construction & Mining Machinery	1023	...	...	...
7185	Mineral Crushing Machinery, etc.	49	...	...	...
719	Machinery & Appliances, N.E.S.	11855	9943	10924	16208
7191	Beating & Cooling Equipment	1525	...	...	...
7192	Pumps & Centrifuges	3099	...	...	...
7193	Mechanical Handling Equipment	901	...	...	...
7194	Domestic Appliances	27	...	...	...
7195	Powered Tools, N.E.S.	1243	...	...	...
7196	Other Non-Electric Machines	376	...	...	...
7197	Ball Roller Bearings, etc.	195	...	...	...
7198	Machinery & Appliances, N.E.S.	986	...	...	...
7199	Parts & Accessories, N.E.S.	3503	...	...	...
72	ELECTRICAL MACHINERY	22174	25389	30091	31377
722	Electrical Power Machinery & Switchgear	5606	6825	7017	8597
7221	Electrical Power Machinery	3496	...	...	...
7222	Switchgear, etc.	2110	...	...	...
723	Equipment for Distributing Electricity	5124	6827	8740	6379
7231	Electrical Insulating Equipment	4896	6556	8306	6041
724	Telecommunications Apparatus	3881	...	...	...

EXHIBIT : 25

(P.O.B. Values in '000 U.S.\$)

1974	1975 ^a	1976	1977	1978	1979 ^a
...	873	...	...	...	2649
14817	33646	18337	16403	...	19110
13946	32694	16936	13802	...	16823
...	95	...	...	...	95
...	857	...	...	...	2192
...	9880	...	...	...	24495
...	217	...	...	...	1189
...	229	...	...	...	1840
...	6762	...	...	...	14449
...	418	...	...	...	4242
...	2253	...	...	...	2775
27254	37446	39249	48138	...	68817
...	4545	...	...	...	10117
...	10694	...	...	...	23333
...	2868	...	...	...	4460
...	261	...	...	...	...
...	1907	...	...	...	6773
...	1293	...	...	...	4343
...	651	...	...	...	1297
...	4815	...	...	...	11013
...	10411	...	...	...	7482
61171	76842	85320	102678	...	107859
15348	20827	19459	25347	...	40798
...	10310	...	...	...	22037
...	10516	...	...	...	18761
16224	21149	22736	22460	...	10354
14692	17731	19355	20283	...	8431
...	9702	...	...	...	6334

Contd...

SITC Code	Product Group	1970 ^a	1971	1972	1973
7241	T.V. Broadcast Receivers	---	---	---	---
7242	Radio Broadcast Receivers	2566	---	---	---
7249	Telecommunication Equipment, N.E.S.	1315	---	---	---
725	Domestic Electrical Equipment	2527	---	---	---
726	Electro-Medical Apparatus, etc.	67	---	---	---
7261	Electro-Medical Apparatus	10	---	---	---
7262	X-Ray Apparatus	57	---	---	---
729	Other Electrical Machinery	4969	---	---	---
7291	Batteries & Accumulators	2706	5276	6893	7580
7292	Electric Lamps	367	---	---	---
7293	Thermionic, etc. Valves & Tubes	459	---	---	---
7294	Automotive Electrical Equipment	254	---	---	---
7295	Electrical Measuring Instruments	94	---	---	---
7296	Electro-Mechanical Hand-tools	25	---	---	---
7297	Electron & Proton Accelerators	---	---	---	---
7299	Electrical Machinery, N.E.S.	1064	---	---	---
73	TRANSPORT EQUIPMENT	35876	40764	39612	44055
731	Railway Vehicles	2936	8901	5687	7391
7311	Railway Locomotives, Steam/ Electric	---	---	---	---
7313	Other Railway Locomotives	---	---	---	---
7315	Railway Passenger Cars	---	---	---	---
7316	Railway Freight Cars	2200	---	---	---
7317	Parts of Locomotives, etc.	736	---	---	---
732	Road Motor Vehicles	23762	19915	18609	19787
7321	Passenger Motor Cars	3150	---	---	---
7322	Buses (including trolley buses)	2034	---	---	---

EXHIBIT 125

(P.O.B. Values in '000 U.S.\$)

1974	1975 ^a	1976	1977	1978	1979
---	38	---	---	---	---
---	6903	---	---	---	1586
---	2761	---	---	---	4748
---	9784	---	---	---	15826
---	461	---	---	---	113
---	50	---	---	---	61
---	411	---	---	---	52
---	14918	---	---	---	34434
13696	8543	19644	27306	---	17716
...	1829	...	...	...	3500
...	135	...	...	...	1707
...	732	...	...	...	2192
...	342	...	...	...	2181
---	38	---	---	---	211
---	---	---	---	---	---
..	3300	---	---	...	6926
66750	106571	106697	118647	---	169073
3888	20778	17277	6422	...	18844
---	---	---	---	...	---
---	---	---	---	...	---
---	8069	---	---	---	6077
---	7795	---	---	---	5281
---	4914	---	---	---	7486
30393	52387	58776	69002	---	90363
---	503	---	---	---	1000
---	11636	---	---	---	12256

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contd....

EXHIBIT : 25

(F.O.B. Values in '000 U.S.\$)

SITC Code	Product Group	1970 ^a	1971	1972	1973	1974	1975 ^a	1976	1977	1978	1979
7323	Lorries and Trucks	5784	...	...	...	...	6106	...	...	...	5535
7324	Special Purpose Lorries, etc.	382	...	...	...	...	478	...	...	...	4209
7325	Road Tractors	337	...	...	...	...	330	...	...	...	525
7326	Chassis with Engines for Passenger Motor Cars	1676	...	...	...	...	3541	...	...	...	...
7327	Other Chassis with Engines	2325	...	...	...	...	2909	...	...	...	25377
7328	Bodies, Chassis, Frames, etc.	7128	7824	7528	8416	16104	23881	21978	34781	...	36344
7329	Motor Cycles, etc. and their parts	145	...	...	...	...	2922	...	...	...	5118
733	Road Vehicles, not motorised	9015	10140	12964	14962	26017	29658	23292	37407	...	40332
7331	Bicycles, etc.	8989	10131	12932	14858	25662	29585	23254	37310	...	40107
7333	Trailers, etc.	26	...	...	...	...	74	...	...	...	225
734	Aircraft	107	...	...	...	...	1128	...	...	...	239
7341	Aircraft, Heavier than air	96	...	...	...	...	...	...	...	...	...
7349	Airships, Balloons, etc.	11	...	...	...	...	1128	...	...	...	239
735	Ships and Boats	55	...	...	...	...	2700	...	...	...	19294
7353	Ships, other than Warships	49	...	...	...	...	1729	...	...	...	19262
7358	Ships, etc. for breaking up	...	...	...	...	...	...	...	...	...	...
7359	Ships and Boats, N.R.S.	6	...	...	...	...	970	...	...	...	32
TOTAL MACHINERY AND TRANSPORT EQUIPMENT		95040	102482	103530	124924	222852	317489	315291	375203	...	481549

a : Export figures do not include re-exports

Source : 1) Yearbook of International Trade Statistics - United Nations, 1975 - 1981

2) Asian Industry in Figures - UNIDO

I R A N

IRAN

23. Iran, made up of a mainland as well as some islands in the Persian Gulf, is situated in the Middle East. The country has an area of 1,648,000 sq. km. The mid-year population of Iran in the year 1980 was 37.45 million. At the end of 1974, the labour force in Iran was estimated to be 9.2 million of which agriculture claimed 49 per cent. Manufacturing and mining accounted for about 30 per cent .

24. The GDP of Iran at current prices for the year 1977 was 5393 billion Iranian Rials. The contribution to GDP in 1977 by the agriculture, mining and manufacturing sectors were 9 per cent, 30.7 per cent and 11.8 per cent respectively. Before the oil price hike in 1973, the shares of mining and manufacturing in GDP were about 21 per cent and 13.5 per cent respectively. Compared to the Western world, the standard of living of an average Iranian is low. The per capita GDP of Iran measured in 1975 U.S. \$ decreased from 1157 in 1970 to 1102 in 1980.

The economy is predominantly agro-based. Land continues to be the most exploitable asset. Since the mid-fifties, there has been a virtual industrial revolution in Iran, which has transformed the country. A wide range of products such as automobiles, electrical appliances, machine tools, etc. are being manufactured in Iran.

25. *Non-electrical Machinery* : Iran's non-electrical industry comprised 85 establishments in 1979, employing 13,830 employees, and having a gross output of U.S. \$ 325 million. The value added in 1979 was U.S. \$ 97.9 million forming about 1.95 per cent of the value added by total manufacturing sector at current

prices. In terms of employment, it contributed 3.34 per cent of the total labour force engaged in manufacturing. Iran's non-electrical industry manufactures tractors, knitting machines, looms, household appliances, air-conditioning and refrigeration equipment, industrial and agricultural pumps, etc. Non-electrical machinery valued at U.S. \$ 3549 million was imported and equipment worth U.S. \$ 26.4 million exported in 1977.

26. *Electrical Machinery* : In 1979, there were 71 establishments manufacturing electrical machinery, with 25,900 employees, and producing a gross output of U.S. \$ 847 million. The value added in 1979 by the industry was U.S. \$ 415.5 million, forming 8.27% of the value added by total manufacturing at current prices. The employment in this industry in 1979 was 6.25 per cent of the total employment in the manufacturing industries. A variety of electrical and electronic equipment like television sets, radios, telephones, batteries, accumulators, cells, electric lamps, electric meters, cables, transformers, etc. are manufactured. In 1977, Iran imported electrical equipment worth U.S. \$ 1432.5 million. Electric power machinery, switchgear, telecommunications apparatus, and domestic electrical equipment were the main imports. Exports in 1977 were valued at U.S. \$ 2 million.
27. *Transport Equipment* : The transport equipment industry comprising 42 establishments in 1979 employed 27,590 personnel and had a gross output of U.S. \$ 962.9 million of which the value added was U.S. \$ 263.1 million. In 1979, its contribution towards employment in the manufacturing sector was 6.66 per cent and towards manufacturing value added at current prices was 5.24 per cent. The industry comprises of assembling units for passenger cars, buses and trucks mostly from foreign parts. Bicycles, scooters and motor cycles are also manufactured.

The imports of transport machinery in 1977 were worth U.S. \$ 1411.9 million and they constituted 22 per cent of the total machinery and transport equipment imports. Transport equipment worth U.S. \$ 13 million was exported in 1977.

28. Break-up of GDP by activity, statistics related to production, branch characteristics of capital goods sector, statistics on imports and exports are presented in the following pages.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

GDP BY KIND OF ACTIVITY AT CURRENT PRICES - IRAN

(In Thousand Million Iranian Rials)
Fiscal Year Beginning 21st March

Sl.No.	Kind of Activity	1970	1971	1972	1973	1974	1975	1976	1977
1.	Agriculture, Hunting, Forestry and Fishing	160.6	172.7	201.8	234.4	303.3	339.9	426.3	485.0
2.	Mining and Quarrying	140.7	212.6	264.0	587.5	1441.6	1375.8	1678.1	1658.0
3.	Manufacturing	113.7	138.1	171.5	231.9	312.9	379.5	496.0	638.1
4.	Electricity, Gas and Water	13.4	15.9	17.3	21.6	25.7	30.0	34.3	37.8
5.	Construction	41.0	45.1	58.4	78.9	98.2	208.3	356.9	494.8
6.	Wholesale and Retail Trade, Restaurants & Hotels	64.2	74.9	90.7	116.1	159.8	199.6	252.6	299.9
7.	Transport, Storage and Communication	43.1	45.6	55.1	77.9	99.2	138.0	159.2	204.5
8.	Finance, Insurance, Real Estate and Business Services	76.3	88.4	137.9	201.4	270.3	366.6	475.8	640.7
9.	Community, Social and Personal Services	131.1	155.6	193.5	233.9	360.9	447.3	601.1	749.0
	Sub-total	784.1	948.9	1190.2	1783.6	3071.9	3479.0	4480.3	5207.8
	other Adjustments	57.4	65.4	78.2	85.0	65.1	82.1	126.3	185.5
10.	Total	841.5	1014.3	1268.4	1868.6	3137.0	3561.1	4606.6	5393.3

Source : Yearbook of National Accounts Statistics Part 1 and Part 2, 1980
- United Nations

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIAIRAN : CURRENCY EXCHANGE RATES

(Rials per U.S.Dollar)

<u>Year</u>	<u>Average Exchange Rate</u>
1970	76.380
1971	76.380
1972	76.380
1973	68.720
1974	67.625
1975	67.639
1976	70.222
1977	70.617
1978	70.475
1979	70.475
1980	70.615
1981	78.328
1982	83.603

Source : International Financial Statistics Yearbook, 1983, IMF.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PRODUCTION OF SELECTED CAPITAL GOODS IN IRAN

(Figures in Numbers)

ISIC Code	Item	1971	1972	1973	1974	1975	1976	1977	1978
382	NON-ELECTRICAL MACHINERY								
382261	Tractors of 10 HP and over, other than industrial and road tractors	3833	4466	7390	7682	12608	13442	10032	6796
382407	Knitting Machines	...	1358	2412	3545	5211	6250	...	...
382410	Locks	...	1117	...	...	...	...	...	...
382901	Ovens, household	...	...	...	362000	629000	732000	806000	735000
382904	Stoves, Cookers	1286000	...	...	315000	335000	434000	449000	349000
382925	Air-conditioning Machines	...	...	...	149000	232000	198000	243000	226000
382928	Refrigerators (other than household), and freezers	6300	6000	...	309	459	513	536	320
382942	Pumps for Liquids, excluding liquid elevators	5000	5000	...	...	...	...	...	...
382958	Refrigerators for household use	181000	196000	299000	387000	548000	538000	...	...
383	ELECTRICAL MACHINERY								
383201	T.V. Receivers	150000	189000	219000	319000	344000	296000	264000	277000
383204	Radio Receivers	175000	214000	274000	351000	345000	242000	194000	80000
383210	Telephones	91000	66000	113000	186000	255000	248000	...	...
383910	Batteries & Cells, Primary (in millions)	80	95	...	148	166	162	174	141
383913	Batteries, Accumulators	556000	779000	1000000	...	...	...	...	...
383916	Lamps, Electric (in millions)	5	11	22	...	...	...	...	...
384	TRANSPORT EQUIPMENT								
384307	Passenger Cars, Assembled from imported parts	40000	51000	51000	73000	90000	102000	132000	48000
384312	Buses, etc. assembled from imported parts	1284	1237	1627	1911	...	...	...	...
384313	Buses, etc. produced	...	...	...	6348	7746	10821	9359	6239
384315	Trucks, etc. assembled from imported parts	10846	15527	23223	29550	42797	55224	47497	...
384322	Trailers and semi-trailers	586	914	932	...	...	...	...	...
384401	Motor Cycles, Scooters, etc.	...	...	...	47000	73000	114000	90000	102000
384404	Bicycles	...	15000	...	...	...	...	...	...

Source : Yearbook of Industrial Statistics - Volume II, 1976 - 1980
 - United Nations

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

BRANCH CHARACTERISTICS OF CAPITAL GOODS MANUFACTURING SECTOR - IRAN

Sl.No.	Characteristic	Unit	1970	1971	1972	1973	1974	1979	1980
382 NON-ELECTRICAL MACHINERY									
1.	No. of establishments	Nos.	124	124	129	141	143	85	114
2.	Avg. number of persons engaged	Thousand Nos.	3.67	3.67	6.87	7.34	8.16	...	...
3.	Average number of employees	Thousand Nos.	3.23	3.32	6.43	6.95	7.72	13.83	18.50
4.	Wages & Salaries of employees	Million Rials	194	280	531	677	889	...	...
5.	Gross output	Million Rials	2430	3010	6430	8660	11610	22900	34200
6.	Value added (factor values)	Million Rials	530	800	1970	2900	4240	6900	14680
7.	Gross fixed capital formation (total)	Million Rials	444	382	312	3103	5508	3629	8175
383 ELECTRICAL MACHINERY									
1.	No. of establishments	Nos.	133	141	139	150	152	71	86
2.	Avg. number of persons engaged	Thousand Nos.	15.20	14.83	17.43	20.34	23.05	...	...
3.	Average number of employees	Thousand Nos.	14.86	14.38	17.06	19.92	22.57	25.90	25.31
4.	Wages & Salaries of employees	Million Rials	941	1179	1513	1827	2320	...	...
5.	Gross output	Million Rials	10010	12060	15180	21830	29940	59800	54900
6.	Value added (factor values)	Million Rials	4070	4480	6240	9060	13060	29280	27000
7.	Gross fixed capital formation (total)	Million Rials	1133	1026	584	2774	4121	2671	5180
384 TRANSPORT EQUIPMENT									
1.	No. of establishments	Nos.	41	48	43	49	49	42	57
2.	Avg. number of persons engaged	Thousand Nos.	9.44	9.68	10.32	11.73	14.19	...	...
3.	Average number of employees	Thousand Nos.	9.31	10.58	10.23	11.63	14.07	27.59	31.38
4.	Wages & Salaries of employees	Million Rials	838	925	1070	1569	1931	...	...
5.	Gross output	Million Rials	15380	18170	25090	31850	40120	67800	83100
6.	Value added (factor values)	Million Rials	6570	6740	5920	7830	10100	18540	28200
7.	Gross fixed capital formation (total)	Million Rials	275	864	1415	2425	2608	2080	1700

contd...

EXHIBIT : 29

Sl.No.	Characteristic	Unit	1970	1971	1972	1973	1974	1975	1980
3 MANUFACTURING ^a									
1.	No. of establishments	Nos.	....	5387	5671	6056	6191	4602	5880
2.	Avg. number of persons engaged	Thousand Nos.	....	278.77	303.62	362.17	396.28	....	....
3.	Average number of employees	Thousand Nos.	....	266.27	288.31	340.58	380.89	414.55	473.51
4.	Wages & Salaries of employees	Million Rials	....	17993	21048	31342	39897	....	....
5.	Gross output	Million Rials	....	191440	272180	324250	443720	820900	1115900
6.	Value added (factor values)	Million Rials	....	72700	88000	121650	175710	354140	572550
7.	Gross fixed capital formation (total)	Million Rials	....	14572	12654	61850	79283	58990	49135

a - Excluding data for the National Iranian Oil Co.

Source : Yearbook of Industrial Statistics - Vol.I,
United Nations, 1976 - 1981

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

IMPORTS OF SELECTED CAPITAL GOODS - IRAN

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1971	1972	1973	1974	1975	1976	1977
71	NON-ELECTRICAL MACHINERY	386792	463291	657920	789463	1112682	2539778	3207359	3549204
711	Power-generating Machinery	72633	82131	133146	129740	160063	354396	537747	649601
7111	Steam Generating Boilers	...	...	...	...	...	6234	...	34027
7112	Boiler House Plant	6191	6507	15715	1809	2561	6086	...	23645
7113	Steam Engines	4354	4899	16836	981	704	849	...	7079
7114	Aircraft Engines	1127	...	...	...	...	167	...	1306
7115	Internal Combustion Engines	58885	68409	95546	102373	132942	244817	248310	312880
7116	Gas Turbines	...	...	...	...	6743	26184	62929	52616
7117	Nuclear Reactors	...	...	...	789	2310	34999	125637	175704
7118	Engines, N.E.S.	2075	...	1464	10077	7421	35060	63863	42345
712	Agricultural Machinery	33930	28769	59354	48691	57461	173857	170894	164961
7121	Agricultural Machinery for Soil Preparation	2332	2278	3764	...	...	17021	...	13185
7122	Agricultural Machinery for Harvesting, etc.	5245	1118	2190	...	...	17637	...	36534
7123	Milking Machines, etc.	624	...	...	...	...	7967	...	36167
7125	Tractors	16160	15139	39357	33682	29665	116483	89817	47517
7129	Agricultural Machinery, N.E.S.	9568	10096	13830	1638	4280	14754	...	31559
714	Office Machines	6611	8904	13180	18589	24384	34388	31922	32398
7141	Typewriters, etc.	1082	...	...	...	...	13543	...	9193
7142	Calculating Machines, etc.	4361	...	...	...	...	11684	...	9391
7143	Statistical Machines	...	...	...	...	...	2836	...	7247
7149	Office Machines, N.E.S.	1168	...	...	...	...	6325	...	6567
715	Metal Working Machinery	308	604	256	34684	36114	102093	155201	199376
7151	Machine Tools for Metal Working	209	488	150	24883	29753	91544	119939	182790
7152	Metal Working Machines, other than Machine Tools	100	...	...	...	...	10549	...	16587
717	Textile & Leather Machinery	23392	36121	59568	78168	114760	153960	304762	258307
7171	Textile Machinery	18120	30569	52701	66151	98147	136632	264332	213514

contd..

SITC Code	Product Group	1970	1971
7172	Leather Machinery, etc.	1084	...
7173	Sewing Machines	4187	...
718	Machines for special industries	33467	54936
7181	Paper Mill Machinery, etc.	2611	...
7182	Printing Machinery, etc.	3222	...
7183	Food Processing Machinery	5178	7193
7184	Construction & Mining Machinery	14319	20062
7185	Mineral Crushing Machinery, etc.	8136	21801
719	Machinery & Appliances, N.E.S.	216451	251825
7191	Heating & Cooling Equipment	14577	25971
7192	Pumps & Centrifuges	22414	33873
7193	Mechanical Handling Equipment	32556	36086
7194	Domestic Appliances	682	...
7195	Powered tools, N.E.S.	21892	22236
7196	Other non-electric machines	8426	7413
7197	Ball, Roller Bearings, etc.	3923	...
7198	Machinery & Appliances, N.E.S.	42244	68045
7199	Parts and Accessories, N.E.S.	69738	53082
72	ELECTRICAL MACHINERY	170973	259514
722	Electrical Power Machinery and Switchgear	39479	54631
7221	Electrical Power Machinery	27092	38298
7222	Switchgear, etc.	12387	16333
723	Equipment for Distributing Electricity	25436	23789
7231	Electrical Insulating Equipment	23411	21873
724	Telecommunications Apparatus	52705	115967
7241	T.V. Broadcast Receivers	238	182
7242	Radio Broadcast Receivers	147	...
7249	Telecommunication Equipment, N.E.S.	52320	115654
725	Domestic Electrical Equipment	14434	14159
726	Electro-Medical Apparatus, etc.	1031	...
7261	Electro-Medical Apparatus	...	...

EXHIBIT : 30

(Figures in '000 U.S. Dollars)

1972	1973	1974	1975	1976	1977
...	...	...	1903	...	8023
...	...	...	15425	...	36770
74338	170416	267127	834400	641704	489165
...	...	...	25007	...	17194
...	...	...	18858	...	29053
8848	5292	14030	32483	106439	95011
30041	104216	168675	521145	325436	151586
27434	140037	64452	236907	165132	196320
318079	309176	452773	886685	1365131	1755395
27389	35537	52953	135102	301968	202514
49303	58035	91550	179573	236805	453611
69867	34740	71074	142412	199189	202264
1112	18279	10252	10684	45910	36114
22219	11101	13400	36599	45430	69752
11812	14352	24239	55882	58348	81558
...	...	...	14809	...	19122
67437	30469	25700	63277	130396	126629
64072	98685	154012	248346	333543	563831
267309	310936	401170	805101	1086477	1432118
68174	93018	102649	186779	308660	526681
42149	51888	56305	123548	201971	356225
25755	41130	46344	63231	106689	170456
41324	49194	49931	103811	144310	147410
39158	41520	45437	91549	123816	121998
75577	63565	105757	202415	246475	228958
129	3859	21730	18782	37155	37655
...	...	...	25266	...	33248
75323	56343	80364	158368	178909	158055
18644	22540	35424	87626	133916	183898
...	13025	...	19175
...	5909	...	11077

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contd.,

SITC Code	Product Group	1970	1971	1972
7262	X-Ray Apparatus	1031
729	Other Electrical Machinery	37888	48335	61440
7291	Batteries & Accumulators	1726	...	...
7292	Electric Lamps	2968	...	...
7293	Thermionic, etc. valves & tubes	4974	5976	7955
7294	Automotive Electrical Equipment	6108	8302	10692
7295	Electrical Measuring Instruments	3890	...	...
7296	Electro-mechanical handtools	1058	...	...
7297	Electron & Proton Accelerators	...	...	...
7299	Electrical Machinery, N.E.S.	17163	21393	32040
73	TRANSPORT EQUIPMENT	128524	151462	185301
731	Railway Vehicles	5160	...	9779
7311	Railway Locomotive Steam/Electric	58	22025	9779
7313	Other Railway Locomotives	70	...	...
7315	Railway Passenger Cars	...	...	...
7316	Railway Freight Cars	3188	...	...
7317	Parts of Locomotives, etc.	1727	...	...
732	Road Motor Vehicles	113133	110845	142484
7321	Passenger Motor Cars	7349	8796	6864
7322	Buses (Including Trolley Buses)	350	...	...
7323	Lorries & Trucks	15467	9544	6484
7324	Special purpose lorries, etc.	3174	...	6389
7325	Road Tractors	...	...	...
7326	Chassis with Engines for passenger motor cars	...	...	...
7327	Other Chassis with engines	42681	34320	57534
7328	Bodies, Chassis, Frames, etc.	36797	47544	57031
7329	Motor Cycles, etc. and their parts	8217	7880	7589
733	Road Vehicles not motorized	5037	5123	10118
7331	Bicycles, etc.	3558	...	...
7333	Trailers, etc.	1463	1944	5330

EXHIBIT : 30

(Figures in '000 U.S. Dollars)

1973	1974	1975	1976	1977
...	...	7116	...	8098
78834	99466	211445	239498	326376
...	...	5997	...	17996
...	...	10189	...	15088
10681	12681	9368	...	15430
14575	21218	82606	49634	73087
...	13348	24024	31013	55536
...	...	7494	...	15138
...	...	443	...	47
37607	40822	71523	119658	134054
282812	558598	1645404	1376891	1411944
20093	28025	53899	38628	51053
20093	28025	3841	...	108
...	...	1082	...	261
...	...	8	...	1345
...	...	17891	...	28886
...	...	31062	...	17656
240368	145902	1400937	1139110	1190642
27482	74355	144897	206771	321511
...	...	3907	...	5401
8817	51089	681924	313721	146918
7062	20849	40823	64886	76474
1881	13600	55361	23370	11228
36059	30740	23818	33171	71498
55404	96868	165267	160020	137740
87251	144722	247906	258838	315888
15784	11763	37035	76154	103985
12412	58157	117888	80799	75022
...	...	14513	...	30483
4920	50938	102794	59004	44322

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contd...

EXHIBIT : 30

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1971	1972	1973	1974	1975	1976	1977
7334	Invalid carriages	16	...	...	...	...	580	...	217
734	Aircraft	3214	12629	15695	7533	9838	17077	...	39987
7341	Aircraft, heavier than air	315	...	...	....	...	2025	...	...
7349	Airships, balloons, etc.	2900	10614	14867	5756	8674	15052	...	39987
735	Ships and boats	1979	...	7224	2406	16677	55602	88169	55240
7353	Ships, other than warships	414	...	...	...	...	11797	...	14179
7358	Ships, etc. for breaking up	...	...	...	...	...	...	...	42
7359	Ships & boats, N.E.S.	1565	...	6332	1233	14386	43805	68876	41019
	TOTAL MACHINERY AND TRANSPORT EQUIPMENT	686289	874267	1110530	1382811	2072450	4990282	5670727	6393646

Source : Yearbook of International Trade Statistics, 1975 - 1981
 - United Nations

EXHIBIT : 31

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

EXPORTS OF SELECTED CAPITAL GOODS - IRAN

(F.O.B. Value in '000 U.S. Dollars)

SITC Code	Product Group	1970	1975	1977
71	NON-ELECTRICAL MACHINERY	115	8802	26433
711	Power-generating machinery	1	598	1416
7113	Steam Engines	-	-	...
7114	Aircraft Engines	...	1	50
7115	Internal Combustion Engines	1	590	1003
7116	Gas Turbines	...	...	177
7117	Nuclear Reactors	...	6	...
7118	Engines, N.E.S.	...	...	186
712	Agricultural Machinery	...	39	23
7121	Agricultural Machinery for Soil preparation	...	10	...
7122	Agricultural Machinery for Harvesting, etc.	...	21	18
7123	Milking Machines, etc.	...	...	3
7125	Tractors	...	7	...
7129	Agricultural Machinery, N.E.S.	...	1	2
714	Office Machines	-	148	173
7141	Typewriters, etc.	...	1	-
7142	Calculating Machines, etc.	-	140	14
7143	Statistical Machines	...	4	120
7149	Office Machines, N.E.S.	-	4	39
715	Metal Working Machinery	...	36	83
7151	Machine tools for metal working	...	30	42

contd..

EXHIBIT : 31

(F.O.B. value in '000 U.S. Dollars)

SITC Code	Product Group	1970	1975	1977
7152	Metal working machines, other than machine tools	...	6	41
717	Textile and Leather Machinery	3	36	189
7171	Textile machinery	3	27	49
7172	Leather Machinery, etc.	-	1	...
7173	Sewing machines	-	8	140
718	Machines for special industries	5	3965	22453
7181	Paper mill machinery, etc.	...	3	...
7182	Printing Machinery, etc.	1	1	2
7183	Food Processing Machinery	1	38	12
7184	Construction and Mining Machinery	...	3835	20879
7185	Mineral Crushing Machinery, etc.	3	88	1560
719	Machinery and Appliances, N.E.S.	106	3980	2095
7191	Heating and Cooling Equipment	16	73	205
7192	Pumps and centrifuges	1	337	372
7193	Mechanical Handling Equipment	...	2503	281
7194	Domestic Appliances	-	26	9
7195	Powered tools, N.E.S.	62	112	70
7196	Other non-electric machines	11	46	78
7197	Ball, roller bearings, etc.	...	539	152
7198	Machinery and Appliances, N.E.S.	14	1	644
7199	Parts and Accessories, N.E.S.	1	338	284
72	ELECTRICAL MACHINERY	233	2783	1981
722	Electrical Power Machinery and Switchgear	61	744	740
7221	Electric Power Machinery	-	683	697
7222	Switchgear, etc.	61	61	43

contd..

(F.O.B. value in '000 U.S. Dollars)

SITC Code	Product Group	1970	1975	1977
723	Equipment for distributing electricity	10	64	106
7231	Electrical Insulating Equipment	10	64	106
724	Telecommunications Apparatus	5	234	214
7241	T.V. Broadcast Receivers	...	32	5
7242	Radio Broadcast Receivers	5	82	2
7249	Telecommunications Equipment, N.E.S.	-	121	207
725	Domestic Electrical Equipment	76	409	38
726	Electro-medical apparatus, etc.	2	15	38
7261	Electro-medical apparatus	...	10	...
7262	X-ray apparatus	2	6	38
729	Other electrical machinery	79	1317	844
7291	Batteries and Accumulators	...	3	...
7292	Electric Lamps	1	471	1
7293	Thermionic etc. valves and tubes	...	1	2
7294	Automotive Electrical Equipment	...	640	5
7295	Electrical Measuring Instruments	...	59	648
7296	Electro-mechanical handtools	...	19	...
7299	Electrical Machinery, N.E.S.	77	126	187
73	TRANSPORT EQUIPMENT	2024	29771	13045
731	Railway vehicles	...	4	11
7316	Railway Freight Cars	...	...	4
7317	Parts of locomotives, etc.	...	4	...
732	Road motor vehicles	2015	28398	11983
7321	Passenger motor cars	333	995	109
7322	Buses (including trolley buses)	1456	23169	7631
7323	Lorries and trucks	41	1459	1323
7324	Special purpose lorries, etc.	...	110	841

contd..

EXHIBIT : 31

(F.O.B. value in '000 U.S. Dollars)

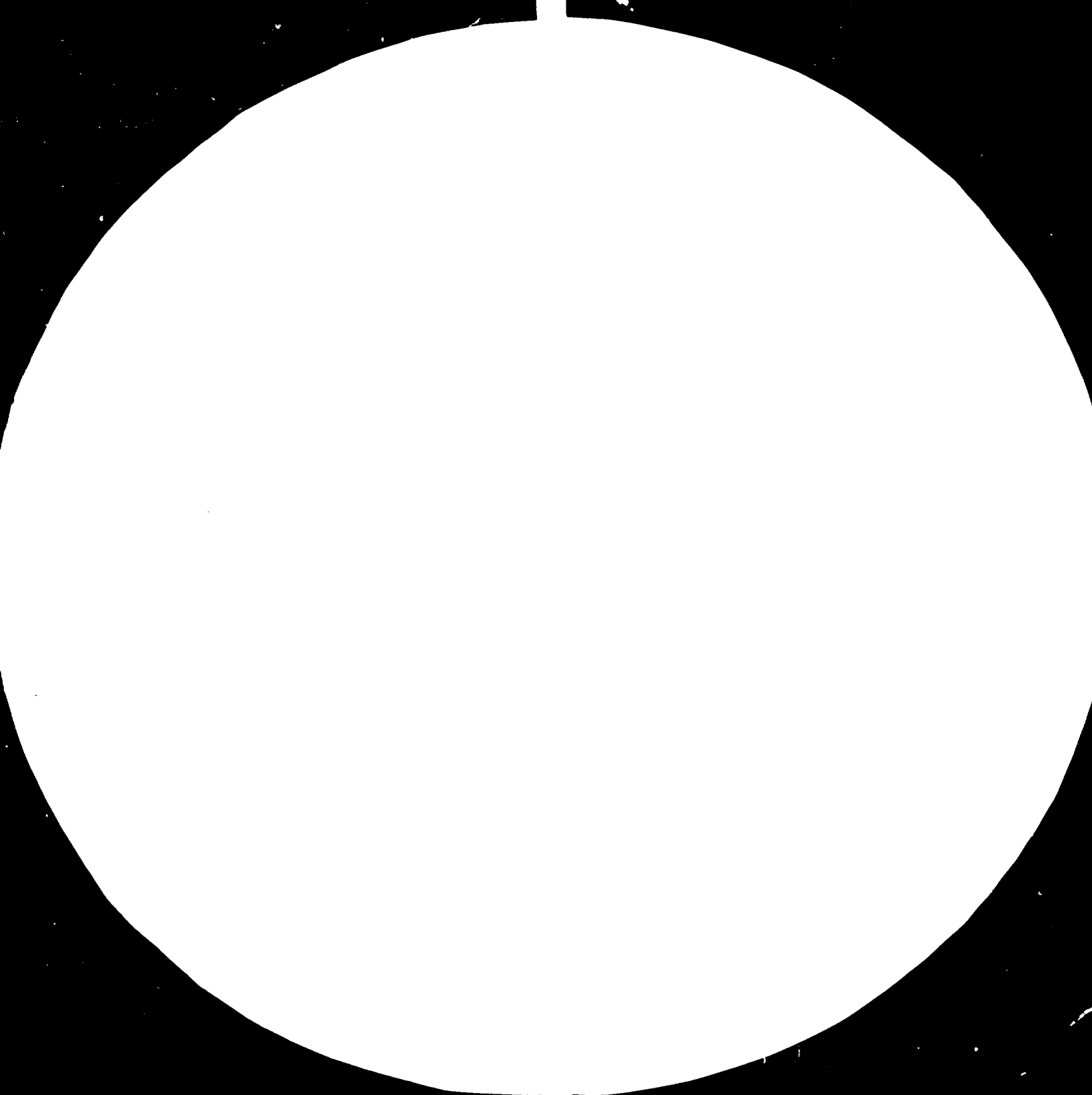
SITC Code	Product Group	1970	1975	1977
7325	Road tractors	...	...	-
7326	Chassis with engines for passenger motor cars	...	5	7
7327	Other chassis with engines	3	5	685
7328	Bodies, chassis, frame, etc.	182	2653	1359
7329	Motor cycles, etc. and their parts	...	1	26
733	Road vehicles, not motorized	8	554	479
7331	Bicycles, etc.	...	1	1
7333	Trailers, etc.	8	553	478
734	Aircraft	...	...	423
7349	Airships, balloons, etc.	...	...	423
735	Ships and boats	1	815	149
7353	Ships, other than warships	1	674	93
7359	Ships and boats, N.E.S.	...	141	56
	TOTAL MACHINERY AND TRANSPORT EQUIPMENT	2372	41355	41458

Source : Asian Industry in Figures - UNIDO

B-55Z



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3.6



MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

NEPAL

NEPAL

29. Nepal is located in the central Himalayas. It is landlocked with an area of 140,797 sq. km. Nepal is predominantly an agricultural country. The mid-year population in 1980 was 14.01 million with an average population density of 96 per sq. km. The average rate of population growth is 2.2 per cent. In 1976, 89.9 per cent of the economically active population was involved in agriculture , forestry and fishing, 4.56 per cent in commerce, 4.53 per cent in personal and community services and only 0.7 per cent in manufacturing.

30. The GDP at current market prices for the year 1979 was 21,152 million Nepalese rupees of which 58.1 per cent was contributed by agriculture, 3.9 per cent by manufacturing, and 6.2 per cent by transport and storage activities. The contribution of agriculture to GDP decreased from 69.7 per cent in 1975 to 58 per cent in 1979. The contribution of manufacturing to GDP too decreased marginally from 4 per cent in 1975 to 3.9 per cent in 1979. Contribution by construction registered an increase from 3.5 per cent in 1975 to 7.1 per cent in 1979.

31. The only industries in Nepal are those having backward linkages with agriculture. They are entirely dependent on agricultural produce. Small and cottage industries play a pivotal role in the industrialisation process. They are labour intensive in nature. In 1977-78, the number of cottage industries totalled 750,575, employed 1,215,000 men and women and accounted for an annual investment of Rs. 341 million. Production of goods was Rs. 713 million.

32. The production of non-electrical, electrical and transport equipment is negligible. In fact, these form a large part of

Nepal's imports. In 1978-79 , imports of machinery and transport equipment amounted to Rs.444.2 million out of the total imports worth Rs.1448.9 million; a share of about 31 per cent.

However, quite a few industrial programmes have been planned in the public sector during the Sixth Plan period (1980-85). These include an agricultural implements factory, a lime factory, a sugar factory, a cigarette factory and a textile mill. The other industries in Nepal are jute, leather, stainless steel vessels, tea, iron goods, matches and soap.

33. Statistical tables on GDP, production of various goods, characteristics of selected manufacturing industries, imports and future plans are given in the following pages.

NEPALEXHIBIT : 32

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

ECONOMICALLY ACTIVE POPULATION, TEN YEARS OF AGE AND OVER,
BY MAJOR INDUSTRY GROUPS - 1976

Sl. No.	Industry Group	Total People Engaged
1.	Agriculture, Forestry, Fishing	5,571,787
2.	Mining and Quarrying	20
3.	Manufacturing	42,136
4.	Electricity, Gas and Water	1,881
5.	Construction	4,952
6.	Commerce	282,632
7.	Transport and Communication	5,724
8.	Finance and Business Services	8,248
9.	Personal and Community Services	260,463
	Total Economically Active Population	6,197,843
	Total Population	12,837,018

Source : Mid-term Population Sample Survey - 1976,
National Planning Commission,
Government of Nepal

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

GDP BY KIND OF ACTIVITY AT FACTOR COST - NEPAL

(In Million Rupees)
(Fiscal Year Ending 15 July)

Sl.No.	Kind of Activity	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1.	Agriculture	7106	6578	8851	11550	11611	10506	11752	13365	13520	17992
2.	Mining	2	3	3	22	23	26	25	34	42	58
3.	Manufacturing	996	971	1282	664	690	736	799	848	936	1019
4.	Electricity, Gas & Water	23	29	28	34	38	39	43	48	60	78
5.	Construction	149	153	163	583	718	1020	1344	1559	1570	1874
6.	Trade	339	336	374	540	603	636	692	721	889	900
7.	Transport & Communications	285	347	422	690	805	852	1088	1246	1541	1668
8.	Finance	907	942	979	1095	1171	1412	1564	1613	1833	1940
9.	Public Administration	230	228	250	1393	1735	2053	2407	1090	1211	1253
10.	Others	332	382	456								250	284	300
	Total	10369	9969	12808	16571	17394	17280	19732	22215^a	23351^a	29073^{a*}

^a - At Market Prices * Provisional

Source : Key Indicators of Developing Member Countries of ADB, ADB, April 1983

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIANEPAL : CURRENCY EXCHANGE RATES

(Rupees per U.S. Dollar)

Year	Average Exchange Rate
1970	10.125
1971	10.125
1972	10.125
1973	10.500
1974	10.560
1975	11.003
1976	12.500
1977	12.500
1978	12.111
1979	12.000
1980	12.000
1981	12.359
1982	13.244

Source : Key Indicators of Developing Member Countries of ADB,
ADB, April 1983.

NEPAL

EXHIBIT : 45

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PRODUCTION OF PRINCIPAL COMMODITIES

Sl.No.	Commodity	Unit	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
1.	Jute Products	Tonnes	12265	15994	16803	16347	15520	15573 ^a
2.	Sugar	Tonnes	11926	10632	16351	26502	27200	14159
3.	Cigarettes	Million Sticks	30013	24468	17737	16337	20686	16424
4.	Matches	Thousand Gross	649	679	658	677	724	703
5.	Distilleries ¹	Thousand Litres	224	580	533	687	455	698
6.	Soap	Tonnes	891	970	1855	1317	1121	1328 ^a
7.	Leather Shoes	Pairs	70044	59079	54855	59061	55779	70299
8.	Processed Leather	Thousand Numbers	30	623	1096	1256	1320	1857
9.	Agricultural Implements	Tonnes	300	92	287	313	179	124 ^a
10.	Tea	Tonnes	254	366	395	413	326	488 ^a
11.	Stainless Steel Vessels	Tonnes	156	175	157	173	294	395 ^a
12.	Strawboard	Tonnes	1022	901	1301	749	1410	642 ^b
13.	Brick & Tiles ²	Thousand Numbers	25575	33069	23737	20546	12402	30872 ^a
14.	Beer	Thousand Litres	688	816	630	788	1181	1310
15.	Manure	Tonnes	441	576	446	423	569	287
16.	Cotton Textile	Thousand Metres	...	4200	5264	3769	2429	3606
17.	Cement	Tonnes	...	26933	42694	38080	21019	28892
18.	Plastic Goods	Tonnes	22	39	46	44	75	69
19.	Biscuit	Tonnes	601	643	723	1197	2037	2314
20.	Plywood	Thousand Sq.Ft.	55	607	1720	1835	1809	1409 ^a
21.	Polythene Pipe	Thousand Metres	...	...	...	185	575	426
22.	Synthetic Textiles	Thousand Metres	...	...	1128	1717	1775	2953 ^a
23.	Iron Goods	Tonnes	...	4922	5177	3573	4471	5963

1 : Output of Distilleries only
2 : Output of Bricks and Tiles Factories

a : Estimated
b : For first 9 months only

Source : Sixth Plan (1980-85) Part I,
National Planning Commission, Govt. of Nepal

NEPALEXHIBIT : 36UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIACHARACTERISTICS OF MECHANICAL MANUFACTURING SECTOR (1976-77)

Industry	No. of Establishments (Nos)	No. of Persons Engaged (Nos)	Wages & Salaries of Employees ('000 Rs)	Gross Output ('000 Rs)	Value Added ('000 Rs)
Metallic Vessels	16	503	2,025	17,227	5,062
Repairing Works	35	248	515	1,414	690
Total Manufacturing Industry	3528	50,120	132,821	3,939,955	532,432

Source : Census of Manufacturing Establishments (1976-77),
National Planning Commission,
Government of Nepal

NEPAL

EXHIBIT : 37

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

IMPORTS OF SELECTED COMMODITIES

(Value in '000 Rs.)

Sl.No.	Commodities	1971 - 72	1972 - 73	1973 - 74	1974 - 75	1975 - 76	1976 - 77	1977 - 78	1978 - 79
1.	Office Equipment and Stationery	1944	1949	8671	28767	12627	19214	24370	36716
2.	Motor, Motorcycle and Spare Parts	8658	11297	24387	23667	36043	34634	59998	79629
3.	Machineries and Parts	5769	8674	10886	50322	56205	76920	87557	128159
4.	Tractor and Spare Parts	-	2712	2540	8876	11445	6321	9972	23541
5.	Aircraft and Spare Parts	2641	4658	17107	9180	19894	18720	85183	49537
6.	Radio, Taansistor and Tape-Recorders	2020	1392	3078	3890	2722	2976	11764	23663
7.	Electrical Goods	2558	2798	3965	7615	19817	14367	23660	30701
8.	Telecommunication Equipment	-	2804	4586	10268	4687	15781	15675	16698
9.	Iron Rod, Sheets and Corrugated Sheets	-	1753	4418	16919	15475	4471	14359	32332

a : Motor, Motor Cycle and Parts including Tyres and Tubes

Source : Nepal Overseas Trade Statistics
1978 - 79
Trade Promotion Centre, Nepal

NEPALEXHIBIT : 38

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

BREAK-UP OF IMPORTS OF SELECTED ENGINEERING PRODUCTS IN 1978-79

Sl.No.	Commodities	Value (Rs.)
1.	Motor Car, Jeep and Parts	39,628,262
2.	Bus, Truck and Parts	20,578,930
3.	Motorcycle and Parts	4,642,776
4.	Bicycle and Parts	101,668
5.	Tyres and Tubes	14,778,841
6.	Machineries and Parts	128,159,423
7.	Handtools	703,067
8.	Telecommunication Equipment	16,697,623
9.	Radio, Transistor and Tape-recorder	23,663,112
10.	Electrical Goods	30,701,092
11.	Medical Equipment	11,848,754
12.	Office Equipment and Stationery	36,716,034
13.	Tractor and Parts	23,541,481
14.	Agricultural Equipment	2,832,713
15.	Water Pump and Parts	248,604

contd...

EXHIBIT : 38

Sl.No.	Commodities	Value (Rs.)
16.	Water Meter	7,351,285
17.	Irrigation Equipment	5,118,804
18.	Hydro-Electrical Equipment	22,834,765
19.	Aircraft's Spare Parts	49,537,154
20.	Kitchen Equipment	4,498,820

Source : Nepal Overseas Trade Statistics 1978-79
Trade Promotion Centre

NEPALEXHIBIT : 39

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PRINCIPAL INDUSTRIAL PRODUCTION PROGRAMMES IN THE PUBLIC
SECTOR DURING THE SIXTH PLAN (1980 - 85)

Name	Unit	Target Capacity
1. Agricultural Tools Factory	Rs. Equivalent (Nepali)	45,000,000
2. Agricultural Lime Factory		
(a) Agricultural Lime	Tonnes	10,000
(b) Chemical Limestone	Tonnes	55,000
3. Birgunj Sugar Factory		
(a) Sugar	Tonnes	60,500
(b) Spirit	Litre	5,300,000
4. Janakpur Cigarette Factory		
(a) Cigarette	Million Sticks	12,467
5. Bansbari Leather & Shoe Factory		
(a) Shoes	Number	685,000
(b) Sole Processing	Tonne	1,750
(c) Leather	Square Foot	3,700,000
6. Harisiddhi Brick & Tile Factory		
(a) Brick	Number	1,32,500,000
(b) Roofing Tile	Number	3,000,000
(c) Flooring Tile	Number	1,500,000

contd...

EXHIBIT : 39

Name	Unit	Target Capacity
7. Bhaktapur Brick Factory		
(a) Brick	Number	100,000,000
8. Hetauda Textile Mill	Metre	34,200,000

Source : The Sixth Plan (1980-1985) Part 1 (A Summary)
National Planning Commission, Govt. of Nepal

PAKISTAN

PAKISTAN

34. Pakistan is situated in South Asia and forms a part of the Indian sub-continent. The country has an area of 803,943 sq. km. The mid-year population of Pakistan in 1980 was 82.44 million. A 1975 estimate has put the total labour force in Pakistan at 20.5 million, forming only 29 per cent of the total population. Agriculture absorbed about 57.3 per cent of the labour, whereas industry accounted for 12.5 per cent. Of the economically active people 9.9 per cent were occupied in wholesale and retail trade.
35. The GDP of Pakistan at current prices for the year 1979 was Pakistani Rs. 229,937 million, of which the shares of agriculture, manufacturing and community and personal services were 28.8, 14.7 and 14.6 per cent respectively. Wholesale and retail trade accounted for 13.23 per cent and transport activities for 6.54 per cent of the GDP respectively. In terms of current prices, the per capita GDP increased from Rs.840 in 1971 to about Rs.2,880 in 1979.
36. Agriculture continues to be the major sector in the Pakistan economy. It provides for the bulk of Pakistan's exports. Manufacturing is still in the developing stage. During 1960-70, Pakistan's industrial production increased at an average rate of 12.4 per cent, but dropped to a mere 3.2 per cent in the first half of the seventies. For most manufactured articles, rate of growth was lower in the seventies than in the sixties. Of the total imports of machinery and transport equipment in 1980, the share of non-electrical and transport equipment was as high as 87 per cent.

37. NON-ELECTRICAL MACHINERY

The non-electrical machinery industry is in its developing stage. In 1976 it comprised 282 establishments, employed 15,200 people and had a gross output of U.S. \$ 88.3 million. The value added was U.S. \$ 32.1 million. In 1976, the non-electrical machinery industry accounted for 3 per cent of the total labour force employed in manufacturing and 2.9 per cent of the value added at current prices by manufacturing. There is adequate indigenous production of sewing machines in Pakistan. The production of sewing machines decreased from 88,000 numbers in 1970 to 55,000 numbers in 1975 and increased again to 67,000 numbers in 1980. There are a number of plants engaged in the manufacture of agricultural machinery and implements. The other non-electrical machineries manufactured in the country include sugar mill machinery, jute and textile machinery, rice husking and grain milling machines, agricultural tractors, machine tools, hand tools, diesel engines, pumps and compressors, etc. In 1981 non-electrical machinery worth U.S. \$ 545.1 million was imported and equipment worth U.S. \$ 38.4 million was exported.

38. ELECTRICAL INDUSTRY

In 1976, Pakistan had 135 establishments manufacturing electrical goods and employing 16,000 people. The gross output was U.S. \$ 91.6 million and the value added U.S. \$ 34.9 million. In 1976, the electrical machinery manufacturing industry accounted for 3.16 per cent of the labour force involved in manufacturing and contributed 3.15 per cent of the value added by manufacturing at current prices. The electrical machinery manufactured in Pakistan include transformers, switchgear, electric motors, wires and cables, electric fans, storage batteries, dry cells, radios, electric accessories and appliances. Electric lamps and gramophone records are also manufactured. The production of electric lamps was 20 million in 1980 as compared to 11 million

in 1971. The production of gramophone records decreased from 1.0 million in 1971 to 368,000 in 1980. A number of joint ventures are planned. A Rs.2.8 billion project is being set up to manufacture 10,000 TV sets per annum in collaboration with Sanyo, Japan. Other projects that are being set up with Japanese collaboration include plants for manufacture of fluorescent tubes, automotive batteries and motorcycle batteries. In 1981, U.S. \$ 197 million worth of electrical machinery was imported and U.S. \$ 4.4 million worth of equipment exported.

39. TRANSPORT MACHINERY

The transport equipment manufactured in the country include bicycles, passenger cars, buses, motor coaches, lorries, trucks, and sea going vessels. In 1976, there were 126 establishments engaged in transport equipment manufacture, 21,540 people were employed and the gross output of this industry was U.S. \$ 165 million; the value added was U.S. \$ 71.1 million. Of the total labour force involved in manufacturing in 1976, the transport equipment industry accounted for 4.25 per cent. It contributed 6.42 per cent of the value added by manufacturing at current prices. The major transport equipment industries are highlighted here.

- (a) *Ship Building and Repair* : This industry is in the infant stage. Three sea going vessels were made in 1973, 2 in 1976 and one each in 1971, 1974 and 1980.
- (b) *Road Transport* : The motor vehicle industry accounts for a large share in the gross output of the transport equipment industry. Passenger cars, motor coaches, trucks and lorries are assembled from imported parts. The production of passenger cars remained constant at 2000 numbers from 1975 to 1980. The production of trucks increased from 8937 in 1975 to 11,110 in 1980.

The bicycle industry has been showing a gradual growth with a production of 279,000 bicycles in 1980 as compared to 160,000 in 1971.

Implementation of a project in the public sector is under progress to manufacture cars, pick-up trucks and vans with Japanese collaboration. The plant will also produce four-wheel drive vehicles. This project aims to manufacture automobiles with 80 per cent local content within six years. Another joint venture project with Japanese collaboration is being set-up to manufacture 6000 motor-cycles per annum.

- (c) *Railway Equipment* : Pakistan also manufactures railway rolling stock and accessories. In 1981-82, 111 passenger coaches were manufactured as against a production target of 120. There are a number of repair workshops for repairing coaches, wagons and engines. Four factories manufacture concrete sleepers for railways with a total annual capacity of 400,000 units. Under a loan agreement with Japan for purchase of 38 diesel electronic locomotives Pakistan will assemble 8 locomotives from completely knocked down packages.

The 1981 imports of transport equipment amounted to U.S. \$ 419.8 million and exports were worth U.S. \$ 14.3 million. In 1981-82, 9537 light commercial vehicles, 196 buses and 1902 trucks were imported.

40. Break-up of GDP by kind of activity, statistics on production, branch characteristic of capital goods sector, statistics on imports and exports are presented in the following pages.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

GDP BY KIND OF ACTIVITY AT CURRENT FACTOR COST - PAKISTAN

(In Billion Rupees)

(Fiscal Year Ending 30 June)

Sl.No.	Kind of Activity	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1.	Agriculture	21.9	28.1	33.5	38.3	43.7	49.5	57.5	66.1	74.8	86.3
2.	Mining	0.4	0.6	0.8	1.0	1.2	1.2	1.4	2.2	2.8	3.0
3.	Manufacturing	9.7	12.8	17.5	20.1	22.2	25.2	28.2	35.1	42.0	48.7
4.	Electricity, Gas & Water	1.0	1.2	1.3	1.7	1.9	2.4	3.4	4.8	5.7	6.6
5.	Construction	2.3	3.1	5.0	6.7	7.4	8.3	9.3	11.8	13.4	15.7
6.	Trade	8.6	12.3	16.2	18.3	19.8	23.1	26.1	30.8	37.4	45.4
7.	Transport & Communications	4.3	5.6	7.4	8.3	9.3	11.3	13.1	15.5	19.0	22.9
8.	Finance	3.6	4.7	6.4	7.4	8.5	9.7	11.0	12.4	14.3	16.7
9.	Public Administration	4.4	5.8	8.1	9.5	10.4	13.2	13.9	16.2	18.6	20.9
10.	Others	4.6	6.4	8.5	10.1	11.4	13.2	15.2	17.7	21.3	25.3
	Total	60.8	80.4	104.6	121.4	135.7	157.2	179.1	212.6	249.3	291.5

Source : Key Indicators of Developing Member Countries of ADB, ADB, April 1983

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIAPAKISTAN : CURRENCY EXCHANGE RATES

(Rupees per U.S.Dollar)

<u>Year</u>	<u>Average Exchange Rate</u>
1970	4.762
1971	4.762
1972	8.941
1973	9.994
1974	9.900
1975	9.900
1976	9.900
1977	9.900
1978	9.900
1979	9.900
1980	9.900
1981	9.900
1982	11.852

Source : Key Indicators of Developing Member Countries of ADB,
ADB, April 1983.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA
PRODUCTION OF SELECTED CAPITAL GOODS IN PAKISTAN

Item		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
382 NON-ELECTRICAL MACHINERY												
Sewing Machines	'000 Nos.	58	66	76	55	64	58	62	62	67	65	67
383 ELECTRICAL MACHINERY												
Gramophone Records	'000 Nos.	689	999	1330	1516	1082	773	991	550	368	...	...
Lamps, Electric	Million Nos.	8	11	11	15	17	15	18	21	20	34	41
Pedestal Fans	'000 Nos.	28	34	32	38	31	31	38	39	67	41	30
Ceiling Fans	'000 Nos.	137	153	145	141	102	128	147	151	201	187	160
Electric Tube	'000 Mts.	490	565	642	604	564	413	464	1238	1145	1285	1040
384 TRANSPORT EQUIPMENT												
Other Sea-going Merchant Vessels, Launched	Nos.	2	3	1	1	2	-	-	-	1	...	...
Passenger Cars, assembled	'000 Os.	...	...	...	2	2	2	2	1	2	...	...
Buses and Motor Coaches, assembled from imported parts	Nos.	...	...	...	2802	1983	1037	520	1176	1930	...	...
Lorries (Trucks), including articulated Vehicles, assembled from imported parts	Nos.	...	...	...	8937	6291	5088	4542	12530	11110	...	...
Bicycles	'000 Nos.	123	212	179	210	218	211	245	280	297	327	399

Source : 1) Yearbook of Industrial Statistics - Volume II, United Nations, 1975 - 1980
2) Asian Industry in Figures - UNIDO
3) Economic Survey 1982 - 83, Ministry of Finance, Islamabad

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

BRANCH CHARACTERISTICS OF CAPITAL GOODS
MANUFACTURING SECTOR - PAKISTAN

Sl.No.	Characteristic	Unit	1970	1971	1976
<u>382 NON-ELECTRICAL MACHINERY</u>					
1	Number of Establishments	Nos.	323	296	282
2	Average number of Employees	Thousand Nos.	12.79	10.46	15.20
3	Wages & Salaries of Employees	Million Rs.	24	20	...
4	Gross Output (in Producers' Values)	Million Rs.	172	133	...
5	Value Added (in Producers' Values)	Million Rs.	58	51	...
6	Gross Fixed Capital Formation (Total)	Million Rs.	22	58	...
<u>383 ELECTRICAL MACHINERY</u>					
1	Number of Establishments	Nos.	137	136	135
2	Average number of Employees	Thousand Nos.	16.20	13.62	16.00
3	Wages & Salaries of Employees	Million Rs.	48	57	...
4	Gross Output (in Producers' Values)	Million Rs.	339	364	...
5	Value Added (in Producers' Values)	Million Rs.	160	190	...
6	Gross Fixed Capital Formation (Total)	Million Rs.	141	150	...

contd...

EXHIBIT : 43

Sl.No.	Characteristic	Unit	1970	1971	1976
<u>3832 RADIO, TELEVISION, ETC.</u>					
1	Number of Establishments	Nos.	12	9	...
2	Average number of Employees	Thousand Nos.	7.14	1.59	...
3	Wages & Salaries of Employees	Million Rs.	22	6	...
4	Gross Output (in Producers' Values)	Million Rs.	89	32	...
5	Value Added (in Producers' Values)	Million Rs.	40	15	...
6	Gross Fixed Capital Formation (Total)	Million Rs.	74	16	...
<u>384 TRANSPORT EQUIPMENT</u>					
1	Number of Establishments	Nos.	139	120	125
2	Average number of Employees	Thousand Nos.	17.24	15.65	21.54
3	Wages & Salaries of Employees	Million Rs.	46	50	...
4	Gross Output (in Producers' Values)	Million Rs.	247	362	...
5	Value Added (in Producers' Values)	Million Rs.	67	136	...
6	Gross Fixed Capital Formation (Total)	Million Rs.	129	176	...
<u>3841 SHIPBUILDING & REPAIRING</u>					
1	Number of Establishments	Nos.	6	...	...
2	Average number of Employees	Thousand Nos.	5.83	...	...
3	Wages & Salaries of Employees	Million Rs.	18	...	...
4	Gross Output (in Producers' Values)	Million Rs.	39	...	...
5	Value Added (in Producers' Values)	Million Rs.	1	...	...
6	Gross Fixed Capital Formation (Total)	Million Rs.	58	...	...

contd...

EXHIBIT : 43

Sl.No.	Characteristic	Unit	1970	1971	1976
<u>3843 MOTOR VEHICLES</u>					
1	Number of Establishments	Nos.	105	24	...
2	Average number of Employees	Thousand Nos.	7.88	4.37	...
3	Wages & Salaries of Employees	Million Rs.	22	22	...
4	Gross Output (in Producers' Values)	Million Rs.	163	155	...
5	Value Added (in Producers' Values)	Million Rs.	52	35	...
6	Gross Fixed Capital Formation (Total)	Million Rs.	56	28	...

Source : 1) Yearbook of Industrial Statistics - Volume I, 1975 - 1980.
United Nations
2) Asian Industry in Figures - UNIDO

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

'IMPORTS' OF SELECTED CAPITAL GOODS - PAKISTAN

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
71	NON-ELECTRICAL MACHINERY	207335	147573	82860	81306	152871	253277	287179	385056	398246	529961	575429
711	Power Generating Machinery	19376	17679	4530	6598	32627	21053	12532	27191	24603	50875	55172
7111	Steam Generating Boilers	1890	1424	836	...	...	6056	...	...	...	...	5318
7112	Boiler House Plant	1742	130	34	...	...	17	...	...	...	...	466
7113	Steam Engines	339	...	...	...	...	147	...	...	...	...	1811
7114	Aircraft Engines	29	...	...	...	...	89	...	...	...	...	1174
7115	Internal Combustion Engines	13509	9706	3104	4596	7430	6986	5551	4994	9787	18264	24106
7116	Gas Turbines	661	4065	342	660	13586	6778	3154	18123	10908	14980	10890
7117	Nuclear Reactors	528	378	57	...	...	449	...	...	...	...	18
7118	Engines, N.E.S.	678	...	...	...	...	530	...	...	...	...	11388
712	Agricultural Machinery	16674	9951	9899	8007	28769	52984	58149	94998	95754	158148	113661
7121	Agricultural Machinery for soil preparation	1693	...	...	...	...	594	...	...	...	...	2707
7122	Agricultural Machinery for harvesting, etc.	975	...	...	...	...	1839	...	...	...	...	464
7123	Milking Machines, etc.	160	...	...	...	...	156	...	...	...	...	1304
7125	Tractors	13735	8672	9032	7537	27860	49594	57104	92145	90882	146560	108661
7129	Agricultural Machinery, N.E.S.	111	...	...	...	...	801	...	...	...	...	526
714	Office Machines	2746	2447	2160	2412	12753	4421	...	...	...	...	8801
7141	Typewriters, etc.	721	...	...	...	...	1792	...	...	...	...	2353
7142	Calculating Machines, etc.	599	...	...	...	...	751	...	...	...	...	1682
7143	Statistical Machines	894	...	...	...	...	487	...	...	...	...	3123
7149	Office Machines, N.E.S.	532	...	...	...	...	1390	...	...	...	...	1644
715	Metal Working Machinery	13371	3465	2127	3655	5367	4974	...	...	...	...	10516
7151	Machine Tools for Metal Working	7347	2514	1751	...	...	3317	...	...	...	...	8596

contd...

EXHIBIT : 44

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
7152	Metal Working Machines other than Machine Tools	6024	951	376	...	...	1657	...	...	...	...	1919
715	Textile and Leather Machinery	54115	42122	26863	20531	28962	49638	66443	66383	45254	53085	70349
7171	Textile Machinery	52652	41414	25624	18363	25631	45714	63619	62598	42333	50032	65789
7172	Leather Machinery, etc.	167	...	...	...	...	2527	...	...	...	...	2029
7173	Sewing Machines	1296	...	...	...	...	1397	...	...	...	...	2530
718	Machines for special industries	28450	16999	9528	11494	16844	40224	52845	48445	60643	54613	64359
7181	Paper Mill Machinery, etc.	2816	804	393	...	...	583	...	...	...	...	6638
7182	Printing Machinery, etc.	2348	...	...	...	...	1721	...	...	...	...	8708
7183	Food Processing Machinery	2748	4988	2709	1202	5794	8689	26107	12740	29119	4215	5601
7184	Construction & Mining Machinery	18044	7743	4509	8988	7802	27606	22203	28567	20926	37856	37764
7185	Mineral Crushing Machinery, etc.	2494	1054	374	...	...	1625	...	...	...	...	5648
719	Machinery & Appliances, N.E.S.	72602	54910	27752	28258	36733	79983	87119	137223	156759	194902	252571
7191	Heating & Cooling Equipment	8735	4869	3209	1882	5050	6679	9329	10266	15676	12254	15633
7192	Pumps & Centrifuges	10610	8458	3290	3152	4600	11463	12292	19884	18523	17168	22091
7193	Mechanical Handling Equipment	13315	8018	2430	1870	2374	6079	10573	18495	33614	25779	24534
7194	Domestic Appliances	1648	...	...	...	...	122	...	...	...	...	270
7195	Powered Tools, N.E.S.	1555	...	...	...	...	1042	...	...	...	...	8447
7196	Other non-electric machines	3396	3204	680	542	822	863	...	...	...	...	4620
7197	Ball, Roller Bearings, etc.	3941	3686	1893	3386	3508	3846	4537	4711	6730	12875	14638
7198	Machinery & Appliances, N.E.S.	9474	5417	4464	4942	6861	15059	15157	35442	24604	59952	93341
7199	Parts & Accessories, N.E.S.	19930	19810	11443	12057	12954	34029	31139	43395	52348	60816	68978
72	ELECTRICAL MACHINERY	66392	67965	37895	49391	89333	131485	115653	148664	150059	198189	117450
722	Electrical Power Machinery and Switchgear	24337	25285	14214	16804	29974	64300	45613	53540	52756	71912	61745
7221	Electrical Power Machinery	12721	16291	9581	11135	19076	51832	35904	37383	32510	47977	30966
7222	Switchgear, etc.	11615	8994	4633	5669	10897	12468	9710	16157	20247	23935	30778

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SITC Code	Product Group	1970	1971	1972
723	Equipment for Distributing Electricity	12557	14147	6615
7231	Electrical Insulating Equipment	10819	12426	5932
724	Telecommunications Apparatus	8925	9934	8229
7241	T.V. Broadcast Receivers	1305	....	275
7242	Radio Broadcast Receivers	1063	....	....
7249	Telecommunication Equipment, N.E.S.	6558	8004	6843
725	Domestic Electrical Equipment	1887	....	....
726	Electro-Medical Apparatus, etc.	1035	....	....
7261	Electro-Medical Apparatus	521	....	....
7262	X-Ray Apparatus	614	....	....
729	Other Electrical Machinery	17551	15990	6758
7291	Batteries and Accumulators	1125	...	....
7292	Electric Lamps	912	...	...
7293	Thermionic, etc. valves and tubes	710	...	...
7294	Automotive Electrical Equipment	1033	....	....
7295	Electrical Measuring Instruments	2481	...	....
7296	Electro Mechanical handtools	398	...	....
7297	Electron and Proton Accelerators	4	...	....
7299	Electrical Machinery, N.E.S.	10887	10283	3824
73	TRANSPORT EQUIPMENT	92333	85717	41442
731	Railway Vehicles	21807	23026	4286
7311	Railway Locomotives, Steam/Electric	5068	7731	17
7313	Other Railway Locomotives	5153	3689	....

EXHIBIT : 44

(Figures in '000 U.S. Dollars)

1973	1974	1975	1976	1977	1978	1979	1980
9205	8892	20448	20986	21786	16769	23006	24011
8470	7741	17438	19885	19914	15654	18408	22680
12665	29448	22667	25253	37255	42319	33628	24975
2577	9848	8787	8053	11935	15014	10686	10934
.....	.....	833	.....	.....	.....	.....	318
8431	16905	13088	15956	23847	26423	22267	13723
.....	.....	1037	.....	.....	.....	.....	10423
.....	.....	1897	.....	.....	.....	.....	6104
.....	.....	832	.....	.....	.....	.....	3796
.....	.....	1065	.....	.....	.....	.....	2308
3547	17853	21139	20000	27826	29250	52575	50194
.....	.....	1577	.....	.....	.....	.....	7439
.....	.....	1728	.....	.....	.....	.....	4259
.....	.....	867	.....	.....	.....	.....	3252
.....	.....	544	.....	.....	.....	.....	2503
.....	.....	3361	3590	4859	6372	12832	12957
.....	.....	729	.....	.....	.....	.....	954
.....	.....	35	.....	.....	.....	.....	40
6400	10599	12297	10908	13401	11443	19497	18790
51000	154000	128318	175718	154089	225052	245476	604931
2768	5334	36696	11241	10592	12585	40703	29286
.....	14851	-
.....	-	336

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contd...

EXHIBIT : 44

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
7315	Railway Passenger Cars	5029	2761	723	...	...	-	...	...	...	...	-
7316	Railway Freight Cars	4280	233	3	...	...	-	...	...	...	...	-
7317	Parts of Locomotives, etc.	2276	8155	3542	2744	5329	21844	11104	9607	11140	40701	28923
732	Road Motor Vehicles	46297	37831	32582	44180	70610	77766	94601	110524	131829	184349	250678
7321	Passenger Motor Cars	17569	8288	2630	4334	20506	20876	26266	31667	43687	31303	67705
7322	Buses (including Trolley Buses)	1652	...	...	...	...	723	...	...	...	...	331
7323	Lorries and Trucks	3919	3983	429	2358	1212	2402	3170	15724	8947	35078	38564
7324	Special purpose lorries, etc.	2567	...	...	...	...	5080	10044	8113	12113	11309	15038
7325	Road Tractors	910	...	...	...	...	682	...	...	...	...	2128
7326	Chassis with engines for Passenger Motor Cars	1057	...	...	...	...	2344	...	...	...	...	3395
7327	Other Chassis with Engines	9508	10942	18227	13909	11986	13878	15014	12911	9447	20821	42039
7328	Bodies, Chassis, Frames, etc.	4294	5468	8499	16011	23485	24006	24287	24306	34035	50139	45479
7329	Motor Cycles, etc. and their parts	4819	5172	1524	3384	5297	7775	12527	14143	20705	31881	35999
733	Road Vehicles not motorized	2351	...	...	...	...	1677	...	...	...	...	2018
7331	Bicycles, etc.	1327	...	...	...	...	1300	...	...	...	...	1326
7333	Trailers, etc.	1024	...	...	...	...	377	...	...	...	...	692
734	Aircraft	17172	18384	421	121	73132	496	62168	7993	2457	1647	262400
7341	Aircraft heavier than air	16788	18156	...	...	73013	182	61004	83	1762	1425	201806
7349	Airships, Balloons, etc.	385	...	...	...	...	313	1163	7911	695	222	594
735	Ships and Boats	4706	5113	3162	1934	2922	11684	6212	22596	75827	16530	60549
7353	Ships, other than Warships	3521	874	627	...	...	7246	...	105	2204	1754	47890
7358	Ships, etc. for breaking up	378	...	...	...	...	2106	4101	17035	30142	10871	8510
7359	Ships and Boats, N.E.S.	807	4113	1588	791	2313	2332	1867	5456	43482	3906	4149
	TOTAL MACHINERY AND TRANSPORT EQUIPMENT	366060	301255	165597	181697	396204	513080	578550	687809	773357	973686	1357810

Source : Yearbook of International Trade Statistics, 1975 - 1981
- United Nations

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

EXPORTS OF SELECTED CAPITAL GOODS - PAKISTAN

(F.O.B. Value in '000 U.S.Dollars)

SITC Code	Product Group	1970 ^a	1975 ^a	1976	1977	1978	1979	1980 ^a
71	NON-ELECTRICAL MACHINERY	1573	3596	14213	11814	22930	23040	4039
711	Power Generating Machinery	223	425	...	...	...	...	165
7111	Steam Generating Boilers	1	44	...	...	...	...	86
7114	Aircraft Engines	...	3	...	...	...	...	...
7115	Internal Combustion Engines	205	305	...	...	...	...	19
7116	Gas Turbines	8	38	...	...	...	...	...
7118	Engines, N.E.S.	10	35	...	...	...	...	59
712	Agricultural Machinery	18	8	...	...	...	...	618
7121	Agricultural Machinery for Soil Preparation	...	...	...	...	...	...	467
7122	Agricultural Machinery for Harvesting, etc.	12	...	...	...	...	...	25
7125	Tractors	-	...	...	...	...	...	...
7129	Agricultural Machinery, N.E.S.	6	8	...	...	...	...	125
714	Office Machines	3	88	...	...	...	...	182
7141	Typewriters, etc.	...	54	...	...	...	...	178
7142	Calculating Machines, etc.	2	-	...	...	...	...	...
7143	Statistical Machines	...	33	...	...	...	...	4
7149	Office Machines, N.E.S.	1	=	...	...	...	...	...
715	Metalworking Machinery	48	310	...	...	...	...	497
7151	Machine tools for metal working	43	206	...	...	...	...	458
7152	Metal Working Machines, other than machine tools	5	104	...	...	...	...	39
717	Textile and Leather Machinery	714	507	...	...	...	...	762
7171	Textile Machinery	286	131	...	...	...	...	302
7172	Leather Machinery, etc.	4	2	...	...	...	...	1
7173	Sewing Machines	423	374	2889	3416	10668	6585	460
718	Machines for special Industries	115	739	...	...	...	...	453
7181	Paper Mill Machinery, etc.	15	3	...	...	...	...	13
7182	Printing Machinery, etc.	8	14	...	...	...	...	106
7183	Food Processing Machinery	15	22	...	...	...	...	22
7184	Construction and Mining Machinery	77	674	2825	3224	10349	6423	307
7185	Mineral Crusing Machinery, etc.	...	26	...	...	...	...	5
719	Machinery & Appliances, N.E.S.	451	1520	5138	5036	9055	14558	1361
7191	Heating and Cooling Equipment	12	125	...	...	...	...	169
7192	Pumps and Centrifuges	51	616	...	...	...	...	320
7193	Mechanical Handling Equipment	74	43	...	...	...	...	...
7194	Domestic Appliances	1	...	...	...	...	...	7
7195	Powered tools, N.E.S.	1	56	...	...	...	...	59
7196	Other Non-Electric Machines	46	3	...	...	...	...	22
7197	Ball, Roller Bearings, etc.	1	21	...	...	...	...	52

contd..

EXHIBIT 44

(F.O.B. Value in '000 U.S. Dollars)

SITC Code	Product Group	1970 ^a	1975 ^a	1976	1977	1978	1979	1980 ^a
7198	Machinery & Appliances, N.E.S.	127	93	901	1287	253	8483	453
7199	Parts & Accessories, N.E.S.	138	563	3362	2216	8062	5233	278
72	ELECTRICAL MACHINERY	1495	2742	2381	1283	4561	4941	3222
722	Electrical Power Machinery and Switchgear	301	1262	....	...	....	....	2521
7221	Electrical Power Machinery	200	601	....	...	....	....	2332
7222	Switchgear, etc.	101	661	....	..	....	....	189
723	Equipment for Distributing Electricity	281	142	....	....	....	....	89
7231	Electrical Insulating Equipment	281	117	....	....	....	....	...
724	Telecommunications Apparatus	490	270	....	....	....	....	300
7241	T.V. Broadcast Receivers	57	48	....	....	....	....	141
7242	Radio Broadcast Receivers	249	122	....	....	....	....	-
7249	Telecommunication Equipment, N.E.S.	184	100	....	....	....	....	239
725	Domestic Electrical Equipment	65	325	....	....	....	....	85
726	Electro-Medical Apparatus, etc.	-	4	....	....	....	....	...
7261	Electro-Medical Apparatus	...	....	....	....	....	....	...
7272	X-Ray Apparatus	-	4	....	....	....	....	...
729	Other Electrical Machinery	358	738	....	....	....	....	148
7291	Batteries and Accumulators	40	-	....	....	....	....	-
7292	Electric Lamps	6	....	....	....	....	....	54
7293	Thermionic, etc. Valves and Tubes	26	221	....	....	....	....	...
7294	Automotive Electrical Equipment	...	69	....	....	....	....	...
7295	Electrical Measuring Instruments	16	52	....	....	....	....	...
7299	Electrical Machinery, N.E.S.	270	396	....	....	....	....	74
73	TRANSPORT EQUIPMENT	309	259	6127	19907	5599	26121	26492
731	Railway Vehicles	...	....	19	905	0	9815	4603
7315	Railway Passenger Cars	...	....	....	....	....	9071	2209
7317	Parts of Locomotives, etc.	...	....	....	....	....	....	2394
732	Road Motor Vehicles	176	34	....	....	....	....	79
7321	Passenger Motor Cars	14	4	....	....	....	....	1
7322	Buses (including trolley buses)	59	3	....	....	....	....	...
7323	Lorries and Trucks	37	....	....	....	....	....	...
7326	Chassis with Engines for Passenger Motor Cars	1	....	....	....	....	....	...
7327	Other Chassis with Engines	2	....	....	....	....	....	...
7328	Bodies, Chassis, Frames, etc.	63	26	....	....	....	....	73
7329	Motor Cycles, etc. and their parts	-	-	....	....	....	....	5
733	Road Vehicles not motorised	29	14	....	....	....	....	7
7331	Bicycles, etc.	4	12	....	....	....	....	2
7333	Trailers, etc.	25	2	....	....	....	....	5

contd...

EXHIBIT : 45

(F.O.B. Value in '000 U.S. Dollars)

SITC Code	Product Group	1970 ^a	1975 ^a	1976	1977	1978	1979	1980 ^a
734	Aircraft	52	...	...	...	...	...	...
7349	Airships, Balloons, etc.	52	...	...	...	...	...	...
735	Ships and boats	51	212	4464	11192	3534	15035	21803
7353	Ships, other than Warships	49	211	4463	11172	3482	9363	21803
7359	Ships and boats, N.E.S.	2	1	...	...	...	...	-
	TOTAL MACHINERY AND TRANSPORT EQUIPMENT	3377	6597	22739	27004	33090	54102	33753

a : Export figures do not include re-exports

Source : 1) Yearbook of International Trade Statistics, 1975 - 1981.
- United Nations

2) Asian Industry in Figures - UNIDO

S R I L A N K A

SRI LANKA

41. Sri Lanka consists of one large island and several smaller ones lying east of the southern tip of the Indian sub-continent. It has an area of 65,610 sq. km. The mid-year population of Sri Lanka in 1980 was 14.74 million. During the period 1970-1979, population grew at the rate of 1.7 per cent. As of October 1971, 41 per cent of the total economically active population was engaged in agriculture, 11 per cent in community, social and personal services, 7.6 per cent in manufacturing, 7.7 per cent in wholesale and retail trade, 4 per cent in transport, storage and communication and 2.3 per cent in construction activities.
42. In 1979, the GDP of Sri Lanka at current prices was 55.2 billion Sri Lanka rupees. Agriculture accounted for 35.8 per cent of the GDP. Manufacturing, construction and mining contributed 10.77, 6.58 and 1.68 per cent respectively. The shares of agriculture and manufacturing in GDP were 36.1 per cent and 35.8 per cent respectively in 1970. The per capita GDP of Sri Lanka measured in 1975 U.S. \$ went up from 267 in 1970 to 357 in 1980.
43. There has been a marked increase in Sri Lanka's industrial output in recent years. The industrial sector is demarcated into public and private sectors. While the private sector covers a wide range of light consumer goods industries, the public sector industries are engaged in the manufacture of cement, paper, textiles, steel, petroleum refining and fertilizers. These industries primarily serve the domestic market.
- A major portion of Sri Lanka's imports of capital goods constitute non-electrical machinery. Exports of capital goods from the country were not significant. However, the value of exports registered an increase from U.S. \$ 27,000 in 1970 to U.S. \$ 4.24 million in 1980.

44. NON-ELECTRICAL MACHINERY

In 1979, there were 45 establishments in Sri Lanka manufacturing non-electrical machinery. They employed 1548 employees and had a gross output of 79 million Sri Lanka rupees. The value added by this industry was 47 million Sri Lanka rupees, which formed 1.12 per cent of the total manufacturing value added at current prices. The non-electrical machinery industry employed 3.53 per cent of the total manufacturing labour force in 1978. The commodities manufactured in the non-electrical category are stoves, cookers, sewing machines, freezers, domestic refrigerators, pumps, etc. Imports include power-generating equipment, internal combustion engines, agricultural machinery, metal working machinery, leather and textile machinery, mining and construction machinery and mechanical handling equipment. Total non-electrical machinery imports in 1980 were valued at U.S. \$ 226.5 million; this constituted almost 45 per cent of the imports of machinery and transport equipment. In the same year, non-electrical machinery worth U.S. \$ 1.9 million were exported.

45. ELECTRICAL MACHINERY

The electrical machinery manufacturing industry comprised 58 establishments in 1979, employed 2792 people and had a gross output of 270 million Sri Lanka rupees. The value added was 164 million Sri Lanka rupees, which constituted 3.92 per cent of the total manufacturing value added in 1979. The industry accounted for 2.69 per cent of manpower employed in manufacturing in 1978. The electrical equipment manufactured include radios, batteries, cells and accumulators, whereas imports are electric power machinery, switchgear, telecommunications apparatus, and domestic electrical equipment. In 1980 electrical equipment worth U.S. \$ 95 million were imported, and equipment valued at U.S. \$ 622,000 were exported.

46. TRANSPORT EQUIPMENT

Sri Lanka's transport equipment industry comprised 68 establishments in 1979 and employed about 1646 people. The gross output of the industry in 1979 at current prices was 262 million Sri Lanka rupees and the value added was 157 million Sri Lanka rupees forming about 3.75 per cent of the value added by total manufacturing. In terms of employment, the transport equipment industry accounted for 3.21 per cent of the employment in manufacturing in 1978. A range of transport equipment are manufactured in Sri Lanka, which include railway goods wagons and vans, rail passenger carriages, buses, motor coaches assembled from imported parts, trailers, motorcycles, scooters, bicycles and perambulators. Road motor vehicles, railway vehicles and bicycles formed a large part of the total transport equipment imports in 1980, valued at U.S. \$ 185 million. Transport equipment worth U.S. \$ 1.7 million were exported in 1980.

47. Break-up of GDP by activities, and statistics relating to production, branch characteristics, imports and exports are given in the following pages.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

GDP BY KIND OF ACTIVITY AT CURRENT PRICES - SRI LANKA

(In Million Rupees)
(Calendar Year)

Sl.No.	Kind of Activity	1975	1976	1977	1978	1979	1980	1981
1.	Agriculture	7581	8637	10723	12098	15199	17900	22358
2.	Mining	323	443	412	587	646	910	1078
3.	Manufacturing	6652	7314	9415	10070	10690	12422	13648
4.	Electricity, Gas & Water	117	123	150	169	352	547	988
5.	Construction	1262	1610	1591	2476	3702	6502	8037
6.	Trade	4883	5771	6495	8949	9896	11331	14395
7.	Transport & Communications	2362	2685	3056	3371	4848	6962	7373
8.	Finance	336	419	542	845	1243	1785	2463
9.	Public Administration	618	625	715	740	1450	1659	1688
10.	Others	2997	3346	3813	5257	6694	8300	10065
	Total	27040	30973	36912	44562	54920	68338	82093

Source : Key Indicators of Developing Member Countries of ADB, ADB, April 1983

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIASRI LANKA : CURRENCY EXCHANGE RATES

(Rupees per U.S.Dollar)

Year	Average Exchange Rate
1970	5.952
1971	5.935
1972	6.001
1973	6.405
1974	6.649
1975	7.050
1976	8.459
1977	9.153
1978	15.608
1979	15.569
1980	16.534
1981	19.248
1982	20.830

Source: Key Indicators of Developing Member Countries of ADB,
ADB, April 1983.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PRODUCTION OF SELECTED CAPITAL GOODS IN SRI LANKA

ISIC Code	Item	Unit	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
382 NON-ELECTRICAL MACHINERY												
382904	Stoves, Ranges, Cookers	Thousand Nos.	...	...	30	25	8	14	21	...	27	7
382910	Sewing Machines	Thousand Nos.	39	34	38	37	27	15	13	14	32	33
382928	Refrigerators (other than household) and Freezers	Nos.	...	...	...	4320	...	...	332	...	338	...
382942	Pumps for liquids, except liquid elevators	Thousand Nos.	2	2	4	6	...	...	...	...	10	5
382958	Refrigerators for household use	Thousand Nos.	...	7	8	3	3	2	3	3	4	...
383 ELECTRICAL MACHINERY												
383204	Radio Receivers	Thousand Nos.	...	25	36	117	...	44	55	75	59	44
383910	Batteries and Cells Primary	Million Nos.	...	...	...	41	48	38	20	41	26	49
383913	Accumulators for Motor Vehicles	Thousand Nos.	...	56	64	51	61	...	...	...	44	95
383916	Lamps, Electric	Million Nos.	...	3	5	3	3	...	...	...	...	6

contd...

EXHIBIT : 48

ISIC Code	Item	Unit	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
384 TRANSPORT EQUIPMENT												
384210	Goods, Wagons and Vans	Nos.	...	...	...	8	...	...	...	...	...	...
384213	Rail Passenger Carriages	Nos.	...	...	...	40	...	...	...	...	...	...
384312	Buses and Motor Coaches, assembled from imported parts	Nos.	...	...	...	820	...	...	...	...	...	...
384322	Trailers and Semi-trailers	Nos.	982	362	700	632	784	744	581	...	794	342
384404	Bicycles	Thousand Nos.	...	8	12	16	31	37	138	167	...	...
384901	Perambulators and push chairs for babies	Thousand Nos.	...	...	...	1	...	...	...	...	...	...

Source : 1) Yearbook of Industrial Statistics, Volume II, 1975 - 1980.
- United Nations
2) Asian Industry in Figures - UNIDO

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

BRANCH CHARACTERISTICS OF CAPITAL GOODS SECTOR - SRI LANKA

Characteristic	Unit	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
382 NON-ELECTRICAL MACHINERY											
1. No. of Establishments	Nos.	50	52	56	62	67	71	80	83	81	45
2. Average No. of employees	Nos.	7184	7983	6701	7563	7173	7784	7068	8049	5085	1548
3. Gross Output	Million Rs.	93	95	86	88	106	...	...	...	...	79
4. Value added (in factor values)	Million Rs.	...	...	...	...	...	...	...	...	...	47
5. Gross fixed capital formation(total)	Million Rs.	...	...	...	...	...	...	...	...	...	33
3825 OFFICE, COMPUTING, ETC.											
1. No. of Establishments	Nos.	...	...	...	...	...	1	1	1	-	3
2. Average No. of employees	Nos.	...	...	...	...	...	29	30	...	-	14
3. Gross Output	Million Rs.	...	...	...	...	...	...	...	...	...	-
4. Value added (in factor values)	Million Rs.	...	...	...	...	...	...	...	...	...	-
5. Gross fixed capital formation(total)	Million Rs.	...	...	...	...	...	...	...	...	...	-
383 ELECTRICAL MACHINERY											
1. No. of Establishments	Nos.	73	77	80	103	99	83	79	107	100	58
2. Average No. of employees	Nos.	2850	3027	3432	3288	3568	4279	4618	7358	3881	2702
3. Gross Output	Million Rs.	72	83	106	107	152	...	...	...	...	270
4. Value added (in factor values)	Million Rs.	...	...	...	...	...	...	...	...	...	164
5. Gross fixed capital formation(total)	Million Rs.	...	...	...	...	...	...	...	...	...	87
3832 RADIO, TELEVISION, ETC.											
1. No. of Establishments	Nos.	11	14	16	35	35	22	18	37	24	24
2. Average No. of employees	Nos.	473	483	624	727	808	696	640	1185	...	528
3. Gross Output	Million Rs.	13	16	31	29	36	...	...	...	...	18
4. Value added (in factor values)	Million Rs.	...	...	...	...	...	...	...	...	...	11
5. Gross fixed capital formation(total)	Million Rs.	...	...	...	...	...	...	...	...	...	11

contd...

Sl. No.	Characteristic	Unit	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
384 TRANSPORT EQUIPMENT												
1.	No. of Establishments	Nos.	64	57	61	92	87	78	78	89	129	68
2.	Average number of employees	Nos.	1945	2049	2186	3043	3184	5598	5142	6104	4625	1646
3.	Gross Output	Million Rs.	19	22	24	27	41	...	...	...	...	262
4.	Value added (in factor values)	Million Rs.	...	...	...	...	...	...	...	...	...	157
5.	Gross fixed capital formation(total)	Million Rs.	...	...	...	...	...	...	...	...	...	19
3841 SHIP BUILDING & REPAIRING												
1.	No. of Establishments	Nos.	5	4	5	5	7	...	...	...	...	20
2.	Average number of employees	Nos.	10	44	80	111	475	...	...	...	...	538
3.	Gross Output	Million Rs.	1	2	3	4	4	...	...	...	...	23
4.	Value added (in factor values)	Million Rs.	...	...	...	...	...	...	...	...	...	13
5.	Gross fixed capital formation(total)	Million Rs.	...	...	...	...	...	...	...	...	...	4
3843 MOTOR VEHICLES												
1.	No. of Establishments	Nos.	41	36	38	68	65	...	...	...	...	33
2.	Average number of employees	Nos.	1163	1202	1206	1941	1720	1733	1431	1943	...	907
3.	Gross Output	Million Rs.	7	6	7	8	12	...	...	...	...	226
4.	Value added (in factor values)	Million Rs.	...	...	...	...	...	...	...	...	...	136
5.	Gross fixed capital formation(total)	Million Rs.	...	...	...	...	...	...	...	...	...	12
3 MANUFACTURING												
1.	No. of Establishments	Nos.	2028	2242	2210	2367	2344	2384	2447	2446	2587	2443
2.	Average number of employees	Nos.	98156	108384	110723	113744	114583	116728	135930	152922	144018	160640
3.	Gross Output	Million Rs.	1938	2266	2626	2780	4343	...	...	...	...	11351
4.	Value added (in factor values)	Million Rs.	...	...	...	...	...	...	3763	4096	5011	4185
5.	Gross fixed capital formation(total)	Million Rs.	...	...	...	...	...	...	...	...	...	4275

Source : Yearbook of Industrial Statistics, Vol.I, United Nations, 1975 - 1980.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA
IMPORTS OF SELECTED CAPITAL GOODS - SRI LANKA

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1974	1975	1976	1977	1978	1979	1980
71	NON-ELECTRICAL MACHINERY	35732	20190	35369	35286	41151	100963	158117	226454
711	Power Generating Machinery	3080	4422	3972	5566	4452	12612	16259	18638
7111	Steam Generating Boilers	539	.....	477	.....	.....	.....	.....	1087
7112	Boiler House Plant	15	.....	7	.....	.....	.....	.....	342
7113	Steam Engines	39	.....	6	.....	.....	.....	.....	54
7114	Aircraft Engines	45	.....	1512	2082	2162	117	.....	2210
7115	Internal Combustion Engines	2309	2099	1835	3301	2041	9156	11060	11719
7116	Gas Turbines	2	.....	.....	.....	.....	.....	.....	2191
7117	Nuclear Reactors	3	.....	1	.....	.....	.....	.....	21
7118	Engines, N.E.S.	127	.....	135	.....	.....	.....	.....	1015
712	Agricultural Machinery	3814	1743	3138	1267	4999	23157	25575	22132
7121	Agricultural Machinery for Soil Preparation	493	...	399	.....	.....	.....	.....	714
7122	Agricultural Machinery for Harvesting, etc.	62	...	186	...	...	...	...	581
7123	Milking Machines, etc.	291	...	7	...	...	...	...	98
7125	Tractors	2885	832	2539	450	4262	21115	23475	20360
7129	Agricultural Machinery, N.E.S.	83	.....	8	...	...	...	...	378
714	Office Machines	1092	.....	1010	1167	1660	2478	4509	6887
7141	Typewriters, etc.	278	.....	430	.....	.....	.....	...	2002
7142	Calculating Machines, etc.	386	.....	364	.....	.....	.....	...	2231
7143	Statistical Machines	104	.....	60	.....	.....	.....	...	1452
7149	Office Machines, N.E.S.	324	.....	156	.....	.....	.....	...	1201
715	Metal Working Machinery	1816	.....	445	1141	1176	2502	5595	8949
7151	Machine tools for metal working	1731	.....	384	991	983	2226	4937	8076
7152	Metal working machines, other than machine tools	85	.....	60	.....	.....	.....	...	873
717	Textile and Leather Machinery	6416	...	1626	4176	3650	8820	15083	28850
7171	Textile Machinery	5107	.....	996	3063	2530	5710	8516	21418

contd...

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1974	1975	1976	1977	1978	1979	1980
7172	Leather Machinery, etc.	121	...	42	...	...	...	...	445
7173	Sewing Machines	1189	...	588	1079	1063	2974	6175	6987
718	Machines for special industries	6116	3564	12254	5784	7318	9097	30772	61028
7181	Paper mill machinery, etc.	2153	153	7208	...	...	...	...	1529
7182	Printing Machinery, etc.	921	...	645	...	571	2057	4164	8233
7183	Food Processing Machinery	461	...	545	64	396	992	8042	6806
7184	Construction and Mining Machinery	1387	2553	3156	2812	5617	3458	12718	31621
7185	Mineral Crushing Machinery, etc.	1194	...	400	1083	568	1960	4530	12840
719	Machinery and Appliances, N.E.S.	13398	8229	12924	16185	17896	42297	60323	79970
7191	Heating and Cooling Equipment	1434	...	1233	3200	2439	9578	8136	13638
7192	Pumps and Centrifuges	2140	1759	3815	3330	4982	9517	11739	13934
7193	Mechanical Handling Equipment	2218	...	1284	1446	2012	5049	12076	16208
7194	Domestic Appliances	63	...	121	...	...	...	...	98
7195	Powered tools, N.E.S.	1230	...	404	...	...	...	...	3946
7196	Other non-electric Machines	1283	...	709	...	1103	1834	3754	7881
7197	Ball, roller bearings, etc.	661	...	1591	1783	1595	2843	3032	3013
7198	Machinery and Appliances, N.E.S.	2037	...	415	1292	1582	3448	8485	10363
7199	Parts and Accessories, N.E.S.	2332	2228	3350	3786	3539	7635	9521	10888
72	ELECTRICAL MACHINERY	12562	7965	13729	16023	13613	37439	61243	95002
722	Electrical Power Machinery & Switchgear	4494	3832	6029	5045	4640	11589	17679	34762
7221	Electric Power Machinery	1701	2298	2833	2355	2558	6226	8392	18207
7222	Switchgear, etc.	2793	1534	3196	2690	2082	5363	9288	16556
723	Equipment for distributing electricity	1900	...	953	1444	1222	2598	6181	8817
7231	Electrical Insulating Equipment	1582	...	731	1128	879	2301	5547	6619
724	Telecommunications Apparatus	1180	...	1557	5209	2373	9292	19377	23740
7241	T.V. Broadcast Receivers	...	...	...	...	...	...	...	5032
7242	Radio Broadcast Receivers	382	...	317	...	...	...	...	3413
7249	Telecommunications Equipment, N.E.S.	798	...	1240	4975	2172	6631	15156	15295
725	Domestic Electrical Equipment	774	...	327	...	459	2811	3880	10201
726	Electro-Medical Apparatus	97	...	308	...	...	...	...	475
7261	Electro-Medical Apparatus	32	...	24	...	...	...	...	295
7262	X-Ray Apparatus	66	...	284	...	...	...	...	180
729	Other electrical machinery	4117	2487	4555	3589	4189	10759	12469	17008

contd...

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1974	1975	1976	1977	1978	1979	1980
7291	Batteries and Accumulators	548	...	485	...	...	...	...	3400
7292	Electric Lamps	594	...	523	...	...	...	...	2306
7293	Thermionic, etc. valves and tubes	370	...	246	...	...	...	...	812
7294	Automotive Electrical Equipment	909	...	976	...	...	...	...	3535
7295	Electrical Measuring Instruments	212	...	317	...	...	...	...	1345
7296	Electro-mechanical handtools	80	...	64	...	...	...	...	370
7297	Electron and Proton Accelerators	1	...	...	...	...	...	...	...
7299	Electrical Machinery, N.E.S.	1403	...	1944	...	...	...	...	5192
73	TRANSPORT EQUIPMENT	20045	13176	14839	20615	29097	85782	140094	185052
731	Railway vehicles	2398	1387	2396	3440	4938	6377	30180	18041
7311	Railway Locomotives Steam/Electric	324	...	2	...	...	...	...	2298
7313	Other railway locomotives	...	...	8	...	...	...	...	5604
7315	Railway passenger cars	1257	...	...	...	...	...	...	...
7316	Railway freight cars	185	...	6	...	...	...	...	...
7317	Parts of locomotives, etc.	632	1306	2380	3425	4930	6109	10339	9871
732	Road motor vehicles	15335	9193	9725	16142	21569	71938	102602	137967
7321	Passenger motor cars	1671	1905	2337	5250	5515	18655	27690	18311
7322	Buses (including trolley buses)	3971	...	359	697	341	12320	27259	25488
7323	Lorries and trucks	443	...	1989	1115	5008	2864	1842	46319
7324	Special purpose lorries, etc.	488	...	86	...	...	...	...	3203
7325	Road tractors	60	...	281	...	...	...	...	2044
7326	Chassis with engines for passenger motor cars	32	...	2	...	...	...	...	...
7327	Other chassis with engines	4153	2160	663	3307	5796	2613	...	14238
7328	Bodies, chassis, frame, etc.	4146	3009	3752	4122	3840	7705	10497	10632
7329	Motor cycles, etc. and their parts	371	...	255	428	184	3725	8555	17732
733	Road vehicles, not motorized	1059	...	726	622	1172	2923	4827	20288
7331	Bicycles, etc.	652	...	567	...	604	2122	3366	16606
7333	Trailers, etc.	402	...	159	...	...	...	...	3672

contd..

(Figures in '000 U.S. Dollars)

SITC Code	Product Group	1970	1974	1975	1976	1977	1978	1979	1980
7334	Invalid carriages	5	...	-	...	...	...	...	10
734	Aircraft	852	...	1475	340	463	3471	2130	5635
7341	Aircraft, heavier than air	1	...	...	...	...	3056	500	660
7349	Airships, balloons, etc.	851	...	1475	...	...	...	...	4975
735	Ships and boats	402	...	517	...	...	...	...	3121
7353	Ships, other than warships	8	...	...	...	...	...	...	208
7358	Ships, etc. for breaking up	...	...	...	...	...	...	...	...
7359	Ships and boats, N.E.S.	394	...	22	...	...	...	...	2913
	TOTAL MACHINERY AND TRANSPORT EQUIPMENT	68339	41331	63937	71924	83861	224184	359454	506509

Source : Yearbook of International Trade Statistics, 1975 - 1981.
 - United Nations

EXHIBIT : 51

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

EXPORTS OF SELECTED CAPITAL GOODS - SRI LANKA

(F.O.B. Value in '000 U.S. Dollars)

SITC Code	Product Group	1975	1980
71	NON-ELECTRICAL MACHINERY	1168	1937
711	Power-Generating Machinery	...	115
7111	Steam Generating Boilers	...	1
7114	Aircraft Engines	...	29
7118	Engines, N.E.S.	...	84
712	Agricultural Machinery	1	70
7121	Agricultural Machinery for Soil Preparation	...	1
7125	Tractors	...	69
7129	Agricultural Machinery, N.E.S.	1	...
714	Office Machines	71	22
7141	Typewriters, etc.	5	...
7142	Calculating Machines, etc.	33	6
7143	Statistical Machines	...	3
7149	Office Machines, N.E.S.	34	13
715	Metal Working Machinery	2	71
7151	Machine tools for metal working	...	30
7152	Metal working machines, other than machine tools	2	41
717	Textile and Leather Machinery	68	102
7171	Textile Machinery	5	29
7172	Leather Machinery, etc.	...	...
7173	Sewing Machines	63	73
718	Machines for special industries	944	1285

contd..

EXHIBIT : 51

(F.O.B. Value in '000 U.S. Dollars)

SITC Code	Product Group	1975	1980
7182	Printing Machinery, etc.	3	6
7183	Food Processing Machinery	941	1228
7184	Construction and Mining Machinery	...	51
719	Machinery and Appliances, N.E.S.	83	273
7192	Pumps and Centrifuges	19	79
7193	Mechanical Handling Equipment	...	86
7194	Domestic Appliances	...	36
7195	Powered tools, N.E.S.	...	14
7196	Other Non-Electrical Machines	...	5
7197	Ball, roller bearings, etc.	...	9
7198	Machinery and Appliances, N.E.S.	58	...
7199	Parts and Accessories, N.E.S.	5	45
72	ELECTRICAL MACHINERY	72	622
722	Electrical Power Machinery and Switchgear	31	91
7221	Electrical Power Machinery	5	38
7222	Switchgear, etc.	26	52
723	Equipment for distributing electricity	...	5
7231	Electrical Insulating Equipment	...	5
724	Telecommunications Apparatus	6	101
7241	T.V. Broadcast Receivers	2	...
7249	Telecommunications equipment N.E.S.	4	101
725	Domestic Electrical Equipment	7	7
726	Electro-Medical Apparatus	...	2
7262	X-Ray Apparatus	...	2
729	Other electrical machinery	29	417
7291	Batteries and Accumulators	27	52
7292	Electric Lamps	1	7

contd..

EXHIBIT : 51

(F.O.B. Value in '000 U.S. Dollars)

SITC Code	Product Group	1975	1980
7294	Automotive Electrical Equipment	...	348
7296	Electro-mechanical handtools	...	8
73	TRANSPORT EQUIPMENT	222	1681
731	Railway Vehicles	...	23
7317	Parts of Locomotives, etc.	...	23
732	Road motor vehicles	41	110
7321	Passenger motor cars	34	49
7322	Buses (including trolley buses)	...	44
7327	Other chassis with engines	...	1
7328	Bodies, chassis, frame, etc.	7	4
7329	Motor cycles, etc. and their parts	...	12
733	Road vehicles, not motorized	8	206
7331	Bicycles, etc.	6	4
7333	Trailers, etc.	2	202
734	Aircraft	159	173
7341	Aircraft, heavier than air	...	1
7349	Airships, balloons, etc.	159	172
735	Ships and boats	13	1170
7353	Ships, other than warships	...	1124
7358	Ships, etc. for breaking up	...	40
7359	Ships and boats, N.E.S.	...	6
	TOTAL MACHINERY AND TRANSPORT EQUIPMENT	1462	4241

Note : Figures for Exports do not include re-exports

Source : Asian Industry in Figures
- UNIDO

SECTION - 3

BASIC PROBLEMS AND ISSUES

BASIC PROBLEMS AND ISSUES

1. NEED FOR CAPITAL GOODS

- It is a well known fact that industrialisation process helps in rapid development of economy of country or region. The growth of industrialisation largely depends on the availability of capital goods. Capital goods are essential for converting raw materials and agricultural produce into products like steel, cement, textiles, paper, sugar, chemicals, petro-chemicals, etc. These are also necessary for developing a sound infrastructure for power generation and transport system in a country.
2. Agro-based economies, as prevalent in most of the countries in South Asia, can also draw maximum benefits by judicious use of capital goods. Tractors, harvesters, threshers, etc. can increase productivity (yield/person/year/hectare). Productivity can also be increased by adopting mechanical means of irrigation and bio-chemical technology comprising fertilizers and high-yield seeds. Post-harvest technology is another field which can benefit by employing capital goods in erection of cold storages, storage silos and in providing packaging materials.
 3. Capital goods like wood cutting machinery, dairy plants, fishing equipment, handlooms can provide many other avenues of income and useful employment in the rural sector, thereby reducing burden on the land.
 4. U.S.A. is an excellent example where adoption of mechanised farming and bio-chemical technology has produced excellent results. About 140 years ago 70 per cent of the U.S. population was dependent on agriculture; but today less than 10 per cent is engaged in agriculture. In the meantime, agriculture production has increased at least three fold.
 5. Exploitation of known natural resources - new mineral and energy sources such as coal, gas, petroleum, etc. - needs varied types of earthmoving machinery and drilling rigs.

6. Considering wide uses of capital goods and their impact on the economy, each country of the South Asian region desires to be self-sufficient, at least in such items which are required for meeting basic needs of its people. Dependence on imports not only involves valuable foreign exchange but can also endanger the economy of the country in case of war or other emergencies.
7. Status of capital goods in each country of the South Asian region can best be judged from the indicators namely (1) per capita GDP and its structure, (2) private consumption expenditure, (3) consumption/production of steel, cement and electricity, (4) number of passenger cars and commercial vehicles in use, (5) length of roadways and railways developed, (6) production and yield per hectare of food crops, and (7) fertilizer consumption per hectare. The above indicators are dependent on the capital goods employed in their sphere of application, and hence reflect relative status of the corresponding capital goods.
8. Average per capita GDP in South Asia was U.S. \$ 189 with a maximum of U.S. \$ 1102 in Iran and a minimum of U.S. \$ 103 in Afghanistan in 1980, measured at 1975 U.S. Dollars. The low income is mainly due to the limited size of the industrial sector as against agriculture. Contribution of agriculture to GDP is 33 per cent while that of industrial sector is 31 per cent. The industry's contribution would fall to only 24 per cent if Iran's share, which is substantially higher, is not taken into account. Structure of GDP for the countries under consideration is shown in Exhibit-52.
9. Status of steel mill machinery, cement plants and equipment for power generation, transmission and distribution can be measured from the data on consumption/production of steel, cement and energy in each country of the South Asian region. The relevant data on these is presented in Exhibit-53. Total consumption of steel in Bangladesh, India, Iran and Pakistan in the year 1981 amounted to 17.9 million tonnes. During the same period, Australia, Japan and U.S.A. consumed 6.6 million, 66 million and 129.7 million tonnes of steel respectively. Similarly, Bangladesh

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STRUCTURE OF GDP

Sl.No.	Indicator	Units	Afghanistan	Bangladesh	India	Iran	Nepal	Pakistan	Sri Lanka
1.	Area	Thousand Sq.Km.	647.5	144.0	3287.6	1648.0	140.8	803.9	65.6
2.	Population	Mid-year 1980 (Millions)	15.94	90.20	673.21	38.13	14.29	82.17	14.82
3.	Per capita G.D.P.	For 1980 at 1975 U.S.\$	103	142	143	1102	121	194	357
4.	Per capital G.N.P.	At market prices for 1980 in U.S. \$	---	120	240	---	140	300	270
5.	Share of Agriculture in G.D.P.	Percentage share in 1979	59.4	53.0	31.4	9.0	58.1	28.8	35.8
6.	Share of mining in G.D.P.	Percentage share in 1979	---	-	1.4	30.7	0.1	0.8	1.7
7.	Share of manufacturing in G.D.P.	Percentage share in 1979	22	7.3	16.2	11.8	3.9	14.7	10.8
8.	Share of electricity, gas and water supply in G.D.P.	Percentage share in 1989	---	0.2	1.5	0.7	0.2	2.1	0.6
9.	Share of construction in G.D.P.	Percentage share in 1979	5.4	5.2	4.5	9.2	7.1	5.1	6.6
10.	Share of services in G.D.P.	Percentage share in 1979	13.2	34.3	45.0	38.6	30.6	46.5	44.5

Source : (i) UNIDO
(ii) World Bank Atlas 1981

(iii) Asian Business Directory, 1978 - Kothari & Sons, India
(iv) Key Indicators of Developing Member countries of ADB, April, 1981

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

CONSUMPTION/PRODUCTION OF SELECTED GOODS AND SERVICES

Country	Steel Consumption		Cement Production		Electricity Production		Energy Consumption 1980 (% US per capita consumption)
	1981 (Thousand Metric Tons)	Past 5 year % Increase	1981 (Thousand Metric Tons)	Past 5 years % Increase	1981 (Billion Kwh)	Past 5 years % Increase	
Afghanistan	...	...	...	...	0.97	34	0.4
Bangladesh	150	47	312	225	2.59	59	0.4
India	13750	47	20772	10	121.19	26	1.7
Iran	3200	-34	...	...	17.15	9	11.5
Nepal	...	...	...	...	0.22	32	0.1
Pakistan	800	60	3540	10	17.15	55	2.0
Sri Lanka	...	...	708	68	1.87	55	1.0

Source : Indicator of Market size for 131 countries
1983 Reprint Edition
Reprinted from Business International of December 10, 17 and 31, 1982

India, Pakistan and Sri Lanka all put together consumed 25.3 million tonnes of cement against 64.9 million tonnes by U.S.A. in the year 1981. Consumption of energy in the year 1981 for the whole South Asian region having a population of over 929 million amounted to 161.14 Billion KWH. Against this, consumption figures for Australia, Japan and U.S.A. were 103.2, 521.89 and 2368.22 Billion KWH respectively. Such a wide difference in consumption firmly establishes the need for installation of many more steel mills, cement plants and power generation facilities.

10. India is the largest country in the South Asian region and is comparatively more industrially developed than other members of the region. Still if it were to achieve a modest per capita income of U.S. \$ 300 at the end of the current century - a level already reached by several developing countries today, it needs a substantial increase in production by the manufacturing sector. Following are some examples :
 - (a) In steel, in order to reach a per capita production of only 130 kg. against Japan's present 1000 kg., India needs to increase its steel production twenty fold by 2000 A.D.
 - (b) In cement even if India increases its production tenfold by the end of the century, it will still be less than 200 kg. per capita against Japan's 640 kg. at present.
 - (c) In paper, India needs to increase the production ninefold by the end of the century to be able to achieve a modest per capita production of only 8 kg. against Japan's 70 kg. today.
 - (d) In newsprint, India should increase its production twentyfold to reach a 13 kg. per capita consumption against Japan's 70 kg. at present.

Similar position prevails with respect to other manufacturing industries. Augmentation of production capacity in manufacturing industries require substantial quantum of plant and equipment.

11. In India, for the year 1980, per capita expenditure for food, clothing and household durables amounted to U.S. \$ 100, U.S. \$ 18, U.S. \$ 6.6 respectively. Corresponding figures for Japan were U.S. \$ 1328; U.S. \$ 360; and U.S. \$ 312. This abnormal gap in consumption standards can be bridged only if India increases production of the above products along with buying power of its people. Condition of other countries in the region is no better. Exhibit-54 presents private consumption expenditure for the countries of the South Asian region.
12. Exhibits-55 thru' 57 depict transport network in the South Asian countries. Total number of passenger cars in the region except Nepal were 2492 thousand. Against this, the number of cars in use in Australia, Japan and U.S.A. were 5949 thousand, 23659 thousand and 123467 thousand respectively. There were 8 cars per population of 1000 in the region. Corresponding figures for Australia, Japan and U.S.A. were 410, 203 and 555 respectively. Status of trucks and buses was no better. The region had 1479 thousand trucks and buses in use. Australia, Japan and U.S.A. had 1491 thousand, 14196 thousand and 35562 thousand of buses and trucks during the same period. The above figures confirm the need for more cars, trucks and buses in the region.
13. Agriculture sector in the South Asian region needs substantial help from its industrial sector. At present, productivity of both land and labour is low. Against an average world production of 1914 kgs. of wheat per hectare in 1981, the Indian yield was only 1649 kgs. In the case of rice, the Indian yield per hectare was 2010 kgs. against Japan's 5629 kgs, and China's 4637 kgs. The productivity of other countries in the region is no better. Production and yield per hectare of wheat and

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PRIVATE CONSUMPTION EXPENDITURE - 1980

Country	Total 1980 (in Billion US \$)	Past 5 years % increase (constant price)	% of P.C.E. for food 1980	% of P.C.E. for clothing 1980	% for household durables 1980
Afghanistan	...	...	...	...	...
Bangladesh	9.72	...	...	...	...
India	111.75	16.8	60.2	10.9	4.0
Iran	...	...	...	...	...
Nepal	...	...	...	...	...
Pakistan	19.87	38.4	...	...	...
Sri Lanka	3.26	...	64.7	6.2	5.6

Source : Indicators of Market size for 131 countries,
 Business International, December 10, 17 and 31, 1982.

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LENGTH OF ROADWAYS AND RAILWAYS AT THE END OF 1976

Country	Roadways (Kms)	Railways (Kms)
Afghanistan	19,000	-
Bangladesh	...	...
India	1,188,000	60,162
Iran	69,026	5,480
Nepal	3,100	100
Pakistan	63,000	12,100
Sri Lanka	26,218	1,535

Source : Asian Business Directory, 1978
 Kothari & Sons, India.

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PASSENGER CARS AND COMMERCIAL VEHICLES IN USE - 1980

Country	Passenger cars in use		Trucks and buses in use	
	1980 (Thousands)	No. of cars per 1000 population	1980 (Thousands)	Past 5 years % Increase
Afghanistan	34	1	28	14
Bangladesh	26	0	25	...
India	948	1	835	44
Iran	1079	28	405	228
Nepal	...	...	...	...
Pakistan	285	3	105	15
Sri Lanka	120	8	81	67

Source : Indicators of Market size for 131 countries,
 Business International, December 10, 17 and 31, 1982.

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AVIATION AND RAILWAY STATISTICS - 1979

Country	Aviation				Railways			
	Passenger Traffic Million Pass-Km	Freight Traffic Million Ton-Km	Per capita Passenger Traffic Pass-Km	Per capita Freight Traffic Ton-Km	Passenger Traffic Million Pass-Km	Freight Traffic Million Ton-Km	Per capita Passenger Traffic Pass-Km	Per capita Freight Traffic Ton-Km
1. Afghanistan	238	19	15.31	1.22	...	...	...	...
2. Bangladesh	426 ^a	9.7 ^a	5.3 ^a	0.12 ^a	4616	817	52.6	9.3
3. India	9808	340	15.07	0.52	198640	155990	296	238
4. Nepal	231.7	1.64	16.9	0.12	...	...	...	...
5. Pakistan	4499	211.8	60.7	2.7	16507*	9375*	209	119
6. Sri Lanka	123	2	8	0.14	4073	286	282	20

a : Figures relevant to 1976

Source : ADB Key Indicators of Developing Member Countries,
ADB, April 1981.

rice in the countries of the region are presented in Exhibit-58. This situation can only be improved by switching from traditional methods of farming to mechanical farming. Similarly, adoption of bio-technology can increase productivity. Pakistan's consumption of fertilizer in the year 1980-81 was 49.5 kg/hectare, the highest in the region. But it was insignificant when compared with Japan's consumption of 372 kg/hectare. Consumption figures for Bangladesh, India and Pakistan are shown in Exhibit-59. The low productivity of the land along with low consumption of fertilizers signifies the need for more fertilizers and thereby the need for more fertilizer plants.

14. Non-electrical machinery, electrical machinery and transport equipment can be manufactured with machine tools as mother machines. Hence, their need in the region is a basic necessity. As compared to the more advanced countries like U.S.A. and U.S.S.R. where annual consumption of the machine tools is U.S. \$ 2056 million, each, India's consumption works out to U.S. \$ 360 million i.e. hardly 17.5 per cent of U.S.A. or U.S.S.R.

15. ESSENTIALS FOR MANUFACTURE OF CAPITAL GOODS

Manufacturing is a major activity under the industrial sector, the others being mining, utilities and construction. International Standard Industrial Classification (ISIC) sub-divides "manufacturing" (ISIC Group 3) into nine divisions (31-39). This study is limited to three manufacturing industries namely, Non-electrical machinery (ISIC - 382), Electrical machinery (ISIC - 383) and Transport equipment (ISIC - 384).

16. Setting up an industry requires correct planning and thorough execution. Success or failure of a venture depends on whether or not all the basic factors affecting its development have been

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIAPRODUCTION AND YIELD PER HECTARE OF WHEAT AND RICE IN 1981

Country	Wheat		Rice	
	Production ('000 Tonnes)	Yield Kg/Hectare	Production ('000 Tonnes)	Yield Kg/Hectare
Afghanistan	3,000	1,154	475	2,065
Bangladesh	1,093	1,848	20,000	1,980
India	36,460	1,649	82,000	2,010
Iran	5,800	1,055	1,400	4,040
Nepal	477	1,256	2,407	1,895
Pakistan	11,340	1,640	5,093	2,560
Sri Lanka	...	...	2,020	2,525

Source : Fertiliser Statistics, 1981-82
The Fertiliser Association of India

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FERTILISER CONSUMPTION PER HECTARE OF ARABLE LAND

Country	Arable Land (Thousand Hectares) 1980	Fertiliser Consumption per Hectare of Arable Land - 1979-80 Kg/Hectare	Fertiliser Consumption per Hectare of Arable Land - 1980-81 Kg/Hectare
Afghanistan	7,910	...	...
Bangladesh	8,928	44.6	46.3
India	165,500	29.9	30.9
Iran	15,330	...	...
Nepal	2,316	...	...
Pakistan	20,030	51.9	49.5
Sri Lanka	1,025	...	...

Source : Fertiliser Statistics 1981-82

The Fertiliser Association of India

given proper consideration. Some of the important factors which must be weighed in all respects before going ahead with a project are discussed in the following paragraphs :

- (i) *Market Demand* : The demand for non-electrical machinery, electrical machinery and transport equipment comes from -
 - (a) Individual consumers for supply of consumer durables like utensils, bicycles, radios, T.V. sets, etc.
 - (b) Agricultural sector for fertilizers, pesticides, farming machinery and pumps for irrigation.
 - (c) User industries for production of textiles, sugar, cement, footwear, etc., and for processing of tea, coffee and other food items.
 - (d) Public services and utilities for power generation, transmission and distribution; water works and sanitation; public transport.
 - (e) Manufacturers of machinery and transport equipment for supply of machine tools and other "mother" machines.
 - (f) Construction sector for supply of cement, bricks, stone chips, wood and construction equipment.
 - (g) Replacement requirement for obsolete or superannuated equipment.

The purchasing power of the consumers greatly affects the demand for a product. In turn, demand determines the size of the manufacturing units. As the majority of South Asian people have low incomes, the manufacturing establishments cannot be made large enough to take advantage of the economies of scale. This situation, to a great extent, can be improved upon by

pooling the "home markets" of countries in the region. Till today there is no such arrangement existing in the South Asian region, though, the same prevails among the ASEAN countries. The size of the manufacturing units is also guided by a number of other factors. Availability of capital is an important factor. Due to the scarcity of capital in this region, it is better to conduct market and resource surveys and carry out pre-investment analysis for determining the techno-economic feasibility of the project.

- (ii) *Raw Materials* : Availability of raw materials in right quantity and quality and at the right time is the basic need of the manufacturing industry. The materials may be of local origin or imported: Supply of locally available materials is more certain and may be cheaper also. Because of uncertainty and long procurement time, imported materials tend to increase inventory costs. They are also a drag on valuable foreign exchange, specially for developing countries where cost of raw materials normally varies from 40 to 65 per cent of the total cost of production of engineering goods. It is estimated that the ratio of the capital locked up in inventories in Indian industries to the turnover is 1:3 whereas in developed countries the ratio is 1:8.

Raw materials needed for non-electrical machinery and transport equipment are ferrous and non-ferrous alloys in form of sheets, plates, angles, channels, rounds, flats (hot or cold-rolled or extruded), forgings and castings. Electrical machinery requires a number of special materials like cold-rolled grain oriented (CRGO) steel stampings, copper conductors, insulation materials, press boards, moulded insulation items, insulators, EC Grade aluminium, etc. The list is only indicative and by no means an exhaustive one.

Steel is the single largest raw material required by the capital goods industry. Its production in 1981 in the South Asian region amounted to about 11 million tonnes. Out of this, India's share was about 10 million tonnes while Iran and Pakistan together contributed little over 1.0 million tonnes. In 1981, the total consumption of steel in the region was approximately 18 million tonnes. While India imports only alloy and special steels, other countries in the region depend mostly on foreign sources for all categories of steel.

In addition to above items, industries also require standard items like anti-friction bearings, leather belts, tyres, fasteners, oil seals, valves and instruments (measuring, recording and controlling). Such items are procured by industries from local or foreign sources. Their manufacture needs specific know-how and is not economical for small lot production.

- (iii) *Machine Tools and Equipment* : Cost of machine tools and other equipment inclusive of material handling and utilities varies from 50 to 60 per cent of the total project costs for a capital goods manufacturing industry in developing countries. If there are no local sources of supply, the entire equipment need to be imported, thus placing heavy burden on the countries' foreign exchange reserves.

Selection of suitable machine tools and equipment is indeed complex. Besides considering the production capacity, reliability and maintainability of the equipment, it should be examined for its suitability to locally available inputs and level of technology. The equipment should be able to withstand the local climatic conditions.

The technological advancement in industrially developed countries has resulted in increased sophistication of equipment. The trend is towards more automation and less dependence on the operator and his skill. This may be a desirable feature with regard to the condition prevailing in the developed countries but is totally unsuitable for the developing countries with severe un-employment problems. Undoubtedly, high level of sophistication and automation decreases the operational problems, but, at the same time equipment maintenance demands highly skilled personnel and regular supply of costly spares. In the absence of well-developed infrastructure, it is advisable to go for equipment with intermediate technological base. Though hydraulically driven machine tools, because of their smoother performance, are replacing mechanically driven machines in the developed countries, it is essential before selecting such machine tools to ensure that the hydraulic oil being prescribed is freely available and more important, is suitable for the tropical environments. Similarly, all electrical equipment conform to local electric power transmission and distribution systems. If necessary, design of the equipment should be modified to suit the local conditions.

Depending on their degree of specialisation, machine tools are categorised as general purpose or special purpose. General purpose machine tools are used for small lot production, while special purpose machine tools are employed for mass production. Obviously, special purpose machine tools have higher productivity but can be employed for limited types of products. On the other hand, general purpose machine tools are more adaptable and hence capable of

producing diverse products. If the market demand of the particular product is likely to be irregular, it is more economical to buy general purpose machine tools. This facilitates diversified production.

Necessary equipment for manufacturing non-electrical machinery, electrical machinery and transport equipment include hot or cold metal forming machines, metal cutting machines, electric arc or resistance welding sets; heating and heat-treatment furnaces, inspection and testing equipment, painting, metal plating, and varnishing equipment, etc.

Among the South Asian countries, India is the largest manufacturer of machine tools. Machine tools are also manufactured by Iran and Pakistan in limited quantities. India manufactures a wide range of metal working, metal forming and other metal cutting machines such as automatics, boring machines, lathes, drilling machines, presses, etc. Other machine tools and accessories made in India include welding and plastic machinery, die casting machinery, small cutting tools, testing and measuring instruments, etc. India is not only self-sufficient in general purpose machine tools but also exports them to several developed and developing countries. The exports of Indian machine tools in 1982 were valued at U.S. \$ 24 million.

In recent years, India has widened its range of manufacture to cover many sophisticated machines like N.C. lathes, hydro-copying lathes, N.C. ram type milling machine, gear hobbing and cutting machines, internal and special purpose grinding machines, thread rolling machines, etc.

Special purpose machine tools imported by India include jig boring machines, precision gear grinding machines, spiral bevel gear cutting machines, slide-way grinding machines, etc. Due to limited demand for these machines in the country, economically viable units could not be set up to manufacture such special purpose machines.

Other countries in the region import their requirement of machine tools from the neighbouring countries or from industrialised nations.

- (iv) *Manpower* : Manpower required in a manufacturing industry can be divided into four broad categories - (a) managerial, (b) technical and supervisory, (c) skilled and (d) unskilled.

Recent experience in India, which has developed a good industrial base, has shown that even workers who are quite unfamiliar with machine technology are capable of acquiring reasonable proficiency at repetitive tasks in a mechanised factory within a not unduly long period of training and practice. There is usually no great difficulty in finding workers capable of being trained within the plant to perform more intricate tasks requiring a greater degree of judgement. The main difficulty lies at the higher levels in the factory hierarchy - foremen, plant supervisors, technicians, skilled mechanics and welders; maintenance engineers, material engineers, designers, research workers, production and programme engineers, works managers and the various executive and administrative decision-making personnel normally responsible for organising and maintaining smooth production operations. Faulty production planning, poor choice of materials, incorrect assignment of machines, lack of balance between parallel movements of components or semi-finished materials, inadequate maintenance of plant and equipment, bad industrial relations and ineffective management are the weaknesses, all of which reduce productivity and raise unit costs. Almost all these drawbacks result from shortages of well-trained personnel in their respective fields.

The problem of non-availability of the above personnel, may be overcome by - (a) employing immigrants on a permanent basis, (b) employing foreigners on a temporary basis until local personnel are trained, (c) training local personnel already employed and (d) training fresh personnel. The first alternative is in direct confrontation with the aspirations of the large number of local people in the South Asian countries. The second alternative has been resorted to in most of the countries, but it offers only a temporary solution. The remaining two alternatives offer long term solutions but require a network of training facilities.

Foreseeing this problem and its impact on industrial developments, Government of the nations in the region are setting up a number of vocational centres, engineering colleges and technical training institutes. Governments have also made training of engineering apprentices as a statutory obligation for the manufacturing units. Related statistics are presented against each country.

Technical knowledge gained at vocational training centres or colleges though very essential, is not the end in itself. Academic education needs to be complemented with in-plant training that necessarily provides specialisation in critical skills through "on-the-job" experience. Such training depends upon the existence of well organised factories and competent instructors. In the absence of locally available training facilities, it becomes necessary to send personnel for training in industrially advanced countries.

- (v) *Technology* : Though manufacturing and design technologies can be borrowed, their application in totality is not desirable. Imported technologies need certain modifications to suit the local inputs and environments. For this an infrastructure in the shape of consultancy, design engineering, erection and commissioning expertise, and research and development facilities should be built up. India, the largest country in South Asia has gone a long way in building up such facilities and should be of much help to other members of the region. In fact, the so called intermediate technology as developed by Indian expertise, should be more suitable in the region because of similar background, resources and environments.

In spite of the fact that the region as a whole has had only limited success in advancing its technology or modifying imported technologies, it has done little to improve the working of its cottage industries which were once a pride of the region. This is a sad reflection on self-reliance.

- (vi) *Infrastructure* : No manufacturing unit can afford to be self-sufficient for all its basic needs. Some of the most important basic needs are availability of power, fuels, transport facilities, ancillary industries and commercial services.

Though the region as a whole has made good progress in power generation, there are still some pockets with power shortage. Due to this, some of the high power consuming units are virtually forced to install captive power generation sets. In addition to increasing the project cost by 10 to 15 per cent this also adds to running costs as the cost of captive generation is two to three times the public tariff.

In the field of fuel energy, all countries in the region except Iran were badly hit because of heavy dependence on imports. Iran is the only country in the region with large proven reserves of oil. The recent discoveries of new sources of oil and gas in India, Pakistan and Bangladesh, have eased the situation somewhat. As regards coal, the other source of energy, it is abundantly available in India only, though with high ash and moisture contents.

The sources of raw materials for a manufacturing unit and the consumption centres for its finished goods are normally distributed over a large geographical area. There is, therefore, great dependence on the availability, cost and effectiveness of the transportation system, for supply and distribution of raw materials and finished products. The South Asian countries are aware of its importance and are putting more emphasis for building road-ways, railways and water ways. Till the year 1976 the overall length of railways and road-ways laid in the region exclusive of Bangladesh was about 79,400 and 13,70,000 kms. respectively. Most of the countries have certain pockets which are still inaccessible. The enormity of the problem can be gauged from the fact that even at present bullock carts, camel carts, horse carts and country crafts carry about 50 per cent of the total number of passengers and approximately 25 per cent of the freight in India.

Due to lack of inland transport systems, commercial and industrial activities get concentrated in the port cities. Such cities have limited facilities for housing and sanitation but all the same exert a kind of centripetal force which attracts a large population from the inland, thereby giving rise to a number of slums.

Facilities such as transport and power generally involve large and discrete investments. Thus the facilities installed keep some provision for future increase in their use. As such, these facilities have a fluctuating tendency from under-utilisation to over-utilisation in the course of economic growth. While lack of these facilities no doubt constitutes an obstacle to industrialisation, extravagant investment in them, beyond foreseeable demand, may constitute a diversion of resources which could be used more beneficially elsewhere in the economy.

The commercial sector provides an important link between manufacturing units and the consumers. Inadequacy of this sector in addition to reducing the size of the accessible market and increasing the burden of carrying and distributing stocks of finished goods also compounds problems of raw material supply, making it necessary for the producer to maintain larger stocks of raw materials and consumables than would be required if ordinary trade channels were more effective.

In this age of specialisation, machinery manufacturers like to set up facilities for assembly only. They do not want to manufacture components whose overall requirement does not justify the investment. They prefer to get such items from the ancillary industries. These industries do need technical guidance in the initial stages but in the long run develop an expertise of their own. This kind of mutual help creates horizontal integration and diversification of industry rather than vertical integration which tends towards centralisation. Specific examples of such an arrangement are provided by Hindustan Machine Tools Ltd., Bharat Heavy Electricals Ltd., and

Indian Telephone Industry, all public undertakings of Government of India, who have generated ancillary industrial activities around their operations. Auto industry in India has also helped in setting up ancillary industries which are not only supplying components to the local industry but are also exporting their products to a number of developed countries.

Lack of ancillary industries and outside repair facilities compell the parent industries to install equipment which may not be utilized fully and also to carry more inventories in the form of spares and replacement.

- (vii) *Capital* : Capital requirements of manufacturing industries, in general, tend to be much higher per unit of operation than those of agricultural and commercial activities. Such requirements are likely to escalate further in South Asian countries as compared to the developed countries because of (i) higher cost of acquiring and installing plant and equipment, (ii) higher inventories in the form of raw materials and maintenance spares, (iii) less availability of infrastructural facilities and (iv) lower productivity. Capital requirements are magnified still further by higher cost of finance. This is 16 per cent in India, the largest developing country in the region, as compared to about 10 per cent in the developed world. Manufacturing industries in the region encounter a number of difficulties in attracting domestic capital for their development activities. Formation of capital depends upon the quantum of savings and fields of investment. The average per capita GDP in 1980 in the region is only U.S. \$ 189. Eighty per cent of it is consumed to meet the bare necessities of the person - food, clothing and household items. leaving hardly any savings for investment.

The higher income group predominantly consisting of traders and land owners which could contribute to formation of capital, prefers to reinvest its savings within the business that produced it. There is a good deal of evidence that investment in real estate and inventories brings faster returns than from an industrial undertaking. Thus the chances of inter-sectoral transfer of savings recede further.

Even when savings are not dissipated in conspicuous consumption or used for financing land transactions, these may not be available for industrial uses. These are generally invested in speculative commercial undertakings which produce quick turnover and, hence, the possibilities of speedy liquidation. Such undertakings are in a better position to escape taxation and various government controls. Moreover, the setting up and operation of such a venture is simpler in comparison to industrial activities.

Investment in jewellery is an age-old custom of the people in this region. Though this custom has largely out-lived its economic justification, it is still being practised. Procurement of such non-productive items consumes a good amount of people's savings; thereby reducing the possibilities of investment in the industrial sector.

Adverse effects of increased savings at the cost of consumption at a given level of income, are well-known. In fact, an increase in real income is the only effective source that can generate more savings. Incomes do increase periodically, but the effects of such advancements are reduced because of ever increasing inflation. Problems relating to availability of savings for manufacturing industries get compounded if the size of the industry is too small to generate enough profits for reinvestment.

With such a state of affairs in most countries of the region, it is necessary to mobilize all outside sources of investments for providing necessary capital till the industry is capable enough to fend for itself.

The major source of investment that can contribute towards formation of capital for the manufacturing industries, is the "Forced Savings" that Governments collect from its people. Such forced savings, in general, are the taxes, duties, life insurance premiums and provident funds of the employees collected by the governments and public savings deposited in post offices or commercial banks of the country. Forced savings thus mobilised are distributed among the various sectors of the economy. Governments in the region have set up a number of banking and financial institutions to help industries with necessary financial investments and technical guidance.

The pattern of each country's gross domestic investments and gross domestic savings are shown in Exhibit-60.

Financial investments and technical guidance are also provided by certain international bodies like the World Bank, International Monetary Fund, Asian Development Bank, UNIDO, etc., though on a more selective basis. Loans approved by IBRD for the countries of the region for the year 1982 are presented in Exhibit-61. Credits approved by IDA in 1982 are presented in Exhibit-62. Similar help, based on bilateral agreements, flow from the governments of developed countries. Foreign companies on their own or in collaboration with local companies also help in providing necessary investment and technology. Formation of domestic and foreign capital largely depend upon the fiscal and investment policies of an individual country. Such policies and their effects on the capital formation shall be dealt with in detail in the next section.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

GROSS DOMESTIC INVESTMENTS AND SAVINGS IN DIFFERENT COUNTRIES
(1976 - 1980)

	Unit	1976	1977	1978	1979	1980
BANGLADESH						
Gross domestic investment	Million Taka	-9144	12360	15950	22025	...
Growth Rate	%	36.7	31.3	29.0	28.1	...
Gross domestic savings	Million Taka	-2126	4977	4539	7332	...
Growth Rate	%	...	...	-8.8	61.5	...
Investment - savings gap	Million Taka	11540	7383	11411	14693	...
INDIA						
Gross domestic investment	Billion Rs.	147.25	164.29	180.33	231.41	236.18
Growth Rate	%	10.7	12.0	9.3	28.3	2.1
Gross domestic savings	Billion Rs.	148.42	177.38	194.98	233.76	230.55
Growth Rate	%	17.3	19.5	9.9	20.0	-1.4
Investment - savings gap	Billion Rs.	-1.17	-13.09	-14.65	-2.35	5.63

contd..

EXHIBIT 100

	Unit	1976	1977	1978	1979	1980
NEPAL						
Gross domestic investment	Million Rs.	...	2142	2499	2886	3216
Growth Rate	%	...	...	15.7	16.4	11.4
Gross domestic savings	Million Rs.	...	1705	1513	1957	1774
Growth Rate	%	...	...	-11.3	29.3	-9.4
Investment - savings gap	Million Rs.	...	437	966	929	1442
PAKISTAN						
Gross domestic investment	Million Rs.	22720	27421	29976	34221	41187
Growth Rate	%	24.7	20.7	9.3	14.2	20.4
Gross domestic savings	Million Rs.	11464	12003	14837	...	...
Growth Rate	%	114.9	4.7	23.6	...	...
Investment - savings gap	Million Rs.	11256	15418	15139	...	...
SRI LANKA						
Gross domestic investment	Million Rs.	4896	5259	8554	13527	24347
Growth Rate	%	18.3	7.4	62.7	58.1	80.0
Gross domestic savings	Million Rs.	3911	6333	6280	6979	8375
Growth Rate	%	101.4	62.1	-0.9	11.1	20.0
Investment - savings gap	Million Rs.	985	-1079	2274	6548	15972

EXHIBIT : 61

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

IBRD LOANS APPROVED DURING FISCAL 1982
(JULY 1, 1981 TO JUNE 30, 1982)

(In Million U.S. Dollars)

Sl.No.	Country/Sector	Principal Amount
1.	INDIA	
	a) Agriculture and Rural development	210.3
	b) Industry	300.0
	c) Power	604.5
2.	INDIA (GUARANTOR)	
	a) development finance companies 14th loan to Industrial Credit and Investment Corporation of India	150.0
3.	PAKISTAN	
	a) Industry	38.5
	b) Non-project	60.0
	c) Telecommunications	40.0
4.	SRI LANKA	
	a) Power	42.7

Source : The World Bank Annual Report, 1982.

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IDA CREDITS APPROVED DURING FISCAL 1982
(JULY 1, 1981 to JUNE 30, 1982)

(In Million U.S. Dollars)

Sl.No.	Country/Purpose	Principal Amount	
		Expressed in SDR's	U.S. Dollars Equivalent
1.	BANGLADESH		
	a) Agriculture & Rural Development	47.2	54
	b) Industry	38.9	45
	c) Non-project	87.4	100
	d) Power	118.7	132
	e) Transportation	54.0	60
2.	INDIA		
	a) Agriculture	417.6	475
	b) Power	325.6	400
	c) Urbanisation	22.2	25
3.	NEPAL		
	a) Education	12.5	14.3
	b) Energy	8.3	9.2
	c) Small-scale enterprises	5.7	6.5
4.	PAKISTAN		
	a) Agriculture & Rural Development	48.0	54
	b) Development of finance companies	26.7	30
	c) Non-project	71.9	80
	d) Technical assistance	6.3	7
5.	SRI LANKA		
	a) Agriculture & rural development	17.8	20
	b) Power	31.3	36
	c) Small-scale enterprises	26.7	30

Source : The World Bank Annual Report, 1982

17. SIZE OF MANUFACTURING UNIT

From the point of view of manufacturing, capital goods classified under ISIC-382, 383 and 384 can be divided into three categories: (i) capital goods that can be made in small-scale industrial units, (ii) plant and equipment that are manufactured on unit or small lot basis, and (iii) equipment that are produced on a line production basis. Market demand is an important factor in selecting the size of a manufacturing unit. However, it is the capital turnover ratio of the unit that determines the economically viable size of the units. South Asian countries, in general, are characterised by limited domestic and export markets, scarce capital, and abundant labour force. While the first two factors limit the size of the manufacturing unit, the third factor comes in the way of automation. Countries in this region, therefore, need manufacturing plants and technologies which are more labour intensive and less capital intensive.

Small-scale Industry : This industry can play two important roles in the process of industrialisation. Firstly, it can produce a number of capital goods required by the consumers and the agricultural sector. An indicative list of such items is presented in Exhibit-63. Such industries can be widely located throughout the country so that they can cater to the surrounding areas efficiently. Secondly, the small-scale industries perform the important function of manufacturing ancillaries and spare parts for the assembly units engaged in producing medium and heavy industrial goods, auto-vehicles and machine tools. Such industries may set up small machine shops, foundries, forge shops, fabrication shops, galvanizing and metal plating shops and repairing facilities like garages, battery charging, tyre retreading and reconditioning of machines.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIAITEMS WHICH CAN BE MADE IN SMALL-SCALE INDUSTRIES

<u>ISIC Code</u>	<u>Product</u>
382	NON-ELECTRICAL MACHINERY
382202	Cultivators, Scarifiers, Weeders, Hoes, etc.
382208	Harrows, Rotary, Animal or Tractor operated
382218	Ploughs
382226	Seeders, Planters, Transplanters
382232	Combined Harvesters, Threshers
382238	Mowers, Animal or Tractor Operated and Self-propelled
382244	Rakes, Animal or Tractor operated and Self-propelled
382249	Threshing Machines
382252	Cream Separators
382255	Milking Machines
382258	Garden Tractors
382263	Fertiliser Distributors, Animal or Tractor operated
382407	Knitting Machines
382416	Paper cutting machines
382504	Calculating Machines
382513	Scales, Industrial
382516	Scales, other than industrial
382901	Ovens, household
382904	Stoves, Ranges, Cookers
382942	Small Pumps

contd..

EXHIBIT : 63

<u>ISIC Code</u>	<u>Product</u>
383	ELECTRICAL MACHINERY
383107A	Motors, Electric, Fractional H.P.
383113A	Transformers, less than 5 KVA
383119	Meters, Electricity Supply
383201	Television Receivers
383204	Radio Receivers
383225	Electronic Tubes
383228	Transistors
383234	Sound Recorders
383237	Sound Reproducers
383301	Vacuum Cleaners
383304	Shavers and Hair Clippers (Electric)
383307	Heaters, Electric Space
383310	Irons, Electric, Smoothing
383901	Fuses, Electrical
383904	Switches, Electrical
383907	Wire and Cables, Insulated
383910	Batteries and Cables, Primary
383916	Lamps, Electric
383919A	Tubes, Fluorescent
384	TRANSPORT EQUIPMENT
384901	Perambulators and push chairs for babies

In the Indian context, small-scale industry is defined as a manufacturing concern having fixed investment on plant and machinery less than 2.0 Million Rupees. It is possible that these industries may manufacture goods on a mass scale within the above investment level depending on the product and the technology. Industries with investment on plant and machinery over Rs.2.0 Million are termed as either medium-scale or large-scale.

In the case of Pakistan, small-scale industry is defined as a manufacturing concern having fixed assets, excluding the cost of land and building upto Rs.0.3 million.

It has been proved in the Indian context that for certain selected products, combining intermediate technology and manual skill, small-scale industry can effectively utilise the abundant labour force and scarce capital. According to the paper on 'Small Industries in Eighties' read at the seminar organised by the Federation of Association of Small Industries of India (FASII) in the year 1980, on an average a small scale factory invests Rs.5,800/- for each worker employed against Rs.30,900/- required by a large unit. In terms of production, small units produce goods worth Rs.27,000/- per employee against the large unit's production of Rs.40,000/-. Thus the output to worker-capital ratio is much higher in the former case. Data pertaining to the Indian industry for the year 1979-80 is presented in Exhibit-64.

Items built on unit or small lot basis : Items built on unit or small lot basis include steam and gas turbines, machine tools of different types and functions, industrial plants and machineries for production of textiles, sugar, cement, paper, jute goods, printing presses, earthmoving equipment, compressors, cranes, electrical equipment like generators and transformers and transport equipment like locomotives and tankers. Such plants and machineries are not required in very high volumes and are normally built in general

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STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PRINCIPAL CHARACTERISTICS OF INDUSTRIES
BY SIZE OF CAPITAL - INDIA:1979 - 1980

Capital Value of Plant and Machinery	No. of Factories	Fixed Capital (Rs.Million)	No. of Employees ('000 Nos.)	Value of Output (Rs.Million)	Net Value Added (Rs.Million)	Investment per Employee (Rs.)	Output per Employee (Rs.)	Value Added per Employee	Output per unit Investment
Upto Rs. 1.0 Million	66823	13727	2311	111017	16251	5940	48038	7032	8.0
Rs.1.0 Million - Rs.2.0 Million	3120	3860	339	25553	4106	11386	75377	12118	6.6
Upto Rs.2.0 Million	69943	17587	2650	136571	20360	6637	51536	7683	7.8
Above Rs.2.0 Million	5968	250034	4650	380363	87072	53770	81798	18725	1.5
Unspecified	19215	676	378	5645	1213	1788	14934	3209	8.3
Total	95126	268296	7678	522579	108645	34943	68062	14150	1.9

Note : Totals may not tally due to figures being rounded off.

Source : Handbook of Statistics, Association of Indian Engineering Industries, 1983.

purpose assembly plants. These plants get the necessary components from the ancillary industries, thereby keeping the investments within limits. The main investment for such units is for installation of material handling equipment, high capacity presses and machine tools, and testing facilities. Occasionally, some special purpose facilities may be installed if not available elsewhere in the country. Availability of high skilled fitters is important. Because of varied construction of the products the fitters should have sound technical judgement, high degree of skill and a capability to improvise. The requirement of unskilled labour for these plants is almost twice that of skilled personnel.

Assembly Line Products : These include tractors, typewriters, sewing machines, electric motors, telephones, engines, buses, trucks, cars, bicycles, scooters, etc. Plant and equipment for the manufacture of these capital goods, must be able to produce at a very high rate. They are built with a high degree of automation and require a number of single purpose machine tools which makes it highly capital intensive. The need for human labour is minimum. In consideration of the above constraints, it is important that no line production goods should be taken in hand unless the manufacturing plants with suitable production capacity are available. For the auto industry it is estimated that to obtain marginal economy of scale, an annual minimum production from one plant should be nearly 50,000 cars.

18. DEVELOPMENT OF MANUFACTURING FACILITIES

Development of facilities for manufacture of capital goods is a long process and vary from country to country depending upon the status of essentials for manufacture of capital goods (discussed earlier) prevalent in the country. The development also depends upon the type of capital goods to be manufactured. However, in general the development can be accomplished in the following stages :

Stage-I should include facilities such as :

- o Maintenance and servicing facilities for upkeep of the existing capital goods.
- o Shops for manufacture of spares
- o Small foundries for remelting the worn-out parts and other scrap available in the country.
- o Small-scale industries for manufacture of household durables and agricultural implements.

Stage-II comprises development of general purpose assembly plants and ancillary industry. In due course, a country should import capital goods in knocked-down condition and assemble them at its own plants thereby reducing the cost of import. Similarly, ancillary industry can manufacture certain standard parts like motors, pumps, pipe fittings and other hardwares in order to increase indigenous content in the imported equipment.

Stage-III should develop general engineering units comprising forging, casting, welding, machining and assembling facilities. Such units can manufacture various types of industrial machinery.

Stage-IV should develop single purpose plants specialising in a particular branch of capital goods like automobiles, power generating equipment, locomotives, machine tools, etc.

It is important to note that development of each stage is a continuous process. In fact, entry of a country from one stage of development to the next stage shall demand further development of stage or stages already passed through by the country. The above categorisation is only in terms of the type of manufacturing facilities required and does not take into account the technology or the quantum of manufacture.

Based on the information presented at the end of this section against each country, it can be fairly concluded that -

- o Afghanistan and Nepal are still in Stage-I of development
- o Bangladesh and Sri Lanka have come to Stage-II
- o Iran and Pakistan are in Stage-III of development and
- o India is in Stage-IV of development when it needs up-dating of its technology

It may not be possible for all countries in the region to attain all stages mentioned above. The reasons for this can be numerous including the domestic demand, availability of raw materials, machine tools and other resources.

Specific items that can be manufactured in each country are detailed in the following Section.

19. EFFECTS OF INDUSTRIALISATION

Industrialisation has no doubt had various beneficial economic effects. However, there are two effects which shall be briefly discussed here viz.

- o Socio-economic effects of industrialisation
- o Effect of industrialisation on the environment

Socio-economic Effects of Industrialisation

The major positive socio-economic effect of industrialisation has been the growth in science and technology. These have resulted due to the growing needs of the industry for new products and processes. Further this growth in industry has also led towards growth in education.

However, there are certain inherently negative effects of industrialisation. As industry has grown near cities there has been a progressive concentration in population around these cities. People in large numbers

have shifted from the rural areas towards the urban industrial centres in search of employment. This has led to overcrowding in the already highly populated cities. For example, the population of Calcutta has already crossed the 10 million mark and Bombay is fast approaching this level. The cities are not able to cope with this increased pressure on their resources and as a result one can observe the growth of large urban slums. These slums are overpopulated and are not capable of providing the basic amenities of life. Consequently, the living conditions in these densely populated slums are very harsh.

Industrialisation has also affected the family structure. The joint families of the villages and small towns have given way to the nuclear family of the industrial society. Owing to the increased pressure of work on the industrial society the parents cannot devote much time to the upbringing of the children. This leads towards delinquent behaviour on the part of children devoid of proper parental supervision.

Effect of Industrialisation on the Environment

Pollution is an inherent effect of industrialisation. The heavily populated cities have pollution levels far above the concentration levels in clean dry atmosphere. The average concentration of SO_2 , NO_2 and particulate matter (P.M.) in Delhi, Bombay and Calcutta has been measured as follows :

Place	$\text{SO}_2(\mu\text{g}/\text{m}^3)$	$\text{NO}_2(\mu\text{g}/\text{m}^3)$	P.M. ($\mu\text{g}/\text{m}^3$)
Clean Dry Atmosphere	0.5	2	-
Delhi	41	15 - 25	601
Bombay	47	15 - 25	240
Calcutta	33	12 - 32	340

The effect of pollution has led towards increased incidence of chronic respiratory and associated ailments.

The pollutants generated by the machinery manufacturing industry however, are generally non-toxic in nature. The major pollutants are in the nature of consumables which are wasted after the manufacturing process viz. lubricating oils, greases etc. These are normally collected in open lagoons and the oil and grease are later recycled if possible or are used as cheap fuels. The water itself is further treated and let out into rivers after having ensured that it meets necessary pollution control regulations.

In factories where furnaces and kilns are in operation the major pollutant is the flue gas from the stacks. These are emitted high enough in the atmosphere to ensure proper dispersion.

Noise pollution is very prevalent in forging and pressing shops. The level of pollution however, are not very high and as such the only measure taken to reduce this is by isolating these shops by proper factory layout.

Thus it can be seen that the pollution generated by the machinery manufacturing sector is not very significant. However, the user industries i.e. the industries which use the machinery viz. pulp & paper, cement, fertilisers industry, etc. generate significant pollutants. Exhibit-65 gives the nature of solid waste generated by these industries.

In order to prevent overcrowding in the cities there has been a planned effort towards re-locating the industries away from the cities. The result has been development of planned industrial estates in different parts of the country. These industrial estates will act as growth centres towards development of industries away from major cities.

The Government of India has taken several steps to ensure dispersal of industrial units in the country. Some of these measures include freight equalisation of steel which is the major raw material for engineering industries and incentives for setting up industries in industrially backward areas.

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INTENSIVE & NON-INTENSIVE SOLID WASTE GENERATING INDUSTRIES

Industrial Sector	Major Source of Solid Waste	Nature of Pollutant	Approx. Genera- tion (T.Waste/ T.R.M.)
<u>A. SOLID WASTE INTENSIVE INDUSTRIES</u>			
Aluminium	Process	Red Mud Alkaline	2
Iron & Steel	Process + P.C.*	Fine Dust & Acidic Slag	0.7 to 1.05
Zinc Smelters	Process + P.C.*	Leach Residues	0.1 to 0.25
Lead	Process	Slag	1 to 5
Cement	Process + P.C.*	Fine Dust	0.1 to 0.25
Pulp & Paper	P.C.*	Organic & Inorganic	0.3 to 0.8
Fertilizers(BpG)	Process	Heavy Metals	5.0
Fertilizers(Cooling Water)	P.C.*	Chromium Sludge	-
Thermal Power Stations	P.C.*	Fly Ash	0.4
<u>B. SOLID WASTE NON-INTENSIVE INDUSTRIES</u>			
Chloralkali	Process	Mercury Sludge	0.033
Dye Stuff	Process + P.C.*	Toxic	0.076
Pesticides	Process	Persistent	0.062
Pesticides	P.C.*	Toxic	2.0

contd..

Industrial Sector	Major Source of Solid Waste	Nature of Pollutant	Approx. Generation (T.Waste/T.R.M.)
Pharmaceutical	Process + P.C.*	Microbes	0.035
Paints & Pigments	Process + P.C.*	Oily + Metallic	0.025
Basic Organic Chemicals	P.C.*	-	0.002 to 2.42
Acrylonitrile	Process	Cyanides	0.05
Quinolphos	Process	Occupational Hazards	0.35

* P.C. : Pollution Control

Source : CEW, Chemical Engineering World, March 1984

"Status of Solid Waste Management in India" by A.N. Saxena

20. Specific issues and problems related to individual countries in the region are discussed in the following sub-sections.

AFGHANISTAN

AFGHANISTAN

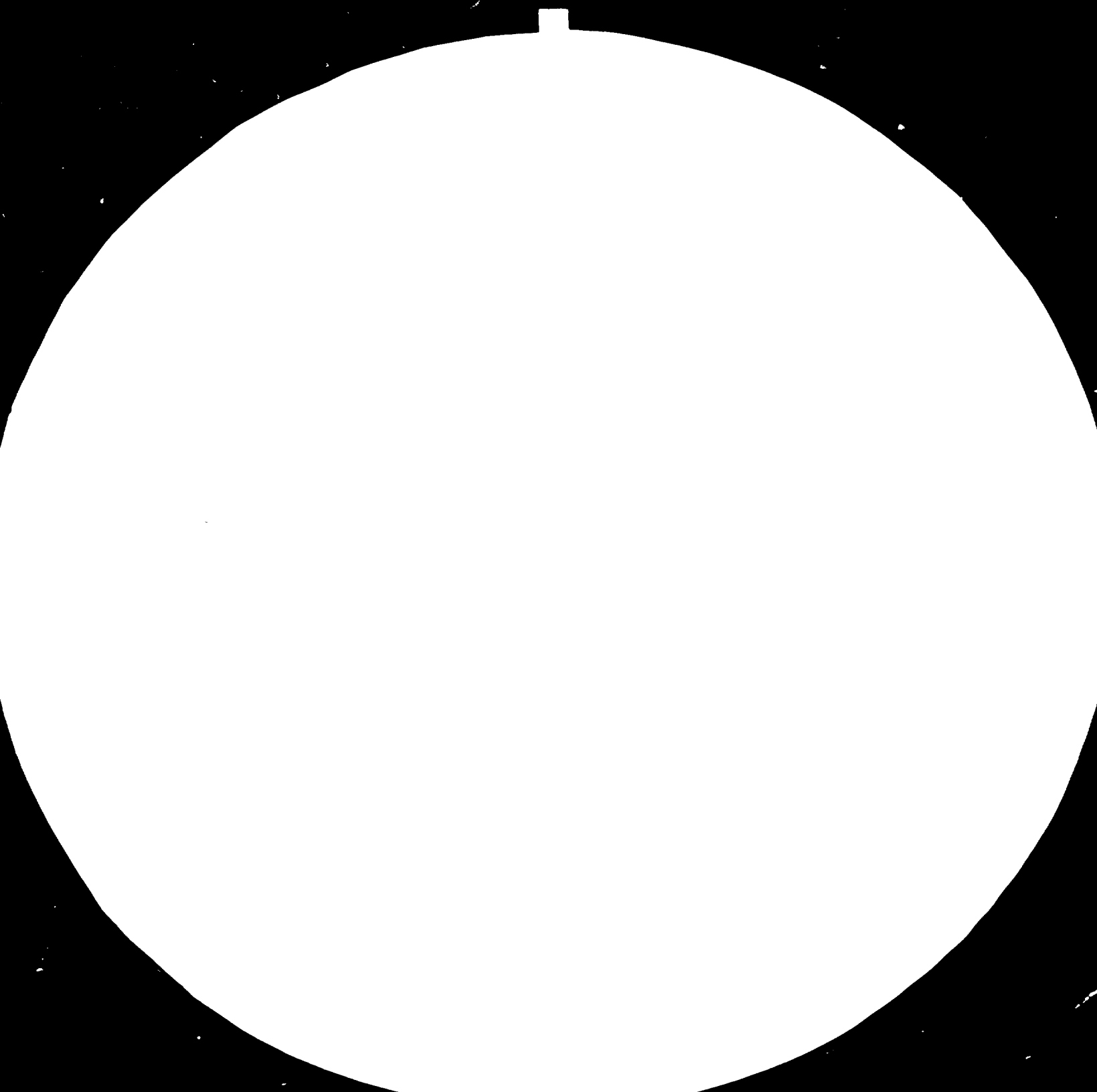
21. The pace of industrialisation in Afghanistan has been slow. The rugged landscape, lack of basic infrastructure, and shortage of easily accessible mineral reserves, have all contributed to the low growth rate. Textile production is the most significant industry in Afghanistan.
22. *Raw Materials and Mineral Resources* : The mineral reserves of the country have not been developed. Afghanistan is endowed with coal, iron ore, copper, chromium, natural gas and oil. Total reserves of coal are estimated to be 85 million tonnes. The output of coal, however, is low. The public sector has control of mining. It is, however, beset with problems due to the difficult terrains in which the minerals lie.
23. *Machinery and Equipment* : Since there are no industries manufacturing capital goods, all the machinery and equipment required by industries have to be imported.
24. *Manpower* : An acute shortage of technical manpower exists due to lack of proper educational and vocational facilities. Training of technical personnel was one of the aims of the Third Plan. The degree of success of the Plan is, however, not known. UNESCO is supporting a 30-year expansion programme relating to development of educational and training facilities in the country.[§]
25. *Capital and Technology* : Afghanistan encourages foreign investment in industries, since according to the Government, such investment brings in not only much needed capital but also modern technology and managerial skills that are in short supply within the country.
26. *Infrastructure* : Establishing the basic socio-economic infrastructure and developing the mineral resources were the aims of the first two Five Year Plans. The First Plan was

§ Ref: The Statesman's Yearbook 1979-80, The Macmillan Press Ltd., London



84.10.09

AD.86.07





3.2



3.6



4



MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1910a
(ANSI and ISO TEST CHART No. 2)

impeded by a severe shortage of technical and administrative skills, and the Second Plan was only partially realised. Only five-sixth of the targeted amount allocated for the Second Plan was actually utilised. In 1980, 970 million KWH of electricity was produced. Natural gas resources have been developed to help augment domestic power generation. Hydropower generation facilities have been developed with foreign financial and technical help.

Transportation in Afghanistan is mainly by road. In 1976, there were nearly 19,000 km. of road. There are no railways. Afghanistan had 34,000 passenger cars and 28,000 commercial vehicles in 1980. The ratio of cars to population was 1 per 1000. The per capita aviation passenger and freight traffics in 1979 were 15.31 passenger-km and 1.22 tonne-km respectively.

Afghanistan received large scale commodity aid from the U.S. and U.S.S.R. until mid 70s. Currently the majority of the aid is received from U.S.S.R. Most of the industries have been set up with foreign aid.

27. *Small-scale Industries* : Small-scale and cottage industries form an integral part of the Afghanistan industry. These units are engaged in tanning, footwear manufacture, raisin cleaning, carpet making and fruit canning. A lot of fiscal and other benefits are given to encourage industrial growth and to promote their regional dispersal.

BANGLADESH

BANGLADESH

28. The size of the industrial sector in Bangladesh is small compared to the agricultural sector. The technological base is still narrow. The industrial structure is primarily dependent on agriculture. A significant part of it consists of processing agricultural raw materials. However, a two way relationship between industry and agriculture has started emerging. Even then, fertiliser consumption in Bangladesh in 1980-81 was 46.3 kg/hectare of arable land as against the Asian consumption of 66.9 kg/hectare. Diesel engine driven pumps are used for irrigation but with the present emphasis on electrification are being progressively replaced. This changeover will mean building up capacity for manufacture of electrical equipment.
29. Jute, sugar, cigarette, paper and leather industries are of primary importance in Bangladesh. There were 77 jute textile and 15 sugar mills in 1978. However, it will not be economically viable to manufacture industrial machinery for these industries. The engineering industry is building up forward linkages with agriculture. Low lift pumps are being used increasingly. The total engine requirement for power pumps during the Second Fifth Year Plan has been estimated at 19,000 pieces.
30. *Raw Materials and Mineral Resources* : Mining has not been very important in the Bangladesh economy. The country has few proven mineral resources apart from natural gas. Low grade coal reserves have been discovered. Steel consumption in 1981 was only 150,000 MT and cement production in 1980 was 312,000 MT.
31. *Machinery and Equipment* : The machinery and equipment required by the industries is imported, since there is no production of industrial machinery and machine tools in the country.

32. *Infrastructure* : Technical manpower, power, and transport are important components of the infrastructure. Labour is mainly from the villages. The labour force fluctuates according to the agricultural season. There has been a slow but continuous drift of rural population to the urban sectors and this has become a burden on them due to the slow industrial growth. Vocational training for this labour is of utmost importance. In the First Five Year Plan (1973-78), a sum of TK 500 million, constituting 15.5 per cent of the total allocation of the education sector, was earmarked for technical education.

In 1977, Bangladesh had 22 polytechnics, 35 vocational institutes and a number of teacher training and primary training institutes. Electricity generation in Bangladesh in 1980, was 2.59 billion KWH registering a total increase of 59 per cent in 5 years.

The present energy crisis has affected Bangladesh, as it has affected other countries. However, the reserves of gas in Bangladesh are estimated at several million cubic metres. Plans to use them for developing a petroleum complex are under way. Pipeline for the gas are being built with foreign help. In 1975, the Government gave contracts to six foreign companies for offshore oil exploration in the Bay of Bengal. Low grade coal reserves estimated at some 700 million tonnes have also been discovered.

In terms of expenditure and outlay in the First Five Year Plan, transport ranked third, next only to education and irrigation. In 1980, there were 26,000 cars and 25,000 trucks and buses in the country; which implies that there was not even one car per 1,000 population. The per capita aviation passenger and freight traffics in 1976 were 5.3 passenger-km and 0.12 tonne-km respectively while the corresponding railway traffics were 52.6 passenger-km and 9.3 tonne-km respectively. There were 2500 km. of paved and 2000 km. of unpaved roads in the country. The low state of development has prompted the Government to

accord high priority to transport. International Development Association (IDA) credits equivalent to U.S. \$ 60 million were approved during 1982 for the purpose of transport development.

33. *Technology & Capital* : Technology for the industries is imported. Foreign investment is generally welcome, but it has been very little so far. The Government's pro-business attitude has borne good results. Between July 1982 and February 1983, the Government approved eight foreign investment proposals involving a total outlay of TK 811.1 million. Six other projects are under consideration.
34. *Small-scale Industries* : Great emphasis is being laid on rural industries and small industries. To stimulate small industries growth, a number of small industrial estates have been set up. However, lack of investible fund in local and foreign exchange, and shortage of imported raw materials have delayed development of these estates. Very few of the cottage and small industries are in urban areas, and about half of them are directly dependent on agriculture. The 1962-63 small industries survey showed 21,199 small industries, and 3,55,697 cottage industries with a total daily employment of 1.4 million and an output of TK 2346 million. Since small and cottage industries are still the predominant feature of the industrial scene in Bangladesh, the Government has laid emphasis on their parallel growth along with large ones. Basic statistics on small and cottage industries in the country is given in Exhibit-66.

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STATISTICS ON SMALL AND COTTAGE INDUSTRIES (1962-63) - BANGLADESH

Sl. No.	Industry	Units (Nos.)	Employment (in '000 Nos.)	Value of Fixed Assets (Million Taka)	Value of Output (Million Taka)
1.	Small Industries	21,199	186.5	252.4	1,245.0
2.	Cottage Industries	355,677	1,170.6	174.7	1,101.3

Source : Re-orientation of Industrial Policies
ESCAP, Note prepared by the ESCAP Secretariat, 1979.

I N D I A

INDIA

35. In the past two decades India has exhibited a significant change in the pattern of industrial production. During this period, the base for a diversified economic structure has been laid. The Indian industry has not only acquired growth but also diversification and sophistication. New agricultural technology has been introduced. This has resulted in a growing demand for tractors. However, due to small land holdings and financial constraints of the farmers, large scale mechanisation has not been possible. The pace of mechanisation in agriculture will have to be carefully regulated so as to ensure that labour absorption is not adversely affected. This automatically reduces the demand for scrapers, harvesters, etc. Though the installed capacity is enough to meet the demand if the need arises. Sugar, textiles, paper, cement and fertiliser industries are fairly well developed, but there is a lot of scope for expansion. The cement production in India for the year 1981 was 20.8 million tonnes registering a total increase of 10 per cent in the past 5 years. Fertiliser consumption is very low in India; only about 30.9 kg./hectare of arable land in 1980-81. This was less than half the average Asian fertiliser consumption of 66.9 kg/hectare. The per capita consumption of sugar in 1975 was 6.2 kgs., while that of newsprint was 0.3 kg. Erection of additional industries in these fields is necessary to improve the per capita availability of commodities. This will also increase the demand of industrial machinery.
36. Transport in India plays a crucial role in ensuring sustained economic growth and is vital for the development of various segments of the economy. The need to accord high priority to this sector flows, virtually from the size of the country as well as from the geographical dispersal of its natural resources.

In 1980 there were 835,000 trucks and 948,000 cars, that is, only about 1 car for 1,000 people.

In the field of electronics India is way behind the developed countries. The electronics industry, particularly engaged in assembly operations, is ideally suited to increase employment with minimum investment. In 1979, the estimated production and investment per employee in the small-scale sector in electronics industry were Rs.44,000/- and Rs.4,750/- respectively. The assembly units in electronics are highly labour intensive requiring low investments on plant and machinery (which are mainly testing equipment). As is evident from the Exhibit-67, the employment potential for a given investment is the highest in the electronics industry.

37. *Raw Materials & Mineral Resources* : India has extensive resources of iron ore, chromite, copper and other industrial minerals, but lacks certain non-ferrous metals which have to be imported. Steel consumption increased by 47 per cent in 5 years to 13.8 million tonnes. However, production of alloy steels was not sufficient to meet the market demand and it had to be imported. India also produced 10.2 per cent of the total Asian aluminium production in 1979.
38. *Manpower* : There is adequate and well developed technical manpower in India. In almost all fields of education including technical education there is some degree of unemployment. Estimated stock of manpower in terms of educational category in 1980 and 1985 is presented in Exhibit-68. As on March 1980, there were 356 craftsmen training institutes and centres in India.
39. *Machinery & Equipment* : India manufactures a wide spectrum of machine tools and industrial machinery. In 1978, 86 per cent of the machine tools requirement was met through indigenous production. However, sophisticated special purpose machines required by some industries are imported. Manufacturing technology is adequately developed, though there is a need for updating it. Designs are usually procured from foreign firms under technical collaborations.

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EMPLOYMENT POTENTIAL IN INDUSTRIES : INDIA

<u>Industry</u>	<u>Relative Employment Potential Factor</u>
Electronics	9
Electrical	7
Textiles	4
Automobiles	3
Ferrous	2
Chemical	1

Source : Purchase, November 1980, Ross Murarka (I) Pvt. Ltd.,
Bombay - 21.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
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**ESTIMATED STOCK OF EDUCATED MANPOWER AT THE
 BEGINNING OF 1980 AND 1965 - INDIA**

(Figures in Thousand Nos.)

Sl.No.	Educational Category	1980		1965	
		Stock of Manpower	Economically Active Population	Stock of Manpower	Economically Active Population
1.	Engineering Degree Holders (BE)	254.5	221.4	306.1	266.3
2.	Engineering Diploma Holders	378.6	329.4	494.1	429.9
3.	Medical Graduates (MBBS)	178.5	155.3	211.9	184.3
4.	Dental Surgeons (BDS)	11.6	10.1	13.4	11.6
5.	Nurses (B.Sc. - Nursing)	2.2	2.2	2.8	2.8
6.	Agricultural Graduates*	98.8	77.1	115.9	90.4
7.	Veterinary Graduates*	22.3	19.4	27.3	23.7
8.	Education Graduates (B.Ed.)	852.7	665.1	1336.7	910.4
9.	Arts Graduates (B.A.)	1931.4	1506.5	2597.6	2026.1
10.	Arts Post-graduates (M.A.)	957.3	746.7	1296.3	1011.1
11.	Science Graduates (B.Sc.)	961.9	750.3	1226.3	956.5
12.	Science Post-graduates (M.Sc.)	278.9	217.5	350.0	273.0
13.	Commerce Graduates (B.Com.)	810.1	631.9	1126.1	872.3
14.	Commerce Post-graduates (M.Com.)	121.9	95.1	176.3	137.5
15.	Other Graduates	1249.6	974.7	1654.2	1290.3
	Total No. of Graduates, Diploma Holders, etc.	8110.3	6402.7	10735.0	8492.2
16.	Matriculate/Higher Secondary Passed	26650.5	16256.8	35860.3	21874.8
	TOTAL EDUCATED	34760.8	22659.5	46595.3	30367.0

* Includes Post-graduates

Source : Sixth Five Year Plan 1980-85, Planning Commission, Government of India.

40. *Infrastructure* : India has taken significant steps to develop its infrastructure. Electricity production in 1981 was 121.2 billion KWH. However, the per capita energy consumption in 1980 constituted only 1.7 per cent of the U.S. per capita energy consumption. Because of inaccessibility India has not been able to tap properly the hydro-electric resources available in the country, particularly in the north-eastern region. With the increasing stress being laid on power generation, demand for turbines, generators, power distribution equipment and switchgear is certain to go up. Improvement of plant load factors and maintenance of thermal power stations is essential to avoid power shortages.

Transport is vital for India's economic growth, and it has been given high priority in the 6th Plan.

In 1976, India had a total of 60,162 km. of railway track and 1 88,000 km. of roads. The per capita railway passenger and freight traffics in 1979 were 296 passenger km. and 238 tonne-km. respectively, whereas the corresponding aviation traffics in the same year were 15.07 passenger kms. and 0.52 tonne-km. respectively. The Sixth Plan outlay for transport is Rs.15.5 billion constituting about 16 per cent of the total plan outlay.

41. *Capital* : The financial sector in India is heavily controlled by the government. All loans exceeding Rs.20 million have to be approved by the Reserve Bank of India. Commercial banks are the chief source of short term funds, mostly in the form of overdrafts. Medium and long term credit is supplied mainly by the government-owned development banks like Industrial Development Bank of India (IDBI), Industrial Finance Corporation of India (IFCI), Unit Trust of India, and Industrial Credit and Investment Corporation of India (ICICI). Sometimes private and foreign banks provide such loans to companies. There are various financial corporations in the Indian states modelled on the lines of the IFCI. These assist industry with loans and guarantees for deferred payments for domestic equipment.

Private industry is hamstrung by industrial bottlenecks and import controls. There is a need for up-dating the technology. In-house research and development work are lacking. However, currently the greatest single problem before the Indian Industry is the severe under-utilisation of capacities already installed. This is particularly noticeable in large-scale industry. While the causes for this under-utilisation are numerous and complex, there are four main reasons viz. shortage of demand, shortage of specific raw materials, shortage of financial resources and limits set by government policies. There are a number of units producing the same type/size of products catering to more or less same market. As a result of demand constraints and other constraints, each one of them operate at lower level of production. It is essential that in order to achieve effective utilisation of capital equipment and resources, some of these units be allowed to expand and/or update the technology level and reap the benefits of economies of scale while the other units should diversify into other product lines.

42. *Small Industries* : The importance of small industries is well established. They foster the disposal of industry, enable smooth transition from the traditional to the modern and provide outlets for entrepreneurial skills. The state intends to improve the competitive strength of the small-scale producers, since it provides the following advantages which have been the socio-economic objectives of the state industrial policy : (i) High employment generation, (ii) promotion of economic federation by an equitable spread of investments and (iii) utilisation of untapped skill and talent.

At present 350,000 registered small-scale units with a fixed capital of 26 billion rupees produce over 2,500 types of products, contributing more than 48 per cent to the industrial economy and providing employment to more than 7 million people. In a country like India, for effective utilisation of scarce capital and abundant labour, the small-scale industry provides the only

solution for economic upliftment. The Sixth Plan envisages a growth rate of 8 to 9 per cent in the small-scale sector. The small-scale sector has demonstrated its will and capability to tackle unemployment and regional imbalances.

Statistics relating to small-scale industries are given in the following Exhibits.

EXHIBIT :

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PRODUCTION, EMPLOYMENT AND EXPORTS STATISTICS FOR
SMALL-SCALE INDUSTRIES - INDIA

No.	Characteristic	1979-80	1980-81	1981-82	1982-83 Estimated	1984-85 Estimated
1.	Production (Billion Rupees)	216.4	235.7	259.2	275.0	3287.3
2.	Employment (Million Nos.)	6.7	7.1	7.5	7.8	8.9
3.	Exports (Billion Rupees)	10.5	15.2	14.3	...	18.5

Source : (1) Guidelines for Industries, 1981, Ministry of Industry, Govt. of India
(2) Handbook of Statistics, AIEI, 1982

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

INDUSTRY-WISE REGISTRATION OF SMALL-SCALE UNITS IN 1980
AND THEIR CHARACTERISTICS - INDIA

Sl. No.	Industry Group	No. of Units	Capacity ('000 Rs.)	Employment	Investment in Plant & Machinery ('000 Rs.)
1.	Basic Metal Industry	576	933692	4711	31535
2.	Metal Products	3095	1557077	16753	68357
3.	Machinery & Parts (Except electrical)	1129	485977	6412	36198
4.	Electrical Machinery & Parts	547	412633	3421	20386
5.	Transport Equipment & Parts	1281	371314	5730	24355
	Total Engineering Industry	6628	3760693	37027	180831
	Total industry	17952	9366318	125065	517731

Source : Handbook of Statistics - AIEI, 1982.

IRAN

IRAN

43. The economy of Iran is based to a large extent on the production and export of petroleum. The Five Year Plans during the period 1962 to 1972 were largely successful in bringing about a marked industrial expansion. The Fifth Plan 1973-1978 was even more ambitious. A sum of U.S. \$ 36 billion was set aside for the Fifth Plan. Due to the 1973 oil price rise, the national income increased manifold. This prompted the government to increase the Fifth Plan investment to U.S. \$ 70 billion. The basic objective of this Plan was to reduce the dependence of the economy on oil, by developing other sectors rapidly. However, the oil price boom lasted only for 2 years and the Fifth Plan encountered severe financial difficulties. The recession in the West lowered the demand for oil, resulting in lower national income and defeating the objectives of building a sound infrastructure.
44. *Raw Materials & Mineral Resources* : Iran is an important producer of petroleum in the world, with more than 10 per cent of the world's reserves. The natural gas reserves are the sixth largest in the world. Other important minerals include copper, lead, and coal. Reserves of magnesite, manganese, mica, tin and antimony have not been developed. During the Fifth Plan, copper mining was started with the help of refinery plant worth U.S.\$ 400 million. It was to yield 150,000 tonnes of copper annually by 1980. The production of aluminium was expected to rise from 42,000 tonnes annually to 150,000 tonnes a year during the same period. During the period 1976-81, steel consumption decreased by 34 per cent. In 1981, it was 3.2 million tonnes. Iran's first steel mill which was started with an annual capacity of 600,000 tonnes was to increase its capacity to 15 million tonnes within a decade.

45. *Machinery & Equipment* : Iran has machine manufacturing and machine tool plants, built with foreign assistance, which were expanded during the Fifth Plan. Though Iran manufactures a variety of machinery and equipment, large machine tools, mining equipment, certain industrial machinery and special purpose machinery are not manufactured in the country.

46. *Manpower* : Most of the technical jobs were manned initially by foreign personnel. In spite of their influx, there was a shortage of manpower leading to sharp wage hikes. Of the total industrial employment of 2.1 million in 1976, registered foreigners employed in Iran were 70,000 while the unregistered foreigners numbered about 120,000. To control the shortage of manpower and higher wages, technical colleges and polytechnics have been started with training facilities for mechanical, electrical, textile and construction engineering. In 1975, the Government of Iran with the help of U.S. Labour Department and International Labour Office commenced building 150 mobile training units and 10 specialised vocational training centres. Plans were also made to commence five regional development centres to concentrate initially on the crucial areas of lower and middle management training. However, the current status of these programmes is not known.

47. *Infrastructure* : The Fifth Plan had large scale plans for development of the infrastructure. Road construction and rail track development were accorded high priority. Roads are the most important mode of transportation in the country. Iran had more than 69,026 km. of roadways in 1978 of which 19,122 were paved. There were about 5,480 km. of rail track owned by the state. The number of passenger cars and commercial vehicles in use in 1980 were 1,079,000 and 405,000 respectively, giving a ratio of 28 cars per 1000 people. The number

of commercial vehicles increased by 228 per cent during 1976-81. The passenger-km. registered by railways in 1974 was 2144 million, while the tonne-km. figure for the same year was 4,432 million.

Iran's electricity generation in 1980 was 17.15 billion KWH. As of 1978, 13 dams were being utilised for generation of electricity, with 4 more under construction. Around 20 per cent of the electricity generated in 1978 was through hydro-electric means.

NEPAL

NEPAL

48. In the course of the all-round development of the country, Nepal has so far completed five periodic plans. Although these plans have succeeded in establishing the basic infrastructure needed for socio-economic development, problems relating to backwardness, unemployment and low productivity are still present. The slow pace of the economic development and the pressure of population have compounded the complex plans of development. The highly involuted procedure of administering incentive schemes, paucity of industrial raw materials, low quality of the work force, shortage of capital and inadequacies of transport and power have slowed down the pace of industrialisation. Since industries cannot function in the absence of a sound infrastructure, a considerable amount of investment, especially in electrification and development of transport systems is called for.
49. *Demand* : Though quite a few programmes for the promotion of sugar, textiles, cement, tobacco and leather factories are being planned, this would not justify production of industrial machinery. The prospects of big industries coming up, are for the time being limited, chiefly because the purchasing power of the majority of the people is low and the domestic market, small. The per capita consumption of steel, cement, fertiliser and other commodities is low. Most of the holdings in the possession of peasants are small, fragmented and scattered, resulting in under-employment and low level of income. Mechanisation will only add to this problem.
50. *Raw Materials & Mineral Resources* : The mineral resources of Nepal have not been developed well, primarily due to the lack of planned investment of the scarce resources in this sector as well as insufficient expert technical manpower. An aeromagnetic survey conducted for search of petroleum and natural

gas is yielding good results. Mineral deposits required for the establishment of nitrogenous fertiliser, cement and iron and steel industries have been found.

51. *Machinery & Equipment* : Machinery and parts required for the industries are imported, since there is no indigenous production of these, in Nepal.
52. *Manpower* : In the process of bringing about sharp increase in investment, shortage of trained manpower and technical experts have become a formidable obstacle. The need of mid and low level technicians is being fulfilled to a great extent. However, a shortage of high level technical and administrative personnel exists. This shortage is being overcome through national technical study institutions, and foreign training programmes.

During the Sixth Plan (1980-85), two of the existing training schools are planned to be converted into trade schools with a view to develop skilled manpower. Plans also include establishment of trade schools under integrated rural development programmes of four locations in the country and starting of diploma level training in electrical, electronics and architecture. During the plan period about 8000 technical personnel are expected to be produced in the country.

53. *Capital* : Domestic entrepreneurs have little industrial experience and this is aggravated by the lack of domestic capital. Industrial development in Nepal is, therefore, dependent largely on injection of foreign capital and technical and entrepreneurial skills.
54. *Infrastructure* : The under-developed state of the railway system, has made the road transportation system an important pre-requisite for the development of the country. With regard to the area, length of roads in Nepal is quite less. The total length of railways too was only about 4,940 km. in 1979-80. There is a vast potential for the development of electricity, However, resources have not been tapped

effectively. In 1981, 220 million KWH of electricity was generated, registering a total increase of 32 per cent in 5 years. Per capita energy consumption was only 0.1 per cent of the U.S. per capita energy consumption.

55. *Small Industries* : Cottage and small industries play a pivotal role in the economy of Nepal. These being labour intensive, considerable employment is generated. The Sixth Plan stresses the need for developing cottage industries, and has an eye on the export market.

PAKISTAN

PAKISTAN

56. Pakistan's economy has improved significantly. Real GDP growth for the period 1977-82 (ended June 30, 1982) averaged 6.31 per cent per annum. This was influenced to a large extent by the expansion of the industrial sector, which grew at the rate of 12.1 per cent in fiscal year 1982.

There are, however, numerous problems facing Pakistan. Structural economic deficiencies, poor infrastructure, high inflation rates, disparities in income distribution and lack of readily available energy sources, which are characteristic of South Asian developing countries, are all obstacles present in the path of development.

57. *Raw Materials & Mineral Resources* : The Mineral Development Corporation was set up in 1974 to guide development of the mining sector. The mineral resources in Pakistan include chromite, iron ore, silica sand, sulphur and copper. Reserves of natural gas at the end of 1974 were estimated to be 474 million cubic metres. The Government has taken steps to exploit Pakistan's petroleum reserves. Several agreements with foreign firms has been finalised, with financial aid from the World Bank for these joint ventures. The country's oil prospects appear good; the success rate so far being about 25 per cent as compared with a world average of 10 per cent. The present recoverable oil reserves of Pakistan are estimated to be 25 million tonnes. Steel consumption in 1981 was 800,000 MT, increasing by 60 per cent in 5 years.
58. *Manpower* : Skilled labour is available for textile, sugar, cement, leather, plastics and chemical industries. In 1980-81, out of the production workers of 4.92 million in the manufacturing sector 3.78 million were either illiterates or educated upto primary level.

Plans for several new technical and engineering schools are under way. A national vocational training programme has been launched to ease the shortage of skilled workers. An estimated 71,000 trainees are scheduled to take part in this scheme, which will be aided by the World Bank and the United Nations Development Programme. A crash programme for training skilled and semi-skilled workers is also being implemented. More than 21,000 have been trained so far under the scheme. National Training Board and the National Training Bureau are working towards improvement of trade, technical and vocational training facilities.

59. *Machinery and Equipment* : A wide range of machinery is manufactured in Pakistan. Public sector undertakings are involved in the manufacture of iron and steel sheets, basic metals and alloys, machine tools, high speed engines, textile, sugar, cement, mining and ship building machinery. Vehicles such as buses, trucks, cars, vans and three-wheelers are assembled as well as manufactured. The electrical industry manufactures transformers, circuit breakers, insulators and cables. Tractors are assembled as well as manufactured. However, electric welding equipment, fork lifts, machine tool accessories, saws for saw-gins, self-centering and independent drill chucks and wire drawing machinery are among the imports.
60. *Technology* : Technology used in most of the industries is imported. Foreign investors are paid royalties or lumpsum payments approved by the Government, for the technical know-how they supply.
61. *Capital* : The Government has announced an investment schedule for the period 1978-83. This pinpoints areas in which foreign firms are welcome to invest. Most foreign capital flows into manufacturing, mining and quarrying. Sectoral foreign private investment in Pakistan during 1972-79 is presented in Exhibit-71. Pakistan has an impressive array of institutions

EXHIBIT : 71UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATIONSTUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIAFOREIGN PRIVATE INVESTMENT IN PAKISTAN - 1972-79

Sector	Investment (Rs. Million)
1. Manufacturing	877.3
2. Mining and Quarrying	393.8
3. Construction	185.1
4. Commerce	63.5
5. Transportation, Storage, Communication	16.0
6. Utilities	2.6
7. Agriculture, Hunting, Forestry, Fishing	0.2
8. Miscellaneous	98.0
TOTAL	1636.5

Source : Business International - Investing, Licensing & Trading Conditions Abroad, October, 1982.

geared to supply medium and long term credit. Pakistan Industrial Credit & Investment Corporation, Industrial Development Bank of Pakistan, Bankers' Equity Ltd. give loans and guarantees for industrial development. Companies often build financing package with the participation of quite diverse sources. They rely on either equity, loans from the parent company or from the originating country's financial institutions and suppliers' credit. Commercial banks are the most important source of short term funds.

Infrastructure : Electricity production in Pakistan increased by 55 per cent in five years to which 17.15 billion KWH in 1981. The per capita energy consumption was a meagre 2 per cent of the U.S. per capita consumption. To overcome the energy crisis, Pakistan has taken several steps. As mentioned earlier, Pakistan has intensified the oil and gas search. Thermal power is generated from low grade coal at Lakhra. Greater use of hydro potential at Tarbela dam is being made and gas pipelines are being expanded.

Transport is a key factor in providing increased mobility of people and materials. In 1979, Pakistan's per capita railway passenger traffic was 209 passenger-km. and the per capita railway freight traffic for the same year was 119 tonne-km. The aviation per capita passenger and freight traffics for the year 1979 were 4499 passenger-km. and 211.8 tonne-km. respectively. Till a decade ago, the railways played a dominant role as the principal long distance carrier of goods and passengers. This has been replaced by road transport. Road transport now accounts for more than two-third of the passenger-km and half of the total freight transported. About 63,000 km. of roads are present in Pakistan, of which 24,000 km. are paved. The number of passenger cars in 1980 was 285,000,

which gives a ratio of 3 cars per 1000 people. There were a total of 105,000 trucks and buses in the same year.

63. Pakistan is endeavouring to enhance industrial production with foreign assistance. Investment opportunities are plenty. The investment allocation and the foreign exchange component in this investment schedule for the non-electrical, electrical and transport industries for the period 1978-83 is given in Exhibit-72.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

INVESTMENT OPPORTUNITIES IN PAKISTAN (1978 - 83)

(Rs. Millions)

Industry	Total Allocation	Foreign Exchange Component
1. Machinery, other than Electrical	4138	2643
2. Machinery, Electrical	1813	1194
3. Transport Equipment	1515	953

Source : Business International - Investing, Licensing & Trading Conditions Abroad, October, 1982.

S R I L A N K A

SRI LANKA

64. The role of industry in Sri Lanka's economy has been gradually increasing. The Government is committed to policies of industrial development.
65. *Raw Materials & Mineral Resources* : No comprehensive geological survey of the island has been made. Scattered deposits of iron ore and alumina exists. The only mineral of commercial significance is graphite the bulk of which is exported.
66. *Machinery & Equipment* : The industries in Sri Lanka manufacture a variety of light consumer goods. The public sector industries are involved in cement, paper, leather products, steel, textiles, etc. Industrial machineries procured primarily through imports.
67. *Manpower* : When light manufacturing industries were first started to cater to the plantation sector, the technical and management grades were manned by foreign nationals and the labour grades filled locally. However, such development has led to the gradual education of the local people and now the country has technical and skilled manpower in various disciplines.
68. *Capital* : The Government of Sri Lanka has given active encouragement to foreign collaboration, both technical and financial in the non-traditional and foreign exchange earning sectors. If the cost of imported is high, then the Government approves foreign capital investment.
69. *Infrastructure* : Most of the electrical energy generated in Sri Lanka is hydro electric, since the island is endowed with abundant water resources. Only 25 per cent of the energy

produced is thermal. At the end of 1981, electricity generation in Sri Lanka totalled 1.87 billion KWH and though it increased by 55 per cent in a span of five years, transmission losses are as high as 22 per cent.

Sri Lanka has a good network of roads, though the quality of roads is uneven. The total length of surface roads in 1978 was 2616 km. In 1980, there were 120,000 cars and 81,000 commercial vehicles. For every 1000 people there were 8 cars. The government owned railways have 1535 km. of track. The per capita railway passenger and freight traffics in 1979 were 282 passenger-km and 20 tonne-km respectively. The aviation traffic was comparatively low, registering only about 8 passenger-km and 0.14 tonne-km per capita.

The world recession has imposed several constraints on Sri Lanka's export-oriented development strategies. Export-oriented industries are of utmost importance to the country and due to this, conditions in Sri Lanka are sensitive to the prices fixed by her exports in the world market. In recent years the industry has developed considerably due to the incentives offered and also because of restrictions placed on the imports of manufactured goods by the Government.

SECTION - 4

PROSPECTS AND POTENTIALITIES

PROSPECTS AND POTENTIALITIES

1. Both the Lima Declaration and the International Development Strategy for the third United Nations Development Decade (1980s) called for acceleration of industrialisation. Based on the projected industrial growth rate of 8.2 per cent for the eighties in South Asia and the growth rates planned by the individual governments in the South Asian region, demand projections for capital goods in the individual countries have been made. Estimates of investments are only for the plants manufacturing the capital goods selected for each country of the region. The estimated investments neither cover the additional costs for setting up of corresponding down-stream or up-stream industries nor for infrastructural facilities. The overall plan outlay for the manufacturing sector may vary between 5 and 8 times the total gross output depending upon the existing industrial base in each country. Further, the estimated investments may be affected by the degree of regional co-operation which is not certain at present.
2. The aspects of regional co-operation and plans for development of capital goods industry are discussed below.

REGIONAL CO-OPERATION AND PLAN HARMONISATION

3. Modernisation of the economy and higher living standards are the basic goals of all South Asian countries. All of them are trying to increase the pace of industrialization and productivity of agriculture sector. There are problems however, in modernisation of production and marketing techniques for the agricultural produce. Despite such a situation, there are a few mutual exchanges of know-how or experts for imparting or receiving field training. In addition to

proper seeds and chemical inputs the other basic requirement for a better yield of a particular crop are suitable climate, topography and soil characteristics. Due to mutual distrust as well as the emphasis on self-sufficiency, each country in the region disregards the basic factors and tries to grow all kinds of crops. Such practice produces only sub-optimal yields. The extent of non-cooperation among the countries in this region can be gauged from the fact that they rarely join hands with a view to fetch higher prices for their common produce in the world market. Bangladesh, India and Nepal are the only countries in the world producing jute and jute goods. Instead of making profitable use of this monopolistic situation, it is often observed that one tries to under-cut the other. Similar is the case with India and Sri Lanka, for tea, coffee and rubber. In the case of tea, the two countries together export more than 60 per cent of the world total exports. If they form a cartel, it will bring to them better unit value in the international market.

4. Co-operation in the field of industrialisation has also not been significant. Though India's performance as measured by economic indicators like GDP, growth rate, per capita income and capital formation is not impressive, it cannot be denied that it has developed a strong industrial base. It has not only absorbed foreign technologies but has modified them to suit the environments in the developing countries. Along with the exports of various capital goods, it is exporting its technical consultancy services to other developing countries in Middle East, South East Asia and Africa. In the year 1982-83, its exports of engineering goods reached a level of Rs.12500 million. Till April 1983, it had set up about 233 joint ventures in 36 developing and developed countries. Though India has the requisite proven expertise and capital goods needed by the other member countries, there are no bilateral or multi-lateral trade agreements among them for achieving their respective goals.

The percentage share of imports from India in the overall imports of each country in the region is :

Afghanistan	5.4
Bangladesh	18.0
Iran	0.6
Nepal	...
Pakistan	0.3
Sri Lanka	40.0

The above figures clearly indicate the state of non-cooperation among the member countries. Elaborating further, out of 233 Indian joint ventures set up abroad, South Asia's share of 31 is far less compared to South-East Asia's 89, Africa's 47, Europe and America's 38 and 25 in West Asia.

5. Lately the South Asian countries have realised the importance of an organisation like the Latin American Free Trade Association (LAFTA), the Andean common market, Association of South East Asian Nations (ASEAN), East European Council for Mutual Economic Assistance (COMECON), European Economic Community (EEC) and Organisation of Petroleum Exporting Countries to promote collective self-reliance and improve the quality of life of the people in the region. Foreign Ministers of seven countries (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) met in New Delhi on August 2, 1983 and laid the foundation of South Asian Regional Co-operation (SARC). The objectives of SARC are :

- (1) To promote the welfare of the people of the seven countries and to improve the quality of life.
- (2) To accelerate economic growth, social progress and cultural development and to provide all individuals the opportunity to live in dignity and to realise their full potentials.

- (3) To promote and strengthen collective self-reliance among the countries in South Asia.
- (4) To contribute to mutual trust, understanding and appreciation of one another's problems.
- (5) To promote active collaboration and mutual assistance in the economic, social, cultural, technical and scientific fields.
- (6) To strengthen co-operation with other developing nations.
- (7) To strengthen co-operation among themselves in international forums on matters of common interest.
- (8) To co-operate with international organisations with similar aims and purposes.

Undoubtedly, this is a very promising beginning but the path ahead is not smooth. The members of SARC are aware of the obstacles likely to be encountered. They have rightly decided to put more emphasis for the present on cultural exchanges, creation of better and easier travel and communication facilities and multi-lateral tariff reduction on certain goods. The channels of trade have been limited to State Trading Corporations only. Because of deep ingrained distrust and their competitive economies, member countries are, at present not ready for free flow of trade. The fear that the markets of other member countries may be flooded with Indian capital goods is another factor that hampers the free flow of trade. Another reason for lack of trade in capital goods is India's inability to match the credit/loan/grant facilities generally offered by the developed countries for sale of capital goods manufactured by them. It is, therefore, a long way that SARC has to go before it becomes an effective tool for regional co-operation.

In spite of the constraints on its financial resources, Government of India has in the past, provided financial aid to other countries in the region. India's assistance to other countries is presented in Exhibit-73.

6. With the above background, it is rather difficult to form a long term or rigid plans for regional co-operation. Thus the plan being recommended is general and flexible in character.

PLANS FOR CAPITAL GOODS INDUSTRY

7. Plans for production of capital goods in the South Asian countries should have two perspectives - national and regional. From national perspective, capital goods which can be manufactured in each country are given as under :
8. Afghanistan and Nepal as discussed in Section-3, are not equipped with manufacturing facilities. In fact, they are still in Stage-I category of the manufacturing facilities. However, along with the development of Stage-I facilities, they should set up facilities for the assembly of capital goods from imported components. These capital goods include :
 - o Electronic goods like radios, record players, T.V. sets
 - o Agricultural implements
 - o Bicycles
 - o Animal-driven carts
 - o Handlooms
 - o Leather machinery
 - o Electrical low-voltage switchgears, transformers, heaters

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA
ASSISTANCE EXTENDED BY INDIA TO OTHER COUNTRIES

(Rs. Million)

Country	Authorisation						Utilisation					
	1979-80			1980-81			1979-80			1980-81		
	Loans	Grants	Total	Loans	Grants	Total	Loans	Grants	Total	Loans	Grants	Total
Afghanistan	-	-	-	-	-	-	140	-	140	-	-	-
Bangladesh	2930	10	2940	-	20	20	2930	10	2940	50	10	60
Nepal ^a	-	1410	1410	-	1420	1420	-	1360	1360	-	590	590
Sri Lanka	1000	-	1000	1000	-	1000	360	-	360	630	-	630

a : Aid to Nepal excludes grant expenditures on Kosi and Gandak schemes executed by Bihar Government and grant expenditure on training of Nepalese scholars in India

Source : Hindustan Yearbook, 1983 - S. Sarkar, India

- o Wood working machinery
- o Semi-automatic fruit canning, food processing and oil crushing machineries
- o Office or household furniture from wood or steel

Advantages of assembly plants are that these are labour intensive rather than capital intensive. Further, these are process oriented and various types of products involving same type of process can be assembled there. As an example an electrical assembly plant can provide facilities for assembly of different electrical items like switchgears, transformers, electric motors, etc., thereby minimising the chances of under utilization of the assembly facilities in case demand for one or other product goes down.

In due course the small assembly plants can be expanded to assemble industrial machinery like cement mill, pulp and paper mills, etc.

9. Bangladesh and Sri Lanka are in Stage-II of development. Bangladesh, at present, manufactures irrigation pumps, low capacity diesel engines, low voltage switchgears, transformers, electric lamps, fluorescent tubes, etc. Bangladesh should increase production of the above items. It should set up plants for assembly of capital goods like heavy industrial machinery required by industries like jute, sugar, textile, pulp and paper, leather, etc. Bangladesh should strengthen its ancillary industries so as to reduce the import contents of the imported capital goods. Sri Lanka has a strong base for assembly of transport and electrical/electronic equipment. It can set up facilities for assembly and manufacture of machinery for rubber and tea processing. Like Bangladesh it should also develop strong ancillary industry specially in field of transport equipment.
10. Capital goods manufactured by Iran and Pakistan have been discussed in Section-2 of this report. Existing level of production needs expansion. They should further set up facilities for manufacture of

heavy machine tools. Ancillary industries specially in field of automobiles need expansion. Fabrication of petro-chemical machinery and railway rolling stock needs further expansion.

11. India has a strong base for manufacture of various types of capital goods. But its present level of consumption and production is low even as compared to some of the developing countries. Its existing facilities for manufacture of every type of capital goods need further expansion. Updating the technology is one of the foremost requirements of capital goods industry in the country. Infrastructure like power generation, transport and other public utilities are far short of their requirement. Manufacturing facilities for capital goods for the above utilities need expansion. Manufacture of capital goods for exploration of oil and petroleum processing should be taken up. Production of electronic goods is another field where further progress is needed.
12. Setting up regional demand-based industries is not easy. Almost 15 years after the formation of ASEAN, no regional industries have been established yet. The only foreseeable solution seems to be setting up such industries as joint ventures with equal investments, sharing of the product and employment opportunities. The machine tools and equipment for the joint ventures should preferably be procured from regional sources. Transport equipment like buses, trucks, cars, railways's rolling stock need high volume production and thus offer a unique opportunity for joint ventures.
13. Short-term projections and the government policies for each country are presented in the following sub-sections.

AFGHANISTAN

AFGHANISTAN

14. The growth rate of production by the industrial sector decreased from 7.8 per cent in 1960-70 to 5.2 per cent in 1970-78. Though the percentage share of manufacturing in GDP went up from 11.4 per cent in 1960 to 18.8 per cent in 1978, manufacturing should contribute more to the country's output. Based on 1979 gross output and the industry growth rate of 8.2 per cent for the eighties as projected by ESCAP (E/ESCAP/IHT.6/10 dated August 23, 1982), the projected gross output of Afghanistan's industrial production in 1990 works out to approximately 442 billion Afghanis (at 1965 constant prices). Assuming an output to investment ratio of 2.8 for the manufacturing industries as is prevalent in similar countries like Nepal, the estimated additional investment to be made in the industrial sector during 1980-90 is about 91 billion Afghanis. This investment is likely to generate employment for about 1 million persons (on the basis of 4.3 employees for an output of 1 million Afghanis).
15. Investment will have to be made firstly for developing the infrastructure such as power, roads and transport. In the industrial sector, investments should be made in the small and medium scale industries to manufacture electrical goods like small electric motors, industrial items such as small transformers, switchgears, household electrical appliances, etc.
16. The country has already taken steps towards improving road transportation by establishing workshops for manufacturing motor spares. Though it may not be possible to set up vehicle manufacturing facilities, industries should be set up to assemble trucks, buses, body building shops for buses, garages for repair of vehicles, shops for reconditioning engines and for battery conditioning.
17. Since agriculture constitutes a major occupation, factories for manufacturing agricultural implements like harrows, hoes, ploughs, rakes, etc. should be set up to improve the productivity in the agricultural sector by mechanisation.

Simple and small equipment for fruit canning and food processing can also be manufactured locally to boost the production/processing of agricultural produce.

18. GOVERNMENT POLICIES

To aid all round development of the poor economy, the Afghanistan government completed three Five year Plans between 1956 and 1972. Development of mineral resources, establishment of basic socio-economic infrastructure and execution of quick-payoff projects like irrigation, chemicals, fertilisers and food processing plants were the primary objects. After the Fourth Plan formulated in 1973 was interrupted due to a change of regime, the economic planning policy was switched over to a seven-year cycle. The government embarked on a plan with the proposed outlay of U.S. \$ 3.5 billion during the period 1976-83.

For encouraging industrial growth, the government allows a number of fiscal and other benefits, the more important of which are highlighted below :

- (a) Exemption from taxes on income for four years.
- (b) Exemption of import duties on capital goods (in accordance with the Customs law).
- (c) Nominal import duties on spare parts and raw materials.
- (d) Exemption from payment of export taxes according to the provisions of the Customs law.

If the industries are located outside Kabul, some added benefits such as exemption of taxes on income and dividend for an extra two years, are allowed. These incentives help in promoting regional dispersal of industries.

Investment Policies : Apart from some areas private industrial ventures are permitted in most fields with or without foreign participation. Since capital, modern technology and managerial skills are lacking, foreign investment is encouraged, though with prior approval of the Investment Committee. Foreign investment in the country can take place only through joint ventures and with the foreign participation not exceeding 49 per cent (as of 1976). However, foreign capital is not discriminated against, as regards facilities, taxes, customs obligation and arbitration procedures.

Trade Control : All import transactions have to be registered before orders are placed abroad. Imports of certain goods such as a few textiles, and selected non-consumer goods are prohibited. There are no quantitative restrictions on other imports. On the whole, trade with bilateral agreement countries are carried out on a compensation basis.

BANGLADESH

BANGLADESH

19. The industrial sector of Bangladesh registered an average annual growth rate of 7.4 per cent in the period 1970-78 as compared to 6.1 per cent in the period 1960-70. Manufacturing in particular exhibited growth rates of 9.6 per cent and 3.7 per cent in the corresponding periods. ESCAP has projected a growth rate of 8.6 per cent per annum for the manufacturing sector for the period 1980-85 (E/ESCAP/IHT.6/10 dated August 23, 1982). Assuming that this will continue upto 1990 and based on the gross output of the industry in 1979, estimated gross outputs of non-electrical, electrical and transport equipment industries in 1990 will be TK 300 million, TK 1700 million and TK 870 million respectively (all at 1979 prices). Based on the average output to investment ratio of about 2, the additional investment required to be made in these industries is estimated to be TK 900 million. Using the average number of persons employed per One Million Taka gross output over the years in non-electrical (28.0), electrical (8.0) and transport equipment (10.3) industries as a base, the additional employment that will be generated in these industries are estimated to be approximately 6500, 8000 and 5300 respectively.
20. Infrastructural development should be accorded high priority as far as financial development outlays are concerned. Industries having forward linkages with agriculture are being developed. About 68 per cent of the people depend on agriculture for a living. Since average farm size is less than four acres, use of tractors and other agricultural machineries is not justified unless farming is done on co-operative basis. A tractor of 12 HP costs about U.S. \$ 5,000.00. Such an investment is beyond the reach of a single farmer. However, manually operated or animal drawn ploughs, seeders, mowers, rakes and planters may be manufactured. These agricultural implements do not reduce employment but aid in productivity. The diesel engines driven pumps are used for irrigation, but due to the increasing emphasis on electrification diesel engines are being replaced

by electric motors. Manufacture of electric motors and the required accessories should be a very profitable venture. The increase in power generation will boost electrical as well as light engineering industries engaged in the manufacture of switchgear, transformers, electric lamps, fluorescent tubes, etc.

21. In 1976-77, 931 motor vehicles were assembled in Bangladesh. There is ample scope for expansion of these units. Effort should be made to increase the local content of these vehicles by setting up ancillary industries. Garages for overhauling and repairing of vehicles and workshops for manufacturing spares should be set up to improve efficiency of the transport system.

22. GOVERNMENT POLICIES

Though Bangladesh emerged as a sovereign independent country in January 1972, the country inherited a poor, undiversified economy within an underdeveloped structure. To put the economy on a sound footing, the Planning Commission prepared the First Five Year Plan (1973-74 to 1977-78).

The government identified certain industries of basic and strategic importance. These industries, protected from private investment include: arms, atomic energy, jute, sugar, textile, paper, iron & steel, heavy engineering, heavy electrical, ship building and chemical industries. Foreign investment is normally welcome in other areas. Foreign private investment is permitted in collaboration with both government and local entrepreneurs. In the private sector, foreign equity participation is limited to those industries where technical know-how is not locally available and/or capital outlay is very high and to those that are based on local raw materials and are wholly export-oriented. All types of industries can enter into technical collaboration agreements without equity participation. The ceiling on private investment is TK 100 million. The government has taken a distinctly pro-business approach. Certain state-owned enterprises will be sold to the private sector, including foreign companies. A few public sector companies will be managed under contract, by the private sector.

Taxation : A company whether resident or non-resident has to pay income tax at the rate of 30 per cent on the profits or gains and super tax at the rate of 30 per cent. A resident company is entitled to some rebates on corporation tax. The taxation policy is designed to encourage further investment.

Trade Control : All imports require licenses or approval on letter of credit authorisation forms. Many imports are reserved for the Trading Corporation of Bangladesh (TCB) including chemicals, cement, sugar, cotton and woollen textiles. Firms in the industrial sector are given an entitlement for import of specified raw materials and packing materials and licenses are issued on the basis of entitlement. Industrial consumers may be granted import licenses for parts and accessories of machinery. The goods imported however, must be used in the industry concerned and must not be sold or transferred without prior approval. To encourage exports, export-oriented industries may receive licenses in excess of their normal entitlement for the import of their raw material requirements, depending on their export performance.

INDIA

INDIA

23. The manufacturing sector in India grew at a rate of 4.6 per cent during 1970-1978. The growth rate projected by ESCAP for the manufacturing sector for the eighties is 8 per cent (E/ESCAP/IHT.6/10 dated August 23, 1982). The growth rates projected for non-electrical, electrical and transport equipment industries are 9.7 per cent, 8.7 per cent and 9.0 per cent respectively. Based on these projections of growth rate and the value of gross output in 1978, the estimated output of non-electrical, electrical and transport equipment manufacturing industries will be approximately Rs.75.5 billion, Rs. 64 billion and Rs. 60 billion respectively (at 1978 prices). Based on the average output to investment ratio of about 1.5 in the Indian industry, estimated additional investment in the above industries during 1978-1990 is Rs. 90 billion. The total additional employment created, based on average ratios of employment to output of One Million Rupees in non-electrical (15.5), electrical (12.1) and transport equipment (18.4) industries, is estimated to be of the order of 2 million.
24. India has a well-established base for manufacture of a variety of engineering goods. However, the productivity and utilisation of existing facilities are much below the desired levels. If the present average capacity utilisation of 70 per cent in industry is increased to 80 per cent, the gross output will go up by almost 10 per cent.
25. In order to achieve the projected growth, development of infrastructure needs to be accorded high priority. The government has already chalked out plans to increase the power generating capacity from 31,000 MW in 1980 to about 60,000 MW by 1990. Rural electrification has been accorded top priority. Though the electrical industry is well-established, production capacity for power generating equipment like boilers, turbines, alternators, other electrical equipment such as switchgears, transformers,

motors, etc. should be increased substantially to meet the demand. More emphasis should be laid on updating the technology of the products. The ambitious power generation plan will give rise to increased demand for conductors, cables and other transmission equipment.

26. Considerable investment is required to be made in the communications sector to update the available technology and to increase production of telephones, cables and other tele-communications equipment.
27. In the agricultural sector, productivity needs to be improved. Investment is required to be made to manufacture manually-operated agricultural implements such as ploughs, scrapers, harvesters, tillers, graders, etc. to cater to the small land owners. Based on the policy towards promoting agriculture the government has projected the production of tractors in 1990 as 190,000. This means more than doubling the existing production level of 84,320.
28. In the manufacture of industrial machinery and machine tools, the industry has to update its technology to catch up with the changing technological trends in the world. Substantial demand is expected to arise from new establishments as well as from old establishments for their replacement requirements.
29. Development of road and rail transport facilities is very important for the industrial growth. Production of road building and construction machinery including bulldozers, excavators, dumpers, etc. should be increased by further investments. Creation of additional capacities for manufacture of rail wagons, passenger coaches, trailers, etc. are already under way.

projected production target for 1989-90 by the Government of India for the automobile industries is as follows :

Buses and trucks	140,000 Nos.
Light commercial vehicles	75,000 Nos.
Cars	150,000 Nos.
Jeeps	45,000 Nos.
Two-wheelers	2,000,000 Nos.
Three-wheelers	100,000 Nos.

Production capacities of all these items are required to be more than double to meet the target. Substantial investment is required to create the additional capacity.

30. GOVERNMENT POLICIES

In fiscal 1980, India's economy was affected by severe domestic supply constraints, a doubling of oil prices and disastrous monsoon. However, in fiscal 1981 due to government policies favouring better management and better utilisation of the installed capacity, the economy restored itself. There was an improved monetary policy and supply constraints in the power, coal and rail transport sectors eased.

Ever since the First Five Year Plan was started in April 1951, the government has undertaken five such plans and has started the Sixth in 1980. India's plan outlay is presented in Exhibit-74. In formulating the objectives and priorities of the Sixth Plan, the government has taken into account both the achievements and the shortcomings of the past. The foremost objective of the Sixth Plan is the removal of poverty, though it is recognised that a task of such magnitude cannot be accomplished in a short period of five years. Stepping up the rate of growth of the economy, promotion of efficiency and capacity utilisation, strengthening the impetus of modernisation for the achievement of economic and technological self-reliance, speedy development of indigenous sources of energy, improving the standard of living of people in general and reducing regional inequalities in the pace of development are the major areas of effort.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

STUDY OF CAPITAL GOODS INDUSTRY IN SOUTH ASIA

PLAN OUTLAY BY HEADS OF DEVELOPMENT - INDIA

Sl. No.	Heads of Development	Fourth Plan (1969-74) (Actuals)	Fifth Plan (1974-79) (Actuals)	1979-80 (Actuals)	1980-81 (Anticipated)	1981-82 (Outlay)	(In Million Rupees)	
							Total Sixth Plan Outlay	% of total
1.	Agriculture & Allied Sectors	23204 ^a	48649	19965	23051	24291	132747	13.6
2.	Irrigation and Flood Control	13541	38765	12879	13859	15842	94935	9.7
3.	Power	29317	73995	22405	26040	32295	192654	19.8
4.	Village and Small Industries	2426	5925	2557	2787	3152	17805	1.8
5.	Industry and Minerals	28644	89886	23835	30856	39487	204071	30.0
6.	Transport and Communications	30804	68703	20449	24472	28537	154842	15.9
7.	Education	7743	) 17103 ^b))	2630	3478	4223	25237	2.6
8.	Scientific Research	1308		914 ^c	1018 ^c	1633 ^c	9152 ^c	0.9
9.	Health	3355		7608	2231	2661	3566	18211
10.	Family Planning	2780	4918	1185	1342	1550	10100	1.0
11.	Water Supply and Sanitation	4589	10916	3876	5085	6381	39220	4.0
12.	Housing, Urban and Regional Development	2702	11500	3688	4669	4303	23703	2.4
13.	Welfare of Backward Classes	1646	7240 ^d	2479 ^d	4222 ^d	5064 ^d	29303 ^d	3.0

contd..

EXHIBIT : 74

Sl. No.	Heads of Development	Fourth Plan (1969-74) (Actuals)	Fifth Plan (1974-79) (Actuals)	1979-80 (Actuals)	1980-81 (Anticipated)	1981-82 (Outlay)	Total Sixth Plan Outlay	% of total
14.	Social Welfare	644	882	307	416	555	2720	0.3
15.	Labour Welfare and Craftsmen Training	311	)	)	)	1186 ^g		
16.	Other Programmes	1798	)	8172 ^e	2365 ^e	3268 ^e	20300 ^e	2.1
17.	Special Schemes	2976)	-	-	-	-	-
	TOTAL	157788 ^f	394262	121765	147224	174173	975000	100.0

- a : Includes buffer stock: Rs.250 million for 1969-70, Rs.500 million for 1971-72, Rs.250 million for 1972-73 and Rs.1240 million for 1973-74. Thus the figure for buffer stocks during the Fourth Plan works out to Rs.1240 million against the original provision for Rs.2550 million.
- b : Includes Science and Technology.
- c : Includes new and renewable sources of energy.
- d : Includes provision for hill and tribal areas and also includes a provision for special centre additive for scheduled castes component plants from 1980-81.
- e : Includes provision for nutrition.
- f : Excludes expenditure on nutrition (Rs.37 million).
- g : Includes outlay for Special Employment Programme.
- Source : Economic Survey, 1981-82 - Government of India.

Industrial Policy : Government intervention in industry is both direct and indirect. So far, successive Five Year Plans have laid emphasis on the leading role of the public sector in basic and producer goods industries. The government has made plans regarding requisite investments for securing the growth of these industries and reaching a level of performance which permits maintaining adequate returns from these investments. The indirect intervention of government in industry arises from the need to ensure that private investment subserves national objectives and that its claim on resources of domestic as well as foreign finance, scarce raw materials and manpower are so regulated as to conform broadly to the Plan priorities. Dispersal of industries for the development of backward regions is also a major concern of the government. The government wishes to avoid concentration of industries in metropolitan regions to promote growth of small industries and labour intensive operations, and to promote opportunities for employment on a large scale. The industrial policy is framed so as to prevent the concentration of economic power in a few hands. The government is the final authority in determining business and trade policies. As a part of the policy to ensure balanced regional development, industries established in selected backward areas are given financial incentives by the government. These are in addition to the facilities and incentives given by individual State Governments. Manufacture of certain articles is reserved for units in the small-scale sector.

The capital goods industry in general and the electronics industry in particular will be given special attention during the Sixth Plan period as these support the growth of a wide range of economic activity. The government aims to develop these industries in terms of competitive costs and high quality. Certain other industries such as machine tools and commercial

vehicles industry have been identified for accelerated development, for supporting not only the domestic market, but also for exploiting the export potential.

The industries reserved for the state are arms and ammunition, atomic energy, iron & steel, heavy castings, heavy plant and machinery for basic industries, mining, aircraft, rail transport and electricity. Government as well as private firms may be engaged in the manufacture of aluminium, ferro-alloys, special steels, antibiotics, fertilisers, road and sea transport. Consumer goods industries are mainly in the private sector.

Investment and Joint Ventures : To supplement the capital resources and know-how for rapid industrialisation, the Government of India allows foreign capital participation and technical collaborations. The government policy towards foreign investment is however very selective and aims at filling technological gaps and expanding exports. Foreign companies cannot invest in state industries, banking, commerce, trading, consumer and high profit yielding companies. Foreign equity participation is allowed only after considering factors such as priority of the industry, nature of technology involved, capability of export promotion and alternative terms for securing the same or similar technology transfer. Annual royalty payments which are linked with the value of actual production are taken into consideration before approving foreign technical collaborations. The government has pinpointed areas where (a) foreign investment may be permitted, (b) only technical collaboration may be permitted and (c) neither financial nor technical collaboration may be permitted. The majority of the foreign collaboration agreements cover only technical collaboration without any equity participation from abroad. Normally, licensing arrangements are sanctioned for a maximum period of 5 years and allow a royalty payment rate of upto 5 per cent, though there are exceptions. Royalty is calculated

on the selling price ex-factory minus C.I.F. cost (including Customs duties) of imported materials and components. Authorities may insist that a certain minimum export obligation be met or a specified local content be reached within a specified period, before approving a know-how sale. Technical collaborations in areas for which know-how is available in India are not generally allowed.

Foreign Trade Control : As the pattern of production has undergone changes so has the composition of trade. In order to sustain increase in exports, the government endeavours to have a stable policy governing exports as well as production for export. The policy will give maximum attention to (a) removing disadvantages which exports suffer because of the restrictions, (b) removing obstacles to the expansion of exports, (c) streamlining the existing cash compensation and other schemes intended to remove the disadvantages suffered by exports and (d) maintaining adequate links with technology abroad, so that the Indian exports are not hurt by outdated technology. To achieve these, certain measures have already been taken. Specified items may be freely imported but the majority of the imports require individual licenses. Imports of raw materials and components prepared by selected industries, small-scale industries and by units that had an export performance of 20 per cent or more of their production, are licensed liberally. The licensing policy accords priority to the import of foodstuffs, capital goods, raw materials, fertilisers and other industrial requirements.

Taxation : The corporate tax base for the companies in India is the gross income less allowable expenses and the tax rate is 55 per cent for public companies earning over Rs.100,000 plus 2.75 per cent surcharge.

I R A N

IRAN

31. The industrial sector in Iran registered a growth rate of only 3.4 per cent during 1970-1978. However, the manufacturing sector grew at the rate of 10.1 per cent during the same period. Considering that the growth of the manufacturing sector was over 10 per cent during the sixties too, it will be reasonable to assume a growth rate of 10.1 per cent during the eighties for the manufacturing sector. Assuming a growth rate of 10.1 per cent and based on 1979 gross output figures, the estimated gross output of non-electrical, electrical and transport equipment manufacturing industries in 1990 will be approximately U.S. \$ 940 million, U.S. \$ 2400 million and U.S. \$ 2800 million respectively (at 1979 constant prices). Assuming gross output to investment ratio of 2, the additional investment required to be made is estimated to be around U.S. \$ 2000 million at 1979 prices. The likely generation of employment will be about 130,000 Nos. based on the ratios of employment to output of U.S. \$ 1.0 million in 1979 in the non-electrical (42.5), electrical (26.9) and transport equipment (32.6) industries.
32. Unlike other countries in the region, Iran has large reserves of oil. Oil is the major item of the country's production, contributing as high as 30 per cent to the GDP. Iran has to invest large sums towards developing other industries in the country. It has a reasonably good industrial base to set up a variety of manufacturing industries.
33. Though Iran manufactures tractors, some amount of tractors are still imported. Iran should expand the existing indigenous capacity to cater to the entire domestic market and also explore possibilities of export to the neighbouring countries. Similarly, the manufacturing capacity for agricultural implements like harrows and harvesters,

both mechanised as well as manually operated, should be expanded to improve agricultural productivity.

34. The diesel engine manufacturing facilities in Iran will need to be increased to meet the entire requirement of auto industry and other industries in Iran. The national plans indicate huge expansion programmes for diesel engine manufacture, in line with the expansion of automobile industry, to be implemented by 1979. However, the degree of implementation of these plans are not known. Though Iran manufactures a variety of machine tools and industrial machinery, large machine tools, heavy equipment for mining and other industries, industrial boilers, etc. are not made in the country. Having established an industrial base Iran should diversify into production of such heavy equipment.
35. Though Iran manufactures consumer electrical and electronics items like electric lamps, fans, kitchen appliances, refrigerators, air-conditioning equipment, radios and television are manufactured in Iran, there is scope for expansion of production capacities of these items. Among the electrical equipment for power generation and distribution, high power transformers, fuse units, protection equipment like switchgears, small hydraulic and steam turbines should be manufactured in Iran.
36. In the transport equipment sector, Iran has facilities for assembly of passenger cars and trucks, and manufacture of motor cycles, scooters and bicycles. The local production facilities will need to be enhanced by establishing ancillary industries to manufacture auto components and to achieve a gradual increase in the local content of manufacture of various motor vehicles. With increase in the number of road transport vehicles in the country, garages and workshops should be set up for repair and maintenance of these vehicles.

37. GOVERNMENT POLICIES

There is very little information on the present situation in Iran. However, it is known that the government has been taking over large private companies, and apart from a few exceptions in textiles and personal care manufactures, there are no really large private concerns left. The government has taken over the management of all industries with foreign investment. The attitude towards free enterprise in industry seems to be based largely on scale, that is, many small investors running modest, productive ventures is seen as desirable, but big companies are discouraged.

Before the change in regime, however, the government had favoured private investment, and had limited public sector participation in industry to sectors for which cost of capital and technical equipment could not be met by local private investors. State ownership was concentrated in basic industries such as steel, aluminium, petroleum, heavy machinery and construction materials. Foreign investment was allowed, but only in industries in which Iranian capital and expertise were not sufficient.

NEPAL

NEPAL

38. The capital goods sector in Nepal is almost non-existent. Lack of the raw materials required for this sector and the skilled manpower as well as low demand for capital goods in the domestic market, are the major constraints. The manufacturing sector in Nepal mainly comprise industries having backward linkages with agriculture and a few engineering industries. In 1976-77, the manufacturing sector comprised 3528 establishments, employed 50120 persons and had a gross fixed capital of Nepalese Rs.954 million. The gross output in 1976-77 was Rs.3.9 billion. Actual growth rate registered by the manufacturing sector in 1979-80 was 6.7 per cent. The growth rate of the manufacturing sector projected by the National Planning Commission for 1980-85 is 10 per cent. The investment plan in the industry during this period at 1979-82 prices was Rs.1050 million and that in cottage industry was Rs.500 million.
39. Assuming 10 per cent growth rate during 1985-90, the estimated investment required in the industry at 1976-77 prices (assuming gross output to investment ratio of 2.8) is approximately Rs.1650 million for the period 1985-90 and the gross output in 1989-90 is about Rs.12.2 billion. Estimated employment in industry by 1989-90 will be approximately 200,000 (assuming 12.8 employees for 1.0 Million Rupees output).
40. Of the total investment required to be made in the industrial sector, a substantial portion will have to come in the form of foreign government aids and borrowings from financial bodies. The estimated share of foreign aid in the Sixth Plan (1980-85) outlay was almost 60 per cent.
41. With the large investment to be made in the industrial sector, the government of Nepal will have to increase the generation of funds from internal sources and also tap possible foreign sources.

42. The investment will have to be made in industries linked to agriculture and in infrastructural facilities such as power, roads, etc. to build a strong base for industrial growth. The industries should be set up in the small-scale and cottage-scale sectors to ensure financial viability.
43. Agricultural implements such as manually-operated or animal-drawn ploughs, weeders, cultivators, seeders, planters, mowers, rakes, threshers, etc. should be made in the small-scale sector. Manufacture of machinery required for sugar plants, cigarette manufacturing factories, paper plants, jute processing, etc. and machine tools is not viable due to economies of scale. However, repair/reconditioning shops and general purpose workshops should be set up to undertake repair work as well as to produce spare parts for equipment.
44. Priority should be set on building up a sound infrastructure. Estimated demand for power in 1989-90 is 357000 KW while the installed capacity in 1979-80 was 80,000 KW. Power generating capacity will need to be increased by more than three-fold to meet the demand. Though power generating machineries are not manufactured in Nepal, small-scale industries should be set up to manufacture small electrical items such as electric switches, electricity meters and some household appliances.
45. Road transport facilities in Nepal play a vital role in transportation of goods and passengers. Use of rail transport is limited owing to the hilly terrain of the country. Manufacture of motor vehicles in Nepal is not viable due to economies of scale and limited demand. There is scope for setting up garages and vehicle repair shops, tyre retreading shops, battery conditioning shops, engine reconditioning shops, etc.
46. Setting up units for assembly of electronic goods like radios and tape recorders from imported components will help in developing a base for an electronic industry.

47. GOVERNMENT PLANS

In order to ensure planned development of the country, the Government completed five periodic plans. The Sixth Plan was drafted with the objectives of raising production, widening employment opportunities and meeting the basic needs of the masses. The Sixth Plan became operative in 1980-81. It aims at raising GDP by 4.3 per cent per annum during the Plan period. To achieve this, the agricultural sector has to grow by at least 3.2 per cent and the non-agricultural sector by at least 5.6 per cent per annum. Allocation of development expenditure in the public sector during the Fifth and Sixth Plan periods is presented in Exhibit-75.

Industrial Policy : One of the aims of the Government's policy is to effectively harness the manpower to the development work so that production as well as standard of living increase. To create new opportunities for employment, labour intensive industries will be given encouragement. The Sixth Plan has allocated 26 per cent of the total outlay for industrial development. Tax concessions are given to industries, with more liberal concessions for industries established in under-developed areas. The differential taxation promotes dispersal of industries. Concessions with regard to customs and excise duties are given for specified capital goods and raw materials. Sales tax is not levied on raw materials, semi-finished materials or finished goods that are used as raw material by another industry and for export. Industries that are planning to expand or modernise their present plants are allowed to debit the cost of machinery and parts in a lumpsum against profits for the year in which investment is made. Monopoly and restrictive trade practices are discouraged by allowing the establishment of viable industries. Policies bearing on current taxation, customs, foreign trade, foreign exchange, wages and investment have been reviewed. Industrial undertakings pay income tax at the rate of 5 per cent.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

ALLOCATION OF DEVELOPMENT EXPENDITURE IN THE
PUBLIC SECTOR - NEPAL

(Rs. Million)

Sl. No.	Sector	Fifth Plan 1975-80 at current prices		Sixth Plan (1980-85) at 1979/82 constant prices	
		Amount	Percent	Amount	Percent
1.	Agriculture	969.4	10.9	2300.0 ^a	10.6
2.	Irrigation	864.0	9.7	3060.0	14.1
3.	Forest	342.7	3.9	850.0	3.9
4.	Industry)			1050.0 ^b	4.8
5.	Cottage Industry)	538.0	6.1	500.0 ^c	2.3
6.	Mining and Geology)			150.0	0.7
7.	Power	1049.9	11.8	3800.0	17.5
8.	Commerce)			20.0	0.1
9.	Labour)	91.3	1.0	20.0	0.1
10.	Tourism)			60.0	0.3
11.	Transport	2299.4	25.9	3880.0	17.8
12.	Communications	81.2	0.9	350.0	1.6
13.	Education	1027.7	11.6	1660.0	7.6
14.	Health	474.0	5.3	1060.0	4.9
15.	Administrative Reforms	5.7	0.1	20.0	0.1
16.	Planning	26.9	0.3	80.0	0.4
17.	Others	1100.4	12.5	2890.0	13.2
	Total	8870.6	100.0	21750.0	100.0

a : Includes Rupees 340 million financial assistance to the Agricultural Development Bank

b : Includes Rupees 200 million financial assistance to the Nepal Industrial Development Corporation

c : Includes financial assistance of Rupees 120 million to be extended to cottage industries

Source : The Sixth Plan (1980-85) - Part 1 (A Summary)
National Planning Commission, Government of Nepal

Investment : Though there has been no discrimination between domestic and foreign investors, foreign investment in Nepal has remained insignificant. Since domestic capital and technical skills are not available in Nepal, industrial development can proceed only if foreign capital and technology are brought into the country. According to the Nepal Company Act, any foreigner can establish a private limited company, but cannot invest in the public sector. In order to attract foreign investment, the new Industrial and Foreign Investment Policy was announced in March, 1981. Priority will be accorded to the private sector for investments and public sector will be considered only if the former is not interested in investing in these areas. Efforts will be made to involve private or public foreign investors either as a sole foreign investor or in collaboration with national entrepreneurs. Foreign investors can hold upto 100 per cent of the shares of the enterprise in large scale industry. It also gives the industries a guarantee against nationalisation. Appraisal of technology, quantum and extent of royalties and lumpsum payments are agreed upon jointly by the Government and the concerned party.

Foreign Trade Control : All imports of goods, except those coming from India, require licenses. Under a Trade and Transit Treaty, Nepal and India have a free trade between themselves in Nepalese and Indian goods. Import licenses are not normally issued to the private sector except against exporters' exchange entitlements or unless the goods involved are raw materials and machinery, imported by firms for their own use. The Government has taken steps to create an atmosphere for liberal trade. The country has bilateral trade relations with fourteen countries and actual trade with more than sixtyfive countries, both developed and developing. Continuous efforts are made to locate new market and suppliers for competitive imports.

PAKISTAN

PAKISTAN

48. The manufacturing sector of Pakistan expanded by an average annual rate of growth of 9.5 per cent during the period 1960-1970. However, the growth rate dropped to 3.3 per cent in the period 1970-1978. Assuming a growth rate of 3.3 per cent from 1970-80, the gross outputs of the non-electrical, electrical and transport equipment industries in 1980 at constant 1976 prices are estimated to be U.S. \$ 100 million, U.S. \$ 105 million and U.S. \$ 190 million respectively. The growth rate of manufacturing in the eighties has been predicted by ESCAP to be around 10 per cent (E/ESCAP/IHT.6/10 dated August 23, 1982). Assuming this growth rate and based on the estimated gross output in 1980, the gross outputs of the industry groups 382, 383 and 384, in 1990, will be U.S. \$ 260 million, U.S. \$ 270 million and U.S. \$ 490 million, all at 1976 prices. Based on the gross output to investment ratio of 1.5 the estimated investment required to be made in these three industries during 1980-1990 will be approximately U.S. \$ 420 million (at 1976 prices). The total additional employment likely to be created, based on the ratios of number of employees per gross output of U.S. \$ 1.0 million in 1976 for non-electrical (172), electrical (175) and transport equipment (130.5) manufacturing industries, is approximately 95,000 during 1980-1990.
49. Pakistan has been following an industrial import substitution policy. The industrial base is fairly well-developed. Though agricultural implements are being manufactured, there is adequate scope for expansion. Husking and grain milling machinery manufacturing plants should be set up.
50. Expansion of units manufacturing lamps, switchgear, transformers, motors, electric fans, etc. should be undertaken to meet the growing demand in the local market.
51. A project undertaken with foreign collaboration agreements, aims to manufacture cars, pick-up trucks and vans. The local content of the vehicles is to be raised to 80 per cent within the next 6 years. To achieve this, a lot of ancillary industries manufacturing automobile parts will have to be set up.

Motor cycles too are being manufactured under another joint-venture project. Motor cycle parts and accessories may be manufactured locally. Pakistan is engaged in the assembly of railway locomotives from completely knocked-down packages. Efforts should be made to increase the local content of these locomotives by supplying locally manufactured parts. This will not only be in agreement with the import substitution policy, but will also aid in strengthening the infrastructure and in generating employment.

52. GOVERNMENT POLICIES

The 1982/83 budget extended certain tax relief measures for companies and introduced tax incentive schemes to stimulate investment by individuals. The state's share in the industry grew rapidly in the first half of the seventies. The state took over shipping, marketing companies, automobile and tractor industries, banking and insurance among other sectors. The state had the following sector under its control : transport and communications, arms manufacture, heavy industries, petro-chemical and cement industry and public welfare institutions such as banks. However, since 1977, the new Government has striven to re-establish fiscal discipline and economic stability, as well as to restore private sector confidence. Tight financial management has been combined with the wide range of price adjustments. This has helped to reduce the distortions in the economy. Structural reforms have been started including steps to revitalise development planning and to improve policies in key sectors such as agriculture, energy, and industry. Sectoral share of plan allocation is given in Exhibit-76.

Investment and Joint Ventures : Although the Government private foreign capital, foreign investors have encountered numerous obstacles arising mainly from the country's social structure and pre-technological conditions. The political situation has added

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SECTORAL SHARE OF PLAN ALLOCATION - PAKISTAN

(Percentage Share)

Sl.No.	Sector	I Plan 1955-60	II Plan 1960-65	III Plan 1965 -70	IV Plan 1970-75	Annual Develop- ment Plans 1970-78	V Plan 1978-83
1.	Agriculture	12.9	17.2	13.3	11.2	9.6	11.7
2.	Mining & Manufacturing	17.3	13.1	13.2	11.6	19.6	11.0
3.	Water & Power	28.8	28.3	26.0	31.0	29.0	36.1
4.	Transport & Communication	17.8	18.5	21.6	16.7	19.6	16.9
5.	Physical Planning & Housing	9.2	12.9	8.0	9.2	8.4	6.9
6.	Education & Training	6.2	6.5	7.7	7.6	5.5	7.6
7.	Health	3.1	2.5	3.8	6.4	4.3	5.1
8.	Others	4.6	0.8	6.3	6.4	4.0	4.7
	Total ^a	100	100	100	100	100	100
	Total in Million Rupees at 1959-60 constant prices	...	13,704	23,635	13,570	34,638	42,510
	Total in Million Rupees at current prices	9,352	14,620	31,000	45,000	69,877	128,220

a - Total may not add due to rounding

Source : Economic Survey 1982-83, Ministry of Finance, Islamabad

to the uncertainty. In April 1979, the government announced its investment schedule for the current Five Year Plan. The areas in which foreign investment is welcome have been pinpointed. The Department of Investment Promotion and Supplies has to approve all licensing and technical assistance agreements involving foreign companies. Numerous though the benefits of advanced foreign technology might be, the government feels that the licensing payments are an increasing strain on the country's foreign exchange reserves. They also discourage domestic research and development. There are no limits on the amount of equity held by a foreign country, but joint ventures with local manpower and indigenous raw materials are favoured. Companies investing in the petroleum industry or in mineral development are given tax incentives. The government uses differential taxation to ensure regional dispersal of firms. In the private sector, the government gives priorities to investment by domestic or foreign investors in agro-based industries that have either forward or backward linkages with agriculture, export-oriented industries and industries making use of local raw materials but which require imported machinery. Foreign investment in industries based on imported raw materials and machinery, and which are not export-oriented, are not easy to get approval for. Foreign investment is allowed only in the private sector. Foreign entrepreneurs may start an industry in the private sector **without** any conditions being laid down regarding participation of **local capital**. This is part of the government's policy to **encourage industrial development**. To limit foreign exchange outflows, the government will favour non-repatriable equity **investments**.

Trade Control : Permitted imports are classified into either a tied list or a free list. Items on the free list may be procured without restrictions while items on the tied list have to be procured from tied sources, under credits, barter trade or loans.

Customs Tariff : The tariff rates on essential articles and imports contributing to the country's development are low. Duties on raw materials are kept lower than semi-finished and finished goods to give imports an industrial bias. Tariff rates on most machinery and parts are about 20 per cent ad valorem, but the amount may be fully refunded if the equipment is used in a less developed area of the country. Export-oriented industries may be allowed to import machinery from foreign suppliers if the suppliers are willing to accept the payment over a period of time out of the industry's export earnings. The government also allows import of used or re-built machinery, either as a part of the foreign investment or for the modernisation or replacement of existing machinery.

Taxation : Taxation rates in Pakistan are quite high. The base for corporate tax is the gross income less allowable expenses and the tax rate is 60 per cent plus 5 per cent surcharge. The corporate tax is more favourable for the public than the private company, the former paying 55 per cent as tax. Firms engaged in mining, food processing or preserving have to pay 50 per cent.

S R I L A N K A

SRI LANKA

53. Sri Lanka is a country rich in cash crops and plantations. Though the manufacturing sector grew at a rate of 8.8 per cent during 1960-70, the rate of growth in 1970-78 was sluggish at 6.6 per cent. However, the contribution of manufacturing in the GDP went up marginally from 9.7 per cent in 1970 to 10.8 per cent in 1978. The growth rate projected by ESCAP for the manufacturing sector for 1979-83 is 8 per cent (E/ESCAP/IHT.6/10 dated August 23, 1982). This rate will have to be maintained upto 1990 for Sri Lanka to achieve a significant share in industrial production in the South Asia region as well as in the world. Based on this growth rate, the estimated gross output of non-electrical, electrical and transport equipment manufacturing industries in 1990 will be approximately Sri Lankan Rupees 184 million, 629 million and 610 million respectively, all at 1979 constant prices. To achieve the desired output, the additional investment required during 1979-1990 is estimated to be SL Rs.450 million (based on gross output to investment ratio of 2). Employment generation over this period, in these three industries, is estimated to be 2100, 5000 and 2100 respectively based on ratios of employees per gross output of One Million Rupees in 1979 for non-electrical (20), electrical (10) and transport equipment (6) manufacturing industries.
54. The economy of Sri Lanka depends to a large extent on export earnings. It may be observed that Sri Lanka has a lack of basic infrastructural facilities, like some other South Asian countries. For the same number of employees, output of the electrical and transport equipment manufacturing industries are much higher than that in the non-electrical industries.
55. Though setting up elaborate facilities for manufacture of non-electrical machinery may not justify the investments, agricultural implements such as harrows, ploughs, harvesters, special implements required in tea gardens, and small items of industrial machinery for tea processing, fruit processing, textiles, components for tractors, etc. can be manufactured locally to improve output of agricultural and industrial sectors.

56. Electric power being one of the major inputs to the industries, should be given high priority. Steps need to be taken to ensure effective generation and transmission of power. Production of electrical equipment such as switches, switchgear, small transformers and motors should be taken up. With the government's industrial policy of permitting foreign capital investments, 100 per cent export-oriented electronic goods manufacturing industries should be set up with foreign collaboration. All types of consumer and industrial electronic items such as radios, tape recorders, television receivers, electro-medical equipment should be manufactured.
57. In the transport sector, though Sri Lanka manufactures trailers and bicycles, scope exists for setting up partial manufacture and assembly plants for trucks, motor cycles, etc. Body building shops for trucks and buses, wagon building shops, garages and repair shops for motor vehicles should also be set up.

58. GOVERNMENT POLICIES

Since 1956, successive governments have been committed to policies of industrial development. Restrictions on imports, incentives for certain industries and liberal investment policies have helped increase industrial growth in the desired direction.

Government and Industry : The industrial sector is divided into the public sector and the private sector. The private sector manufactures a range of light consumer goods. Cement, paper, steel, fertilisers, chemicals, petroleum and ceramic industries are under the State Sector. Expansion in heavy capital goods industries, selected basic industries, and those processing major mineral resources are reserved for the State Sector.

Investment Policy : The government encourages foreign investment in selected fields. The terms for the investments have to be

approved by the government to ensure consistency with the government's economic policy and social-benefit policies. In the manufacturing industry foreign investment may be considered in state enterprises or in collaboration with local private enterprise. The government policy is to supplement indigenous effort with foreign investment. In the private sector, foreign investment will be approved only if the technical skill necessary for the industry is not available locally, or the cost of machinery is high and the foreign capital contribution will relieve the burden on the country's foreign exchange resources or if a large percentage of the output is exported. Technical collaboration without any financial participation in either the public or the private sectors is welcome. Foreign investors cannot invest in activities that are solely financial, trading or commercial.

Trade Control : All trade imports are subject to quota restrictions. Imports are broadly divided into two groups : basic necessities and other imports. Imports of non-essential items or goods similar to locally produced items are either not permitted or are considerably restricted. Only Government Departments, corporations and registered importers have the right to import, though selected commodities may be imported by private individuals for their own use, subject to official approval.

SECTION - 5

MAIN FINDINGS AND RECOMMENDATIONS

MAIN FINDINGS AND RECOMMENDATIONS

1. Consumption of capital goods in the South Asian region is very low and the region needs more of these for meeting basic needs of its people. Capital goods help in increasing productivity of the agricultural sector which provides not only food to the people of the region but also supplies inputs (cash and plantation crops, forest products, etc.) to the region's industries. At present irrigation and farming activities are carried through traditional methods. Yield per hectare per man per year is low. Against an average world production of 1914 kgs. of wheat per hectare in 1981, the Indian yield is 1649 kgs. In case of rice, the Indian yield per hectare is 2010 kgs. against Japan's 5629 kgs. and China's 4637 kgs. The productivity of other countries in the region is no better. Importance of mechanisation has been recognised in the region. Use of irrigation pumps is on the increase. In India alone consumption of the pumps increased from 6.3 million in the year 1978-79 to 9 million nos. in 1982-83. Use of fertilisers and seeds of high yielding variety are getting more popular but the consumption of fertilisers is still far less than being consumed by Japan, U.S.A. or Australia. In the matter of mechanisation of farming governments in the region prefer "Selective Mechanisation". The accent on selective mechanisation is understandable. Firstly, of all the sectors, agriculture is the most labour absorptive sector. It provides almost 44 per cent of the total employment. Secondly, mechanisation of the agriculture (except in the case of large farms) is not possible due to several reasons including :
 - o Use of machines are uneconomical on tiny land holdings which are large in number
 - o Soft soil conditions

- o Financial constraints of the farmers
- o The nature of crops cultivated, like paddy

Notwithstanding the above reasons, use of tractors is on the increase. It is being recognised that apart from the role tractors play in improving productivity in agriculture, it also creates employment through its operation, repair and maintenance. Considering the future needs of tractors, Government of India (as per Guidelines for Industries 1983-84 Part-II) have projected the demand for tractors as 120,000 numbers in 1984-85 and 190,000 in 1989-90. Production of tractors in 1981-82 is 84,219 nos. against a licensed capacity of 175,250 numbers. Need for future expansion is obvious. Other countries of the region are following similar pattern of selective mechanisation.

2. Capital goods are needed for converting agriculture produce and minerals into products like textiles, sugar, paper, cement, steel, etc. That the production/consumption of these products is low, has been established in the preceding sections of this report. However, in order to emphasise the total lack of capital goods production in the region, certain gaps in the capital goods industry in the most industrialised country in the region - India - are presented here. It is estimated that, in steel, in order to reach a per capita production of only 130 kgs. against Japan's present 1,000 kgs., India needs to increase its steel production twenty-fold by 2000 AD. In cement, even if India increases its production ten-fold by the end of the century, it will still be less than 200 kgs. per capita against Japan's 640 kgs. at present. In paper, India needs to increase the production nine-fold by the end of the century to be able to achieve a modest per capita production of 8 kgs. against Japan's 70 kgs. today. The above examples clearly indicate the future requirement of capital equipment for production of some basic commodities. Similar situation exists in the other industries in India and the South Asian region as a whole.

3. Transport systems like roadways, railways, etc. is another area which require heavy inputs like cars, buses, trucks, rolling stock, etc. In the year 1980, there were hardly 8 cars per population of 1000 in the region. Corresponding figures for Australia, Japan and U.S.A. were 410, 203 and 555 respectively. The region had 1.479 million trucks and buses against 1.491 million, 14.196 million and 35.562 million in Australia, Japan and U.S.A. respectively. An estimate indicates that in India, even today, 50 per cent of the total passenger traffic and 25 per cent of the total freight are being transported through animal driven carts. Whatever the degree of accuracy in the above estimates, they do indicate the low level of transport facilities existing in the country. In view of above facts, India plans to expand its automobile industry. Production targets for automobile industry upto 1989-90 as fixed by the Ministry of Industry, Government of India are presented in Exhibit-77.
4. South Asian region as a whole suffers from acute power shortage in spite of low level of per capita consumption as compared to developed countries. In 1981, the region having a population of over 929 million consumed 161.14 billion KWH against 2368.22 billion KWH by U.S.A. The region needs very large inputs of electrical machinery.
5. Machine tools perform dual functions. These are needed for their own manufacture as well for the manufacture of other capital goods. But for India, other countries of the region lack in this basic facility. Even India's annual consumption amounts to only 17.5 per cent of U.S.A.'s or U.S.S.R.'s consumption.
6. From the above few examples, it can be fairly concluded that the region lacks in almost all types of capital goods and needs more of them for its rapid industrialisation.

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PRODUCTION TARGETS FOR AUTOMOBILE INDUSTRY : INDIA

(Figures in Numbers)

	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Buses & Trucks	80,000	90,000	98,000	107,000	117,000	128,000	140,000
Light Commercial Vehicles	34,000	40,000	46,000	52,000	59,000	67,000	75,000
Cars	51,000	60,000	72,000	87,000	104,000	125,000	150,000
Jeeps	20,000	30,000	33,000	36,000	30,000	42,000	45,000
Tractors	100,000	120,000	132,000	145,000	160,000	176,000	190,000
Scoters	340,000	400,000	460,000	528,000	605,000	700,000	800,000
Motor cycles	152,000	175,000	200,000	230,000	265,000	305,000	350,000
Mopeds	310,000	425,000	490,000	560,000	640,000	740,000	850,000
Three wheelers	43,000	50,000	58,000	67,000	77,000	88,000	100,000

Source : The Economic Scene, August 1, 1983.
 Tata Economic Consultancy Services, Bombay.

7. Growth rate for the manufacturing sector in each country of the region during 1960-1978 (given in Table 5.1) though impressive, was not adequate for making the country self-sufficient. The countries still import the bulk of their requirements of capital goods. The imports of non-electrical, electrical and transport equipment of each country are presented in Exhibit-78.

Table 5.1 GROWTH RATE OF MANUFACTURING
SECTOR (1960-1978)

<u>Country</u>	<u>Growth Rate (%)</u>
Afghanistan	5.6
Bangladesh	6.3
India	4.8
Iran	11.2
Nepal	...
Pakistan	6.7
Sri Lanka	7.8

Source: E/ESCAP/IHT.6/10 dt. August 23'82

8. Capital goods can be manufactured locally or can be imported from outside sources. Essentials for local manufacturing are :
- o Total market demand, both domestic and export
 - o Availability of raw materials, machine tools, technical manpower and know-how, infrastructure and financial resources in the country

It has been observed that most of the countries are lacking in the above-mentioned essentials. But for India, other countries depend on import of basic raw materials and machine tools for their requirements. Similar is the condition in case of technical manpower and know-how. Lack of infrastructure, transport and necessary capital are the other major constraints faced by the region as a whole.

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STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

IMPORTS OF CAPITAL GOODS

('000 U.S. \$)

Country	Year of Reference	Non-electrical Machinery	Electrical Machinery	Transport Equipment	Machinery & Transport Equipment
Afghanistan	1977	9210	14915	28553	52679
Bangladesh	1979	192468	90684	89205	372357
India	1979	861598	288789	312852	1463240
Iran	1977	3549204	1432498	1411944	6393646
Nepal	1980	24244	21869	26686	72798
Pakistan	1980	575429	177450	604931	1357811
Sri Lanka	1980	226454	95002	185052	506509

Source : Asian Industry in Figures, UNIDO/IS. 390 dated June 15, 1983.

9. Shortage of capital is a problem faced by all these countries. The average per capita GDP in the region in 1980 at 1975 prices is U.S. \$ 189, with a maximum of U.S. \$ 1102 in Iran and a minimum of U.S. \$ 103 in Afghanistan. Of this, 80 per cent is utilised to meet the bare necessities such as food, clothing and household items, leaving little savings for investment. The higher income group consisting of traders, landowners, etc., which could contribute to the investment, prefer to re-invest its savings in the business that produced it. Investment of capital in speculative commercial ventures which produce quick turnovers and investment in jewellery, etc. are other trends that hinder industrial capital formation.

The pattern of each country's gross domestic investments and gross domestic savings are already shown in Exhibit-60. The low gross domestic savings along with the increasing pressure of unfavourable balance of payments have induced an acute shortage of investible funds. Mobilisation of all outside sources of investment is necessary. Organisations such as the World Bank and the Asian Development Bank should extend more aid for achievement of the set target.

10. Development of facilities for manufacture of capital goods has been sub-divided into four stages.

Stage-I consists of facilities for up-keep of the existing capital goods, and shops for manufacture of necessary spares. Small foundries for remelting the worn-out parts and other scrap are available in the country. Small-scale industries for manufacture of household durables and agricultural implements are the other components of Stage-I development. Afghanistan and Nepal are included in this stage.

Stage-II comprises development of general purpose assembly plants necessary for assembly of capital goods imported in knocked down condition. This stage also envisages setting up of ancillary units so as to reduce import contents of the imported equipment. Bangladesh and Sri Lanka are in this stage of development.

Iran and Pakistan are in Stage-III of development. They should set up general engineering units comprising forging, casting, welding, machining and assembling facilities for manufacture of industrial machinery with minimum import contents.

India is in Stage-IV of development where it needs updating of its technology and expansion of its existing production capacities.

It is important to note that development of each stage is a continuous process. In fact, a particular stage surpassed by a country, needs further strengthening to cope up with the requirements of the next stage of development.

11. In general, type of capital goods, their market demand and finally turnover - capital ratio are the important factors that determine economically viable size of production units. These factors vary from country to country. In Indian industry typical turnover - capital ratios in small, large and line production industries (as presented in Exhibit-64) are 7.8, 1.5 and 1.0 respectively. The above ratios are not the parameters for comparing one type of industry with others. In fact, each type has its own area of activity and more often they complement one another.
12. Plans for future development of capital goods in each country are presented in Exhibit-79 thru 85 . These plans have been based on present production and import of capital goods, and development stage of manufacturing facilities prevalent in the country.
13. The projected turnover for these specified industries in 1990 are presented in Exhibit-86 . The figures given in this Exhibit have been computed on the basis of demand for the goods and assuming the growth rate as fixed by ESCAP. The investment required in the period 1980-1990 and the employment to be generated, are also shown in this

Exhibit. However, these investments are only for the plants manufacturing the capital goods. They do not cover the costs for setting up upstream or downstream industries or infrastructural facilities. The plan outlay for the manufacturing sector may vary between five to eight times the total gross output depending upon the infrastructural facilities existing in each country.

14. It has been observed that in most of the countries, the basic infrastructure required for rapid industrial development, such as a good transport system, availability of technical manpower, and adequate power supply have not been developed fully. Lack of basic raw materials, technology and the necessary capital, are other major constraints. In the case of India, the greatest single problem faced by the industry is the severe under-utilisation of capacities (70 per cent at present) already installed. Shortage of demand, alloy steels, infrastructural facilities, finances, and the limits set by the government policies are, to some extent, responsible for this.
15. However, India has developed a good technological base in the areas of manufacturing, design and consultancy services. India exported Rs.12.5 billion worth of engineering goods in 1981-83. Till April 1983, India had also set up 233 joint ventures in 36 developing and developed countries. This proves that India can supply the necessary technology and machinery to the other countries in the region. However, the fact that only 31 out of the total number of 233 joint ventures are in South Asia, clearly indicates the state of non-cooperation that exists among countries of this region. Pooling markets, setting up joint industry-sharing packages, and having bilateral and multilateral trade agreements within the region can help the countries achieve a concerted industrial growth.
16. Reasons for non-cooperation among the countries of the region include mutual mistrust, somewhat competitive economy, absence of local currency-payment agreement, and credits/loan/grants offered by the

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INDUSTRIES FOR DEVELOPMENT : AFGHANISTAN

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Present Production	Machine spares, bicycles	Nil	Nil
Present Import	Power Generating Machinery, Agricultural Machinery, Office Machines, Machine Tools, Textile and Leather Machinery, Paper & Printing Machines, Earthmoving Machines, Domestic Appliances.	Electrical Power Machinery, Electricity Distributing Equipment, Telecommunication Apparatus, Electronic Amusement Apparatus, Domestic Electrical Equipment, Electro-Medical Apparatus, X-Rays Apparatus, Electric lamps, valves & tubes, Electrical Machinery.	Railway Vehicles, Automobiles (four wheeler), Other Chassis with Engines, Bodies, Chassis, Frames, etc., Two Wheeler Automobiles, Bicycles, Trailers.
Present stage of development of manufacturing facilities	Stage-I	Stage-I	Stage-I

contd..

Description	Non-Electrical Machinery
Development Plans:	<ol style="list-style-type: none"> <li>1. Ancillary shops for manufacture of spares and components. <li>2. Manufacture of agricultural implements and household goods like utensils, furniture etc.

Note: Items produced and imported are not exhaustive.

EXHIBIT : 79

Electrical
Machinery

Transport
Equipment

1. Electrical repair shops.
2. Assembly of household electrical and electronic goods from imported components.

1. Repair shops.
2. Ancillary shops for manufacture of spares and parts.

only indicative

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STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

INDUSTRIES FOR DEVELOPMENT : BANGLADESH

Description	Non-Electrical Machinery	Electrical Machinery
Preventive maintenance	Stoves, Cookers, Sewing Machines, Hardware, Diesel Engines, Garden Tractors.	Electric Motors, Fans, Transformers, Switchgear, Electrical accessories and fittings.
Production	Power Generating Machinery, Nuclear Reactor, Agricultural Machinery, Office Machines, Machine Tools, Textile and Leather Machinery, Paper & Printing Machines, Rubber and Machinery, Domestic Appliances.	Electrical Power Machinery, Electricity Distributing Equipment, Telecommunication Apparatus, Electronic Amusement Apparatus, Domestic Electrical Equipments, Electro-Medical Apparatus, X-Ray Apparatus, Electric Lamps, Motors & Tubers, Electrical Machinery.
Present state of development of manufacturing industry	Stage-II	Stage-II

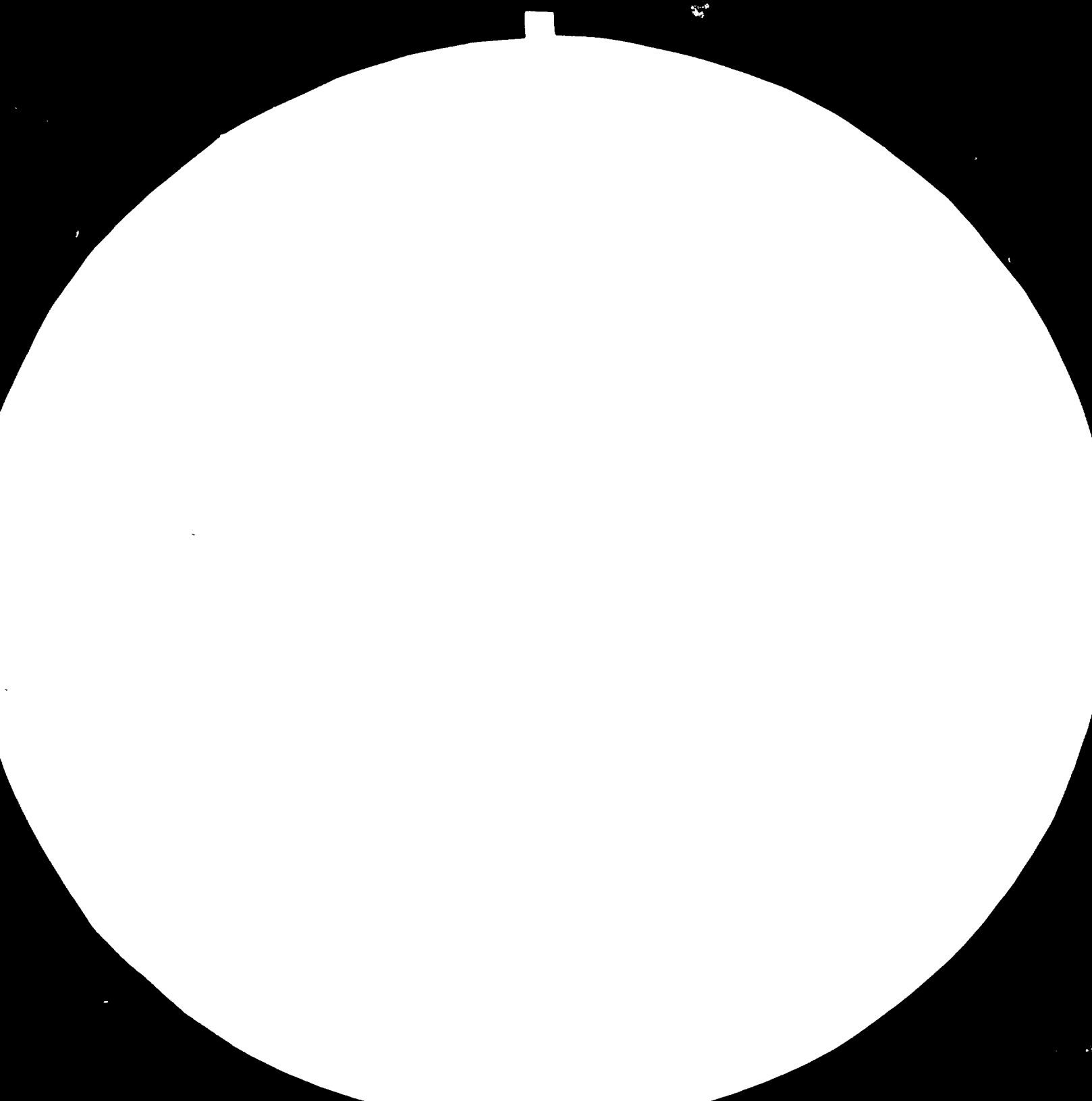
EXHIBIT : 80

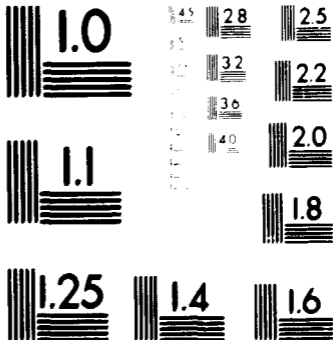
Transport
Equipment

Tankers, Railway Wagons,
Jeeps, Bicycles.

Railway Vehicles,
Automobiles (four wheeler),
other Chassis with Engines,
Bodies, Chassis, Frames
etc., Two Wheeler Auto-
mobiles, Bicycles, Tractors.

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MICROCOPY RESOLUTION TEST CHART
 NATIONAL BUREAU OF STANDARDS
 STANDARD REFERENCE MATERIAL 1010a
 (ANSI and ISO TEST CHART No. 2)

EXHIBIT : 80

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Development Plans	<ol style="list-style-type: none">1. Assembly of textile, jute, leather, paper and sugar machinery from imported components.2. Manufacture of agricultural machinery.3. Expansion of pump and I.C. engines production.4. Manufacture of domestic appliances.5. Setting up of ancillary shops.	<ol style="list-style-type: none">1. Expansion of present products.2. Assembly of electronic goods from imported components.	<ol style="list-style-type: none">1. Assembly of tractors from imported components.2. Expansion of existing industries.

Note : Items produced and imported are only indicative and not exhaustive.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
STUDY ON CAPITAL GOODS INDUSTRY IN SOUTH ASIA

INDUSTRIES FOR DEVELOPMENT : INDIA

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Present Production	Power Machines, Machine Tools, Food Processing Machinery, Packaging Machinery, Rubber Machines, Oil Mill Machinery, Dal & Flour Mill Machinery, Leather Machinery, Tobacco Machinery, Rice Mill Machinery, Biscuit & Bread Making Machinery, Textile Machinery, Metallurgical Machinery, Printing Machinery, Paper & Pulp Machinery, Earthmoving Equipment, Office Machines, Air-conditioning & Refrigeration Unit.	Power Distribution Transformers, ACC/ACSR Conductors & PVC Cables, Cells and Storage Batteries, Electronic Amusement Apparatus, Tubes & Valves, Industrial Furnaces, Lifts & Elevators.	Ship Building, Railway Wagons, Commercial Vehicles, Jeeps, Two-wheelers, Trailers, Bicycles, Three-wheelers.
Present Imports	Power Generating Machinery, Nuclear Reactors, Agricultural Machinery, Milking Machines, Machine Tools, Textile & Leather Machinery, Paper Mill Machinery, Earthmoving Equipment, Domestic Appliances, Office Machines, Heating & Cooling Equipment, Other Non-Electrical Machinery.	Electrical Power Machinery, Equipment for Distributing Electricity, Telecommunication Apparatus, Electronic Amusement Apparatus, Domestic Electrical Apparatus, Electro-Medical Apparatus, X-Ray Apparatus, Batteries &	Railway Vehicles, Railway Locomotives, Railway Passenger Cars, Four-wheeler Automobiles, Chassis with Engines, Two-wheeler Automobiles, Bicycles, Aircrafts, Ships & Boats.

contd..

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Present Imports (contd.)		Accumulators, Electric Lamps, Valves & Tubes, Electro-Mechanical Hand Tools.	
Present Stage of development of Manufacturing facilities	Stage-IV	Stage-IV	Stage-IV
Development Plans	<ol style="list-style-type: none">1. Better utilisation of existing facilities through updating and modernising the technology.2. Expansion of transport (Rail and Road) equipment manufacturing capacity.3. Expansion of Electronic goods manufacturing capacity.4. Manufacture of oil exploration and nuclear equipment.		

Note : Items produced and imported are only indicative and not exhaustive.

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INDUSTRIES FOR DEVELOPMENT : IRAN

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Present Production	Knitting Machines and Looms, Households, Air-conditioning and Refrigeration Apparatus, Pumps, Tractors.	Electronic Amusement Apparatus, Batteries & Accumulators, Electric Lamps, Electric Meters, Cables, Transformers.	Four-wheeler Automobiles, Trailers, Two-wheelers Automobiles, Bicycles.
Present Imports	Power Generating Machinery, Nuclear Reactor, Agricultural Machinery, Office Machines, Machine Tools, Textile & Leather Machinery, Paper & Printing Machines, Domestic Appliances.	Electrical Power Machinery, Electricity Distributing Equipment, Telecommunication Apparatus, Electronic Amusement Apparatus, Domestic Electrical Equipment, Electro-Medical Apparatus, X-Ray Apparatus, Electrical lamps, Valves, and Tubes, Automotive Electrical Equipment, Electrical Measuring Instruments, Electrical Machinery.	Railway Vehicles, Railway Locomotives, Railway Passenger Cars, Four-wheeler Automobiles, Other Chassis with Engines, Bodies, Chassis, Frames, etc., Two-wheeler Automobiles, Bicycles, Trailers, Invalid Carriages, Aircraft, Ships and Boats.

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EXHIBIT : 82

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Present Stage of development of Manufacturing facilities	Stage-III	Stage-III	Stage-III
Development Plans	Ancillary Industries, Expansion of Production Facilities for existing Products, Setting up of General Engineering Shops for Production of Industrial Machinery, Manufacture of Machine Tools.	Production of Household and Low and Medium Voltage Electrical Goods, Assembly of Electronic Goods.	Ancillary Industry for Reduction of Import Content in the products being made at present.

Note : Items produced and imported are only indicative and not exhaustive.

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INDUSTRIES FOR DEVELOPMENT : NEPAL

Description:	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Present Production	Agricultural Implements	Nil	Nil
Present Imports	Machinery and Parts, Office Equipment.	Radio, Transistor and Tape Recorders, Electrical Goods, Telecommunication Equipment.	Two-wheeler Automobiles, Tractor Spare Parts, Aircraft Spare Parts.
Present stage of development of Manufacturing facilities	Stage-I	Stage-I	Stage-I
Development Plans	<ol style="list-style-type: none"> 1. Ancillary shops for manufacture of spares. 2. Manufacture of agricultural implements and household utensils, furniture, etc. 	<ol style="list-style-type: none"> 1. Electrical repair shops. 2. Assembly of household electrical and electronic goods from imported components. 	<ol style="list-style-type: none"> 1. Ancillary shops for manufacture of spares. 2. Repair shops.

Note : Items produced and imported are only indicative and not exhaustive.

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INDUSTRIES FOR DEVELOPMENT : PAKISTAN

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Present Production	Sewing Machines, Agricultural Machinery and Implements, Sugar, textile, rice husking, grain milling machinery, Diesel Engines, Pumps and Compressors, Hand Tools and Machine Tools, Agricultural Tractors.	Gramophone Records, Electric Lamps, Transformers, Switch-gear, Electric Motors, Electric Wire and Cables, Electric Fans, Storage Batteries & Cells, Radios, Electric Accessories and Appliances.	Other Sea-going merchant Vessels, Launches, Passenger Cars, Buses & Motor Coaches, Lorries, Bicycles, Trucks.
Present Imports	Power Generating Machinery, Nuclear Reactors, Agricultural Machinery, Milking Machines, Office Machines, Machine Tools, Textile & Leather, Machinery, Paper Mill Machinery, Earthmoving Equipment, Heating & Cooling Equipment, Domestic Appliances, Other Non-Electrical Machines.	Electrical Power Machinery, Equipment for Distributing Electricity, Telecommunication Apparatus, Electronic Amusement Apparatus, Domestic Electrical Equipment, Electro-Medical Apparatus, X-ray Apparatus, Batteries & Accumulators, Electric Lamps, Valves & Turbines, Electro-Mechanical Hand tools.	Railway vehicles, Railway Locomotive, Railway Passenger Cars, Four wheeler automobiles, Chassis with engines, Two wheeler automobiles, Bicycles, Trailers, Aircraft, Airships, Ships and Boats.
Present stage of development of manufacturing facilities	Stage-III	Stage-III	Stage-III

EXHIBIT : 84

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Development Plans	<ol style="list-style-type: none">1. Ancillary Industries.2. Expansion of production facilities for existing products.3. Manufacturing of large machine tools,4. Agricultural tractors.5. Fertiliser machinery.	<ol style="list-style-type: none">1. Production of household and low and medium voltage electric power equipment.2. Assembly of electronic goods.	<ol style="list-style-type: none">1. Ancillary industry for import substitution (for products being assembled at present).

Note : Items produced and imported are only indicative and not exhaustive.

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INDUSTRIES FOR DEVELOPMENT : SRI LANKA

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Present Production	Stoves, Cookers, Sewing Machines, Freezers, Domestic Refrigerators, Pumps.	Radios, Batteries, Cells and Accumulators, Electrical Lamps.	Railway Goods Wagons & Vans, Rail Passenger Carriages, Buses, Motor Coaches, Trailers, Motor Cycles, Scooters, Bicycles, Perambulators and Push Chairs.
Present Imports	Power Generating Machinery, Nuclear Reactor, Internal Combustion Engines, Agricultural Machinery, Office Machines, Machine Tools, Textile and Leather Machinery, Paper & Printing Machines, Earthmoving Machines, Domestic Appliances, Mining & Construction Machinery.	Electrical Power Machinery, Electricity Distributing Equipment, Telecommunication Apparatus, Electronic Amusement Apparatus, Domestic Electrical Equipment, Electro-Medical Apparatus, X-Rays Apparatus, Electrical Lamps, Valves, and Tubes, Automotive Electrical Equipment.	Bicycles, Trailers, Invalid Carriages, Aircraft, Ships & Boats, Railway Vehicles & Locomotives, Railway Passenger Cars, Four-wheelers Automobiles, Two-wheeler Automobiles, Other Chassis with Engines, Bodies, etc.
Present stage of development of Manufacturing Facilities.	Stage-II	Stage-II	Stage-II

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EXHIBIT : 85

Description	Non-Electrical Machinery	Electrical Machinery	Transport Equipment
Development Plans	<ol style="list-style-type: none">1. Setting up of ancillary shops for manufacture of spares and components.2. Assembly of tea, coffee, and rubber machinery from imported components.3. Manufacture of agricultural machinery.4. Expansion of production facilities for existing products.	<ol style="list-style-type: none">1. Manufacture of household and low voltage electrical goods.2. Assembly of power machinery from imported components.3. Assembly of electronic goods from imported components.	<ol style="list-style-type: none">1. Ancillary shops2. Expansion of production facilities for existing products.

Note : Items produced and imported are only indicative and not exhaustive.

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PROJECTED TURNOVER AND INVESTMENT - CAPITAL GOODS SECTOR

Country	Unit	382		383		384		Increase in employment in these industries 1980-1990
		Increase in turn- over 1980-1990	Investment 1980-1990	Increase in turn- over 1980-1990	Investment 1980-1990	Increase in turn- over 1980-1990	Investment 1980-1990	
Afghanistan ^a	Billion Afghanis (1965 prices)	256 ^b	91 ^b	...	...	...	...	1,000,000 ^b
Bangladesh	Million Taka (1979 prices)	219 ^b	109 ^b	992 ^b	496 ^b	522 ^b	261 ^b	19,820 ^b
India	Billion Rs. (1978 prices)	50 ^c	33.8 ^c	40 ^c	27 ^c	40 ^c	27 ^c	2,000,000 ^c
Iran	Million U.S. Dollars (1979 prices)	612 ^b	306 ^b	1595 ^b	798 ^b	1812 ^b	906 ^b	130,000 ^b
Nepal	Billion Rs. (1976-77 prices)	7.5	3.2	...	...	...	...	200,000
Pakistan	Million U.S. Dollars (1976 prices)	160	110	166	110	300	200	95,000
Sri Lanka	Million Rs. (1979 prices)	105 ^b	53 ^b	459 ^b	230 ^b	348 ^b	174 ^b	9,200 ^b

a : Figures refer to whole industrial sector
c : Figures are for the period 1978-1990

b : Figures are for the period 1979-1990

developed countries against sale of capital goods manufactured by them. A constraint which plays an important role for non-cooperation is that most of the industries set up in various countries are in collaboration with the developed countries and the collaborator insists on the equipment made in his country.

17. Most of the countries studied, follow a policy of mixed economy. Industry is normally demarcated into the public and private sectors. The public sector industries are managed by state sponsored corporations. Heavy industries, industries crucial to the economy, such as petrochemicals, power generation, air and rail transport systems, and services relating to public welfare such as banking and insurance, are normally controlled by the state. These industries are by nature, capital-intensive and often the private sector cannot generate the necessary capital. The governments, however, encourage certain types of private industries by offering taxation incentives as well as differential rates of import duties. Policies and measures are introduced for promoting dispersal of industries so as to ensure balanced regional development in each country.

