OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

14969

Distr.
LIMITED
UNIDO/IS.547
5 July 1985
ENGLISH

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

INDUSTRIAL DEVELOPMENT REVIEW SERIES

INDIA

Prepared by the
Regional and Country Studies Branch
Division for Industrial Studies

Preface

Within the framework of UNIDO country surveys and studies, a series of industrial development reviews on developing countries is prepared by the Regional and Country Studies Branch of the Division for Industrial Studies.

The reviews provide a general survey and brief analysis of each country's industrial development, both as a service to those within UNIDO and other international agencies concerned with industrial policy, planning, project development and implementation, and as a ready source of information for Governments. It is hoped that the reviews will prove useful as well to financial and industrial enterprises, both public and private, to research institutes and to aid agencies in developed countries. The reviews also aim at providing a basis for undertaking in-depth studies of specific aspects of industrial policies, strategies and programmes in the developing countries and at providing a basis for informed discussion and analyses of industrial development trends and policies.

The reviews draw on information provided by the UNIDO data base, material available from national and international statistical publications, and other sources. While up-to-date national statistics are not always available on every aspect of industrial development, the reviews will be updated periodically and efforts are being made to improve the UNIDO data base and to monitor industrial progress and changes in industrial policy on a regular basis.

The present review was prepared towards the end of April 1985 on the basis of information available at UNIDO headquarters. It is divided into two rather distinct parts. Chapters 1 and 2 are analytical in character, giving first a brief overview of the country's economy and its manufacturing sector and then a more detailed review of the structure and development of its manufacturing industries. Chapters 3 and 4 contain various kinds of reference material - which it is hoped will be useful to readers - on national plans and policy statements relevant to industrial development, on the country's

natural, human and financial resources for industrial development and on the more important governmental and other institutions involved in industrial development. It also contains relevant basic indicators, graphical presentation of manufacturing trends as well as a statistical annex and various appendices.

It should be noted that the reviews are not official statements of intention or policy by Governments or by UNIDO, nor do they represent an official assessment by UNIDO of industrial development in the countries concerned. Readers are invited to comment on the findings and analyses, and thereby assist UNIDO in improving and updating the reviews.

CONTENTS

LIST OF TABLES

Page

LIST OF ANNEX TABLES

EXPLANATORY NOTES

Regional classifications, industrial classifications, trade classifications and symbols used in the statistical tables of this report, unless otherwise indicated, follow those adopted in the United Nations Statistical Yearbook.

Dates divided by a slash (1970/71) indicate a crop year or a financial year. Dates divided by a hyphen (1970-71) indicate the full period, including the beginning and end years.

References to dollars ($) are to United States dollars, unless otherwise stated.

The Indian usage "crore" signifies ten million units.

The term "lakh" signifies one hundred thousand units.

The Indian fiscal year covers the period from April 1 to March 31.

In tables:

Three dots (...) indicate that data are not available or are not separately reported;
A dash (-) indicates that the amount is nil or negligible;
A blank indicates that the item is not applicable;
One dot (.) indicates that there is insufficient data from which to calculate the figure.
Totals may not add precisely because of rounding.

The following abbreviations are used in this document:

CPDCs	Centrally Planned Developed Countries
CSIR	Council of Scientific and Industrial Research
EEC	European Economic Community
GDP	gross domestic product
ICICI	Industrial Credit and Investment Corporation of India
ICOR	incremental capital/output ratio
IDBI	Industrial Development Bank of India
IFCI	Industrial Finance Corporation of India
IRCI	Industrial Refinance Corporation of India
ISIC	International Standard Industrial Classification
MIC	Methyl Isocyanate
MVA	manufacturing value added
NICs	Newly Industrializing Countries
NIDC	National Industrial Development Corporation
NPC	National Productivity Council
NRDC	National Research and Development Corporation
OPEC	Organization of Petroleum Exporting Countries
SAIL	Steel Authority of India Ltd.
SITC	Standard International Trade Classification
SARCO	South Asian Regional Co-operation Organization
UTI	Unit Trust of India

THIS REPORT IS BASED ON INFORMATION AVAILABLE AS AT APRIL 1985.

BASIC INDICATORS 1
The economy

GDP at market prices (1983/84): $189,810 million

Population: Total (mid-1984): 738 million

Labour force a/ (million persons):

Total	Agriculture	Industry	Service
244.6	172.7	31.6	40.3

GNP per capita (1984): $260

Average annual growth rate of population (per cent):

1970-82	1980-2000 (projected)
2.3	1.9

Structure of production (percentage share):

	1960/61	1970/71	1983/84
Agriculture	50.1	47.2	36.1
Industry	15.2	15.2	18.2
Manufacturing	14.2	14.2	14.9
Services	34.7	37.3	45.7

Average annual growth rate of GDP (per cent):

1960-70	1970-78	1979/80	1980/81	1981/82
2.9	3.6	-5.3	7.8	5.2

1982/83	1983/84	1984/85
2.0	7.4	4.5

Rate of inflation (per cent):

1970-82	1983/84	1984/85
3.5	12.7	4.6

Exchange rate (Rupee equivalents to $1):

June 1966-Dec. 1971	Dec. 1971-June 1972
7.50	7.25

March 1984	March 1985
10.729	12.35

a/ Total labour force and percentage breakdown from 1981 Census. Excludes data for Assam.

BASIC INDICATORS 2

Resources and transport infrastructure

Resources	
Cash crops (1983/84)	Foodgrains 151.6 million tons, Sugarcane 58.89 lakh tons, Cotton 75 lakh bales
Livestock (millions, 1979):	Cattle (182), Buffaloes (61), Sheep (41), Chicken (145), Goats (71)
Fisheries total production (1979):	2.343 million tons
Forests	63 million hectares 20.5 per cent of total area
Mining (1983) (millions of tons):	Coal (134), iron ore (38), manganese (1.3), copper (24.7)a/ dolomite (2.1)
Energy production (1983) (millions of tons):	Crude petroleum (25.1), natural gas (130), electricity (139)
share of total consumption:	80 per cent a/
Transport	
Roads:	530,000 km. total, of which 25,000 km. national highways
Railways:	77,000 km.
Major Ports:	East: Calcutta, Paradip, Visakapatnam, Madras West: Kandla, Bombay, Mormugao, Cochin
International Airports:	Bombay, Calcutta, New Delhi, Madras

a/ 1981/82.

BASIC INDICATORS 3

Foreign trade and balance of payments

Exports (1982):					
Total value:	$8,446 million				
Main goods:	Handicrafts, engineering goods, cotton apparel, leather and leather manufactures, jute manufactures, tea				
Main destinations:	USSR, USA, Japan, EEC, OPEC, Eastern Europe				
Imports (1982):					
Total value:	$14,088 million				
Main goods:	Petroleum and products, chemicals (fertilizers), iron, steel				
Main sources:	USA, USSR, Japan, OPEC, EEC, Eastern Europe				
Balance on current account: ($ million)	1981/82	1982/83	1983/84[a]	1984/85[a]	
	-3,113	-2,863	-2,521	-2,533	
External public debt: (March 1984)	$21.5 billion[b]				
Debt service (as per cent of goods and services exported):	1974	1980	1982	1984	
	17.3	8.6	9.0	12.0	
Foreign currency reserves: (1984/85)	$6,150 million				

a/ Estimated.
b/ Outstanding and disbursed.

BASIC INDICATORS 4

The manufacturing sector

Manufacturing value added (1981):	$19,629 million		
MVA per capita (1981):	$27		
Average annual growth of MVA (per cent):	1960-80	1980/81	1981/82
	4.5	1.7	3.8
	1982/83	1983/84	1984/85
	1.7	5.0	5.5
Employment in manufacturing (1982) (organized sector):	6.263 million		
as per cent of total labour force:	2.6 per cent		
Small-scale and rural industries:	23.6 million (estimate)		
Structure of production (per cent):	1972	1982	
Mainly consumer goods	37.3	33.8	
Mainly intermediate goods	21.1	23.0	
Mainly capital and durable goods	29.5	35.7	
Other manufactures (unallocated)	12.1	7.5	
Trade in manufactures[a/] (1980)			
Total value - Exports:	$4,404.3 million		
- Imports:	$5,346.9 million		
Share of manufactures[a/] (1980)			
- in total exports:	58.64 per cent		
- in total imports:	38.69 per cent		

a/ SITC 5-8 less 68.

BASIC INDICATORS 5
Trade in manufactured goods

In 1980

MANUFACTURED EXPORTS[a/] total value: $4,404.3 million

Principal manufactured exports	$ million	Destination (in per cent)				
		Developing countries	Developed market countries			Centrally planned developed countries
			EEC	USA	Japan	
Textiles, yarns, fabrics, etc.	1,140	20.70	31.32	12.16	1.83	22.98
Non-metallic mineral manufactures	630	16.74	25.40	30.47	10.76	1.15
Machinery and transport equipment	622	76.94	6.44	3.91	0.10	8.68
Clothing	589	6.40	41.83	17.93	2.21	20.46
Chemicals	314	28.14	15.33	6.03	2.53	44.67

MANUFACTURED IMPORTS[a/] total value: $5,346.9 million

Principal manufactured imports [b/]	$ million	Origin (in per cent)				
		Developing countries	Developed market countries			Centrally planned developed countries
			EEC	USA	Japan	
Petroleum products	2,238[c/]	...	...	...	...	...
Non-electrical machinery	965	1.23	49.66	17.37	11.21	10.88
Iron and steel	841	7.46	36.98	6.85	29.81	7.31
Non-metallic mineral manufacture	692	21.83	67.91	1.83	1.61	0.36
Fertilizers	658	15.24	26.91	29.17	0.30	14.93

a/ SITC 5-8 less 68.
b/ Up-dated figures on the composition of merchandise exports are presented in Annex Table 8.
c/ Sources of petroleum imports are unspecified.

BASIC INDICATORS 6

Inter-country comparison of selected indicators

	Unit	Bangladesh	China, P.R.	India	Pakistan	Sri Lanka
I. Demographic indicators						
Population (mid-1983)	millions	95.5	1,019.1	733.3	89.7	15.4
Population growth (1973-83)	per cent per annum	2.4	1.5	2.3	3.0	1.7
Infant mortality (1983)	per 1000	132	38	93	119	37
Area	'000 km^2	144	9,561	3,285	804	66
Density (1983)	persons per km^2	663	107	222	111	233
II. Economic indicators						
GDP (1983)	$ billion	10.6	274.6	168.2	25.8	4.8
GDP per capita (1983)	$	110	269	229	288	312
GDP growth (1973-83)	per cent per annum	5.2	6.0	4.0	5.6	5.2
Agriculture (1983)	per cent of GDP	47	37	36	27	27
Industry (1983)	per cent of GDP	16	45	26	27	26
Manufac-turing (1983)	per cent of GDP	11	...	15	19	14
Services (1983)	per cent of GDP	36	18	38	46	47
Exports of goods and non-factor services (1983)	per cent of GDP	8	9	6	13	26
Gross domestic investment (1983)	per cent of GDP	17	31	25	17	29
External public debt (1983)	per cent of GNP	37.7	...	11.2	31.3	43.7
III. Industrial indicators						
MVA (1982)	million $ at constant 1975 prices	1,294	83,400	16,210	2,967	748
Share of MVA in GDP (1983)	per cent	11	35	15	19	14
Growth of MVA (1973-83)	Average annual per cent	10.4a/	9b/	4.2	7.0	3.4
MVA share in world manufacturing value added (1981)	per cent	0.04	3.8	0.91	0.17	0.05
Share of manufactured exports in total exports (1982)c/	per cent	65d/	55	56.1e/	57.9	21.5

a/ 1970-81.
b/ Gross industrial output, 1971-80.
c/ SITC 5-8 less (67 + 68).
d/ SITC 5-8 less 68.
e/ 1980.

EXECUTIVE SUMMARY

The Indian economy is passing through a healthy recovery phase characterised by a spurt in agricultural output and a rise in industrial production in recent years. A new breakthrough in foodgrains production has helped the economy rebound well from sharp setbacks in 1979 and 1982/83. Though the Sixth Plan (1979/80-1984/85) started from a low base the targeted average annual GDP growth rate of 5.2 per cent has been met.

The Indian manufacturing sector is the third largest in the developing world after Brazil and Mexico. It is among the most diversified and capable of providing a large proportion of its input needs and of exporting capital goods to other developing countries. Its share in GDP has however remained fairly stable at about 15 per cent over the period 1950-84.

Manufacturing has grown at a rate of 4.5 per cent annually during 1960-80. Manufacturing growth during the Sixth Plan period is expected to average around 5-6 per cent. Capacity utilization has remained low in many manufacturing branches and the capital-output ratio has risen in a wide range of industrial branches indicating a fall in productivity. There are, however, clear indications of marked recovery in 1984/85, when manufacturing grew by 5.5 per cent. Structural changes within the manufacturing sector have led to a relative decline in consumer goods and a rise in the importance of engineering and capital goods.

Major factors impeding growth in Indian manufacturing have been lack of demand and shortages of infrastructural facilities. There has been slow growth in industrial demand despite two successive bumper crops in recent years. Recent increase in rural income and public expenditure is yet to be reflected in expanded demand for manufactured goods. Moreover, the past policy environment has to some extent impeded competition and affected productivity and growth.

The manufacturing sector can be subdivided into three categories: a large- and medium-scale component containing the bulk of the public

industrial enterprises and giant private sector firms; a small-scale manufacturing sector and a mass of cottage industries, employing approximately four times as many people as the large-scale sector; a small but dynamic group of modern small-scale firms is also emerging and may have an important role to play in some key manufacturing branches, particularly in electronics.

One characteristic of the manufacturing sector has been the emphasis on import substitution over export production. Yet manufactured goods constitute roughly 60 per cent of total exports and about a third of manufactured exports is exported to developing countries. India is among the most important developing country suppliers of capital goods and technology exports. India has developed a competitive position in some intermediate and light capital equipment while maintaining her advantage in many consumer goods export lines. Despite rapid growth of heavy industrial complexes, India's relative international comparative advantage remains in tea, leather, made-up articles and cotton fabrics. Accelerated growth in manufactured exports is required to meet India's debt servicing needs which are expected to increase substantially in the second half of the 1980s.

The Indian Government has taken a number of steps to revitalise manufacturing production and exports. The first budget (1985/86) of the new Government, presented to the Parliament on 16 March 1985, spells out a policy package for improved productivity, absorption of modern know-how, fuller utilisation of technology, stimulation of the private industrial sector, unfettered expansion of a number of industries as well as increased linkages between public and private enterprises and stronger nexus to small industry development. The major thrust of the budget is towards improvement of the environment for industrial growth through relaxation of controls, liberalization and modernisation. The budget focusses special attention on high technology industry, particularly on electronics. Taxes have been reduced, import restrictions have been liberalised and licensing procedures have been simplified. Concessions given to firms located in the free-trade zones have been increased and

projects which can attract foreign financing have been stimulated. Investment from non-resident Indians is encouraged. Increases in commercial borrowing are compensating for stagnant concessional aid flows. A fresh impetus to export-oriented industries is also envisaged.

The prospects for a revival in the manufacturing sector are good. The tentative target for industrial growth in the Seventh Plan (1985/86-1989/90) is 7 per cent per annum and the target for GDP growth is likely to be 5 per cent per annum. The manufacturing sector is thus expected to play a greater role in the growth and structural transformation of the Indian economy. The achievement of this target depends upon a relaxation of energy and transport constraints, an improvement in industrial relations, a revitalisation of industrial demand, and an effective implementation of industrial restructuring, trade and industrial policies.

Efforts to improve industrial productivity and export performance would need to be balanced by a corresponding commitment to preserve and strengthen the basic industries and enhance their capacity to sustain diversified technological development in India. The Government has initiated measures towards the liberalization of the economy in order to deal with problems of low productivity and capital utilisation shortfalls. This would, it is envisaged, lead to improved efficiency by stimulating competition.

Priority would also need to be accorded to the generation of more manufacturing employment - India has a 10 per cent urban unemployment rate and this is expected to rise in the next decade - and to increase the integration of Indian large- and small-scale manufacturing sectors. Increasing links with the small-scale sector will facilitate a more intensive utilisation of India's abundant natural resource base and will also stimulate aggregate demand. Demand may also be stimulated by strengthening industry's links with agriculture.

1. THE INDIAN ECONOMY

1.1 Recent economic trends

The performance of the Indian economy has been impressive in recent years. The targeted average annual growth rate of 5.2 per cent during the Sixth Plan period (1979/80-1984/85) has been achieved. Given the international background of recession, poor trends in commodity prices, high interest rates, volatile exchange rates and increased protectionism which blocked the growth prospects of many countries since 1979, recent growth of the Indian economy has been all the more noteworthy. The economy maintained a healthy growth momentum during the fiscal years 1983/84 and 1984/85, but the industrial sector is yet to quicken its pace. The economy greatly benefited from favourable agricultural performance. Two succesive bumper crops have helped the economy recover from recessionary trends which occurred in 1979. There has been a spurt in the production of foodgrains in 1983/84 to 151.6 million tonnes from 128.4 million tonnes in 1982/83. The output of foodgrains is likely to increase further in 1984/85. The rate of inflation has declined from 12.7 per cent in 1983/84 to only 4.6 per cent in 1984/85.

The trends in the balance of payments and foreign trade position since the late 1970s have been viewed with some concern. Since 1979/80 the balance of trade deficit has assumed significant proportions. The trade deficit has exceeded $ 5.6 billion each year since 1980/81, while the deficit on the current account has surpassed $ 2.5 billion annually since that year. Though imports have generally grown faster than exports during 1979-84 the export performance has improved in the last few years and surpassed that of imports. Despite increase in exports during 1984/85, the trade deficit is estimated at $ 5.8 billion, slightly higher than in the previous year. Although foreign exchange reserves remain high, foreign financing requirements continue to grow rapidly - the debt-service ratio stood at about 15 per cent in 1985. An acceleration in the growth of exports is seen as essential for improving the balance of payments and trade position.

The performance of the manufacturing sector has tended to lag behind that of agriculture since 1983. Industrial production grew at a rate of 4.3 per cent during 1983/84 but there are signs of accelerated industrial growth during 1984/85. The 1984/85 Annual Review of the Economy, presented prior to the budget, notes that "industrial performance remains below expectations and fresh initiatives are clearly necessary to spur dynamism in this sector". Improving industrial productivity is an important target of the Seventh Five-year Plan (1985/86-1989/90)[1/] which assumes that capital-output ratio will be reduced from 5.65 to 5.04. This is to be achieved by encouraging the acquisition of foreign technology in India's leading industries, particularly computers and telecommunication, relaxing licensing and other direct controls and by permitting industrial operations which benefit from economies of scale.

Economic liberalisation has been an important feature of the budgets for 1984/85 and 1985/86. The personal income tax rate had been cut by 15 per cent in the 1984/85 budget. The 1985/86 budget raised the exemption limit on the payments of income tax. It abolished export duty on 12 items. Major concessions have been announced for the computer industry. Computers are to be fully exempt from excise duty, and import duty on major computer components has been reduced from 75 per cent to 25 per cent. Excise duty on intermediate goods - particularly cement and petroleum products - has been raised in the 1985/86 budget. The budget announced concessions for small-scale industries and the textile industry. It raised investment ceilings and reduced licensing requirements for a broad range of industrial activities. The 1985/86 budget shows an overall deficit of Rs. 33.49 billion which is lower than the actual deficit incurred during the previous financial year.

The Seventh Five-year Plan envisages an overall deficit of Rs. 100 billion during its period of operation. It expects a substantial increase in private sector investment - targeted at Rs. 650 billion - a rise in foreign capital inflow (mainly in the form of increased collaboration with private investors) and a substantial improvement in public enterprise performance and profitability. The Plan assumes an average annual growth of more than 5 per cent in GDP, and 7 per cent in industry, mainly manufacturing. If these

---

1/ Discussed in Section 3.1.

expectations are realised and major Plan targets achieved, the second half of the 1980s will see important structural changes in the Indian economy.

1.2 Economic structure

India has a per capita income of about $260 (1982 prices) and a population in excess of 740 million people. Since independence the country has experimented with a wide range of economic policies to accelerate the pace of development.

During the first 25 years after independence (1947) GDP grew at an annual average rate of a little over 3 per cent - however, real per capita GDP growth was only about 1.3 per cent. Growth rates picked up in the second half of the 1970s and, as noted earlier, the growth performance of the Indian economy has improved during the 1980s despite adverse international circumstances.

Growth has been accompanied by substantial structural change. The share of the service sector in GDP has more than doubled from 21.8 per cent in 1950/51 to 45.7 per cent in 1983/84 (Table 1). Agriculture's GDP share has declined from 62.2 per cent to 36.1 per cent over the same period. The share of manufacturing increased from 15.3 per cent in 1950/51 to 17.1 per cent in 1980/81. It subsequently declined to 14.9 per cent by 1983/84. The manufacturing sector grew at a higher rate than all other sectors during the period 1950/51 to 1980/81. Table 1 shows that between 1980/81 and 1983/84 growth of the manufacturing sector was lagging behind that of agriculture which experienced record growth rates of 12.1 per cent in 1980/81 and 9.3 per cent in 1983/84.

Changes in the structure of production have been accompanied by corresponding changes in investment and saving patterns (Table 2). Over the period 1972/73 to 1983/84 gross national savings as a ratio of GNP increased by more than 27 per cent. They represented 18 per cent of GNP in 1972/73 but had risen to almost 23 per cent by 1982/84. Gross capital formation rose more rapidly - from 18.7 per cent to 24.5 per cent over the same period. The share of the public sector in gross national savings increased from 16.7 per cent over 1972-74 to 19.3 per cent over 1982-84. Its share in gross capital formation rose from 41.8 per cent to 47.7 per cent over 1982-84. India's ability to increase the rate of domestic resource mobilisation has been an

Table 1. Sectoral origin and growth of GDP, 1950/51 - 1983/84

Sector	GDP by sector of origin (per cent)[a/]								Annual average growth rate (per cent)[b/]						
	1950/51	1960/61	1970/71	1975/76	1980/81	1981/82	1982/83	1983/84	1950/51-1980/81	1970/71-1980/81	1978/79-1979/80	1979/80-1980/81	1980/81-1981/82	1981/82-1982/83	1982/83-1983/84
Agriculture	62.2	50.1	47.5	42.0	37.2	35.9	34.2	36.1	2.2	1.6	-12.5	12.1	3.9	-3.2	9.3
Manufacturing	15.3	14.2	14.2	15.6	17.1	16.5	15.8	14.9	5.1	4.2	-1.9	1.7	3.8	1.7	5.0
Mining and quarrying	0.7	1.0	1.0	1.3	1.6	2.4	3.1	3.3	4.9	3.75	0.76	3.6	11.2	14.2	10.2
Services	21.8	34.7	37.3	41.1	44.1	45.2	46.9	45.7	4.8	5.1	2.4	6.5	7.3	6.4	7.4
GDP	100	100	100	100	100	100	100	100	3.6	3.2	-5.3	7.8	5.2	2.0	7.4

Source: World Bank, India: Structural Change and Development Perspectives, April 1985, Volume II: Statistical Appendix (calculated from Tables 2.2a and b), Report No. 5593-IN.

a/ Based on billions of current Indian rupees.
b/ Derived from billions of Indian rupees at 1970/71 prices.

Table 2. Savings and investments (per cent of GNP) - two-year average, 1972/73-1983/84

	1972/73-1973/74	1974/75-1975/76	1976/77-1977/78	1978/79-1979/80	1980/81-1981/82	1982/83-1983/84
Gross national savings						
Households	13.2	13.3	15.9	17.3	16.3	16.4
Private corporate sector	1.7	1.7	1.4	1.9	1.9	1.8
Public sector	3.0	4.2	5.0	4.7	4.3	4.6
Total	17.9	19.2	22.3	23.9	22.5	22.8
Foreign savings (current account deficit)	0.4	1.5	-0.8	-	1.9	1.6
Total available savings	18.3	20.7	21.5	23.9	24.4	24.4
Statistical discrepancy	0.4	0.9	-	-	0.1	0.1
Gross capital formation	18.7	21.6	21.5	23.9	24.5	24.5
of which:						
Change in stocks: Private	1.8	2.3	1.5	3.1	2.8	2.6
Public	0.7	2.4	0.8	1.5	1.9	0.9
Fixed capital formation: Private	9.0	10.0	10.5	10.4	10.3	10.2
Public	7.2	6.9	8.7	8.9	9.5	10.8
Memo items						
Private consumption	73.3	73.0	68.7	68.9	68.6	67.3
Public consumption	9.3	9.4	9.9	9.9	10.1	10.7
Gross capital formation (constant 1970/71 prices)	19.6	20.7	20.4	21.8	21.5	20.3

Source: World Bank, India: Structural Change and Development Perspectives, April 1985.

important factor enabling her to circumvent pressure from the increased cost of imports - specially oil - and the general deterioration in the international environment which inhibited the growth prospects of many other developing countries.

Indian policy-makers had since the beginning of the 1950s placed emphasis on the need to achieve a rapid increase in the rate of domestic capital formation and national savings. This had been a key objective of the national development plans formulated in the 1950s. It had then been argued that the rapid growth of a state-financed and state-owned capital goods sector was essential to achieving a rapid and sustained increase in the national rate of accumulation. This strategy continued to dominate Indian economic policy throughout the 1960s and 1970s. After the difficulties experienced over 1979-81 a shift of emphasis has occured and greater emphasis is being placed on stimulating private sector initiatives. This, it is believed is necessary to increase the rate of technological improvisation and adoption and to improve efficiency particularly within the manufacturing sector. The execution of such an economic strategy also requires a greater emphasis on restructuring industrial production in accordance with India's dynamic comparative advantage within the international economy. In recent years, policy-makers have emphasized the need to expand exports - which currently equal only about 6 per cent of GDP - and to reduce the import substituting orientation of the manufacturing sector.

1.3 The manufacturing sector: overview and recent trends[1/]

During the Fifth Plan period (1974/75-78/79), growth of MVA averaged 6 per cent annually, in spite of shortfalls in various types of raw materials and inadequate supplies of coal, rail transport and power. In 1979/80, MVA declined by -1.9 per cent due to acute problems in key infrastructure and

---

1/ The manufacturing sector consists of large-, medium- and small-scale enterprises. For analytical convenience, small-scale enterprises are classified into cottage or household industry, crafts or handicrafts and other non-household industrial activities. The phrase "small industries" is used synonymously with small enterprises of non-household type. Unless otherwise indicated the analyses and data contained in this document refe. to large-, medium- and small-scale industries in the organized sector.

severe drought, which reduced supply of agricultural inputs and demand for industrial output.

Over the period 1980-83 industrial output rose at an annual average rate of 5.0 per cent, well below target of 8-10 per cent envisaged in the Sixth Five-year Plan. In 1983/84 the manufacturing sector registered a fairly impressive growth of 5 per cent as against 3.8 per cent in 1981/82 and 1.7 per cent in 1982/83. Production has fallen in steel and ingots, jute, textiles, aluminium and caustic soda. Recessionary trends, problems of power shortage and industrial unrest prevented an increase in production.

In fiscal year 1984/85 manufacturing production rose by 5.5 per cent, production capacity increased by 6 per cent and the capacity utilization rate fell slightly to 74.0 per cent from 74.6 per cent in the previous year. Strong performance was recorded in the engineering and capital goods industries.

The textile industry as a whole is at the cross-roads. Growth of value added in textiles averaged only 1.3 per cent annually from 1970 to 1982, resulting in a decline in the share in total MVA from 16.3 per cent to 12.1 per cent during this period. Though an unprecedented textile strike in Bombay was one of the main reasons for the declining trend, the demand constrain' was pronounced and even mills outside Bombay accumulated unsold stocks. Modernization of the textile industry looms as a challenge. New textile policies are being formulated by the Government to speed up modernisation and increase productivity in the sector which employs over 9 million people and which is the world's largest after the People's Republic of China.

One manufacturing subsector facing continuing difficulties is steel. Capacity utilisation is barely 50 per cent and unsold stocks remain high. However, production has recovered in 1984 - a growth rate of 8 per cent has been achieved against a 10 per cent fall in production in the previous year. The output of raw steel is expected to be around 12.5 million tonnes in 1985 as against 10.2 and 10.5 million tonnes in 1983 and 1984 respectively. Capacity utilization rates in 1985 also compares favourably with the performance in 1983 and 1984. The Steel Authority of India (SAIL) has shown better resilience during 1984 by achieving a growth rate of 6.2 per cent over

the previous year. The SAIL plants are expected to achieve an aggregate production of 5.41 million tons of steel in 1984-85.

The Government is emphasizing the development of the fertilizer indus in the current fiscal year. A pipeline covering 1800 km for bringing natural gas for fertilizer production has been sanctioned. It will cost $1.7 billion and will be constructed over a period of 5 years. Other fertilizer plants are to be established with the help of Japanese and Arab financing in the Seventh Plan period.

Foreign collaboration has also been sought for the development of computer and telecommunication units. Electronics is to be regarded as a key manufacturing sector during the Seventh Plan period. Total production in the electronics industry during 1984 grew by 6 per cent from the 1983 level. Investment by the Ministry of Communications is to increase fivefold over 1985/86-89/90.

Another industrial branch which made significant progress during 1984 was cement. Output is expected to rise by as much as 20 per cent during this year. Expansion is also envisaged in aluminium production. Detailed plans have been drawn up for modernisation of the motor industry in collaboration with Japanese firms.

Finally, it may be noted that 1982/83 and 1983/84 have been relatively good years for the rural and small industries. Output growth has been about 7 per cent. This sector provides about 20 per cent of total exports and employs around 7.5 million persons.

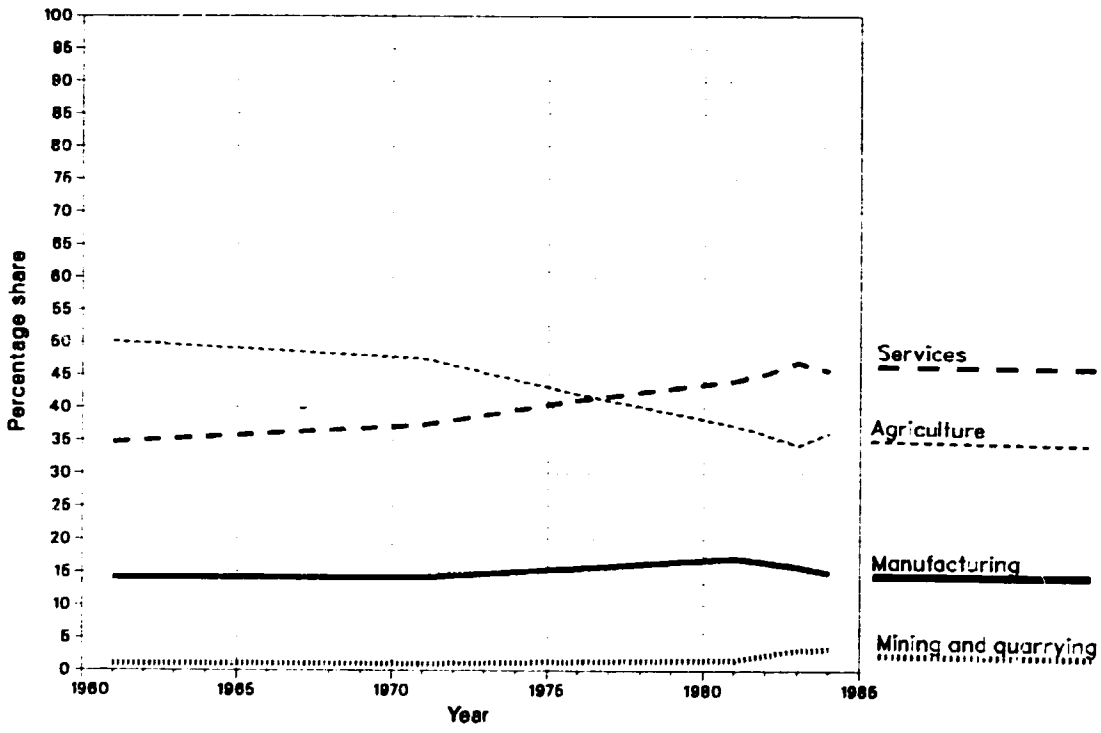
The gas-based industrial units are passing through a crucial phase as the Central Government has suspended the manufacture of all methyl isocyanate (MIC)-based pesticides as a sequel to the Bhopal gas tragedy. There are 17 MIC-based pesticide plants in the country. All of them are in the small-scale sector and use MIC inputs supplied by the Bhopal plant of Union Carbide.

The index of industrial output has risen by 8.2 per cent in the nine months ending December 1984 and the average for 1984/85 may be 7.5 per cent as against the background of the preceding few years when the tempo of industrial

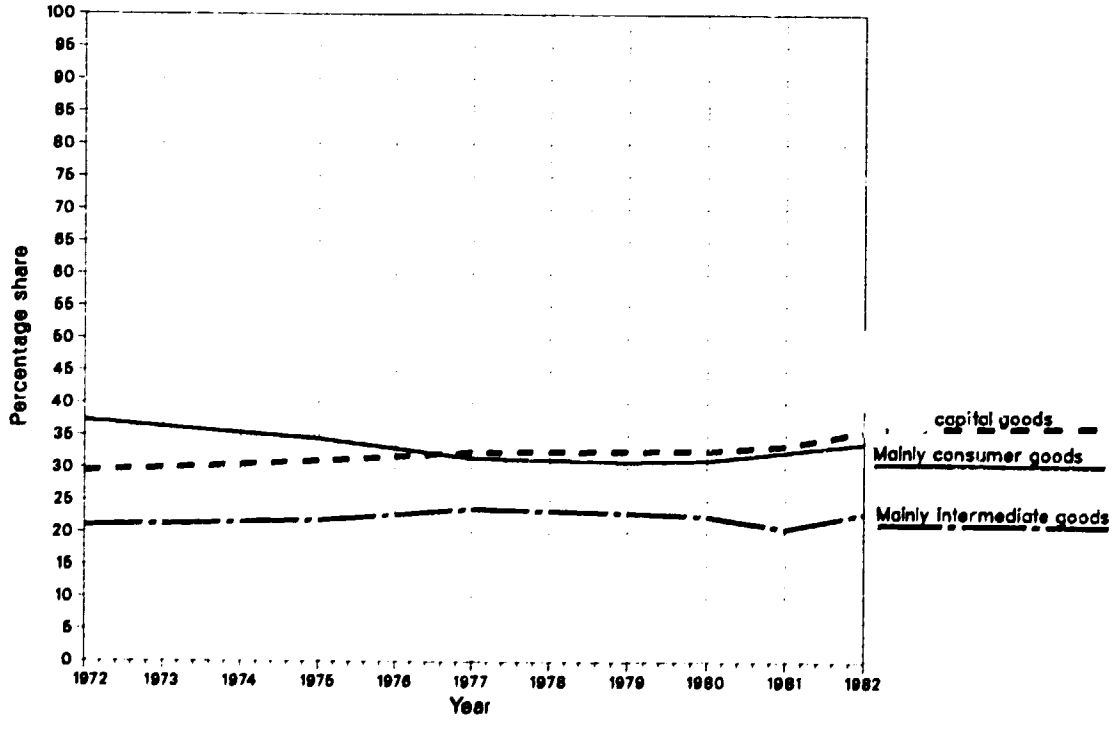
progress had slowed down. One of the immediate problems for the industrial sector in raising production is the declining trend in demand. The cumulative effect of a pronounced increase in Government spending and rural incomes is yet to be reflected in brisker demand for manufactured goods. A short-run strategy for speeding up growth could be adopted in a multipronged approach - mainly fiscal and monetary - in order that demand does not become a constraint on growth. The proposed tax measures, taken together with the reliefs and concessions, introduced in the first budget (1985/86) of the new Government seem to have created a "buoyant mood" among trade and industry circles. The business-boosting measures are designed to spur investment. The development of a consistent strategy for long-run stable growth requires an analysis of the structure and performance of the manufacturing sector. This is dealt with in the next Chapter.

MANUFACTURING TRENDS

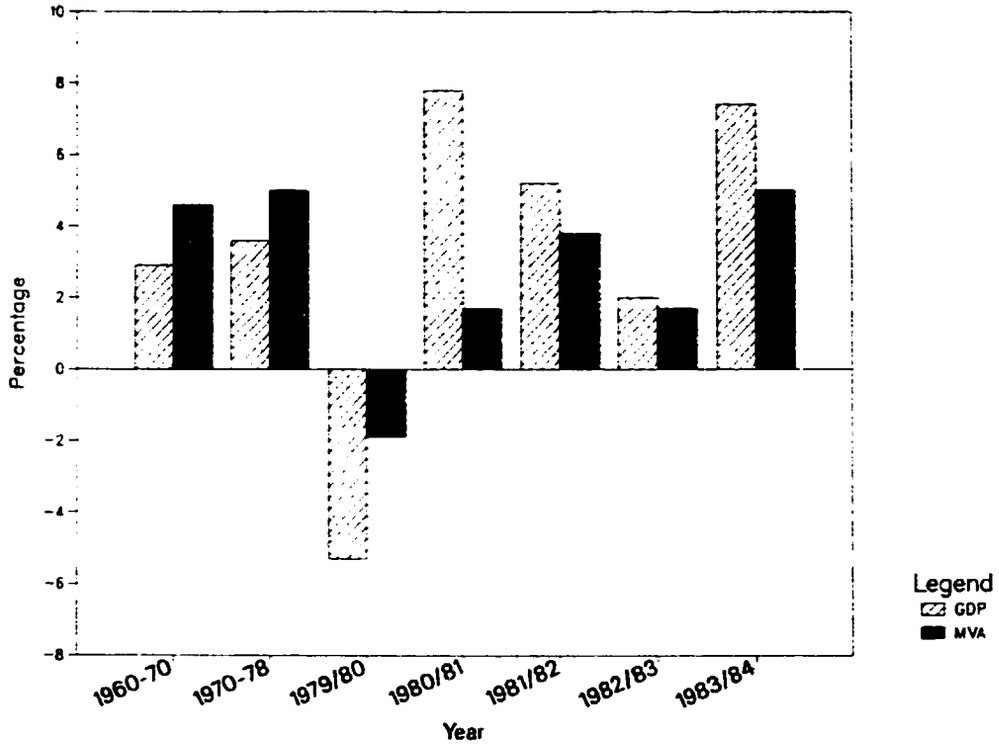
GDP BY ECONOMIC SECTOR, 1961-1984



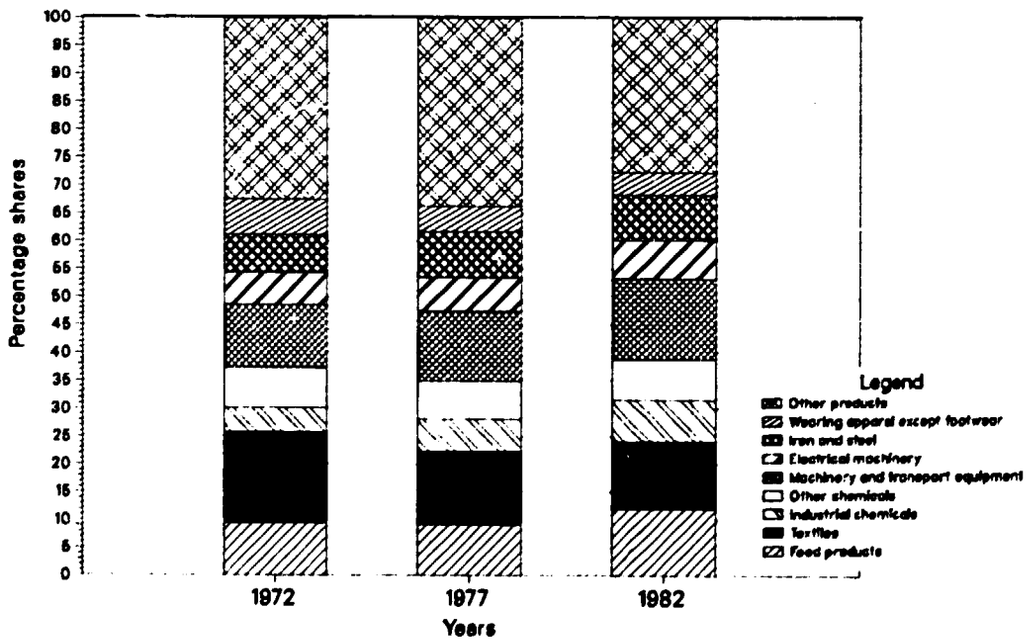
MANUFACTURING VALUE ADDED BY END USE, 1972-1982



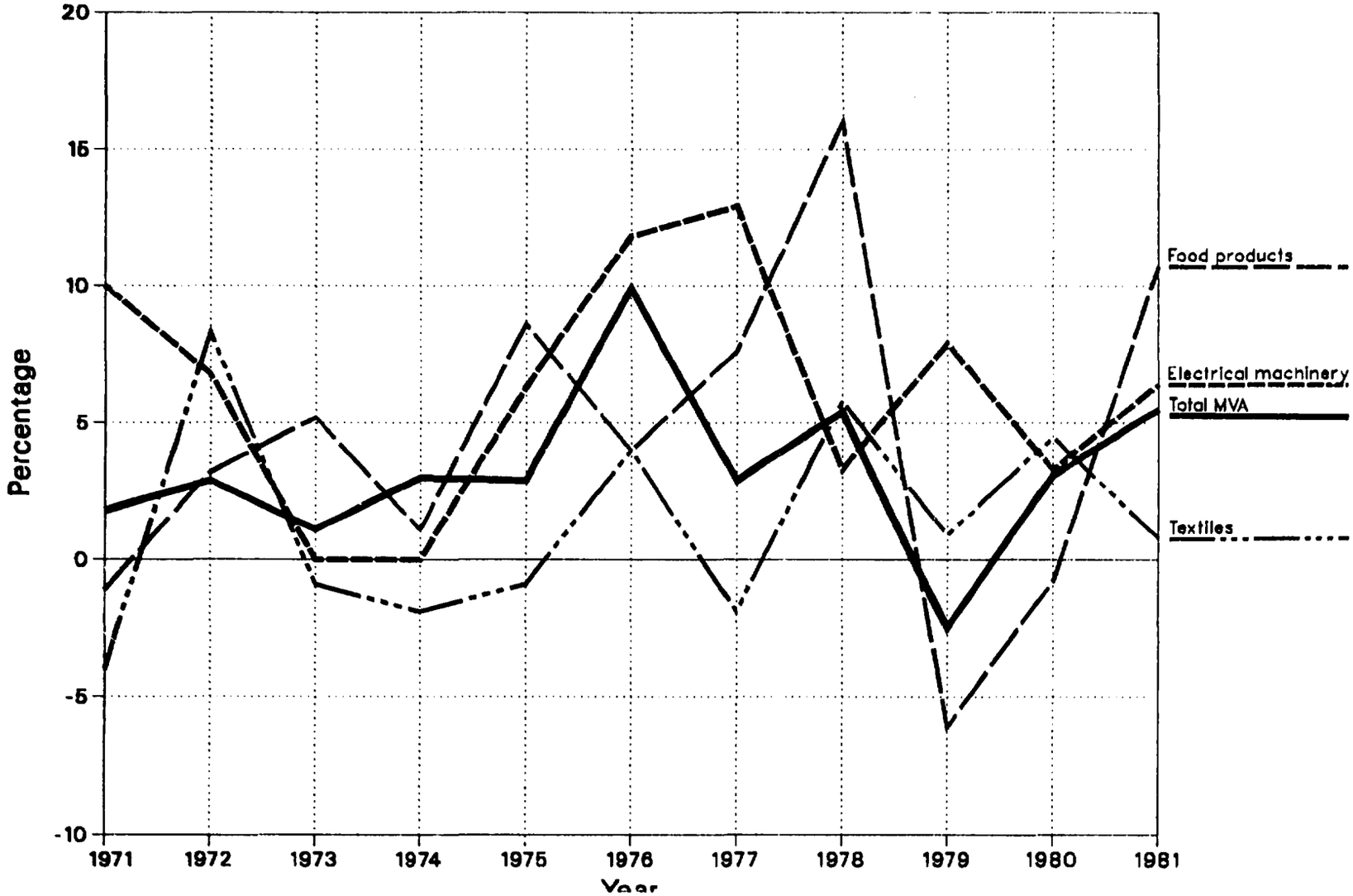
ANNUAL RATES OF GROWTH OF GDP AND MVA, 1960-1984



COMPOSITION OF MVA BY MAIN BRANCHES, 1972 1977 AND 1982

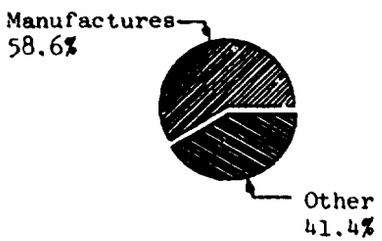


MVA GROWTH OVER PREVIOUS YEAR, BY MAIN BRANCHES, 1971-1981



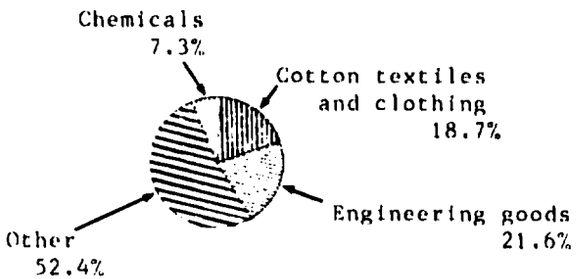
MANUFACTURED EXPORTS AND IMPORTS IN 1980

SHARE OF MANUFACTURES IN TOTAL EXPORTS

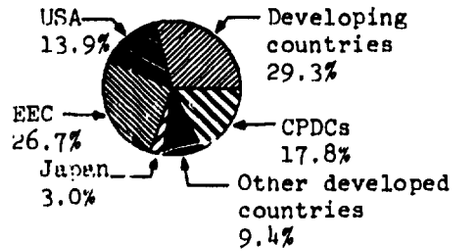


COMPOSITION OF MANUFACTURED EXPORTS

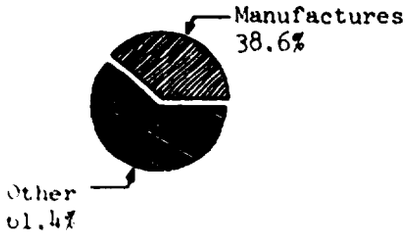
(1982/83)



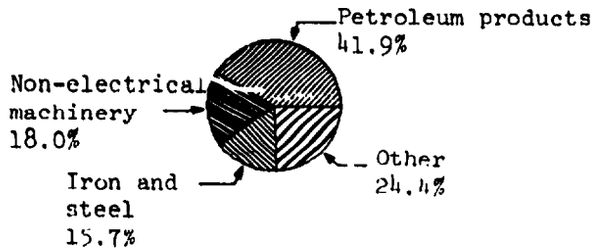
DESTINATION OF MANUFACTURED EXPORTS



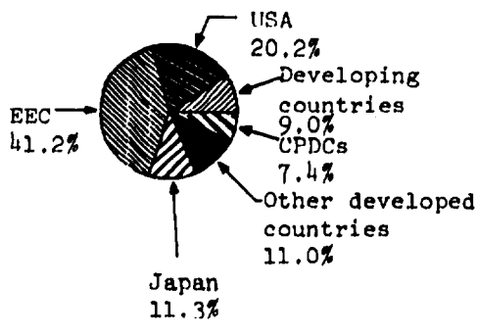
SHARE OF MANUFACTURES IN TOTAL IMPORTS



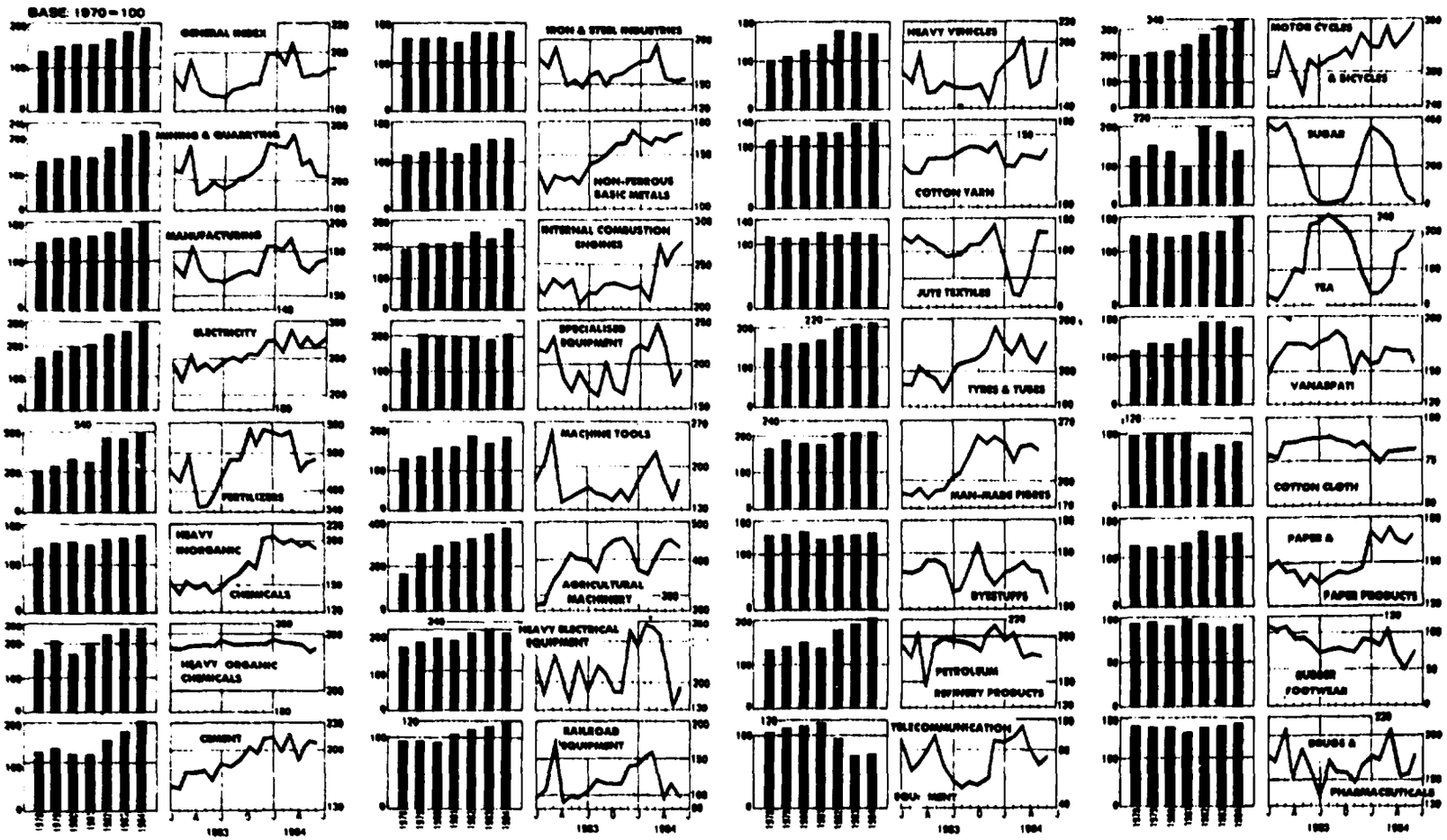
COMPOSITION OF MANUFACTURED IMPORTS



ORIGIN OF MANUFACTURED IMPORTS



INDEX OF INDUSTRIAL OUTPUT, SELECTED PRODUCTS, 1978-1984



Source: The Hindu, Survey of Indian Industry, 1984.

2. STRUCTURE AND PERFORMANCE OF THE MANUFACTURING SECTOR

2.1 Growth and structural change[1/]

India today possesses a diversified range of industries. During the period 1970/71-80/81, the growth rate of real manufacturing value added (MVA) in constant 1970/71 prices slowed to an annual average of 4.2 per cent. In 1976, it rose exceptionally to over 8 per cent. The second half of the 1970s experienced an increasing growth rate of MVA but in 1979/80 industrial production deteriorated sharply, registering a negative growth of -1.9 per cent. This sharp setback was caused by acute problems in essential infrastructure - most particularly bottlenecks in coal, power and railway freight - and by the severe drought reducing supplies of agricultural inputs, lowering demand for industrial products and limiting hydro-electric power generation. Manufacturing output recovered by 1.7 per cent in 1980/81, and grew by 3.8, 1.7 and 5.0 per cent the following three years.

The crucial bottlenecks limiting industrial production have been infrastructural limitations and demand constraints. The tax reducing initiatives of the Government and the boom in agricultural output are yet to stimulate demand. But there are definite indications of a pick-up in industrial production in the next few years. Significant achievements have been made in the modern engineering sector - in aircraft, ship-building, electronics, and the space satellite programme. In general capacity utilisation rates, which have been falling since the early 1970s, failed to improve. Branches particularly hard hit included those producing steel, caustic soda, aluminium and jute textiles.

The index of industrial production during the period 1970-83 (1970 = 100) shows that the highest growth rates were recorded in the following manufacturing sectors (Annex Table A.1): beverage industries (index 540.6 in 1983), non-electrical machinery (250.5), chemical products (224.3), wood industries (206.4), petroleum and coal products (187.9), non-metallic mineral products (187.5), electrical machinery (177.3), rubber products (172.8), metal products excluding machinery and transport equipment (167.0), food industries

1/ The index of industrial production and sector growth rates do not include the small-scale sector.

(165.8), basic metal industries (158.3), transport equipment (147.4), paper products (144.3), tobacco industries (139.2). The textiles industry was seriously afflicted with virtual stagnation of production and with a production index oscillating between 100 and 116. Negative growth rates were registered in footwear and other wearing apparel (88.1) and leather (78.1). This growth pattern among various branches reflects the policy of the Indian Government which places emphasis on the development of capital goods, chemicals and heavy industries. These trends are largely corroberated by data on physical production of selected manufactured goods as presented in Annex Table A.2.

The growth of India's manufacturing production since the 1960s and early 1970s has been accompanied by a well-known pattern of structural change; the industries producing consumer goods, mostly agro-based, have declined in relative importance as industries producing basic and capital goods have developed. This direction of change has continued during 1973-83, although at a slower pace. However, the consumer goods industries, mainly non-durables, still account for about 31 per cent of production in the manufacturing sector (Table 3). The highest growth rates in industrial production since 1960 were recorded in chemical-based industries, followed by metal-based industries while the lowest growth rates were found in agro-based industries.

Table 3. Growth of industrial production by use and input base, 1960-73 and 1973-83
(per cent per annum)

	Weights	1960-73	1973-83
Used based			
Basic industries	32.3	7.1	7.6
Capital goods	15.7	8.2	4.3
Intermediate	21.0	4.7	3.4
Consumer goods	31.0	4.0	3.8
Durables	(2.9)	8.3	4.1
Non-durables	(28.1)	3.0	3.7
General index	100.0	5.6	4.8
Input based			
Agro-based	33.7	2.5	3.1
Metal-based	21.9	8.3	4.1
Chemical-based	12.9	9.0	5.8

Source: World Bank, India: Structural Change and Development Perspectives, Vol. I, 24 April 1985, p. 65.

The pattern of structural change, based on the calculation of structural indices for 1965-1980, is illustrated in Appendix A. It depicts the marked expansion of plastic products and electrical machinery, and the distinct contraction of transport equipments, leather products and textiles. In general, the pattern of structural change is attuned to the expansion of capital and intermediate goods, with few exceptions.

The growth rates and structural changes in value added, by branch of manufacturing, for the past decade, are shown in Tables 4 and 5. These Tables do not include the small-scale sector, whose annual production is estimated at around one third of all industrial output and also value added, and one fifth

Table 4. Indicators of industrial growth by branch of manufacturing, 1970-81

Manufacturing sub-sector	Growth of value added at 1975 prices	Growth of employment	Growth of value added per employee
	1970-1981	1970-1981	1970-1981
TOTAL MANUFACTURING(300)	3.60	3.73 a/	0.06 a/
Food products(311)	3.69	8.39 a/	-4.35 a/
Beverages(313)	4.72	6.27 a/	-1.89 a/
Tobacco(314)	2.42	14.29 a/	-11.99 a/
Textiles(321)	1.31	2.12 a/	-1.18 a/
Wearing apparel,except footwear(322)	-2.87	15.98 a/	-16.82 a/
Leather products(323)	-0.73	1.77 a/	-2.15 a/
Footwear,except rubber or plastic(324)	-1.60	17.20 a/	-16.78 a/
Wood products,except furniture(331)	5.96	0.78 a/	8.80 a/
Furniture,except metal(332)	5.96	-9.13 a/	20.66 a/
Paper and products(341)	3.14	2.53 a/	-0.18 a/
Printing and publishing(342)	0.75 b/	-0.93 a/	3.32 a/
Industrial chemicals(351)	8.97	4.80 a/	5.32 a/
Other chemicals(352)	4.25	5.72 a/	-1.26 a/
Petroleum refineries(353)	4.17	-0.92 a/	5.01 a/
Misc. petroleum and coal products(354)	-0.91	16.38 a/	-14.09 a/
Rubber products(355)	3.85	1.99 a/	2.01 a/
Plastic products(356)	14.19 c/	-4.24 a/	18.30 c/
Pottery,china,earthenware(361)	0.21	0.51 a/	4.58 a/
Glass and products(362)	4.47	0.76 a/	1.61 a/
Other non-metallic mineral prod.(369)	5.21	3.43 a/	2.12 a/
Iron and steel(371)	4.88	3.63 a/	3.14 a/
Non-ferrous metals(372)	1.48	1.41 a/	-0.56 a/
Fabricated metal products(381)	4.25	1.18 a/	3.36 a/
Machinery,except electrical(382)	5.91	2.75 a/	2.38 a/
Machinery electric(383)	5.78	3.12 a/	2.37 a/
Transport equipment(384)	3.58	-0.55 a/	4.45 a/
Professional & scientific equipm.(385)	1.01	1.69 a/	-5.13 a/
Other manufactured products(390)	7.13	-5.63 a/	12.71 a/

Source: Statistics and Survey Unit, UNIDO, based on data supplied by the UN Statistical Office, with estimates by the UNIDO secretariat.

Note: Total manufacturing is the sum of the reported ISICs and does not necessarily correspond to ISIC 300 total.

a/ 1970-1978.
b/ 1970-1980.
c/ 1970-1976.

Table 5. Composition of manufacturing value added 1972-1982

(at 1975 prices)

Manufacturing Sub-sector	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
TOTAL MANUFACTURING(300)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Food products(311)	9.4	8.9	8.7	9.2	8.7	9.1	10.0	9.2	9.1	9.7	12.0
Beverages(313)	0.7	0.7	0.6	0.6	0.7	0.8	0.8	0.7	0.7	0.8	1.1
Tobacco(314)	2.9	2.9	2.8	2.5	2.6	2.6	2.5	2.8	2.7	3.0	3.4
Textiles(321)	16.3	15.9	15.1	14.6	13.8	13.1	13.2	13.1	13.7	13.2	12.1
Wearing apparel,except footwear(322)	6.4	6.4	6.0	5.8	5.3	4.5	4.0	4.0	3.7	3.4	4.1
Leather products(323)	0.5	0.6	0.5	0.6	0.4	0.4	0.3	0.3	0.4	0.4	0.3
Footwear,except rubber or plastic(324)	1.1	1.1	1.1	1.2	1.0	0.9	0.7	0.8	0.7	0.8	0.8
Wood products,except furniture(331)	2.8	2.0	4.1	4.0	4.0	4.4	4.0	4.1	3.8	3.6	3.3
Furniture,except metal(332)	0.8	0.4	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.5	0.7
Paper and products(341)	2.3	2.4	2.5	2.3	2.1	2.1	2.1	2.1	2.3	2.4	2.6
Printing and publishing(342)	2.1	2.1	2.1	2.0	2.1	1.9	1.7	1.5	1.6	. .	0.0
Industrial chemicals(351)	4.4	4.7	4.4	4.9	5.3	5.8	8.0	8.0	8.9	8.6	7.4
Other chemicals(352)	7.2	6.8	6.5	6.2	6.6	6.8	7.0	6.9	6.9	7.2	7.3
Petroleum refineries(353)	1.0	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.0	1.1	1.3
Misc. petroleum and coal products(354)	0.7	0.7	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.4
Rubber products(355)	1.7	1.7	1.7	1.7	1.5	1.6	1.7	1.6	1.7	1.7	1.9
Plastic products(356)	0.4	0.4	0.5	0.5	0.5	. .	. .	. .	. .	. .	0.0
Pottery,china,earthenware(361)	1.3	1.3	1.4	1.1	1.2	1.2	1.2	1.0	0.9	0.7	0.8
Glass and products(362)	0.8	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.6	0.7
Other non-metallic mineral prod.(369)	3.1	3.1	3.1	3.1	3.3	3.4	3.3	3.4	3.4	3.5	3.8
Iron and steel(371)	6.8	6.6	6.7	7.5	8.2	8.2	7.8	7.2	7.0	7.4	8.1
Non-ferrous metals(372)	1.5	1.3	1.2	1.1	1.2	1.2	1.2	1.2	1.1	1.2	1.4
Fabricated metal products(381)	4.2	4.2	4.6	4.6	4.4	4.4	4.7	4.9	4.6	4.3	4.8
Machinery,except electrical(382)	5.9	6.6	6.9	6.9	6.5	6.9	7.4	7.3	7.9	8.0	6.5
Machinery electric(383)	5.7	5.6	5.5	5.6	5.5	6.1	8.0	6.3	8.5	5.8	6.9
Transport equipment(384)	5.4	5.9	5.7	5.4	6.0	5.8	5.3	5.3	5.5	5.8	6.0
Professional & scientific equipm.(385)	0.5	0.4	0.5	0.4	0.3	0.4	0.4	0.4	0.5	0.4	0.4
Other manufactured products(390)	4.5	5.6	5.0	5.2	5.7	5.4	5.9	6.9	6.3	6.5	0.0
TOTAL MANUFACTURING IN MILLIONS US $	11316	11442	11793	12341	13336	13727	14470	14772	14727	15385	14793

Source: Statistics and Survey Unit, UNIDO, based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Note: Total manufacturing is the sum of the available components and does not necessarily correspond to ISIC 300 total.

of total export. Latest data for the breakdown of manufacturing value added by branch of manufacturing show that in 1982 the leading sectors were textiles (12.1 per cent), food products (12.0 per cent), non-electrical machinery (8.5 per cent), iron and steel (8.1 per cent), industrial chemicals (7.4 per cent), other chemicals (7.3 per cent) and electrical machinery (6.9 per cent). The share of the textile, wearing apparel and footwear had gone down significantly over the period, whereas that of industrial chemicals, iron and steel and machinery had gone up. However, the rate of structural change within the manufacturing sector declined significantly in the latter part of the period. This is evidenced by the relative increase in the share of consumer goods such as food products, beverages, and wearing apparel over the period 1979-82.

2.2 Performance and productivity

Concern with industrial productivity has increased among Indian industrial planners in response to unsatisfactory levels of productivity in the economy. The incremental capital-output ratio (ICOR) in manufacturing and mining has risen from 5.52 in the First Plan period to 11.46 in the Fourth Plan, reflecting an increase in capital intensity as well as less efficient utilization of investment resources, particularly in the public sector. The overall ICOR for the manufacturing sector as a whole improved to 8.73 in the Fifth Plan period, but ICOR remained high in the public manufacturing sector - 28 in 1980/81 (latest year available) - reflecting virtual stagnation in value added in public manufacturing, notwithstanding continued heavy investemnt in that sector. Many measures to improve capital productivity have been envisaged in the Sixth and Seventh Plans giving more attention to selection of technology, research and development; improving maintenance systems and upgrading management skills; and improving infrastructure to reduce bottlenecks in raw material supply and delays in transport. Furthermore, much attention is being given to rationalise the procedures for granting approval of industrial licences in pursuit of quick implementation of projects.

In the manufacturing sector as a whole, employment growth kept pace with the growth in value added. This becomes evident when the data reported in Table 4 are considered. This shows that growth rates in these two variables did not vary significantly over the period and the growth of value added per employee was very small (0.06 per cent per annum). As many as 12 industrial

branches registered a negative growth in this ratio. The largest fall being in wearing apparel, footwear, miscellaneous petroleum and coal products and tobacco. Value added per employee declined in most consumer industries. However, it grew at a rate of 20 per cent per annum in the furniture branch. In the intermediate and capital goods sector, plastic products recorded a growth of over 18 per cent and petroleum refineries and transport equipment of about 5 per cent per annum in this ratio. Most other capital goods branches witnessed positive growth rates in value added per employee.

Annex Tables A.3 - A.5 provide some indirect estimators of manufacturing productivity in India. The current price statistics on the growth of gross output and value added show that the former has increased at a significantly faster rate than the latter - indicating a rise in unit costs. There is no significant difference in the relative growth of value added as compared to gross output between the consumer and capital goods branches, indicating that cost increases were significant for both groups. However, aggregate employment grew more rapidly for the consumer goods industries whose share in large-scale manufacturing employment increased from 50.5 per cent in 1973 to 52.8 per cent in 1979 - despite a significant fall in the share of manufacturing employment by the textile industry (from 28.2 to 24.9 per cent over the period). The share of the capital goods industries in aggregate manufacturing employment declined from 32.5 per cent to 29.1 per cent over this period. Their share of aggregate wage and salaries also fell from 42.1 per cent in 1973 to 40.6 per cent in 1979; the share of the consumer goods producing branches rose correspondingly.

The share of value added in output declined from 25 to 19.5 per cent in manufacturing as a whole, reflecting rising industrial costs. The only branch for which this ratio rose was non-electrical machinery. Value added represented 17.7 per cent of gross output in this branch in 1973 but rose to 25.5 per cent by 1979. The largest decrease was in petroleum refineries where the share of value added in gross output fell from 16.8 per cent to 5.1 per cent over the period. As noted earlier, there is little difference in the consumer and capital goods branches in terms of movements of this ratio.

Non-wage value added declined from 52.2 per cent in 1973 to 50.4 per cent in 1979 in the manufacturing sector as a whole (Annex Table 5). This may

reflect a fall in the rate of return [illegible]nufacturing investment in India. However, the non-wage value added rati[illegible]ose in 14 manufacturing branches - most of them being in the intermediate and capital goods sector. The most significant rise in this ratio was in the non-electrical machinery branch where the share of non-wage value added increased from 29 per cent to 51 per cent over 1973-1979. The non-wage value added also rose significantly in leather production.

Gross capital formation in the manufacturing sector has not been encouraging. In 1982 gross capital formation by the private sector fell by 11.2 per cent as compared to the previous year, and net capital formation fell by almost 15 per cent. Since 1983, there has been an upswing in manufacturing investment. Figures for the first nine months of 1983 suggest a substantial increase in the number of industrial licences granted. Capital raised through new issues of equity also increased marginally during this period. According to the latest statistics released by the Reserve Bank of India, profitability in the large-scale industrial sector remains high. A survey of 478 big companies (those with a paid up capital of Rs. 10 million or more) in both the public and private sectors showed that the net income to equity ratio in 1981/82 was 38.7 per cent (as compared to 40.3 per cent in 1980/81). Post-tax gross profits in public corporations under the management of the Central Government increased from Rs. 7.8 billion in 1980/81 to Rs. 11.1 billion in 1981/82 and to Rs. 22.6 billion in the financial year 1982/83. The post-tax profit ratio has however fallen from 5.3 per cent in 1981/82 to 4.4 per cent in 1982/83. The profit rate earned by the major public sector companies is about one third of the profit level of large industrial companies in India. In 1983/84 negative gross profits were registered in steel, minerals and metals and "other" public enterprises (Annex Table A.6).

The average rate of capacity utilization in various industry branches have declined in recent years (Annex Table A.7). During 1970-83 capacity utilization rates in 30 selected industries oscillated between 76 per cent and 70 per cent except in 1974, 1975 and 1983 when it declined to 69, 68 and 67 per cent respectively. The situation is most serious in basic industries sector which operated at around half of installed capacity in 1983 (54 per cent). Capacity utilization rates were higher in capital goods industries (69 per cent) and in intermediate goods industries (72 per cent). The highest

rates of capacity utilization were witnessed in the consumer goods industries (77 per cent). Improving the utilization rate of installed capacity particularly in basic industries is an important prerequisite for sustained industrial growth.

The new incentives proposed in the 1985/86 budget seem to have created an unprecedented boom in new capital issues and investment in different sectors. The Government is concerned about further increasing productivity in the manufacturing sector by enhancing the efficiency of public enterprises and granting incentives to the private sector. These measures are reviewed in Chapter 3 of this Review.

2.3 Trade in manufactured goods

Rapid growth in manufacturing exports is required to meet the rising burden of debt services when major international payments become due from 1986 onwards. It has been estimated that India's commercial borrowing, now running at $1.2 billion a year, may increase to $5.2 billion a year by 1990.

Essential inputs for the domestic economy have grown to be the largest component of India's imports. They accounted for 60 per cent of the total in 1981/82. Major imports in this category are fertilizers, non-ferrous metals and iron and steel. Imports of machinery and transport equipment grew by about 15 per cent (in value terms) in both 1980/81 and 1981/82. Though the net oil import bill declined, there were larger purchases of fertilizers, edible oils, plant and machinery, intermediate products and other items.

The share of manufactures in total exports amounted to 59.3 per cent in 1971 and 69.3 per cent in 1983 (Annex Table A.8). The fastest growing exports have been chemical goods, up 24 per cent in 1984 over 1983 ($ 399 million) and jewellery up 15 per cent ($ 1.23 billion). India's exports, in general, experienced slow growth in the early 1980s due to low production performance and the cyclical downturn of the global economy, particularly the slow-down in economic activity in the developed market economies which purchased more than 50 per cent of India's manufactured exports.

However, in 1983/84, export growth recovered despite several constraints. It averaged about 12 per cent - below the 15 per cent envisaged in the Sixth Plan. Exports of tea were limited due to domestic supply shortages. During 1983/84, export of engineering products declined by about 17 per cent due to the fall in overseas contract work. Particularly hard hit were Indian construction firms operating in the Middle East. During 1984/85 export growth is estimated at over 20 per cent.

India's 'turn key plant exports'[1/] accounted for $1.9 billion in 1982. The composition and direction of technology exports are highly diversified. India's industrial project exports in such sectors as textiles, cement and simple metal products are directed at mainly South and South-East Asian countries. Sugar, paper and pulp, steel mills and machine tools are destined for Africa. The Middle East oil-rich countries account for 44 per cent of the total industrial project exports. In the sectoral distribution of turn key plant exports electricity generating equipments dominate.

The Government's attempts to promote manufactured exports have included the lifting of licensing restraints on export production, establishing completely export-oriented units and the founding of an Export-Import Bank. In an attempt to accelerate the "export drive", the Government facilitated the access to imported inputs, though restrictions on products manufactured within the country continue.

On the import side the importance of manufactures in total imports has declined over the last decade. In 1980 the share of manufactures (SITC 5-8 less 68) in total imports was 38.6 per cent, compared with 49.2 per cent in 1970. Applying a broader definition[2/] of manufactures their share in total imports declined from 71.1 per cent in 1970 to 67.3 per cent in 1980.

1/ The phrase 'turn key plant exports' is used here to denote the setting up of industrial plant abroad where the seller enters into a contract to provide the equipment as well as part of the services involved in design, detailed engineering, procurement, civil construction, equipment installation and commissioning and training of local labour force. For an analytical discussion of macroeconomic performance and technology exports, see Sanjaya Lall, "Exports of Technology by Newly Industrializing Countries: India", World Development, Volume 12, No. 5/6, May/June 1984, pp. 535-565.

2/ See definition in footnotes to Annex Table A.9.

Annex Tables A.9 - A.11 provide detailed information on the composition and direction of India's foreign trade. In 1980, the main markets for the exports of manufactures (SITC 5-8 less 68) from India were countries belonging to the European Economic Community which absorbed 26.65 per cent of total manufactured exports. The developing countries as a whole bought 29.23 per cent of Indian manufactured goods. To all developed market countries, India exported 52.76 per cent of the total manufactured exports and 17.72 per cent to the Centrally Planned Developed Countries (CPDCs). The main origin of India's imports of manufactures (SITC 5-8 less 68) in 1980 were also the developed market countries, with 83.2 per cent of highly processed imports, (much higher than their intake of India's exports) or 57 per cent if the wider definition is used. The share of developing countries in the total manufactures imported by India was 8.9 per cent (13.85 per cent under the wider definition), while the share of the Centrally Planned Developed Countries (CPDCs) was 7.3 per cent in 1980.

As for the level of processing, the largest category of exports in 1980 was processed goods for final use, 41.2 per cent, compared to 26.8 per cent in 1970 (Annex Table A.12). The share of non-processed goods for further processing increased slightly, from 23.6 per cent in 1970 to 27.03 per cent in 1980. This category had the largest rate of growth, 16.8 per cent from 1975 to 1979, while growth of processed goods for final use dropped from 28.13 per cent in 1975-80 to 12.01 per cent in 1975-80.

As for imports, processed goods for final use represented two thirds of total imports in 1980, up from 52.56 per cent in 1970. The fastest growing sector, however, was processed goods for further processing, 35 per cent in 1975-79 while growth of non-processed goods for further processing deteriorated by -11 per cent.

The manufacturing export performance of India has been widely studied. In 1982, UNIDO attempted to identify the dynamic comparative advantage of 24 selected developing countries in world manufacturing trade. The study attempted to calculate a country's revealed comparative advantage ratio in a

given sub-sector.[1/] Estimated values exceeding unity indicate that the performance of the country concerned in specific product areas is superior to that predicted by its share in world manufactures.[2/]

Annex Table A.13 summarises the results for India. It can be seen that over the pericd 1970-1978 the value of the export performance ratio (Eij) was greater than 1 for 36 out of a total of 120 product areas. This compares favourably with Brazil, where the value of (Eij) exceeds unity in 27 out of 123 cases, and Pakistan with 18 out of 91. India thus has a more diversified export manufacturing portfolio than some newly industrializing countries (NICs) and some neighbouring countries.

Secondly, Table A.13 shows that the number of product areas in which India has revealed comparative advantages has remained relatively constant. As compared with 34 in 1969-71, there were 36 such product areas in 1976-78. The pattern of comparative advantage has changed, however. Declining product areas include fish preparations, coffee extracts, food preparations, mineral tar products, perfume and flavour materials, textile yarn and thread, woven fabrics, pig iron, railway and track construction, railway vehicles, footwear and jewellery. India has increased her relative comparative advantage in vegetable oils and fats, synthetic rubber products, tea, vegetable preparations, sugar preparations, iron and steel bars and ingots, mineral manufactures, cement, cotton fabrics, leather and leather manufactures, synthetic dyes, travel goods, manufacture of metals, metal household equiment, machine tools, nails, wire products, tubes, pipes and iron and steel fittings. This list demonstrates India's level of industrial development.

1/ By using the ratio:

$$Eij = \frac{Xij}{Xwj} \Big/ \frac{Xim}{Xwm}$$

Where Xij = country i's export of commodity J
Xim = country i's export of all manufactured products
Xwj = world export of commodity J
Xwm = world manufacturing exports

2/ UNIDO: Changing Patterns of Trade in World Industry, UN, New York, 1982, Sales No. E82.II.B.1, pp. 24, 25.

Despite the rapid growth of heavy industrial complexes, India's comparative advantage in international markets is in consumer goods and light capital equipment. In 1976-78, the highest values of (Eij) for India were obtained for tea, leather, made-up-textiles and cotton fabrics. Improving the export performance of Indian manufacturing must mean paying attention to these branches at least in the short and medium run.

The performance of the manufacturing sector has to be viewed in terms of certain key structural characteristics. These are described in the remainder of this Chapter.

2.4 Geographical distribution

Of the 16,923 registered factories in the country in 1971, 21.6 per cent were located in the state of Maharashtra (Bombay), 12.2 per cent in West Bengal (Calcutta), 9.6 per cent in Tamil Nadu (Madras) and 8.7 per cent in Gujarat. Together these four states contained 52 per cent of the total registered factories, contributed 60.3 per cent of total manufactured value added, 58.8 per cent of total output and employed 55.4 per cent of the total labour force in the manufacturing sector. The states are, however, inhabited by only 29.7 per cent of the total population of India. The next six states, in order of manufacturing significance are Andhra Pradesh, Bihar, Karnataka, Kerala, Madhya Pradesh and Uttar Pradesh which contained 33 per cent of the total registered factories, contributed 28.1 per cent of total MVA and 28.9 per cent of total output, and employed 32 per cent of the labour force in the manufacturing sector. These states are inhabited by 51.2 per cent of the total population of India. The share of these ten states in the total number of registered factories was 85.1 per cent, 88.5 per cent of MVA, 87.6 per cent of gross output, and 87.4 per cent of manufacturing labour force in 1971.

A state-by-state analysis of manufacturing output carried out in 1977/78 indicates that Maharashtra continued to remain the most industrialized state, accounting for a quarter of the total MVA. Next in order came West Bengal (11.6 per cent), Gujarat (10.2 per cent) and Tamil Nadu (8.9 per cent). The other states that contributed significantly to the country's total MVA were Uttar Pradesh (6.4 per cent), Madhya Pradesh (4.3 per cent) and Kerala (3.5 per cent). These ten states together accounted for 84.6 per cent of total

gross output originating from the industrial sector.[1/] Recent statewide value added data indicate that geographical distribution of MVA continues to be fairly uneven. The weight of Maharashtra, West Bengal, Tamil Nadu and Gujarat in total manufacturing output declined marginally from 60.3 per cent in 1971 to 59 per cent in 1984. The share of ten industrially more advanced states increased from 85.5 per cent in 1977/78 to 89.8 per cent in 1984.

One of the basic policies incorporated in the Sixth National Development Plan is the decentralization and wider dispersal of industrial production activities for the development of backward regions. This is an effort to avoid concentration in metropolitan regions, and to promote the growth of small-scale industries and labour-intensive operations. It also aims at preventing regional imbalance in industrial development. Improving the regional dispersal of manufacturing activities has been an objective in Indian planning in each of the Five-year Plans. The Industrial Policy Statement of 1980 took further steps to correct regional imbalances by instituting a preferential treatment of industrially backward areas. Much emphasis is to be given to establishing new plants in industrially backward districts which will generate demand for products from small and cottage industries or produce inputs needed by ancillary units in the area.

Development of the infrastructure required by manufacturers is the most important prerequisite for the growth of industry in these areas, responsibility for which resides almost entirely with the Government. The incentives provided to businesses are designed to offset current severe shortcomings in infrastructure in the least industrialized areas. Incentives vary among states but the most appealing benefit to businesses is often the speedy approval of license applications required for establishing or enlarging production units. This can be especially important to the very large Indian companies and foreign-based firms which often encounter difficulties or delays in receiving these licenses.

1/ Government of India, "India: A Reference Manual, 1981 Yearbook", compiled by the Research and Reference Division, Ministry of Information and Broadcasting, New Delhi, 1981, p.289.

The principal incentives include:

1) Investment subsidy - reimbursement of up to 15 per cent of total investment in fixed capital as a grant up to a maximum of Rs. 1.5 million by the Central Government, lower interest rates, longer amortization periods and grace periods for new projects and expansions in specified areas;

2) Transport subsidy - for relatively inaccessible specified hills and areas, half of the transport cost of raw and finished products can be written off;

3) Income tax deductions - tax deduction of up to 20 per cent of profits for new industrial projects in specified areas;

4) Government purchases - 10 per cent price preference for Government purchases from small-scale industries; 15 per cent preference for such production in backward areas;

5) Power tariff concessions - 25 per cent discount from the State Electricity Board to units in backward areas for a limited duration.

At the beginning of the 1970s, the following states were identified as industrially backward and in need of special industrial development incentives: Andhra Pradesh, Assam, Bihar, Jammu and Kashmir, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Orissa, Rajasthan, Uttar Pradesh, Himachal Pradesh, Sikkim and Tripura (and all Union Territories, except Delhi and Chandigarh). The 247 districts selected as qualifying for financial concessions, of which 101 were identified for futher financial subsidies, are located in both backward and more industrialized states.

It is generally agreed that manufacturing enterprise has tended to grow more rapidly in the industrially advanced states. However deliberate policy of the Government endeavors to achieve balanced regional industrial growth. The major thrust towards developing the industrially backward areas is through various policy incentives, such as strengthening linkages between small-scale and larger industries, ancillarization activities, backward areas dispersal, development of growth centres, provision of infrastructural facilities, etc.

2.5 Manufacturing activity by size of enterprise

The development of rural and small industries is a crucial element in policies to disperse manufacturing activities, generate employment, and to produce mass-consumption goods. The small-scale manufacturing sector is defined as manufacturing and repairing units with maximum investment levels of Rs. 2 million, or Rs. 2.5 million in ancillary units (approximately $ 210,000 and 260,000).[1/]

By 1977 the estimated total number of units of small-scale and rural units of various sizes and capital intensity was around 8 million as against 7,000 large-scale factories.[2/]

From 1974 to 1980 production in small-scale industries grew by an average 6.8 per cent annually. In 1980/81 the sector recorded an overall growth of 8.9 per cent; its growth in 1981/82 was estimated at 10 per cent. Furthermore, it was estimated that in the year 1979/80, the share in manufacturing of this sector was around 49 per cent in terms of gross value of output and 51 per cent in terms of value added. It had offered employment opportunities to about 23.6 million persons (both part-time and full-time) as against around 6 million persons engaged, on a full-time basis, in large and medium industries. The small-scale sector has grown over the years and is now estimated to contribute about 35 per cent of the total value of output and also value added. It directly employs 7.5 million persons (full-time basis), and exports from this sector in 1981-82 accounted for 20 per cent of the total

---

1/ Ministry of Industry, "Review of Recent Industrial Development and its Outlook - India", submitted to Sixth Session of ESCAP Committee on Industry, Human Settlements and the Environment, Bangkok, September 1982. UNIDO: Evaluation Report on Industrial Estates No. 13, India, 1976, ID/WG.231/12. (Expert Group Meeting on Evaluation of the Effectiveness of Industrial Estates in Developing Countries, Vienna 13-16 Dec. 1976).

2/ Ministry of Industry, "India's Experience in Small-Scale and Rural Industries", Round Table Ministerial Meeting on Industrial and Technological Co-operation among Developing Countries, New Delhi, 4-8 January 1977, organized by UNIDO in co-operation with the Government of the Republic of India.

exports from the country[1/]. Growth in the small-scale sector is of great importance to the Government primarily because of its employment generating capacity and its central role in the development of rural areas. It has been estimated that a unit of investment in the small-scale sector creates 5.3 times as much employment as in the large-scale sector.

In 1979, 13,467 small-scale units were located in 662 industrial estates/areas. The value of production by these units amounted to Rs. 636.27 million during 1978-79 and provided employment to 219,000 persons. As for exports, this sector accounted for more than one third of the total exports of the country in the early 1980s.

The small-scale industries can be further divided, for analytical purpose, into modern small-scale and traditional rural industries. The modern small-scale industrial sector has emerged as a major supplier of mass consumption items such as leather and leather goods, bicycles, plastic and rubber goods, ready made garments, TV sets, tape-recorders, drugs and pharmaceuticals, electric motors, etc.

The traditional rural industries consist of the following:

Handloom (hand-weaving of cloth yarn produced by mills) and powerloom industries rank second in importance in number of people employed, after agriculture. There are about 3.8 million handlooms of which 1.27 million are co-operatives. About 10 million persons depend on this industry for their livelihood. The powerloom industry is of recent creation. There were 400 thousand powerlooms operating in the country in 1977.

Khadi and village industries: Khadi, (hand-spun and hand-woven cloth) is the principal product of small productive activities. Other important village industries include food processing (cereals, pulses, ghani oil, palm products) forest-based industries (matches, bamboo and cane work, gums and resins), and other industries such as hand-made paper, village pottery, fibre other than coir, blacksmith products and carpentry.

1/ The Hindu, Survey of Indian Industry, 1984.

Among well-known Indian Handicrafts, are the traditional skills of artisans working in wood, metal, clay, ivory, cloth, etc. to produce consumer articles as well as decorative or artistic products.

Sericulture and silk: India produces all four commercially important varieties of silk, e.g. Mulbery silk and non-Mulberry silk consisting of Tassar silk, Eri silk and Muga silk. India is the second biggest producer of Tassar Silk, following People's Republic of China. In Mulberry silk production, it ranks fifth after Japan, People's Republic of China, the Republic of Korea and the USSR.

Coir from coconut husk is an important cottage industry in the coastal districts of Kerala and Tamil Nadu. Its main products are yarn, mats, mattings, rugs, carpets, ropes, etc.

Government strategy for the promotion of the small-scale sector has been based on the following elements:

1) provision of consultancy services to assist in the development of entrepreneurship;

2) improvement in production techniques;

3) institutional support for increased availabilty of credit and greater stability in supplies of raw materials; and

4) incentives for organising co-operatives and other marketing support.

2.6 Ownership and investment patterns[1/]

India's industrial policy is based on the overall policy of a "mixed economy" which places primary responsibility on the Government for the planned development of industries. Industrial policy in all of the Five-year Plans is in accordance with the Parliament's acceptance in 1954 of a Socialistic Pattern of Society as the national objective. The policy reserves the right

---

1/ A list of leading Indian companies (1984) is given in Appendix C.

of the State to acquire or establish industrial enterprises, and provides for a clear and complimentary delineation of the public and private sectors.[1/] The objectives of this strategy are to ensure that India's industrial development serves to fulfill basic socio-economic objectives, most importantly to generate employment and surpluses for investment in further growth, and to direct structural changes so as to achieve greater self-sufficiency in basic products and attain a high degree of technical sophistication. The Industrial Policy Statement of July 1980 placed strong emphasis on the need to improve management and increase productivity in the public sector.

In 1979 there were 176 Central Government public undertakings, 166 were enterprises in operation while 10 others were under construction. In 1977/78, the number of persons employed in the 153 public enterprises was 1.7 million. The public sector accounted for 30 per cent of total MVA in that year.

1/ Under the revised policy since 1956, industries specified in Schedule A are the exclusive responsibility of the State, while industries in Schedule B (both enumerated below) are to be progressively State-owned, but private enterprise is expected to supplement the efforts of the State in these fields. Future development of industries falling outside the two schedules would, in general, be primarily within the private sector.

Schedule A Industries: Arms and ammunition and allied items of defence equipment; atomic energy; iron and steel, heavy castings and forgings of iron and steel, heavy plant and machinery required for iron and steel production, for mining, for machine tool manufacture and for such other basic industries as may be specified by the Central Government; heavy electrical plant including large hydraulic and steam turbines; coal and lignite; mineral oils; mining or iron ore, manganese ore, chrome ore, gypsum, sulphur, gold and diamonds; mining and processing of copper, lead, zinc, molybdenum and wolfram, minerals specified in the Schedule to the Atomic Energy (Control of Production and Use) Order, 1953; aircraft; air transport; railway transport; ship-building; telephones and telephone cables, telegraph and wireless apparatus (excluding radio receiving sets); generation and distribution of electricity.

Schedule B Industries: All other minerals except 'minor minerals' as defined in Section 3 of the Minerals Concession Rules, 1949; aluminium and other non-ferrous metals not included in Schedule A; machine tools; ferro-alloy and tool steel; basic and intermediate products required by chemical industries, such as, the manufacture of drugs, dyestuffs and plastics, antibiotics and other essential drugs; fertilizers; synthetic rubber; carbonization of coal; chemical plup; road transport and sea transport.

Between 1970/71 and 1980/81 the public sector's share in capital formation increased from 31 per cent to 44 per cent, but productivity and profitability have remained low. The cumulative investment in public manufacturing enterprises has increased from Rs. 46 billion in 1973 to Rs. 214 billion in 1983 (Annex Table A.15). In the public sector, the main branches in 1983, were in basic industries such as minerals and metals (20.9 per cent), steel (18.2 per cent), chemicals and pharmaceuticals (13.5), and petroleum (10.7 per cent); the engineering sector accounted for 5.0 per cent. The share of public sector enterprises in cumulative investment was modest in transportation equipment (2.9 per cent); consumer goods (2.4 per cent); and agro-based enterprises (0.11 per cent).

Although the public sector exercises control over the principal industries (three fifths of the fixed assets in the factory sector is owned by public undertakings), output, value added and employment still remain dominated by the private sector. This implies low efficiency in the use of resources by the public sector. In 1982/83 the public sector accounted for one third of investment in manufacturing and about 15 per cent of MVA. However, over the last 25 years, both value added and employment in the public sector have grown faster than in the private sector. The relative growth rates of the public and private sectors reflect, to some extent, the types of products manufactured. Public sector output is composed largely of basic industrial items and capital goods, demand for which has been comparatively greater. The large firms in the private sector which specialize in capital goods and consumer durables have also grown relatively faster. But the rest of the private sector industry, catering mostly to the demand for non-durable consumption goods, has experienced slower growth and hence its share in total production has diminished. In the Sixth Five-year Plan, the fields identified for significant growth in the private sector include fertilizers, cement, paper, textiles, pharmaceuticals and pesticides.

2.7 A summary

Indian manufacturing has grown relatively slowly since independence and its share in GDP has fluctuated between 15 and 16 per cent, with a slight long-term increasing trend. It accounts for only about 10 per cent of total employment. The manufacturing sector has played a limited role in structural transformation of the Indian economy. However, it is among the most diversified in the world and capable of providing for a large proportion of its input needs. India has become a major exporter of capital goods to Asian and African developing countries.

The public enterprise sector has played an important role in establishing India's technological capability. However, its performance has suffered from low levels of productivity. Its capacity for surplus mobilisation is likely to increase with the rapid growth of domestic oil production. Some public enterprises have played a significant role in accelerating the growth of Indian manufactured exports, particularly to West Asia.

An important problem facing Indian manufacturing has been declining levels of productivity. Capital-output ratios estimated for 20 manufacturing branches over the period 1959/60 to 1978/79 have shown a significant increase. This indicates a decline in industrial productivity as capital-output ratios in both consumer and investment goods branches have risen and there was an underlying increasing trend in both groups. Furthermore, there has been declining capacity utilization by all industrial groups. It declined for 30 selected industries from 76 per cent in 1970 to about 67 per cent in 1983. In 1983 capacity utilisation rates were lowest for basic industries (54 per cent), somewhat higher for capital goods (69 per cent), and intermediate goods (72 per cent) and highest for consumer goods industries (77 per cent). Recovery, as noted earlier, has been hampered by infrastructural bottlenecks.

In 1984/85 there has been some improvement in the capacity utilization rate. Industries engaged in the production of steel, aluminium smelters and cement seem to have made impressive progress in capacity utilization. On the other hand, cotton textiles, some segments of the engineering

sector, sugar and other industries with substantial weight in the industrial structure have experienced acute difficulties.

In order to deal with problems of low productivity and sub-optimal industrial growth, the Government has introduced measures towards liberalization of the economy in recent years. The budget for 1985/86 proclaims bold steps to free the economy from many taxes and controls which have been acclaimed by the industrial community. These measures would, it is hoped, lead to improved productivity by stimulating demand and competition.

3. INDUSTRIAL DEVELOPMENT STRATEGY, POLICIES, PLANS AND INSTITUTIONS

3.1 Objectives and plan targets

India's industrial development strategy is aimed at structural diversification of the industrial sector, modernization of existing manufacturing capacities and greater self-reliance. Industrial development is a cornerstone of the entire economic growth, modernization and social development strategy of the country. The major policy implementation tools in the industrial sector, such as investment licensing, control over monopolies and foreign investment and financing of research and development, were first established in the Industrial Policy Resolution of 1948. The Industrial Policy Statement of July 1980 amended the basic policy on account of severe problems and resulting stagnation of industrial output but maintained the basic tenets of the earlier Resolution, i.e., the essential role of State planning and the public sector in directing the course and impact of industrialization. Special emphasis is made in the 1980 Statement on imperatives of increasing use of existing manufacturing capacity, generating more employment and promoting greater regional dispersal of manufacturing activities.

Reflecting this basic strategy and priorities, the main objectives of the Sixth Five-year Plan (1979/80-1984/85) were: 1/

(a) substantial enhancement of manufacturing capacities in both the public and private sectors to provide not only consumer goods and consumer durables but also to support agricultural and industrial growth through the supply of intermedite and capital goods;

(b) special attention to the development of the capital goods industry;

1/ India, Planning Commission, "Sixth Five-Year Development Plan 1980-1985", Chapters: Policy Framework, pp. 76-89; Village and Small Industries, pp. 186-203; Industry and Minerals, pp. 259-295. Ministry of Information and Broadcasting, "India: A Reference Annual", 1980 and 1981.

(c) promotion of engineering goods exports and other export-oriented projects to raise substantial foreign exchange resources required to support the Plan;

(d) continuation of industrial progress through technological development to be attained through the judicious import of technology and the development of indigenous technological capabilities;

(e) appropriate measures to improve energy efficiency through changing the pattern of industrial energy use to suit the domestic energy endowments; and

(f) implementation of new strategies for the development of backward regions and limit concentration of industry in existing metropolitan areas.

The Plan envisaged industrial production to grow at an average annual rate of 8 per cent during the five-year period. A significant improvement in the functioning of the infrastructure, particularly coal, power and railways was considered as an essential pre-condition for the realization of the industrial growth target. The objective of self-reliance determines that the pattern of investment in the industrial sector continued to give high priority to the creation of adequate capacity in basic industries such as steel, non-ferrous metals, capital goods, fertilizers and petrochemicals.

The public sector was expected to assume a major role in the expansion of these industries. There is substantial scope, within the framework of the Industrial Policy Resolution, for the expansion of the private, joint and co-operative sectors. The fields in which these sectors were expected to contribute most significantly are fertilizers, cement, paper, textiles, chemicals, pesticides, drugs and pharmaceuticals.

As envisaged in the Plan, some basic structural shifts in the pattern of industrial production were expected to emerge in the 1980s (Annex Table 16).[1/] Production of natural gas, petroleum and coal, and industries based

1/ Data on actual production of selected industries are provided in Annex Table A.2.

on these resources, and more particularly fertilizers, plastics, synthetic fibres, synthetic rubber and other petro-chemicals were expected to grow rapidly. A major expansion in the electronics industry, in which the country has a competitive advantage due to the availability of a large pool of technically qualified personnel, was also envisaged. While the expansion in metal and engineering industries was expected to continue, chemical and electronic industries were expected to assume the leading role in industrial investment and production.

The overall outlay envisaged in the Plan was Rs. 204.07 billion including coal and petroleum. A major part of the outlay amounting to Rs. 109.19 billion was controlled by the Central Government and the balance of Rs. 13.89 billion was controlled by the states. The Plan provided public sector outlay for the small-scale and rural industries of about Rs. 17.8 billion.

The recent performance of the economy helped to achieve the envisaged overall growth rate of 5.2 per cent during the Sixth Plan period. The Seventh Plan (1985/86-1989/90) aims at achieving a growth rate of about 7 per cent (tentative target) in industrial production. It is expected that the Plan will envisage a total investment outlay of about Rs. 3,600 billion. The public sector's share is expected to be around 47 per cent, the lowest since the First Plan. A major restructuring of Indian industrial policy is likely to be identified as an important objective of the Seventh Plan. It is recognized that this, as well as the objectives of increasing employment and reducing poverty, will require an increase in both domestic and international borrowing. The Seventh Plan envisages Government expenditure during the last half of the current decade to exceed Government revenue by 22 per cent - the gap in resources and expenditure during the Sixth Plan was targeted at about 5 per cent. Hence increased emphasis is expected to be placed on increasing economic efficiency, reducing cost and attracting foreign finance.

3.2 Recent changes in industrial policy

Many of the expected policy changes in the industrial sector are already underway. Liberalisation began during the Sixth Plan period. The budget for 1985/86 (starting 1 April) spells out a policy package for improved

productivity, absorption of modern technical know-how and fuller utilization of installed capacity. A number of industries has been earmarked for unfettered expansion. The strategy of the budget is to release the energies of private industrial enterprises and reduce its dependence on publicly owned financial institutions by creating an environment for savings, reducing the cost structure of industry and channeling investment into key areas.

The 1984/85 budget contained excise duty reductions on a wide range of manufactured products. Major cuts in personal and corporate taxation were introduced to encourage industrial investment. Steps were taken to stimulate direct investment of non-resident Indians. Export incentives were offered to many groups of producers such as jewellery makers and exporters of textile fibres. Export duty has been abolished on 12 items, leaving only four export items subject to duty. In the import and export policy statement for 1984/85, 149 new items were switched to open general licensing. Most capital goods are now included in this list. Greater flexibility for allowing exporters' access to their foreign exchange earnings is a feature in the new export/import policy. Subsidies and direct price controls on a wide range of industrial products have been reduced during the period 1982-85. Investment licensing procedures have been simplified and the role of quantitative trade restrictions have been reduced. There has been a reduction in the amount of time taken required for the sanctioning of both domestic and foreign investment projects in recent months. Attempts have also been made to rationalise the preparation, implementation and appraisal of projects undertaken by the public sector.

The new Government is proceeding at a brisk pace in drawing up a strategy towards liberalisation and modernisation of the manufacturing sector. In a major thrust towards liberalisation, the Government delicensed twenty-five industries and others are expected to follow. It would cut down procedural delays to the minimum in areas where additional industrial capacities were needed.

The announcement of a new policy package for electronics in the budget for 1985/86 reflects the priority that the Government proposes to accord to this important industry. The budget proposed total exemption from customs duties for certain advanced types of computers not manufactured in India.

Simultaneously, customs duty on four important components of computer is further reduced from 75 per cent to 25 per cent ad valorem with a view to reducing the costs of indigenous manufactured components. To boost the demand for TVs, VCRs and radios, the budget proposes the abolition of licence.

The main trust of the new industrial policy is a phased dismantling of the structure of direct controls and the encouragement of inflow of foreign technology for the modernisation of Indian industry. Private sector manufacturers are encouraged to establish joint ventures in the computer and telecommunication industries, thus breaking important public sector monopolies in the late 1984. Licensing bottlenecks have been slashed by the decision to transfer the Company Affairs Department to the Ministry of Industries. Physical controls on industrial investment and production are being replaced by fiscal ones. The decision to restrict production by large manufacturers - in order to limit monopolistic tendencies - has in many cases been revoked and higher production capacities have been sanctioned in the interest of economies of scale.1/

Liberalisation of the import regime and encouragement of joint ventures would lead to rapid growth of foreign investment - particularly by Japanese firms - in the telecommunications and computer industries. It is envisaged that increased collaboration with foreign partners will lead to an improvement in quality and a reduction in cost of Indian high-technology manufactures. The domestic private sector has responded favourably to liberalisation. Capital markets have been growing very rapidly in the recent past. Total capital raisings by the private corporate sector through the markets has grown at an average annual rate of over 100 per cent over the last six years. In 1981 the capital markets accounted for about 1 per cent of domestic savings. In 1984 this ratio stood at 4 per cent.2/

1/ Industrial enterprises with assets of Rs. 200 million ($15.2 million) and more were previously subject to provisions of the anti-monopoly and restrictive trade practices law. This limit has been raised to Rs. 1 billion. Industrial enterprises up to this size can expand without having to seek special permission. For the small-scale sector the ceiling on investment in plant and machinery has been raised to Rs. 3.5 million as against Rs. 2 million in 1980.

2/ Far Eastern Economic Review, 11 January 1985, p. 50.

The problem of "industrial sickness" is attracting the attention of the new Government. It is expected that firm steps will be taken against managers and financial institutions involved in companies which become serious loss-makers.[1/] A board for financial and industrial reconstruction would be established to help companies merge and find solutions to ailing businesses.

The new industrial policy does not represent a break with the orientation established in the past but rather a modification of some outdated features. There is no evidence that the overall level of protection in India is likely to decline substantially. In the preceding few decades the levels of protection were substantially higher under the pretex of infant industry argument. But the effective rate of protection, i.e., the percentage increase in value added afforded by protection over the value added which would prevail in a non-protected situation, seems to have declined. Though the export-oriented industrialization strategy is currently in vogue, the Government continues to encourage concentration of activities where there is a clear comparative advantage.

Despite encouraging inflow of foreign capital and technology, India remains committed to a policy of achieving and retaining of self-reliance in key industrial sectors. The system for procurement of foreign technology is likely to become increasingly geared to ensuring that technology imported is up to date. It is believed that selected Indian importing firms have the technical and organisational capability to absorb and develop high technology imported by them. In the high technology and priority areas the Government has urged industry to adopt the latest technology, but what is not most modern is accepted in non-priority areas. The basic change is towards allowing a greater role for private firms in high technology and consumer electronics. It is for the firms now to face the challenge not just by making entertainment electronics but by entering in a concerted way the field of industrial electronics which will be more rewarding to the economy. The associated structural changes in employment pose a challenge to the modernization and restructuring process and calls for special measures in the field of training. The Government recognizes this need and is taking appropriate measures.

1/ Financial Times, 26 March 1985.

The policy framework for accelerated growth of the Indian economy enunciated by the World Bank consist of four interrelated elements:[1/] "a judicious choice of investment projects and development programmes; an efficient utilization of existing capital and other resources; a strategy for resource mobilization that is compatible with the efficiency objective; and a reform in the industrial and trade policies aiming at improving efficiency and accelerating growth." The Government has in fact already made significant progress in the implementation of a number of these policy areas.

According to the World Bank, industrial policy changes are necessary in three areas. First, domestic industrial policies would need to reverse declining productivity through greater competition. Second, import policies would entail the reduction and elimination of barriers to entry of product markets through a drastic reduction in the minimum direct controls on private sector activities. Third, Government pricing policy in key sectors should encourage productivity growth and align domestic and industrial prices more closely. There is also need for industrial restructuring packages based on analysis of structural adjustment needs of key sectors, particularly textiles and steel.

Recently appointed governmental economic commissions have also tended to emphasize the need for shifting from an industrial strategy which relied primarily on the growth of capital stock to one which puts premium on maximising the efficient utilisation of existing resources: a higher rate of output growth with lower rates of incremental investment is required. There is also a need to increase the rate of employment generation within the manufacturing sector: these needs can be met by increasing the incentives for manufactured exports. The Government has appointed a Committee on Export of Engineering and Capital Goods which recommended that Government and industry should work together at devising export plans and targets for specific thrust industries and products. It advocates increasing the coverage of industrial incentive schemes and other aspects of import/export policy. The new import-export policy announced in early 1985 and effective until 1988 incorporates many of the recommendations of the Committee. The Government has also established committees to examine the feasibility of moving from a set of physical to financial controls as a means for executing its industrial policy.

1/ World Bank, India: Structural Change and Development Perspectives, April 1985.

However, despite these policy initiatives, India remains committed to an industrialisation strategy primarily geared towards serving the domestic market and depending on the growth of domestic demand. In the execution of such a strategy the Government has to play a major role as both investor and policy-maker. It employs a wide range of policy instruments and institutional mechanisms to execute its industrial strategy.

3.3 Policy instruments

Government intervention in industry is both direct and indirect. Many observers believe that the high level of regulation of Indian industry has in the past tended to create constraints within the system. Its direct intervention is linked with the responsibility of the Government for planning investment in and management of the public industrial sector. The indirect involvement of the Government in the private industrial sector is pursued through adoption and use of various policy instruments, which result from the need to ensure that the private sector serves national objectives on domestic and foreign resources, scarce raw materials and human resources.

Price policies are intended to regulate and control certain essential industrial products, particularly basic consumer goods and essential industrial or agricultural inputs, in the interest of overall price stability. The concern is, however, to limit price control and price regulation measures, or the system of administered prices, to as few commodities as possible.

The system of retention prices for different producers on the basis of costs of production on the one hand and uniform sales prices for consumers on the other has been recommended and is in operation for several items including steel, fertilizers, cement, etc. in an attempt to reconcile the interests of consumers and producers.

Adapting to the fast-changing pace of technological change is seen as an important necessity. Specific objectives of technology policies are to create gainful employment, especially for women and poorer

sections of society, to modernize equipment and processing to international levels, and to develop renewable energy sources while recycling waste products and maintaining an ecological harmony.

Among the policy measures taken to promote the development and implementation into production processes of indigenous technologies are preferential treatment in licensing of industries based on indigenously developed technologies and special taxation benefits for sponsoring research or productive investment in such tehnologies. The National Research Development Corporation promotes linkages between research and industry within the country.

Export-oriented units are particularly encouraged to increase their production. In addition to tax concessions, administrative procedures for granting approval of expansion of productive capacities have been streamlined. Enterprises that increase their exports by 10 per cent will enjoy special benefits in respect to income taxes. To avoid the excessive protection of indigenous industries and induce them to improve their competitiveness, the import policy is to remain relatively liberal.

In order to encourage foreign investments, the industrial establishments established in free industrial zones are allowed to sell up to 25 per cent of their total production in local markets. Previously the total production was required to be exported.

Non-residents of Indian origin have been provided with special assistance to facilitate the importation of plant and machinery for establishing industrial projects in India from their own savings in foreign exchange. These facilities have been liberalized so as to attract remittances and investment in industries in the priority and export-oriented sectors.

The Industrial Development and Regulation Act of 1951 provides the framework for the licensing and regulation of industrial investments. The purpose of the industrial licensing scheme is to regulate industrial investment and production in accordance with specified targets of the

Five-year Plans. It is also used to direct industrial development towards meeting fundamental objectives, such as growth of the small-scale sector and balanced regional industrial growth.

Licensing policy favours entrepreneurs in the small- and medium-sized enterprises rather than in the larger industrial houses and foreign concerns. Co-operatives and small entrepreneurs are to be encouraged to participate in the production of mass consumption goods. Larger investors are allowed to participate only if there are special factors, such as sizeable economies of scale, technological improvements, large investment requirements, substantial export possibilities or as part of the modernization endeavour. As a further encouragement to the establishment of small-scale enterprises, licensing requirements are waived for firms with a below-minimum level of fixed assets (Rs. 200,000 in 1980).

3.4 Institutional infrastructure

A. Central and state administration

The Central Government exercises control over all major industries, ensuring the development of the industrial sector in conformity with overall national objectives.

- The Planning Commission (Chairman - Prime Minister) is responsible for the formulation of the Plans and appraisal of progress of various programmes, including industry, and recommends the adjustment of industrial policy and measures.
- The Ministry of Industry is responsible for formulation of industrial policy and co-ordination of industrial development programmes and licensing of industrial undertakings.
- The Central Advisory Council of Industry, (presided over by the Minister of Industry) advises Central Government on matters concerning the development and regulation of Scheduled industries.
- The Directorate General of Technical Development (as a Department in the Ministry of Industry) is the principal technical consultative agency and assists Central Government, all Ministries and Departments, and oversees large and medium industries.

- Development Councils, formed for almost all major industries recommend targets of production, co-ordinate production programmes, review progress, etc.

- Autonomous Boards (Tea Board, Coffee Board, Rubber Board) oversee the control and development of certain plantation industries.

- Special Boards and Commissions: Handicrafts Board, Handloom Board, Silk Board, Coir Board; Khadi and Village Industries Commission.

In state Governments, Ministers of the Departments of Industries are responsible for all development programmes within the state, including those for industries.

- The State Directorates of Industry, as Advisory Committees and Boards, are responsible for all programmes of industrial development covering small, medium and large industries within the states and for co-ordinating the work of various other agencies.

B. Public industrial enterprises

There are three categories of institutional forms for public industrial enterprises:

(a) Direct operation by the Government - in cases where the State itself is the main user of the products, for example the ordinance factories;

(b) Statutory Corporations and Commissions - in certain fields of industrial activity which require greater autonomy in management, for example, the Oil and National Gas Commission;

(c) Companies registered under the Indian Companies Acts - the most common for public industrial enterprises which are expected to operate on commercial lines, for example Bharat Electronics, Bharat Heavy Electricals Ltd., Hindustan Steel, Indian Refineries, Indian Telephone Industries, etc.

C. Financial institutions

Institutional finance for industries is provided by several term-lending institutions both at the national and state levels. The principal institutions which supply industrial finance are the following:

(a) The Industrial Development Bank of India (IDBI) was set up in 1964 to co-ordinate the activities of other financial institutions (including banks), supplement their resources to plan and promote industries of key significance to the industrial structure and to adopt and enforce a system of priorities in promoting future industrial growth. In 1970 the IDBI introduced a concessional scheme for promotion of industrial projects in backward areas. Its principal functions and operations have been entrusted to three separate wings: domestic finance, international finance and small and village industries. Up to 31 December 1984 the Bank had sanctioned financial assistance (excluding guarantees) totalling Rs. 128,559 million, of which 42.4 per cent to backward regions and 30.8 per cent to the small-scale sector.

(b) The Industrial Finance Corporation of India (IFCI), established in 1948, now a subsidiary of the Industrial Development Bank of India, provides long-term loan assistance to industrial concerns, both in the public and private sectors. The authorized capital amounts to Rs. 500 million.

(c) Eighteen State Financial Corporations, including the Tamil Nadu Industrial and Investment Corporation, supply industrial finance to medium- and small-scale sectors. The total loans sanctioned by the corporations up to March 1980 was Rs. 15,710 million.

(d) The Industrial Credit and Investment Corporation of India (ICICI) was set up in 1955 to channel overseas grants and loans into industrial development. The authorized capital amounts to Rs. 500 million.

(e) The Industrial Reconstruction Corporation of India (IRCI), set up in 1971, is mainly concerned with the revival and revitalization of industrial units which have closed down or are facing closure but show promise of viability by promoting the reconstruction of share capital, strengthening management, providing finance on soft terms, assisting in improving technology and by improving labour relations. As of 30 September 1980 IRCI had sanctioned loan assistance of Rs. 850 million. By act of parliament the IRCI has recently been converted into the Reconstruction Bank of India.

(f) The Unit Trust of India (UTI) was established in 1964 as a public sector investment institution for mobilising community savings and channeling them into productive corporate investments so as to provide for the growth and diversification of the economy. To achieve this, UTI provides opportunities to private investors, particularly in small and medium income groups, to participate indirectly in the ownership of shares and debentures of joint stock companies. Total investments amounted to Rs. 8.7 billion as of end June 1984.

(g) The Export-Import Bank of India (Eximbank) was established in 1982 to strengthen institutional backing for non-traditional exports. The authorized capital of the Bank amounts to Rs. 2 billion. The Bank operates various lending programmes to promote exports of engineering and capital goods and related services.

(h) General Insurance Corporation of India (GIC) was established to take over the role of private general insurance companies which were nationalized in 1973. Seventy per cent of investments are reserved for specified investments in the public sector.

(i) The Indian Investment Centre was established by the Government as an autonomous society in 1960 primarily to assist Indian and foreign industrialists on matters relating to investment of foreign private capital in industrial ventures in India. Its headquarters is in Delhi and it has branches in New York and Dusseldorf.

D. Research and development

The total annual expenditure on science and technology is now close to 0.6 per cent of GNP. Industrial research in India is mainly State sponsored but is also undertaken by private industries, universities and other academic institutions.

The national organization for industrial research is the Council of Scientific and Industrial Research (CSIR), which has been in existence since 1942. The CSIR has a large network of national laboratories or institutes and extension centres. Its main objectives are the promotion, guidance and co-ordination of scientific and industrial research in India. The National Research and Development Corporation (NRDC) is a public sector undertaking set up in 1953 by the Central Government as a link between research and industry. The main function of the NRDC is commercialization of the technology developed in various research institutes and universities.

Private research institutes include, inter alia, Indian Jute Manufacturers Research Institute, the Sri Ram Institute for Industrial Research, the Ciba Research Centre, the Rubber Research Institute and the Tata Institute.

E. Small-scale industry support

Technical advice and assistance to small-scale manufacturers is provided by the Small Industries Development Organization through its network of service and training centres. Two new centres, namely the Central Institute of Tool Designs (Hyderabad) and the Institute for Design Electrical Measuring Instruments (Bombay), are providing technical guidance and training to entrepreneurs. Four Regional Testing Centres have been established at New Delhi, Calcutta, Bombay and Madras for providing testing facilities in mechanical, metallurgical, chemical and electrical trades.

The Union Government set up a number of agencies to help village and small industries. These include the Small-scale Industries Board, the Khadi and Village Industries Commission, the All India Handicrafts Board, the All India Handloom Board, the Coir Board and the Central Silk Board.

The National Small Industries Corporation, set up in 1955, operates a scheme for procuring machinery for small-scale manufacturers on a purchase basis on concessional terms. It also assists the small-scale sector in processing orders from Government departments and agencies.

Small-scale industrial development corporations have been set up in each state with the prime objective of promoting small scale industries with particular emphases on self employment schemes.

F. Consultancy and design services

The development of consultancy services was initiated during the First Five-year Plan period (1951-1956). In 1977, there were about 155 consultancy organizations. The consultancy services have been developed as either divisions of large public sector undertakings like Bharat Heavy Electricals Ltd., and Fertilizer Corporation of India or as captive facilities within Government departments such as Railway Design and Standards Organization of the Indian Railways.

The National Association of Consulting Engineers is considered as central organization to co-ordinate the activities of consultancy organizations in India.

The National Industrial Development Corporation (NIDC) which was set up in 1954 for the rehabilitation and modernization of cotton textiles and jute industries and for the expansion of machine tool units, has recently assumed consultancy service functions to help such industries.

G. Standardization

The Indian Standards Institution, set up in 1947, promotes standardization and quality control in industrial technology and imparts training in standardization techniques to executives and technical personnel.

The quality control and inspection of products is governed by the Export Quality Control and Inspection Act of 1963, and is undertaken by the Export Inspection Council.

H. Extension services

The National Productivity Council (NPC), set up in 1958 as an autonomous organization under the Ministry of Industry, is a special agency for promoting efficiency and productivity in industry, as well as in other businesses and trades. The NPC has established six regional directorates and has sponsored 46 Local Productivity Councils.

I. Specialized organizations for export promotion:[1/]

- The Central Advisory Council on Trade (1978,

1/ Sources: Ministry of Industry, "India's Experience in Development of Infrastructure for Industry", Round Table Ministerial Meeting on Industrial and Technological Co-operation among Developing Countries, New Delhi, 4-8 January 1977, organized by UNIDO in co-operation with the Government of the Republic of India; and "India: A Reference Annual", 1981.

- The Trade Development Authority
- The Federation of Indian Export Organizations co-ordinates and supplements the export promotion activities of organizations such as the Export Promotion Councils, and Chambers of Commerce and Industry.
- Commodity Boards, Export Promotion Councils, Trade Associations
- The Indian Institute for Foreign Trade (New Delhi)
- Export Processing Zone (Santa Cruz, Bombay)
- Handicrafts and Handloom Export Corporation
- Trade Fair Authority of India
- The State Trading Corporation
- Minerals and Metals Trading Corporation
- Projects and Equipment Corporation of India.

4. RESOURCES FOR INDUSTRIAL DEVELOPMENT

4.1 Human resources

The labour force (age group 15-59) in 1982 was estimated at 276 million. Employment data on a reliable and regular basis are available only for relatively large- and medium-scale manufacturing establishments in the organized sector. However, this covers only a small fraction of the total work force. Employment in this sector in 1982/83 was about 23.9 million, of which 16.4 million were in the public sector and 7.5 million in the private sector. Most employees are in services (9.1 million), followed by manufacturing (6.3 million), transportation and communication (2.9 million). Manufacturing employment in the organised sector was 6.263 million in 1982/83 of which 74 per cent in the private and 26 per cent in the public sector. The village and small industries employed 23.3 million persons in 1979/80 (part- and full-time).

Training is imparted in 32 engineering and 23 non-engineering centres approved by the National Council for Training in Vocational Trades to young people within the age group of 15 to 25 years.[1/] For this purpose, 356 permanently and 139 provisionally affiliated Government Industrial Training Institutes have been established in various parts of the country. In addition, there are 156 permanently and 180 provisionally affiliated private Industrial Training Institutes. These are affiliated with the National Council for Training in Vocational Trades. The overall enrolment capacity of these institutes is 192,000.

There are six Central Government training institutes for the training of instructors which come under the Directorate General of Employment and Training. In order to meet the need for advanced and specialized craftsmen in industry, the following institutions have been established:

1/ India, "India's Experience in Development of Infrastructure for Industry", New Delhi, 1977, pp. 13-16; Government of India, "India: A Reference Annual, 1981", Education, pp. 43-57; Basic Economic Data, pp. 159-169; Labour, pp. 376-396.

Dear Reader,

Would you like to have your name included in the mailing list for the *Country Industrial Development Review Series*?

In order to make future issues more relevant and informative and to aid in the updating and revision of the *Reviews*, the staff of the Regional and Country Studies Branch solicit your comments and suggestions. We would therefore appreciate your response to the questions listed below. Please return this pre-addressed form to UNIDO (as an aerogramme—no envelope needed).

Industrial Development Review of **INDIA**

(a) Do you consider the *Industrial Development Review*:

	Check
Very important	☐
Useful	☐
Of little importance	☐

(b) For which particular purpose is the *Review* useful? _____

_____

_____

_____

(c) Suggest additional topics to be covered or additional emphasis on specific subject _____

_____

_____

_____

(d) Criticism of analyses and other comments: _____

_____

_____

_____

(e) Which of the following activities are you involved in?

	Check
Government policy making	☐
International aid	☐
Business/industry	☐
Industrial institution	☐
Academic research	☐
Journalism	☐
Other (please specify)	☐

(f) Would you like to receive *Reviews* on:

	Check
Asia and Pacific countries	☐
West Asian (Arab) countries	☐
African countries	☐
Latin American countries	☐
All developing regions referred to above	☐
Specific countries (please specify)	☐

(g) Please send future *Reviews* to the following address:

_____ (Name)

_____ (Occupation, title)

_____ (Organization)

_____ (District, city)

_____ (P.O. Box)

_____ (Country)

(Additional comments)

Fold 1

AEROGRAMME

Return Address:

STAMP

Regional and Country Studies Branch (D2036)
United Nations Industrial Development Organization
P.O. Box 300
A-1400 Vienna
AUSTRIA

Fold 2

Please close with staples

(i) Advanced Training Institute, Madras;

(ii) Foreman Training Institute, Bangalore;

(iii) Central Staff Training and Research Institute, Calcutta; and

(iv) Advanced Training Institute in Electronics, Hyderabad.

For the purpose of training of middle level manpower, diploma courses are offered in 337 polytechnics with an annual enrolment capacity of about 50,000 students. They offer a variety of specializations in engineering and technical areas, as well as in a few non-technical fields.

For professional engineers and technicians, 159 engineering colleges offer courses leading to the Bachelor's degree in engineering and technology. The total annual admission capacity for these courses is about 25,000.

The number of institutions offering post-graduate courses is 76, with an annual acceptance capacity of about 5,500. These centres also offer part-time courses at the post-graduate level for those who are already engaged in relevant professional activities.

About 30 institutions, mostly in the university sector, offer management courses both at the first degree and advanced levels. The courses cover training at the Master's degree level for the management and business administration degree, and the annual admission capacity is about 1,200.

Five national institutions at Bombay, Kanpur, Kharagpur, Madras and New Delhi, known as Indian Institutes of Technology provide facilities for higher level education and research in engineering and technology. In addition, 70 other engineering colleges and university departments offer facilities for post-graduate courses and research with an annual intake of about 3,500 students. There are also 15 regional engineering colleges and a number of other technological institutions and polytechnics providing facilities for education in various branches of engineering and technology. For specialized courses such as mining and metallurgy, industrial engineering, forge and foundry and architecture, a number of centres have been established. Various engineering colleges

and polytechnics are now offering 'sandwich' courses in collaboration with industry, in order to integrate engineering education with practical training.

In 1980, the number of institutions conducting degree and diploma courses in engineering and technology were 159 and 337 respectively as compared to 53 and 89 in 1951.

Under the Apprenticeship Act of 1961, industrial establishments are required to induct one trainee for 7 workers employed at various levels. The cost of such training is shared between the said establishments and the Government on a regulated basis.

4.2 Raw material resources [1/]

I. Agricultural resources

The agricultural sector has made an impressive contribution to the performance of the Indian economy during 1983-84. The output of food grains has increased significantly. For the first time in recent years there is plentiful availability of food grains.

Agriculture provides raw materials for a wide range of Indian industries. Major cash crops processed for the food manufacturing and textile industries include cotton, jute, oil seeds, tobaccco, tea, coffee, rubber and cardamom. Production data on principal crops during 1950/51-1983/84 (selected years) are presented in Table 6, while data on index numbers of agricultural production is provided in Table A.17.

1/ Government of India, 1981, op.cit., pp. 199-234, 288-331;
India, Planning Commission, op.cit., pp. 97-147, 259-295;
India, Economic Survey, 1980-1981, New Delhi;
India, Central Statistical Organization, Statistical Abstract, India, 1975, New Delhi, 1976. No. 21;
The Economist Intelligence Unit, Quarterly Economic Review of India, Nepal, Annual Supplement 1983;
India, Economic and Social Commission for Asia and Pacific, Activities of India in Appraisal, Development and Management of Mineral Exploration and Development, Bangkok, 21-27 January 1976;
World Bank, India: Structural Change and Development Perspectives, April 1985.

Table 6. Production of principal crops, 1950/51-1983/84 (selected years)[a/]

	1950/51	1960/61	1965/66	1975/76	1980/81	1981/82	1982/83	1983/84
A. Foodgrains	50.82	82.02	72.35	121.03	129.59	133.30	129.52	151.54
1. Cereals	42.41	69.31	62.40	107.99	118.96	121.79	117.66	138.89
Rice	20.58	34.57	30.59	48.74	53.63	53.25	47.12	59.77
Wheat	6.46	11.00	10.39	28.85	36.31	37.45	42.79	45.15
Jowar	5.49	9.81	7.58	9.50	10.43	12.06	10.75	11.93
Bajra	2.59	3.28	3.75	5.74	5.34	5.54	5.13	7.63
Maize	1.73	4.08	4.82	7.26	6.96	6.90	6.55	7.92
Others	5.56	6.57	5.27	7.90	6.29	6.59	5.32	6.49
2. Pulses	8.41	12.71	9.95	13.04	10.63	11.51	11.86	12.65
Grams	3.65	6.25	4.22	5.88	4.33	4.64	5.29	4.75
B. Non-foodgrains								
1. Oilseeds[b/]	5.16	6.98	6.40	9.91	8.38	10.99	8.76	11.31
Groundnut	3.48	4.81	4.26	6.75	5.01	7.22	5.28	7.28
Rape and Mustard	0.76	1.35	1.30	1.94	2.30	2.38	2.21	2.57
2. Sugarcane (cane)	57.05	110.00	123.99	140.60	154.25	186.36	189.51	177.02
3. Cotton	3.04	5.60	4.85	5.95	7.01	7.88	7.53	6.58
4. i. Jute	3.31	4.13	4.48	4.44	6.51	6.79	5.95	6.06
ii. Mesta	...	1.13	1.30	1.47	1.65	1.58	1.23	1.36

Source: Ministry of Agriculture. Quoted from World Bank, India: Structural Change and Development Perspectives, Vol. I and II, Report No. 5593-IN, April 24, 1985.

Notes: a/ Units of measurement of all commodities is million tonnes, except in the case of cotton, jute and mesta whose production is in terms of million bales.

b/ Five major oilseeds-groundnuts, rape and mustard, linseed, castorseed and sesamum.

Cotton

The average annual production of cotton during 1980/81-1983/84 was about 7.25 million bales, and in 1983/84 it was about 6.6 million bales. Industry now consumes as much as 1.0 to 1.1 million bales of man-made fibres, of which 0.6 to 0.7 million bales are imported. The Sixth Plan aimed at a target of 9.2 million bales by 1985. The production of cotton for 1984/85 is estimated at 8.6 - 8.8 million bales.

Jute

The Sixth Plan aimed at a target of 9.0 million bales by 1985. Production reached 6 million bales in 1983/84. The jute crop thus failed for the second consecutive season in 1983/84 to reach the target.

Sugarcane

Production in 1983/84 amounted to 177 million tons. It was planned to increase prodction to 215 million tons by the end of the Sixth Plan period 1984/85.

Livestock

India has abundant livestock resources. These include: cattle - 182 million, goats - 71 million, buffaloes - 61 million, horses and ponies - 1 million, sheep - 41 million, pigs - 10 million, poultry - 145 million.

With the present availability of 33.2 million raw hides and 69.9 million raw skins per annum, India is well placed to satisfy a significant part of the world's requirement of leather footwear and other goods. The pattern of leather exports has undergone a significant change during the last decade. The share of finished leather in the total exports has increased significantly.

Fish

Fish production during 1979 was about 2.343 million tons, of which 1.495 million tons came from marine sources and 0.848 million tons from inland sources.

Forestry

Finally, forests occupy an area of about 74,600 million hectares in India. About half of this area is reserved for the production of timber and other forestry products. Apart from providing raw materials for pulp, panel products, matchwood and other wood-based industries, forests are also a source of a number of useful minor products like bamboo, canes, kendu leaves, grasses, essential oils, medicinal plants, lac, resins, fatty oils and fats,

gums, tanning materials, dyes, animal products, etc. Quite a number of these are valuable exchange earners.

II. Mineral resources

India is richly endowed with minerals. The estimated deposits of some of the principal minerals found in the country are given below:

Apatite and Phosphorite

Apatite deposits of commercial importance exist in the Singhbhum district of Bihar, Vishakhapatnam district of Andhra Pradesh and Purulia district of West Bengal. Deposits of phosphorite are located in Madhya Pradesh, Rajasthan and uttar Pradesh. They have been estimated at about 128.6 million tons.

Bauxite

There are important deposits of bauxite in Bihar, Goa, Gujarat, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa and Tamil Nadu. Promising reserves have been located in Andhra Pradesh, Goa, Kerala and Uttar Pradesh. The reserves of bauxite of all grades have been estimated at 2,403 million tons.

Coal and lignite

There are vast deposits of coal of Gondwana formation in Andhra Pradesh, Bihar, Madhya Pradesh, Maharashtra, Orissa and West Bengal and of the tertiary formation in Arunachal Pradesh, Assam, Meghalaya, Jammu and kashmir and Nagaland. The overall reserves of coal, both coking and non-coking have been estimated at 140,000 million tons. Of these, the reserves of coking coal in the Gondwana coal-fields alone are about 19,400 million tons.

There are significant reserves of lignite in Gujarat, Jammu and Kashmir, Rajasthan and Tamil Nadu. The total estimated reserves are about 2,100 million tons, of which Neyveli field in Tamil Nadu alone contains 1,920 million tons.

Chromite

There are deposits of economic significance in Bihar, Karnataka, Maharashtra, Orissa and Tamil Nadu. The total reserves of chromite, including lump and fine varieties, are about 10 million tons.

Copper ore

The important copper ore bearing areas are Agnigundala in Andhra Pradesh, Chitradurga, Kalyadi and Thinthini in Karnataka, Singhbhum Mosabani and Rakka in Bihar, Malanjkand in Madhya Pradesh and Khetri and Dariba in Rajasthan. Besides minor deposits are also known in Gujarat, Orissa and Skkim. The aggregate reserves have been estimated at about 456 million tons, with a total metal content of 5.6 million tons.

Diamond

The Panna diamond belt, the only diamond producing area in the country, is spread over the districts of Panna, Chatarpur and Satna (only some parts) in Madhya Pradesh as well as some parts of the Banda district of Uttar Pradesh. The diamond field in the South is spread over the districts of Anantapur, Cuddapah, Kurnool and Krishna in Andhra Pradesh and Bellary in Karnataka. Kimberlitic pipe rock has been noticed for the first time in the jungle area of Mirzapur in Uttar Pradesh.

Gold

There are three important groups of gold mines in the country: viz., Ramagiri gold field, Anantapur district, Andhra Pradesh; Kolar gold field, kolar district; and Hutti mines, Raichur district, in Karnataka. Karnataka is the only gold producing state in the country. The estimated gold ore reserves in Karnataka are about 8.9 million tons with a total gold content of 66,439 kg.

Gypsum

Deposits of gypsum are estimated at 1,204 million tons, of which Rajasthan, Jammu and Kashmir and Tamil Nadu have 1,071.8, 105 and 17.7 million tons respectively.

Ilmenite

It is found mainly in the eastern and western coasts of India, associated with the beach sands. Of the exploitable deposits of this

type, those in Kerela, Orissa and Tamil Nadu are the most important. Total inferred reserves of ilmenite in beach sands have been put at over 52 million tons.

Iron ore

There are large deposits of iron ore in Bihar, Goa, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu and Orissa. The estimated reserves of haematitic ore, containing at least 55 per cent of iron, are about 10,166 million tons. Besides, there are also about 4.682 million tons of magnesite ore reserves with 25 to 62 per cent iron content. Production of iron ore declined to 38.7 million tons in 1983 from around 42 million tons during the three precedirg years.

Lead zinc ore

The known reserves of lead-zinc ore are located in Gujarat and Rajasthan. Lead ore deposits are known to exist at Agnigundala in Andhra Pradesh and Sargipalle in Orissa. The total reserves have been estimated at about 346 million tons and in terms of metal content at 18 million tons.

Manganese ore

Rich deposits of manganese ore are located in Andhra Pradesh, Goa, Karnataka, Madhya Pradesh, Maharashtra and Orissa. The total measured, indicated and inferred reserves are 80 million tons. Production of manganese ore has gradually declined from 1.7 million tons in 1980 to 1.3 million tons in 1983

Mica

Economic deposits of mica are found in three important belts in Andhra Pradesh, Bihar and Rajasthan.

Nickel ore

Nickel ore is found in the Cuttak and Mayurbhanj districts of Orissa. The total reserves are placed at 58.1 million tons of which 40.87 million tons are estimated in Kansa block and 13.4 million tons in the Sarnabil-Sukarangi area.

Oil

The potential oil-bearing areas are located in Assam, Tripura, Manipur, West Bengal, Ganga Valley, Punjab, Himachal Pradesh, Kutch,

eastern and western coastal areas (in Tamil Nadu, Andhra Pradesh and Kerala), Andaman and Nicobar Islands, Lakshadweep and in the offshore areas in the continental shelf.

4.3 Energy resources [1/]

The requirements of energy in India are met from both commercial and non-commercial sources. The most important sources of commercial forms of energy are coal and oil (Tables 7 and 8) Hydro-power and coal contribute

Table 7. Commercial primary energy balance, 1981
(thousand tons coal equivalent)

Production		Apparent consumption	
Solid fuels	89,899	Solid fuels	87,994
Crude petroleum & natural gas liquids	21,701	Liquid fuels b/c/	39,473
Natural gas	2,329	Natural gas b/	2,329
Hydroelectricity a/	21,584	Hydroelectricity a/	21,584
Nuclear power a/	1,392	Nuclear power a/	1,392
		Less net exports of	-18
Total production	136,905	Total consumption	152,754
Imports		**Exports**	
Solid fuels	620	Solid fuels	199
Crude petroleum	22,613	Electricity a/	20
Petroleum products	7,752	Total exports	139
Electricity a/	2	Bunkers	788
Total imports	30,987	Increase in crude stocks	1,380
		Increase in solid fuels stocks	2,401
		Balancing item d/	10,430
Total supply	167,892	Total demand	167,892

Source: The Economist Intelligence Unit, Quarterly Economic Review of India, Nepal, Annual Supplement 1983, p. 15.

a/ The amount of energy a thermal power station of average (28 per cent) efficiency would require to produce the same amount of electricity.
b/ Assuming no change in stocks.
c/ Including refinery consumption.
d/ Comprises output of 5.2 million tons of non-energy petroleum products (e.g. naphtha, lubricants), unidentified changes in crude stocks and statistical discrepancy.

1/ Government of India, 1981, op.cit., pp. 267-288. India, Planning Commission, 1980-1985, op.cit., pp. 228-259.

primarily to electricity production. Firewood, cowdung cakes and vegetables waste, which constitute the non-commercial forms of energy, meet the bulk of the rural energy demand.

Over the period 1974-81 energy consumption has been growing at the rate of 5.6 per cent per annum. Energy production has grown at 5.4 per cent during this period. India produces 80 per cent of its own energy requirement, meeting over half of its needs from solid fuels (coal). The balance consists of imported oil. Per capita energy consumption at 158 kg coal equivalent per person in 1981 is one of the lowest in the world. Much of the energy consumed in the subsistence sector, however, such as dung, goes unrecorded. Demand for energy continues to increase rapidly but the high price of gasoline and serious efforts to reduce imports have resulted in more modest growth of demand for petroleum.

Coal reserves are estimated at nearly 112 billion tons, of which 23 billion tons are proven. There are also large lignite reserves (2.1 billion tons), mainly in Tamil Nadu. Coal production stagnated for five years until 1980/81 at around 105 million tons annually which led to a substantial coal shortage. Production in 1981/82 was about 131 million tons. There are ambitious plans to raise coal production to 165 million tons in 1984/85, with new, mainly open cast mines.

India's oil reserves have increased following offshore oil discoveries made in 1975. Oil reserves have been estimated at 1.5 billion tons and 4.5 billion tons equivalent in the form of gas. In 1982/83, 21.7 million tons were produced locally against a total demand of 38.5 million tons - roughly double the output of 1980/81. In order to raise production and to exploit new discoveries - in the Ratnagiri field for example - as rapidly as possible, the Government has sanctioned ambitious exploration plans and intends to invite foreign oil companies to join the exploration.

The total installed electricity capacity (utilities) in March 1983 was 34,630 mw, of which 12,710 mw was hydro, 860 mw nuclear and 21,060 mw thermal. Planning in the Sixth Five-year Plan was to add 20,000 mw to capacity: 15,000 mw thermal, 1,200 nuclear and the balance hydro. However, the annual addition to capacity is falling well short of these targets and may total about 14,000 mw over the five-year period.

Table 8. Production of coal, crude oil and electricity, 1975/76 - 1982/83
(millions of tons)

	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83
Coal (including lignite)	102.7	104.8	104.4	105.3	106.9	118.8	130.1	137.1
Crude oil	8.7	9.0	10.7	11.6	11.8	10.5	16.2	21.1
Electricity generated by public utilities (bn kwh)	79.9	89.3	92.3	102.5	104.6	110.8	122.0	130.1

Source: The Economist Intelligence Unit, Quarterly Economic Review of India, Nepal, Annual Supplement, 1983 and 1984.

Significant problems in both generation and transmission contributed to a capacity utilisation of only 50 per cent in 1982/83.

4.4 Financial resources

Investment (equity and loans) in the industrial public sector grew from Rs. 43,010 million in 1969/70 to Rs. 128,514 million in 1977/78 and to Rs. 156,020 million in 1978/79. In the period 1974-79, public sector outlay in the small and village industries amounted to Rs. 5,350.3 million.

In the Fifth Plan period (1973/74-1978/79) expenditures on industry and minerals in the public sector amounted to Rs. 73,620 million (18.7 per cent of the total expenditure in public sector), of which village and small-scale industries received Rs. 5,100 million (1.3 per cent), large- and medium-scale industries Rs. 52,970 million (13.5 per cent) and fertilizer and pesticides Rs. 15,550 million (3.0 per cent).

The planned investment for the period 1980-1985 [1/] in the manufacturing sector (public and private) is estimated at Rs. 455,150 million (28.7 per cent

1/ India, Planning Commission, op.cit., Public Sector Outlay, pp.55-59; Resources for the Plan, pp. 59-70; Village and Small Industries, pp. 186-203.

of the total planned investment of Rs. 1,587,100 million) and in the mining and quarrying sector Rs. 65,750 million (4.14 per cent of the total planned investment). Of the total investment in manufacturing and minerals (Rs. 520,900 million), it is estimated that Rs. 303,230 million would be in the private sector and Rs. 217,670 million in the public sector.

Industry and minerals were to be allocated 15.4 per cent of Government expenditures on the Sixth Plan, or Rs. 150,176 million. Out of this, the village and small-scale sector was to receive Rs. 17,805 million. Energy, science and technology received relatively a higher portion (12.7 per cent).

To supplement the capital resources and know-how for rapid industrial development, the Government of India solicits foreign assistance in desirable cases. The policy in regard to foreign capital is governed by the Industrial Policy Resolution of 1948 and the Prime Minister's statement in the Constituent Assembly in 1949. Foreign capital is not permitted in the fields of banking, commerce, finance, plantations, trading , consumer and high profit yielding industries.

As Table 9 shows, domestic savings were expected to finance 94 per cent of total investment during the Sixth Plan period. Public sector investment represented 52 per cent of the total - public sector savings are, however, only 22.8 per cent of total domestic savings.

Table 9. Inter-sectoral capital flows, Sixth Plan, 1979/80-1984/85
(Rs. billion at 1979/80 prices)

Item	Public sector	Corporate + co-operative sector	Household sector	Total
Domestic savings	342,000	105,880	1,048,590	1,496,470
Transfer from other domestic sectors	388,719	89,940	-478,650	-
Inflow from rest of the world	109,290	-	-18,660	90,630
Investment	840,000	195,820	551,280	1,587,100

Source: India, Planning Commission, Sixth Five-year Plan, 1980-1985.

The rate of investment in India has grown from around 19 per cent of GDP in the early 1970s to about 24.5 per cent by 1982. It has been estimated that about half of this represents a "nominal" increase attributable to the rise in the price of investment goods. Most of the real investment increase took place in the public industrial sector.

Gross national savings have grown faster than investment during the second half of the 1970s - to 22.5 per cent of GDP. During this period, public sector savings grew more rapidly than private sector savings but in the 1980-82 period this trend has been reversed and there has also been an increased tendency for foreign borrowing. In 1982/83 the savings rate stood at around 23 per cent. Public enterprise resource mobilisation remained positive during 1980-83 largely due to the rapid expansion of domestic oil production. The annual growth rate of gross domestic capital formation by the manufacturing sector during the period 1970/71 to 1980/81 was 5.8 per cent, valued at 1970/71 prices. This was slightly above the rate of growth of aggregate gross domestic capital formation and not statistically different from the growth rate in gross capital formation achieved in agriculture. It has been estimated that net transfer of aid funds declined marginally from $1,645.86 million in 1982/83 to $1,645.17 million in 1983/84. This represents a significant shortfall in real terms, and aid prospects have not improved for the 1984/85 financial year. This must require an increase in the resource mobilisation capacity of Indian manufacturing, implying growth acceleration in the sector. This has been an important objective of Indian industrial policy.

4.5 Manufacturing prospects and technical assistance to industry

The current revival in industrial activity indicates that the prospects for accelerating growth are good, provided infrastructural constraints can be relieved and productivity levels raised. The Government is conscious of both these needs and has instituted a series of reforms to attain these objectives.

The key to accelerated growth of the Indian economy and its manufacturing sector lies in the interrelated areas of industrial and trade policy, export promotion, efficiency of resources utilization and continued improvement in agricultural performance.

The Seventh Plan is likely to aim at a macro-economic framework[1/] for 5 per cent GDP growth; which would imply annual value added growth rates of 3.2 per cent for the primary sector, 7 per cent for the secondary sector, mainly manufacturing, and 5.2 per cent for the service sector.

A key factor in achieving 7 per cent industrial growth, chiefly manufacturing growth, will be the availability of sufficient imports required by the manufacturing sector. Total import growth during the Seventh Plan period is estimated at 6.4 per cent. To keep the current account deficit on the balance of payments within manageable proportions, total exports growth would need to accelerate from 4-5 per cent annually over the last few years to 7 per cent in the next year and about 9 per cent by 1989/90; this is clearly a much higher growth rate that India has ever attained in the past. Even with the aimed export growth targets the debt service ratio will increase from current level of 15.5 per cent to 21.6 per cent by the year 1989/90. If exports fell significantly short of the target the balance of payments deficit and debt service ratio would reach serious proportions, necessitating reduced imports and reverting to a lower economic growth pattern.

Since manufacturing would be the main vehicle of economic growth and structural change, it is through modifications in trade and industrial policies leading to greater efficiency in capacity utilisation, that growth stimulation will have to come about. Three key government committees have recently been examining ways and means to improve export and industrial performance and their recommendations are crucial to the formulations of the Government's new policies, some of which are already being implemented.

Within the manufacturing sector emphasis is being put on the development of the electronics industry and on the growth of export-oriented manufactures. Collaboration is increasingly being sought with foreign investors to realize domestic industrial potential and surmount international protectionist barriers.

1/ World Bank, India: Structural Change and Development Perspectives, April 24, 1985,

Care, however, would need to be taken to ensure that the new emphasis on "opening up" the Indian industrial sector does not lead to a neglect of the technological capability that has been created at great cost since independence. The running down of the steel industry is a case in point. Excess capacity in this sector, reflects flagging industrial demand at the moment and is no indicator of India's long-run needs for this product. A substantial reduction in steel capacity can prove undesirable from the perspective of India's long-term development.

India belongs to a group of few developing countries which have the capacity to achieve industrial self-reliance and make this a basis for regional economic co-operation. While recognizing that expanding manufactured exports is an important objective in the next few years, which will see the maturing of a series of international debts, it is important that industrial export growth should not take place at the expense of the relative contraction of the basic industries which represent the core of the Indian manufacturing sector.

Increasing the economic linkages of the advanced and modernised sectors of Indian industry with traditional industry and with the rural sector can play an important part in demand stimulation for industrial revival and for creating conditions within the economy for self-sustaining growth.

The pace at which industrial policy reforms aimed at increasing productivity and the efficiency of management are introduced will to some extent be conditioned by the level of unemployment within the manufacturing sector. Steps would need be taken to harmonize the introduction of these reforms with policies that stimulate industrial employment. This is particularly curcial in an economy which has an estimated unemployment rate of over 10 per cent - and disguised unemployment is far higher (and almost impossible to estimate with any accuracy). This means that very careful industrial planning is required for optimal economic restructuring. The choice is not between "liberalisation" and "State control", but about the way in which controls and incentives can be combined to improve economic conditions in a country where 50 per cent of the population - almost 400 million people - still live at the subsistence level.

The fact that India's most diverse and complex forms of technology exports coexist with some technological lags in large segments of manufacturing industry does not support the argument that the sale of technology abroad by manufacturing firms is part of a natural process of growth and technological development. Recent research findings show that dynamic enterprises started to explore foreign markets for their products because of cyclical performance and other constraints in the domestic market. Research on macroeconomic performance and technological development may be encouraged to find solutions for the paradoxical situation where technological lags are compatible with rapid growth of technology exports.[1/]

Achieving the envisaged annual growth rate of 7 per cent in the industrial sector during the Seventh Plan implies an increase in gross capital inflows to $34.5 billion by the end of the Plan period. Since foreign aid and private investment are expected to increase only marginally, the additional inflow will have to be obtained from commercial sources. To meet her foreign capital requirements, it has been projected that India's commercial borrowing would increase to $5.2 billion from the present level of $1.2 billion. If the new policy measures improve productivity, capacity utilization and above all performance of public sector enterprises, it will create a healthy industrial climate for additional capital inflow from industrial countries.

The success of the country's move towards more open trade policies partly depends on the inflow of concessional aid; the thrust of which has been consistent with the country's development objectives. In the past foreign concessional assistance has played a crucial part in supplementing India's foreign exchange and investment resources. Recent trends however indicate that such assistance has declined. Concessional lending from the World Bank affiliate, the International Development Association (IDA), to India has declined from a peak of more than $ 1.5 billion in fiscal year 1980/81 to approximately $650 million in fiscal year 1984/85.

1/ For a further discussion on this subject, see Sanjaya Lall, op. cit.

India qualifies as an aid recipient as strongly as any other low-income country on any of the usual criteria for aid allocation, namely, per capita income, aid performance and policy change needing foreign exchange support. A resumption of previous levels of commercial assitance is important to support India's short- and medium-term growth targets and also essential in the light of India's prospective debt service ratio. Moreover commercial assistance is crucial as a cushion against any shortfall or delay in attaining the export growth target. For the current fiscal year 1985/86 India has received financial aid commitments of $4 billion from its Western aid donors. In Special Drawing Right (SDR) terms the new comitments increased by 5.5 per cent to 3.9 billion, but commercial lending from the International Development Association (IDA) remained at the level of $650 million.

India plays an important role in the UN system not only as a recipient but also as a donor. India provides about 100 experts to the UN system and around 1500 fellowships per year. The focus of India's technical assistance requirements is on high technology and self reliance. Bilateral technical assistance amounts to around $60 million per year. This together with UN assistance accounts for a total technical assistance of over $70 million which represent around 1 per cent of Official Development Assistance (ODA).

UNIDO is committed to "helping the developing countries to bridging the technological gap and to attain some degree of self-reliance to meet their basic needs".[1/] Projects currently underway are located in the metallurgical, engineering, chemical, agro-industries, textiles, cement industries, etc. A detailed list of current projects is given in Appendix B. Currently there are 55 UNDP funded and 12 non-UNDP funded UNIDO projects in India, covering both approved and operational projects. The approved figure for 1985 under UNDP funded projects is over $13 million. The third UNDP country programme for India started in April 1985 to coincide with the country's Seventh Five-year Plan.

1/ UNIDO, Annual Report of the Executive Director 1983, Industrial Development Board, Vienna, May 1984, p.2.

Given the size of UNIDO projects, the newly emerging modern small-scale sector, particularly active in the electronics field, is of importance. Recent interest in the modernization of the textile industry, popularising the use of microelectronic equipment and other innovative technologies may create further opportunities for relatively small-scale operations. Technical assistance also has a role to play in the provision of technical know-how to the research institutes serving the basic industries. With its vast technological capacity, India can play a role in enhancing the developing countries' capacity for technological self-reliance. An interesting development has been the establishment of the South Asian Regional Co-operation Organisation (SARCO) involving seven countries of South Asia. Identifying viable integrative projects and helping in their planning and implementation can provide important means for using India's technological capabilities for enhancing industrial development within the region. Finally, India plays an active role in assisting a number of developing countries within the framework of economic and technical co-operation among developing countries (ECDC and TCDC) and in the implementation of a number of bilaterial industrial co-operation schemes with both developed and developing countries.

Statistical Annex

Table A.1 Index of industrial production, by industry groups, 1951-1983 (selected years)

(Base 1970 = 100)

Industry Group	Weight	1951	1960	1970	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	Annual Average Growth Rates (% per annum) 1951-1960	1961-1970	1971-1980	1980-1983
I Mining & Quarrying	9.69	44.7	67.1	101.0	107.0	113.2	127.9	136.8	139.9	142.1	148.5	144.2	170.4	187.8	210.4	4.6	3.9	4.0	13.4
II Manufacturing	81.08	38.5	55.9	104.5	111.2	111.9	116.0	130.3	135.1	144.3	144.6	146.1	157.6	162.8	168.0	7.0	5.6	3.8	4.8
Food Industries	7.74	41.8	62.5	98.1	96.8	97.8	106.0	110.8	118.4	138.4	130.0	128.2	141.7	169.3	165.8	4.6	4.4	3.0	9.0
Beverage Industries	0.69			(117.0	193.7	142.4	186.1	262.6	347.0	387.9	279.2	383.6	415.7	573.0	540.6)			11.2	21.2
Tobacco Industries	2.21	33.0	56.9	(104.5	101.9	99.7	94.2	106.8	107.7	112.5	124.9	121.7	139.7	154.3	139.2)	6.2	5.7	1.7	4.6
Textiles	17.43	72.1	90.4	99.9	104.0	102.6	101.3	105.7	103.3	109.7	110.0	115.3	116.2	102.5	114.9	2.5	0.8	1.6	-0.1
Footwear & Other Wearing Apparels etc	0.34	39.4	62.0	99.5	92.5	89.9	91.0	90.7	80.4	73.1	75.8	70.2	85.6	77.4	88.1	5.2	3.8	-3.8	7.9
Wood & Cork except Furniture	0.49	19.8	45.4	112.6	50.1	103.2	105.6	115.4	131.4	124.0	129.5	121.8	87.3	107.1	206.4	9.7	9.7	0.9	19.2
Paper Products	2.24	17.7	46.1	104.3	109.2	116.1	108.5	111.8	112.8	121.0	124.0	131.0	148.0	152.7	144.3	11.2	8.3	2.6	3.3
Leather & Fur Products except Footwear	0.32	118.7	163.9	93.6	114.9	109.3	118.5	102.8	104.2	71.5	72.3	103.5	93.7	84.7	78.1	3.6	-5.4	1.1	-8.9
Rubber Products	2.22	25.9	46.2	108.9	112.7	121.0	123.1	121.7	127.9	143.2	142.7	150.3	152.6	163.5	172.8	6.6	7.5	3.6	4.8
Chemical & Chemical Products	10.90	18.2	42.9	112.2	126.8	123.0	132.8	155.4	171.6	182.6	187.3	183.3	207.6	217.0	224.3	10.0	8.3	5.6	7.0
Petroleum&Coal Products	1.62	3.7	33.5	106.2	111.4	113.0	119.6	124.8	132.7	140.9	153.4	137.4	160.6	174.8	187.9	27.7	12.2	2.9	11.0
Non-Metallic Mineral Products	3.33	19.9	51.1	109.7	115.7	118.1	119.0	140.8	147.4	152.4	157.7	159.8	167.9	176.6	187.5	11.1	6.9	4.3	5.5
Basic Metal Industries	8.84	22.1	47.6	102.8	102.2	104.2	116.4	139.7	144.8	144.9	138.9	133.7	148.2	158.2	158.3	8.9	6.5	3.0	5.8
Metal Products excluding Machinery&Transport Equipment	2.77	12.6	40.9	105.5	107.8	122.0	124.6	131.8	137.0	154.9	162.7	150.5	149.7	157.8	167.0	14.0	9.0	4.0	3.5
Mfg.of Machinery except Electrical Machinery	5.55	5.4	24.5	115.9	144.2	152.9	159.6	165.0	179.8	202.2	204.9	220.1	234.1	239.2	250.5	18.3	14.5	7.4	4.4
Electrical Machinery, Apparatus&Appliances	5.32	7.1	27.1	105.4	113.3	113.1	120.3	129.9	145.5	151.2	163.3	170.0	180.0	180.2	177.3	16.1	14.0	5.5	1.4
Transport Equipment	7.39	14.7	74.9	100.3	109.6	109.0	106.3	149.2	124.5	124.6	125.5	130.2	142.9	142.4	147.4	19.8	1.5	2.9	4.2
Miscellaneous Industries	1.68	14.2	83.3	95.7	84.8	78.3	73.3	80.6	99.0	133.4	120.6	109.2	99.4	88.8	n.a.	21.7	1.7	1.5	n.a
III Electricity Generated	9.23	10.7	29.9	107.2	114.8	124.1	138.6	160.3	165.4	183.6	193.0	197.3	220.4	236.0	247.4	12.1	12.5	7.0	7.8
IV General Index	100.00	29.7	54.3	104.4	111.1	113.1	119.2	133.7	138.3	147.7	149.5	150.6	164.6	172.0	179.7	6.9	6.0	4.2	6.1

Sources: 1. CSO, Monthly Statistics of the Production of Selected Industries of India, March 1979, Volume II.
2. CSO, Monthly Abstract of Statistics, various issues.

Quoted from World Bank, India: Structural Change and Development Perspectives, 24 April 1985.

Notes: The indices available on different bases, have been converted to base 1970.

Table A.2 Production of selected industries, 1950/51-1983/84 (selected years)

	Units	1950/1	60/1	70/1	75/6	77/8	78/9	79/0	80/1	81/2	82/3	83/4 (a)	April-Sept 1983	April-Sept 1984 (a)	% chg in April-Sep84 over April-Sep83
I. MINING															
Coal(including Lignite)	mln.tons	32.8	55.7	76.3	102.7	104.6	105.1	106.8	118.8	130.1	136.9	144.9	67.2	68.2	1.49
Iron Ore	mln.tons	3.0	11.0	32.5	42.2	44.0	38.6	39.0	42.2	40.8	41.6	38.2	15.9	17.0	6.92
Petroleum Crude	mln.tons	n.a	0.4	6.8	8.4	10.8	11.6	11.8	10.5	16.2	21.1	26.0	12.4	13.9	12.10
II.METALLURGICAL INDUSTRIES															
Pig Iron	mln.tons	1.7	4.3	7.0	8.5	9.5	9.5	8.6	9.6	9.7	9.6	9.2	4.2	4.4	4.76
Steel Ingots (b)	mln.tons	n.a	n.a	6.1	8.3	9.8	10.1	9.9	10.3	11.0	11.0	10.5	4.9	5.0	2.04
Finished Steel	mln.tons	1.0	2.4	4.6	5.8	7.0	7.7	6.9	6.8	7.8	8.1	6.1	2.7	3.1	14.81
Aluminum (virgin metal)	'000 tons	4.0	18.3	168.6	187.3	178.5	213.7	191.9	199.1	206.8	211.5	220.3	96.6	135.5	40.27
III.MECHANICAL ENGINEERING INDUSTRIES															
Machine Tools	mln.Rs.	3	70	430	1137	1076	1328	1652	1962	2499	2699	2724	1227	1348	9.86
Sugar Mill Machinery	mln.Rs.	n.a	44	139	330	410	352	316	242	263	415	498	254	217	-14.60
Cotton Textile Machinery	mln.Rs.	n.a	104	303	1315	1456	1930	2362	3032	3472	3294	3512	1685	n.a	n.a
Cement Machinery	mln.Rs.	n.a	6	42	57	231	387	253	336	437	453	448	214	271	26.64
Railway Wagons(c)	'000 nos.	2.9	11.9	11.1	12.2	12.2	11.6	12.1	13.6	17.8	15.4	17.4	7.7	6.6	-14.30
Automobiles	'000 nos.	16.5	55.0	87.9	72.7	84.4	103.4	104.6	121.1	154.4	151.4	158.2	75.4	88.0	16.71
i) Commercial Vehicles	'000 nos.	8.6	28.4	41.2	43.8	41.0	57.6	57.4	71.7	91.1	86.0	88.3	41.0	44.4	8.29
ii) Passenger Cars & Jeeps	'000 nos.	7.9	26.6	46.7	28.9	43.4	45.8	47.2	49.4	63.3	65.4	69.9	34.4	43.6	26.74
Motor Cycles & Scooters	'000 nos.	n.a	19.4	97.0	182.7	226.0	254.9	246.6	317.1	316.2	399.8	440.1	211.3	247.7	17.23
Diesel Engines(stationary)	'000 nos.	5.5	44.7	65.0	135.5	133.8	143.5	144.6	173.9	174.5	156 5	156.1	77.4	83.3	7.62
Diesel Engines (vehicular)	'000 nos.	n.a	10.8	3.2	4.2	3.2	3.6	2.4	5.2	7.1	5.8	4.2	2.6	4.4	69.23
Power Driven Pumps	'000 nos.	35	109	259	275	355	378	347	431	373	461	492	241	228	-5.39
Sewing Machines	'000 nos.	33	303	235	269	367	206	385	335	343	309	341	173	171	-1.16
Bicycles	'000 nos.	103	1071	2042	2332	3183	3743	3736	4189	5051	4781	5830	2913	3019	3.64
IV.ELECTRICAL ENGINEERING INDUSTRIES															
Power Transformers	mln.k.v.a	0.2	1.4	8.1	13.7	16.1	20.5	18.6	19.5	21.5	18.6	23.1	10.0	11.4	14.00
Electric Motors	mln.h.p	0.1	0.7	2.7	3.7	4.0	3.9	3.7	4.1	5.3	4.8	5.4	2.3	2.2	-4.35
Electric Fans	mln.nos.	0.2	1.1	1.7	2.1	3.4	3.1	3.9	4.2	3.8	4.1	4.7	2.27	2.34	3.08
Electric Lamps	mln.nos.	14.0	43.5	119.3	132.8	168.5	180.4	203.5	198.1	266.3	271.4	275.7	130.4	140.2	7.52
Cables - Aluminum	'000 tons	1.7	23.6	64.2	59.8	57.6	67.5	69.1	86.0	70.3	50.4	45.9	19.5	22.0	12.82

Source: World Bank, India: Structural Changes and Development Perspectives, 24 April 1985.

(a) Provisional.
(b) Including mini-plants.
(c) Data for 1950/51 relates to calendar year.

Table A.2 Production of selected industries, 1950-51-1983/84 (selected years) (continued)

	Units	1950/1	60/1	70/1	75/6	77/8	78/9	79/0	90/1	81/2	82/3	83/4 (a)	April-Sept 1983	April-Sept 1984 (a)	% chg in April-Sept84 over April-Sept83
V. CHEMICAL & ALLIED INDUSTRIES															
Nitrogenous Fertilizers	'000 tons	9	98	830	1535	2014	2180	2226	2164	3144	3424	3485	1485	1724	16.09
Phosphatic Fertilizers	'000 tons	9	52	229	320	662	770	757	842	949	980	1048	458	609	32.97
Soda Ash	'000 tons	45	152	449	555	573	581	556	563	632	621	781	339	382	12.68
Caustic Soda	'000 tons	12	101	371	458	521	564	550	578	614	577	630	299	336	12.37
Paper and Paper Board	'000 tons	116	350	755	836	961	1011	1058	1149	1243	1205	1182	593	674	13.66
Automobile Tyres	mln. nos.	n.a	1.4	3.8	5.4	6.2	7.1	7.1	8.3	8.7	8.8	9.8	4.6	5.4	17.39
Bicycle Tyres	mln. nos.	n.a	11.2	19.2	24.5	28.5	32.2	27.6	27.0	26.6	27.3	32.9	13.8	16.0	15.94
Cement	mln. tons	2.7	8.0	14.3	17.2	19.3	19.3	17.6	18.6	20.9	23.3	27.1	12.6	14.7	16.67
Refined Petroleum Products	mln. tons	0.2	5.8	17.1	20.8	23.2	24.2	25.8	24.1	28.2	31.1	32.9	16.0	15.7	-1.88
VI.TEXTILE INDUSTRIES															
Jute Textiles	'000 tons	837	1302	1060	1302	1178	1047	1337	1392	1334	1338	1089	591	676	14.38
Cotton Yarn	mln. kgs.	534	907	929	1062	843	947	951	1067	989	999	1118	547	572	4.57
Cotton Cloth	bln. metres	4.2	7.4	7.6	8.1	6.8	7.6	7.5	8.4	8.0	8.0	8.8	4.3	4.4	2.33
i) Mill Sector	bln. metres	3.4	4.4	4.1	4.0	3.1	3.3	3.2	3.4	2.9	2.4	2.7	1.4	1.3	-7.14
ii) Decentralised Sector	bln. metres	0.8	3.0	3.5	4.1	3.7	4.3	4.3	5.0	5.1	5.6	6.0	2.9	3.1	6.90
VII FOOD INDUSTRIES															
Sugar (b)	'000 tons	1134	3510	3740	4264	6462	7844	3859	5148	8438	8232	5889	2082	808	-61.20
Coffee	'000 tons	21.0	62.1	71.4	90.7	103.6	114.9	120.2	139.5	136.4	135.9	113.1	66.6	64.2	-3.60
Vanaspati	'000 tons	170	401	558	500	572	678	618	753	865	886	889	464	452	
Tea	mln. kgs.	277	376	423	483	557	576	537	581	552	567	604	375	419	.
VIII ELECTRICITY GENERATED (c)	bln. kwh	5.3	33.0	55.8	79.2	91.4	102.5	104.6	110.8	122.1	130.2	139.9	66.2	75.9	14.65

Source: Ministry of Industry, Office of the Economic Adviser. Quoted from World Bank, India: Structural Change and Development Perspectives, 24 April 1985.

(a) Provisional.
(b) Annual figures relate to the sugar season which is October - September from 1967/68. Earlier it was November-October.
(c) Relates to public utilities only.

Table A.3 Gross output and value added in manufacturing, 1973 and 1979

(at current prices) (currency = Rupee)

Description (ISIC)	Gross output (millions)		Gross output Share in total (percentage)		Value added (millions)		Value added Share in total (percentage)	
	1973	1979	1973	1979	1973	1979	1973	1979
TOTAL MANUFACTURING(300)	185805	482998	100.0	100.0	46399	94128	100.0	100.0
Food products(311)	34077	74850	18.3	15.5	3713	7270	8.0	7.7
Beverages(313)	947	2637	0.5	0.5	290	705	0.6	0.7
Tobacco(314)	4238	7714	2.3	1.6	751	1576	1.6	1.7
Textiles(321)	36079	78774	19.4	16.3	11206	20451	24.2	21.7
Wearing apparel,except footwear(322)	494	2806	0.3	0.6	92	434	0.2	0.5
Leather products(323)	1388	5066	0.7	1.0	131	401	0.3	0.4
Footwear,except rubber or plastic(324)	402	1113	0.2	0.2	141	308	0.3	0.3
Wood products,except furniture(331)	1122	2531	0.6	0.5	289	571	0.6	0.6
Furniture,except metal(332)	130	255	0.1	0.1	38	66	0.1	0.1
Paper and products(341)	3450	9038	1.9	1.9	1157	2190	2.5	2.3
Printing and publishing(342)	2592	5387	1.4	1.1	1078	1827	2.3	1.9
Industrial chemicals(351)	10110	33845	5.4	7.0	3470	6389	7.5	6.8
Other chemicals(352)	12840	34898	6.9	7.2	3343	7438	7.2	7.9
Petroleum refineries(353)	3466	26573	1.9	5.5	581	1346	1.3	1.4
Misc. petroleum and coal products(354)	1357	7251	0.7	1.5	232	1018	0.5	1.1
Rubber products(355)	3196	9048	1.7	1.9	737	1759	1.6	1.9
Plastic products(356)	1084	3320	0.6	0.7	307	564	0.7	0.6
Pottery,china,earthenware(361)	330	742	0.2	0.2	143	263	0.3	0.3
Glass and products(362)	847	1768	0.5	0.4	284	474	0.6	0.5
Other non metallic mineral prod.(369)	4452	11665	2.4	2.4	1288	2707	2.8	2.9
Iron and steel(371)	17411	51370	9.4	10.6	5042	9232	10.9	9.8
Non-ferrous metals(372)	2936	7950	1.6	1.6	653	1072	1.4	1.1
Fabricated metal products(381)	5436	13140	2.9	2.7	1494	3171	3.2	3.4
Machinery,except electrical(382)	13579	29665	7.3	6.1	2404	7556	5.2	8.0
Machinery electric(383)	11150	29801	6.0	6.2	3482	6959	7.5	7.4
Transport equipment(384)	11235	27786	6.0	5.8	3536	7310	7.6	7.8
Professional & scientific equipm.(385)	663	2259	0.4	0.5	247	694	0.5	0.7
Other manufactured products(390)	794	1746	0.4	0.4	270	377	0.6	0.4

Source: Statistics and Survey Unit, UNIDO. Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Table A.4 Employment, wages and salaries in manufacturing, 1973 and 1979

(at current prices) (currency = Rupee)

Description (ISIC)	Employment (thousands)		Share in total (percentage)		Wages and salaries (millions)		Share in total (percentage)	
	1973	1979	1973	1979	1973	1979	1973	1979
TOTAL MANUFACTURING(300)	5139	6805	100.0	100.0	22174	46660	100.0	100.0
Food products(311)	695	1176	13.5	17.3	1563	3439	7.0	7.4
Beverages(313)	22	35	0.4	0.5	96	322	0.4	0.7
Tobacco(314)	200	368	3.9	5.4	295	781	1.3	1.7
Textiles(321)	1447	1695	28.2	24.9	5860	11522	26.4	24.7
Wearing apparel,except footwear(322)	19	54	0.4	0.8	56	240	0.3	0.5
Leather products(323)	23	34	0.4	0.5	68	171	0.3	0.4
Footwear,except rubber or plastic(324)	21	26	0.4	0.4	106	215	0.5	0.5
Wood products,except furniture(331)	62	75	1.2	1.1	132	249	0.6	0.5
Furniture,except metal(332)	13	10	0.3	0.1	29	46	0.1	0.1
Paper and products(341)	91	121	1.8	1.8	429	964	1.9	2.1
Printing and publishing(342)	159	153	3.1	2.2	669	1115	3.0	2.4
Industrial chemicals(351)	129	196	2.5	2.9	917	2357	4.1	5.1
Other chemicals(352)	193	294	3.8	4.3	1134	2555	5.1	5.5
Petroleum refineries(353)	8	10	0.2	0.1	101	224	0.5	0.5
Misc. petroleum and coal products(354)	12	31	0.2	0.5	80	316	0.4	0.7
Rubber products(355)	63	83	1.2	1.2	347	700	1.6	1.5
Plastic products(356)	30	59	0.6	0.9	101	214	0.5	0.5
Pottery,china,earthenware(361)	27	29	0.5	0.4	83	155	0.4	0.3
Glass and products(362)	53	58	1.0	0.9	161	288	0.7	0.6
Other non-metallic mineral prod.(369)	203	252	4.0	3.7	618	1298	2.8	2.8
Iron and steel(371)	414	504	8.1	7.4	2636	5299	11.9	11.4
Non-ferrous metals(372)	44	53	0.9	0.8	266	543	1.2	1.2
Fabricated metal products(381)	176	202	3.4	3.0	706	1461	3.2	3.1
Machinery,except electrical(382)	324	420	6.3	6.2	1706	3705	7.7	7.9
Machinery electric(383)	252	314	4.9	4.6	1526	3284	6.9	7.0
Transport equipment(384)	391	482	7.6	7.1	2201	4677	9.9	10.0
Professional & scientific equipm.(385)	32	40	0.6	0.6	145	323	0.7	0.7
Other manufactured products(390)	36	31	0.7	0.5	143	197	0.6	0.4

Source: Statistics and Survey Unit, UNIDO.Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Table A.5 Selected industrial indicators, by branch of manufacturing, 1973 and 1979

(at current prices) (currency = Rupee)

Description (ISIC)	Value added per employee		Wages and salaries per employee		Share of value added in gross output (percentage)		Share of wages and salaries in value added (percentage)	
	1973	1979	1973	1979	1973	1979	1973	1979
TOTAL MANUFACTURING(300)	9029	13832	4315	6857	25.0	19.5	47.8	49.6
Food products(311)	5342	6182	2249	2924	10.9	9.7	42.1	47.3
Beverages(313)	13182	20143	4364	9200	30.6	26.7	33.1	45.7
Tobacco(314)	3755	4283	1475	2122	17.7	20.4	39.3	49.6
Textiles(321)	7744	12065	4050	6798	31.1	26.0	52.3	56.3
Wearing apparel,except footwear(322)	4842	8037	2947	4444	18.6	15.5	60.9	55.3
Leather products(323)	5696	11794	2957	5029	9.4	7.9	51.9	42.6
Footwear,except rubber or plastic(324)	6714	11846	5048	8269	35.1	27.7	75.2	69.8
Wood products,except furniture(331)	4661	7613	2129	3320	25.8	22.6	45.7	43.6
Furniture,except metal(332)	2923	6600	2231	4600	29.2	25.9	76.3	69.7
Paper and products(341)	12714	18099	4714	7967	33.5	24.2	37.1	44.0
Printing and publishing(342)	6780	11941	4208	7288	41.6	33.9	62.1	61.0
Industrial chemicals(351)	26899	32597	7109	12026	34.3	18.9	26.4	36.9
Other chemicals(352)	17321	25299	5876	8690	26.0	21.3	33.9	34.4
Petroleum refineries(353)	72625	134600	12625	22400	16.8	5.1	17.4	16.6
Misc. petroleum and coal products(354)	19333	32839	6667	10194	17.1	14.0	34.5	31.0
Rubber products(355)	11698	21193	5508	8434	23.1	19.4	47.1	39.8
Plastic products(356)	10233	9559	3367	3627	28.3	17.0	32.9	37.9
Pottery,china,earthenware(361)	5296	9069	3074	5345	43.3	35.4	58.0	58.9
Glass and products(362)	5358	8172	3038	4966	33.5	26.8	56.7	60.8
Other non-metallic mineral prod.(369)	6345	10742	3044	5151	28.9	23.2	48.0	47.9
Iron and steel(371)	12179	18317	6367	10514	29.0	18.0	52.3	57.4
Non-ferrous metals(372)	14841	20226	6045	10245	22.2	13.5	40.7	50.7
Fabricated metal products(381)	8489	15698	4011	7233	27.5	24.1	47.3	46.1
Machinery,except electrical(382)	7420	17990	5265	8821	17.7	25.5	71.0	49.0
Machinery electric(383)	13817	22162	6056	10459	31.2	23.4	43.8	47.2
Transport equipment(384)	9043	15166	5629	9703	31.5	26.3	62.2	64.0
Professional & scientific equipm.(385)	7719	17350	4531	8075	37.3	30.7	58.7	46.5
Other manufactured products(390)	7500	12161	3972	6355	34.0	21.6	53.0	52.3

Source: Statistics and Survey Unit, UNIDO.Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Note: TOTAL MANUFACTURING is the sum of the reported ISICs and does not necessarily correspond to ISIC 300 total.

Table A.6 Profitability of Central Government non-departmental enterprises, 1972/73-1983/84

(Rs. million)

	1972/73	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84
I.Gross Profits [a]					(Rs. million)							
A. Total Manufacturing Enterprises	1305	2163	3631	4321	5810	3611	5038	6314	8079	18727	25803	25267
Steel	-37	197	660	644	1188	537	1213	717	940	1307	596	-738
Minerals & Metals	-42	179	-397	148	276	-636	-1189	-164	1401	1177	1102	-1040
Petroleum	685	754	1552	1504	2089	2603	2940	3449	3823	12172	18305	22355
Chemicals	121	90	291	69	78	-149	372	138	58	1227	1725	1207
Engineering Group	595	938	1474	1893	2135	1260	1435	1778	1397	3023	3555	4526
Others	-17	5	51	63	44	-4	267	396	420	-179	520	-1043
B. Total Service Enterprises	1122	1173	1961	2364	4466	5536	5674	6678	6139	7817 [d]	8847 [d]	10423 [d]
C. Total Running Enterprises	2427	3336	5592	6685	10276	9147	10712	12992	14178	26544	34650	35690
II.Capital Employed [b]												
A. Total Manufacturing Enterprises	37970	37960	47180	56820	66310	72020	83070	100010	121010	149938	175287	187431
Steel	11270	11943	13845	16365	20057	21330	19508	21166	23443	29031	32643	30001
Minerals & Metals	4972	5753	7297	10898	12381	14542	15207	17753	20525	18222	21205	25516
Petroleum	4148	4382	5247	7770	8010	8010	13480	18390	27180	31934	39793	50540
Chemicals	3170	3358	4855	5363	7194	8112	12351	19334	23582	23711	25608	22716
Engineering Group	9891	11467	13834	16247	16357	17930	17923	21074	22457	26101	31057	35014
Others	519	1057	2112	2177	2311	2096	4601	2293	3823	20939	24991	23644
B. Total Service Enterprises	13600	14750	19360	33240	44260	48630	56620	61810	61060	69412	89973	111529
C. Total Running Enterprises	47570	52710	66540	90060	110570	120650	139690	161820	182070	219350	265260	298960
III.Rate of Return on Capital Employed [c]					(percentage)							
A. Total Manufacturing Enterprises	3.84	5.70	7.70	7.60	8.76	5.01	6.06	6.31	6.64	12.49	14.72	13.48
Steel	-0.33	1.65	4.77	3.94	5.92	2.52	6.22	3.39	4.01	4.50	1.83	-2.46
Minerals & Metals	-0.84	3...	-5.44	1.36	2.23	-4.37	-7.82	-0.92	6.83	6.46	5.20	-4.08
Petroleum	16.51	17.21	29.58	26.07	26.08	32.50	21.81	18.75	14.07	38.12	46.01	44.23
Chemicals	3.82	2.68	6.01	1.29	1.08	1.84	3.01	0.71	0.25	5.17	6.74	5.31
Engineering Goods	6.02	8.18	10.65	11.65	13.05	7.03	8.01	8.44	6.22	11.58	11.45	12.93
Others	-3.28	0.47	2.41	2.89	1.90	-0.19	5.80	17.27	10.99	-0.85	2.08	-4.41
B. Total Service Enterprises	8.25	7.95	10.13	7.11	10.09	11.38	10.02	10.80	10.05	11.26	9.83	9.35
C. Total Running Enterprises	5.10	6.33	8.40	7.42	9.29	7.58	7.67	8.03	7.79	12.10	13.06	11.94

Source: Bureau of Public Enterprises Annual Report on the working of Industrial and Commercial Undertakings of the Central Government.
Quoted from World Bank, India: Structural Change and Development Perspectives, 24 April 1985.

Notes:
[a] Gross Profits represents excess of income over expenditure after depreciation but before tax and interest on loan.
[b] Capital employed is fixed assets less depreciation, plus working capital excluding items under construction or expansion. Capital employed is as at the end of the year.
[c] Return on Capital Employed is computed by dividing Gross Profits by Capital Employed.
[d] Includes data for Central Power Undertakings.

Table A.7 Capacity utilization of selected industries, 1970-1983

(in percentages)

	Weight (a)	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
A. Basic Industries	16.98	55	56	58	56	56	60	68	63	63	57	59	63	59	58
Nitrogenous fertilisers	0.87	57	58	72	64	56	58	71	67	64	69	54	65	66	65
Phosphatic fertilisers	0.52	53	56	67	69	54	59	61	67	75	78	64	71	71	69
Cement	1.17	82	81	80	76	72	77	87	88	88	80	73	72	75	79
Pig Iron for sale	0.76	65	50	69	76	77	86	111	83	90	62	77	52	49	55
Saleable Steel	3.88	67	67	71	64	73	86	103	94	82	69	86	99	79	59
Aluminium	0.55	92	106	91	78	66	73	84	61	67	65	62	66	67	63
Electricity	9.23	43	45	45	46	44	45	47	44	48	45	44	46	47	45
B. Capital Goods Industries	6.69	79	80	81	74	64	57	57	60	61	62	62	75	67	69
Ball&roller bearings	0.48	114	101	108	104	105	81	110	91	94	77	91	111	84	88
Diesel Engines (stationary)	0.64	44	54	42	75	38	47	35	43	42	41	44	55	50	51
Storage Batteries	0.22	108	89	86	97	76	70	63	65	66	65	66	75	75	72
Dry cells	0.32	102	103	100	95	52	42	46	48	62	66	77	75	77	69
Power transformers	1.48	121	135	140	94	83	61	59	66	66	70	60	66	56	60
Electric motors	0.35	96	89	107	60	60	90	56	60	60	56	57	67	68	74
Railway wagons	1.13	37	26	31	35	33	36	33	42	35	41	37	57	52	54
Commercial vehicles	1.25	65	66	60	68	65	59	62	59	65	70	93	89	86	83
Passenger cars	0.49	76	83	83	89	78	50	67	79	66	56	58	80	80	85
Agricultural tractors	0.33	56	51	41	55	60	65	73	65	90	102	100	110	76	81
C. Intermediate Goods Industries	11.67	83	88	85	81	77	74	74	78	84	84	85	86	77	72
Jute manufactures	2.71	73	84	85	80	73	76	80	88	89	89	106	105	100	70
Cotton spinning	6.24	78	79	79	78	77	69	68	76	80	79	77	77	66	67
Automobile tyres	1.10	118	129	98	79	86	80	83	79	89	100	92	91	78	83
Petroleum products	1.62	93	93	92	93	79	82	78	83	87	85	75	87	82	85
D. Consumer Goods Industries	15.41	91	89	82	82	81	77	77	80	85	81	75	80	81	77
Sugar	2.75	120	101	79	96	92	106	91	93	116	97	70	81	129	124
Cigarettes	2.21	112	117	110	95	93	80	89	71	74	76	74	84	91	78
Vanaspati	0.68	64	60	57	44	31	40	42	45	51	49	55	63	66	65
Soap(organised ssector)	0.61	107	121	130	105	88	118	119	125	150	128	141	148	135	109
Paper and paper board	2.17	101	87	87	86	92	76	79	82	80	74	67	73	68	59
Cotton cloth mill	5.34	69	72	70	73	73	67	68	76	78	79	77	78	58	65
Rubber footwear	0.44	82	81	82	75	77	71	72	75	69	72	78	65	69	66
Radio receivers	0.97	77	86	76	64	75	52	59	63	62	69	62	63	50	38
Electric fans	0.24	85	108	82	76	78	73	79	110	94	119	116	99	84	90
Average for 30 industries	50.75	76	76	75	72	69	68	71	71	74	71	70	75	71	67

(a) Weight in Index of Industrial Production.

Source: Industrial Development Bank of India, Annual Report, various issues.

Quoted from World Bank, India: Structural Change and Development Perspectives, 24 April, 1985.

Table A.8 Merchandise exports[a/], 1970/71-1983/84

(at current prices - in $ million)

	70/71	71/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84
PRIMARY EXPORTS	793	791	846	1170	1570	1828	1798	2124	2041	2469	3001	2730	2547	...
Agricultural Products	574	601	652	942	1323	1521	1440	1756	1640	1982	2477	2206	2011	...
Cashews	69	82	89	96	148	111	119	175	98	146	179	209	137	...
Coffee	34	30	43	59	64	77	141	227	175	202	273	187	211	...
Tea	198	210	191	187	286	274	328	665	415	455	551	453	385	...
Marine Products	42	56	70	115	83	147	202	204	276	314	298	320	375	362
Oilcakes	74	54	97	229	120	112	262	156	134	158	225	178	159	148
Sugar	37	41	17	55	425	546	166	23	160	143	51	72	88	204
Spices	52	49	38	71	77	83	84	160	180	185	141	103	96	n.a
Rice	7	-	-	-	-	15	-	13	47	159	284	396	207	119
Tobacco	42	57	79	88	101	108	108	132	135	127	171	217	212	199
HPS Groundnuts	-	-	-	-	-	-	-	-	-	-	80	31	37	34
Raw Cotton	19	22	28	42	19	48	30	1	20	93	224	40	104	145
Ores & Minerals	219	190	194	228	247	307	358	368	401	487	524	524	536	545
Iron Ore	153	141	143	171	201	247	267	281	284	353	384	394	406	415
Other	66	49	51	57	46	60	91	87	117	134	140	130	130	130
MANUFACTURED EXPORTS	1157	1369	1712	2069	2604	2844	3955	4191	4937	5479	5503	5789	5743	...
Chemicals	39	41	46	65	117	99	124	136	180	245	286	424	320	399
Cotton Textiles	100	103	132	251	200	167	299	262	263	356	350	330	296	286
Jute Manufactures	254	356	324	292	372	290	225	286	203	416	418	288	211	160
Leather	109	135	239	240	207	264	265	318	432	644	354	341	320	355
Engineering Goods [b/]	155	163	185	259	447	477	634	721	854	915	1033	1051	1098	1078
Handicrafts	37	41	54	86	111	120	189	241	296	388	433	403	360	375
Gems & Jewellery	56	69	100	134	129	150	281	653	886	742	814	919	1068	1233
Clothing	40	51	72	128	173	235	373	287	532	573	654	750	654	693
Processed Foods)								107	123	168	202	221	291	197
Other)	367	410	560	614	848	1042	1565	1180	1168	1032	939	1062	925	...
TOTAL MERCHANDISE EXPORTS	1950	2160	2558	3239	4174	4672	5753	6315	6978	7948	8504	8519	8290	8355

Sources: Ministry of Foreign Trade, Directorate General of Commercial Intelligence and Statistics, Monthly Statistics of the Foreign Trade of India; Export Promotion Councils. Quoted from World Bank India: Structural Change and Development Perspectives, April 1985, Vol. II, Report No. 5593-IN.

a/ Excluding petroleum exports of $ 259 million in 1981/82, $ 1208 million in 1982/83 and $ 1701 million in 1983/84.

b/ Due to reclassification, data from 1973/74 onwards are not strictly comparable with data for earlier years.

Table A.9 Product mix of traded manufactured goods, 1970 and 1980*/

SITC	DESCRIPTION OF TRADE GOODS	EXPORTS 1970 PERCENT IN TOTAL MANUFACTURES	EXPORTS 1980 PERCENT IN TOTAL MANUFACTURES	IMPORTS 1970 PERCENT IN TOTAL MANUFACTURES	IMPORTS 1980 PERCENT IN TOTAL MANUFACTURES
01	Meat and meat preparations	0.303	1.182	0.002	0.001
02	Dairy products and eggs	0.007	0.071	0 805	1.051
032	Fish n.e.s. and fish preparations	0.347	0.044	0.001	0.000
0422	Rice,glazed or polished not otherwise worked	0.393	2.740	1.762	0.008
046	Meal and flour of wheat or of meslin	0.177	0.002	0.045	0.124
047	Meal and flour of cereals,except above	0.001	0.002	0.420	0.002
048	Cereals preparat. & starch of fruits & vegetab.	0.063	0.180	0.371	0.143
052	Dried fruit	0.022	...	0.625	0.003
053	Fruit,preserved and fruit preparations	0.134	0.265	0.000	0.000
055	Vegetables,roots & tubers,preserved or prepared	0.140	0.205	0.001	0.000
06	Sugar,sugar preparations and honey	1.803	0.830	0.041	1.154
0713	Coffee extracts,essences,concentrates & similar	0.099	0.224	...	...
0722	Cocoa powder,unsweetened	0.008	...	0.001	0.007
0723	Cocoa butter and cocoa paste	...	0.006	...	...
073	Chocolate and related food preparations	0.033	0.001	0.000	0.000
074	Tea and mate	13.742	8.031	...	...
081	Feeding-stuff for animals	5.290	2.911	0.030	0.013
09	Miscellaneous food preparations	0.202	0.177	0.288	0.011
11	Beverages	0.000	0.012	0.028	0.007
122	Tobacco manufactures	0.088	0.337	0.001	0.002
2219	Flour and meal of oil seeds,nuts,kernels	...	...	0.019	0.001
231	Crude rubber,synth. & reclaimed(excl.SITC 2311)	0.005	0.008	0.269	0.169
243	Wood,shaped or simply worked	0.004	0.011	0.010	0.027
251	Pulp and waste paper	0.083	0.009	1.111	0.256
2627	Wool or other animal hair,carded or combed	0.000	...	0.002	0.003
2628	Wool tops	0.007	...	0.003	...
2629	Waste of wool and other animal hair n.e.s.	0.001	0.000	0.065	0.083
263	Cotton	1.652	3.137	8.548	0.000
266	Synthetic and regenerated(artificial) fibres	0.007	0.001	0.458	1.196
267	Waste materials from textile fabrics(incl.rags)	0.042	0.002	0.141	0.095
332	Petroleum products	0.797	0.506	2.381	24.037
4	Animal and vegetable oils and fats	0.584	0.586	3.112	8.821
411	Animal oils and fats	0.003	0.005	1.056	0.149
421	Fixed vegetable oils,soft(incl.SITC 422)	0.574	0.446	2.029	8.649
431	Animal and vegetable oils and fats processed	0.008	0.135	0.027	0.023

Table A 9 Product mix of traded manufactured goods, 1970 and 1980 */ (continued)

SITC	DESCRIPTION OF TRADE GOODS	EXPORTS 1970 PERCENT IN TOTAL MANUFACTURES	EXPORTS 1980 PERCENT IN TOTAL MANUFACTURES	IMPORTS 1970 PERCENT IN TOTAL MANUFACTURES	IMPORTS 1980 PERCENT IN TOTAL MANUFACTURES
5	Chemicals	3.297	5.584	15.737	15.206
51	Chemicals elements and compounds	0.633	0.707	6.012	4.413
52	Tar and chemicals from coal,petroleum,nat. gas	0.161	...	0.039	...
53	Dyeing,tanning and colouring materials	0.587	1.169	0.774	0.270
54	Medicinal and pharmaceutical products	0.786	1.941	2.085	1.019
55	Essential oils and perfume materials	0.677	1.525	0.169	0.108
56	Fertilizers,manufactured	...	0.042	4.271	7.071
57	Explosives and pyrotechnic products	0.009	0.013	0.032	0.092
58	Plastic materials,regenerated cellul. & resins	0.295	0.059	0.735	1.297
59	Chemical materials and products n.e.s.	0.150	0.134	1.620	0.935
6	Manufactured goods classified by material	57.105	45.372	27.977	25.814
61	Leather manufactured n.e.s. & dressed fur skins	6.645	7.191	0.005	0.016
62	Rubber manufactures n.e.s.	0.623	0.552	0.241	0.211
63	Wood and cork manufactures(excl.furniture)	0.139	0.338	0.009	0.015
64	Paper,paper board and manufactures thereof	0.495	0.121	2.064	2.130
65	Textile yarn,fabrics,made-up articles	32.276	20.257	0.656	0.774
66	Non-metallic mineral manufactures,n.e.s.	4.296	11.198	2.945	7.437
67	Iron and steel	9.233	1.510	11.335	9.032
68	Non-ferrous metals	1.105	0.315	9.355	5.364
69	Manufactures of metal,n.e.s.	2.291	3.890	0.766	0.835
7	Machinery and transport equipment	6.657	11.050	32.929	19.708
71	Machinery,other than electric	2.591	4.346	22.770	10.367
72	Electrical machinery,apparatus and appliances	1.553	2.397	5.987	3.380
73	Transport equipment	2.513	4.308	4.172	5.960
8	Miscellaneous manufactured articles	6.906	16.514	2.815	2.057
81	Sanitary,plumbing,heating & lightning fixtures	0.039	0.092	0.002	0.001
82	Furniture	0.056	0.104	0.010	0.010
83	Travel goods,handbags and similar articles	0.062	0.302	0.000	0.000
84	Clothing	2.548	10.475	0.020	0.002
85	Footwear	1.072	0.801	0.001	0.002
86	Professional,scient. & controll. instruments	0.681	0.830	2.155	1.639
89	Miscellaneous manufactured articles,n.e.s.	2.447	3.111	0.628	0.402
		1970	1980	1970	1980
	TOTAL MANUFACTURES (in thousand US $)	1427655	5631645	1488832	9311933
	TOTAL: SITC 5-8 LESS 68 a/(in thousand US $)	1040175	4404305	1034784	5346922
	TOTAL TRADED GOODS: SITC 0-9 (in thousand US $)	2012577	7510628	2093718	13818707

Note:Data and SITC descriptions refer to SITC revision 1.

*/ This table is based on the definition of trade in manufactures covering a list of 148 specifically identified SITC 3-digit or 4-digit codes comprising a wide range of processing stages of manufactured goods.

a/ Definition of trade in manufactures SITC 5-8 less 68 is one of the most often found. It covers only items recognized as exclusively manufactured goods,i.e. with a high level of manufacturing content.

Source: UNIDO data base,information supplied by the United Nations Statistical Office.

Table A. 5: Origin of imports of manufactures by branch, 1980 */

SITC	DESCRIPTION OF TRADE GOODS	WORLD TOTAL (1000 US$)	DEVELOPING COUNTRIES (PERCENT)	DEVELOPED MARKET ECONOMIES TOTAL (PERCENT)	USA (PERCENT)	EEC (PERCENT)	JAPAN (PERCENT)	CENTRALLY PLANNED DEVELOPED COUNTRIES (PERCENT)
01	Meat and meat preparations	54	32.87	67.13	0.00	61.28	5.85	0.00
02	Dairy products and eggs	97900	0.48	97.85	1.87	94.27	0.01	1.68
032	Fish n.e.s. and fish preparations	14	10.90	89.10	0.00	78.45	10.65	0.00
0422	Rice,glazed or polished not otherwise worked	759	98.31	1.69	0.00	1.69	0.00	0.00
046	Meal and flour of wheat or of meslin	11584	4.34	95.66	95.66	0.00	0.00	0.00
047	Meal and flour of cereals,except above	155	2.27	97.73	97.34	0.40	0.00	0.00
048	Cereals preparat. & starch of fruits & vegetab.	13270	0.31	99.66	99.26	0.37	0.01	0.02
052	Dried fruit	290	100.00	0.00	0.00	0.00	0.00	0.00
053	Fruit,preserved and fruit preparations	4	40.64	59.36	0.00	59.36	0.00	0.00
055	Vegetables,roots & tubers,preserved or prepared	28	27.51	66.93	0.00	0.00	0.00	0.00
06	Sugar,sugar preparations and honey	107430	97.72	2.05	0.13	1.76	0.05	0.23
0722	Cocoa powder,unsweetened	648	6.86	93.14	0.00	93.14	0.00	0.00
073	Chocolate and related food preparations	3	100.00	0.00	0.00	0.00	0.00	0.00
081	Feeding-stuff for animals	1234	99.13	0.87	0.05	0.83	0.00	0.00
09	Miscellaneous food preparations	1049	3.18	96.82	83.73	9.95	0.24	0.00
11	Beverages	611	1.80	98.17	0.36	93.00	3.28	0.00
122	Tobacco manufactures	149	4.63	95.37	5.14	90.22	0.00	0.00
2219	Flour and meal of oil seeds,nuts,kernels	130	0.00	100.00	99.96	0.04	0.00	0.00
231	Crude rubber,synth. & reclaimed(excl.SITC 2311)	15736	0.23	96.90	34.50	36.66	23.41	0.00
243	Wood,shaped or simply worked	2135	93.10	6.85	0.02	6.75	0.07	0.05
251	Pulp and waste paper	23680	2.94	97.05	48.88	1.40	0.01	0.02
2627	Wool or other animal hair,carded or combed	273	0.00	100.00	0.00	44.56	0.00	0.00
2629	Waste of wool and other animal hair n.e.s.	7775	0.75	98.68	0.00	88.37	1.69	0.00
263	Cotton	21	100.00	0.00	0.00	0.00	0.00	0.00
266	Synthetic and regenerated(artificial) fibres	111409	4.36	90.66	5.92	20.68	49.19	1.64
267	Waste materials from textile fabrics(incl.rags)	8818	0.38	99.62	5.37	57.24	15.95	0.00
332	Petroleum products	2238850	0.00	0.00	0.00	0.00	0.00	0.00
4	Animal and vegetable oils and fats	821393	51.59	48.41	33.31	4.69	0.76	0.01
411	Animal oils and fats	13885	3.34	96.66	30.04	3.23	0.47	0.00
421	Fixed vegetable oils,soft(incl.SITC 422)	805394	52.48	47.51	33.43	4.70	0.63	0.00
431	Animal and vegetable oils and fats processed	2113	26.06	71.50	9.59	9.49	51.29	2.44

Table A.10 Origin of imports of manufactures by branch, 1980*/ (continued)

SITC	DESCRIPTION OF TRADE GOODS	WORLD TOTAL (1000 US$)	DEVELOPING COUNTRIES (PERCENT)	DEVELOPED MARKET ECONOMIES TOTAL (PERCENT)	USA (PERCENT)	EEC (PERCENT)	JAPAN (PERCENT)	CENTRALLY PLANNED DEVELOPED COUNTRIES (PERCENT)
5	Chemicals	1415945	13.05	76.43	24.97	34.00	5.98	9.75
51	Chemicals elements and compounds	410981	12.05	81.57	19.44	42.20	10.43	5.47
53	Dyeing,tanning and colouring materials	25108	32.69	63.77	4.92	48.27	5.78	0.99
54	Medicinal and pharmaceutical products	94876	6.24	83.27	8.98	48.61	5.91	8.91
55	Essential oils and perfume materials	10073	13.08	86.18	11.03	64.30	6.23	0.63
56	Fertilizers,manufactured	658433	15.24	69.83	29.17	26.91	0.30	14.93
57	Explosives and pyrotechnic products	8588	0.00	100.00	6.34	41.42	0.12	0.00
58	Plastic materials,regenerated cellul. & resins	120820	14.60	76.90	29.15	20.60	22.17	6.00
59	Chemical materials and products n.e.s.	87067	2.09	94.13	40.25	43.19	6.20	1.42
6	Manufactured goods classified by material	2403787	21.50	72.76	6.40	38.53	13.44	5.08
61	Leather manufactured n.e.s. & dressed fur skins	1462	35.52	62.88	4.27	56.84	0.14	0.30
62	Rubber manufactures n.e.s.	19665	2.48	93.13	19.91	50.43	16.30	4.32
63	Wood and cork manufactures(excl.furniture)	1396	2.12	97.76	3.66	72.07	0.51	0.04
64	Paper,paper board and manufactures thereof	198310	7.05	72.36	2.79	8.34	3.71	20.59
65	Textile yarn,fabrics,made-up articles	72100	10.50	75.22	12.48	17.11	36.22	3.05
66	Non-metallic mineral manufactures,n.e.s.	692515	21.83	77.74	1.88	67.91	1.61	0.36
67	Iron and steel	841095	7.46	84.51	6.85	36.98	29.81	7.31
68	Non-ferrous metals	499505	54.42	43.35	10.24	13.99	3.11	2.14
69	Manufactures of metal,n.e.s.	77739	10.86	83.53	17.44	44.15	11.45	4.63
7	Machinery and transport equipment	1835176	1.55	90.89	30.99	42.65	9.65	7.36
71	Machinery,other than electric	965392	1.23	87.73	17.37	49.66	11.21	10.88
72	Electrical machinery,apparatus and appliances	314785	2.25	91.68	21.78	42.81	15.53	5.43
73	Transport equipment	554999	1.70	95.98	59.92	30.36	3.59	2.33
8	Miscellaneous manufactured articles	191518	10.05	85.56	24.21	36.62	16.42	3.51
81	Sanitary,plumbing,heating & lightning fixtures	72	0.53	96.98	2.24	62.57	27.01	2.48
82	Furniture	946	0.11	99.78	9.24	84.22	4.22	0.11
83	Travel goods,handbags and similar articles	8	16.80	83.20	0.00	59.02	24.18	0.00
84	Clothing	198	9.23	68.59	3.81	61.59	2.15	1.21
85	Footwear	211	26.05	73.95	66.71	7.24	0.00	0.00
86	Professional,scient. & controll. instruments	152659	9.00	86.12	24.26	37.32	15.49	4.22
89	Miscellaneous manufactured articles,n.e.s.	37425	14.51	83.04	24.32	32.54	20.64	0.75
	TOTAL manufactures	9311933	13.85	57.37	15.55	26.16	7.33	4.36
	TOTAL: SITC 5-8 LESS 68 a/	5346922	8.93	83.16	20.04	40.97	11.23	7.32
	TOTAL traded goods: SITC 0-9	13818707	36.65	41.03	11.49	17.82	5.00	5.83

Note:Data and SITC descriptions refer to SITC revision 1.

*/ This table is based on the definition of trade in manufactures covering a list of 148 specifically identified SITC 3-digit or 4-digit codes comprising a wide range of processing stages of manufactured goods.

a/ Definition of trade in manufactures SITC 5-8 less 68 is one of the most often found. It covers only items recognized as exclusively manufactured goods,i.e. with a high level of manufacturing content.

Source: UNIDO data base,information supplied by the United Nations Statistical Office.

Table A.11 Destination of exports of manufactures by branch, 1980 */

SITC	DESCRIPTION OF TRADE GOODS	WORLD TOTAL (1000 US$)	DEVELOPING COUNTRIES (PERCENT)	DEVELOPED MARKET ECONOMIES TOTAL (PERCENT)	DEVELOPED MARKET ECONOMIES USA (PERCENT)	DEVELOPED MARKET ECONOMIES EEC (PERCENT)	DEVELOPED MARKET ECONOMIES JAPAN (PERCENT)	CENTRALLY PLANNED DEVELOPED COUNTRIES (PERCENT)
01	Meat and meat preparations	66559	82.83	17.13	2.11	14.76	0.16	0.04
02	Dairy products and eggs	4001	99.98	0.02	0.00	0.02	0.00	0.00
032	Fish n.e.s. and fish preparations	2462	8.02	80.72	0.48	77.28	0.63	11.25
0422	Rice,glazed or polished not otherwise worked	154332	59.28	17.10	4.15	10.08	0.00	23.61
046	Meal and flour of wheat or of meslin	114	100.00	0.00	0.00	0.00	0.00	0.00
047	Meal and flour of cereals,except above	105	78.93	17.52	0.00	0.05	17.48	0.00
048	Cereals preparat. & starch of fruits & vegetab.	10120	77.42	22.55	3.93	15.60	0.28	0.00
053	Fruit,preserved and fruit preparations	14928	57.01	22.78	2.58	14.76	0.08	20.21
055	Vegetables,roots & tubers,preserved or prepared	11558	40.41	57.05	5.36	30.49	4.09	2.54
06	Sugar,sugar preparations and honey	46759	57.36	42.63	0.63	41.90	0.00	0.00
0713	Coffee extracts,essences,concentrates & similar	12625	8.84	0.88	0.00	0.84	0.04	90.28
0723	Cocoa butter and cocoa paste	328	0.02	99.98	0.00	99.98	0.00	0.00
073	Chocolate and related food preparations	43	100.00	0.00	0.00	0.00	0.00	0.00
074	Tea and mate	452268	36.27	28.87	1.49	25.02	0.64	34.86
081	Feeding-stuff for animals	163927	23.21	46.00	0.02	44.85	1.01	30.78
09	Miscellaneous food preparations	9943	26.28	72.26	26.70	20.98	0.84	1.40
11	Beverages	703	92.95	7.05	4.57	0.76	0.48	0.00
122	Tobacco manufactures	18959	50.54	13.66	2.13	0.29	10.64	35.79
231	Crude rubber,synth. & reclaimed(excl.SITC 2311)	427	48.47	51.53	0.00	0.00	0.00	0.00
24	Wood,shaped or simply worked	635	53.44	46.56	1.01	15.94	23.40	0.00
251	Pulp and waste paper	499	3.96	96.04	0.00	96.04	0.00	0.00
2629	Waste of wool and other animal hair n.e.s.	7	0.00	100.00	0.00	100.00	0.00	0.00
263	Cotton	176670	47.90	28.83	0.00	10.11	14.61	8.80
266	Synthetic and regenerated(artificial) fibres	31	6.56	93.44	3.89	83.64	0.00	0.00
267	Waste materials from textile fabrics(incl.rags)	106	4.21	95.79	0.00	93.04	0.00	0.00
332	Petroleum products	28507	0.00	0.00	0.00	0.00	0.00	0.00
4	Animal and vegetable oils and fats	33009	6.69	89.58	9.81	49.13	25.48	3.66
411	Animal oils and fats	275	97.35	2.65	0.00	2.65	0.00	0.00
431	Animal and vegetable oils and fats processed	7603	10.77	89.09	2.03	80.30	1.02	0.00

Table A.11 **Destination of exports of manufactures by branch, 1980**[*/] (continued)

SITC	DESCRIPTION OF TRADE GOODS	WORLD TOTAL (1000 US$)	DEVELOPING COUNTRIES (PERCENT)	DEVELOPED MARKET ECONOMIES TOTAL (PERCENT)	USA (PERCENT)	EEC (PERCENT)	JAPAN (PERCENT)	CENTRALLY PLANNED DEVELOPED COUNTRIES (PERCENT)
5	Chemicals	314490	28.14	26.88	6.03	15.33	2.53	44.67
51	Chemicals elements and compounds	39812	32.31	49.29	10.75	20.67	10.31	18.13
53	Dyeing,tanning and colouring materials	65443	35.90	33.62	13.12	15.80	1.28	29.55
54	Medicinal and pharmaceutical products	109310	22.92	27.92	3.36	20.72	1.91	49.12
55	Essential oils and perfume materials	65894	22.82	8.66	2.39	4.04	0.59	68.41
56	Fertilizers,manufactured	2386	6.19	52.35	0.00	52.35	0.00	41.46
57	Explosives and pyrotechnic products	753	89.85	10.15	2.16	0.00	5.17	0.00
58	Plastic materials,regenerated cellul. & resins	3345	83.91	11.17	0.63	8.25	0.26	4.92
59	Chemical materials and products n.e.s.	7547	51.23	43.06	4.64	26.58	4.85	4.50
6	Manufactured goods classified by material	2555209	23.50	59.33	15.97	28.35	4.07	16.90
61	Leather manufactured n.e.s. & dressed fur skins	404964	5.98	59.18	7.53	38.76	2.97	34.73
62	Rubber manufactures n.e.s.	31106	46.67	34.59	19.21	12.40	0.01	18.74
63	Wood and cork manufactures(excl.furniture)	19058	54.67	38.29	4.31	16.65	12.54	7.00
64	Paper,paper board and manufactures thereof	6828	90.69	7.90	1.12	3.50	0.35	1.41
65	Textile yarn,fabrics,made-up articles	1140806	20.70	56.07	12.16	31.32	1.83	22.98
66	Non-metallic mineral manufactures,n.e.s.	630626	16.74	82.02	30.47	25.40	10.76	1.15
67	Iron and steel	85041	73.60	17.01	13.25	0.94	0.58	7.23
68	Non-ferrous metals	17717	83.58	7.66	1.78	5.67	0.00	8.75
69	Manufactures of metal,n.e.s.	219064	57.54	38.86	12.83	18.69	0.17	3.07
7	Machinery and transport equipment	622312	76.94	13.62	3.91	6.40	0.10	8.68
71	Machinery,other than electric	244746	76.62	16.49	3.88	8.28	0.14	6.42
72	Electrical machinery,apparatus and appliances	134982	56.11	17.30	8.44	4.43	0.18	26.45
73	Transport equipment	242584	88.85	8.69	1.41	5.60	0.01	1.08
8	Miscellaneous manufactured articles	930011	14.42	68.78	16.93	38.95	1.85	16.77
81	Sanitary,plumbing,heating & lightning fixtures	5172	98.14	1.83	0.77	0.66	0.00	0.03
82	Furniture	5862	71.39	28.36	2.21	19.23	3.62	0.02
83	Travel goods,handbags and similar articles	17007	6.35	91.70	14.89	59.32	2.57	1.96
84	Clothing	589898	6.40	73.13	17.93	41.83	2.21	20.46
85	Footwear	45094	10.43	85.96	11.88	51.92	0.18	3.61
86	Professional,scient. & controll. instruments	46741	40.38	36.19	5.21	27.03	0.06	23.42
89	Miscellaneous manufactured articles,n.e.s.	220237	28.37	61.43	18.68	30.96	1.54	10.14
	TOTAL manufactures	5631645	32.04	47.85	11.21	25.80	3.05	18.92
	TOTAL: SITC 5-8 LESS 68 a/	4404305	29.23	52.76	13.81	26.65	2.95	17.72
	TOTAL traded goods: SITC 0-9	7510628	28.69	49.80	11.29	22.01	9.70	20.30

Note:Data and SITC descriptions refer to SITC revision 1

*/ This table is based on the definition of trade in manufactures covering a list of 148 specifically identified SITC 3-digit or 4-digit codes comprising a wide range of processing stages of manufactured goods.

a/ Definition of trade in manufactures SITC 5-8 less 68 is one of the most often found. It covers only items recognized as exclusively manufactured goods,i.e. with a high level of manufacturing content.

Source: UNIDO data base;Information supplied by the United Nations Statistical Office.

Table A.12 Shares of exports and imports classified according to level of processing, 1970 and 1980, and trend growth rates, 1970-1975 and 1975-1980

CLASSES	EXPORTS				IMPORTS			
	CLASS SHARE OF TOTAL (PERCENTAGE)		CLASS GROWTH RATE (PERCENTAGE)		CLASS SHARE OF TOTAL (PERCENTAGE)		CLASS GROWTH RATE (PERCENTAGE)	
	1970	1980	1970-1975	1975-1980	1970	1980	1970-1975	1975-1980
A : Non-processed goods for further processing	23.56	27.03	15.98	16.75	27.26	10.51	31.25	-11.74
B : Processed goods for further processing	30.22	16.51	15.30	2.50	17.64	21.10	9.06	35.03
C : Non-processed goods for final use	19.43	15.29	11.87	10.53	2.53	1.26	5.17	28.68
D : Processed goods for final use	26.79	41.16	28.10	12.01	52.56	67.13	21.34	22.24
Sum of classes: A+B+C+D in 1000 current US$	1970 1990757	1980 7485031			1970 1956972	1980 9849272		
Total trade SITC 0-9 in 1000 current US$	2012577	7510628			2093718	13818707		

SOURCE: UNIDO data base; Information supplied by the United Nations Statistical Office, with estimates by the UNIDO Secretariat.

Note: Calculations are based on current us dollar prices.
Sum of classes and Total trade figures should be identical. Discrepancies or zero values are due to lack of countrys" trade reporting in general, but especially at the 3-, 4- and 5-digit SITC level.

Table A.13 Export performance indicators, 1969-1971, 1976-1978

SITC CODE	NOTES	COMMODITY DESCRIPTION	SHARE IN TOTAL EXPORTS OF MANUFACTURES (PER CENT)		NET EXPORTS AS PERCENTAGE OF TOTAL TRADE		EXPORT-PERFORMANCE RATIO	
			1969-1971	1976-1978	1969-1971	1976-1978	1969-1971	1976-1978
011-013	a/	MEAT AND MEAT PREPARATIONS	0.195	0.657	98.43	99.67	0.10	0.42
022-024	b/	DAIRY PRODUCTS	0.011	0.019	-98.36	-97.14	0.02	0.03
032		FISH PREPARATIONS	0.296	0.034	98.41	94.86	1.18	0.16
0422		RICE, GLAZED OR POLISHED	0.327	0.647	-78.23	15.78	1.28	2.49
048		CEREAL PREPARATIONS AND STARCH	0.085	0.198	-63.38	-30.02	0.32	0.71
052		DRIED FRUIT	0.025	0.010	-94.19	-93.99	0.29	0.14
053		FRUIT, PRESERVED AND FRUIT PREPARATIONS	0.198	0.301	99.51	99.45	0.58	0.96
054		VEGETABLES, ROOTS & TUBERS, PRES. OR PREP.	0.152	0.226	97.59	99.40	0.57	0.87
061,062		SUGAR, SUGAR PREPARATIONS AND HONEY	2.150	4.358	89.99	97.84	2.98	5.45
0713		COFFEE EXTRACTS, ESSENCES & SIMILAR	0.105	0.114	...	...	1.42	1.03
072,3+073	c/	COCOA AND CHOCOLATE PREPARATIONS	0.040	0.037	87.18	97.13	0.29	0.23
074		TEA AND MATE	14.185	11.826	100.00	...	63.44	76.14
081		FEEDING-STUFF FOR ANIMALS	5.094	5.103	98.82	98.17	6.51	5.51
099		FOOD PREPARATIONS, N.E.S.	0.186	0.167	-3.96	80.89	1.00	0.74
111		NON-ALCOHOLIC BEVERAGES, N.E.S.	0.001	0.006	100.00	97.79	0.03	0.10
112		ALCOHOLIC BEVERAGES	0.001	0.008	-93.54	-43.40	0.00	0.01
122		TOBACCO MANUFACTURES	0.133	0.149	94.59	96.54	0.44	0.53
2312, 2313	d/	SYNTHETIC & RECLAIMED RUBBER & SUBSTIT.	0.005	0.007	100.00	...	1.16	3.47
243		WOOD, SHAPED OR SIMPLY WORKED	0.004	0.057	-65.93	53.29	0.00	0.06
251		PULP AND WASTE PAPER	0.060	0.005	-90.45	-96.29	0.05	0.00
266		SYNTHETIC AND REGENERATED FIBRES	0.007	0.002	-94.19	-99.75	0.02	0.00
332		PETROLEUM PRODUCTS	0.822	0.476	-56.22	-87.26	0.30	0.13
411		ANIMAL OILS AND FATS	0.008	0.003	-99.33	-96.93	0.03	0.02
421, 422		FIXED VEGETABLE OILS AND FATS	0.597	0.844	-56.21	-69.47	1.07	1.31
431		ANIMAL & VEGETABLE OILS & FATS PROCESSED	0.011	0.100	-82.54	44.15	0.11	0.96
512		ORGANIC CHEMICALS	0.238	0.364	-91.59	-80.91	0.11	0.14
513		INORGANIC CHEMICALS: ELEM., OXIDES, HALIDES	0.166	0.213	-73.15	-72.95	0.26	0.31

Table A.13 Export performance indicators (continued)

SITC CODE	NOTES	COMMODITY DESCRIPTION	SHARE IN TOTAL EXPORTS OF MANUFACTURES (PER CENT)		NET EXPORTS AS PERCENTAGE OF TOTAL TRADE		EXPORT-PERFORMANCE RATIO	
			1969-1971	1976-1978	1969-1971	1976-1978	1969-1971	1976-1978
514		OTHER INORGANIC CHEMICALS	0.238	0.334	-44.40	-5.44	0.61	0.93
521		MINERAL TAR & CRUDE CHEM. FROM COAL,PETR	0.206	0.023	27.21	...	2.97	0.37
531		SYNTHETIC ORGANIC DYESTUFFS	0.197	0.652	-30.96	60.81	0.52	2.02
532		DYEING & TANNING EXTRACTS AND MATERIALS	0.021	0.022	-88.34	-85.39	0.65	0.88
533		PIGMENTS,PAINTS,VARNISHES AND RELATED	0.026	0.304	40.04	55.26	0.90	0.81
541		MEDICINAL AND PHARMACEUTICAL PRODUCTS	0.778	1.037	-50.78	-29.07	0.61	0.85
551		ESSENTIAL OILS,PERFUME & FLAVOUR MATLS.	0.418	0.136	34.89	19.39	2.45	0.89
553		PERFUMERY & COSMETICS EXCEPT SOAPS	0.249	0.326	96.68	98.40	1.44	1.56
554		SOAPS,CLEANSING & POLISHING PREPARATIONS	0.099	0.141	77.11	65.73	0.40	0.57
571		EXPLOSIVES & PYROTECHNIC PRODUCTS	0.012	0.051	-64.98	59.49	0.17	0.77
581		PLASTIC MATERIALS,REGEN.CELLULOSE,RESINS	0.266	0.097	-54.53	-84.26	0.15	0.04
599		CHEMICAL MATERIALS & PRODUCTS N.E.S.	0.113	0.144	-88.03	-76.85	0.09	0.11
611		LEATHER	8.092	7.601	95.85	94.91	22.31	22.96
612		MANUFACTURES OF LEATHER OR RECONSTITUTES	0.370	0.411	55.04	98.64	1.11	5.44
613		FUR SKINS,TANNED OR DRESSED	0.010	0.148	...	100.00	0.09	1.34
621		MATERIALS OF RUBBER	0.027	0.027	-39.89	-43.83	0.16	0.18
629		ARTICLES OF RUBBER N.E.S.	0.597	0.648	37.90	54.87	0.82	0.78
631		VENEERS,PLYWOOD BOARDS,RECONSTIT. WOOD	0.104	0.252	91.57	97.16	0.23	0.58
632		WOOD MANUFACTURES N.E.S.	0.018	0.121	49.35	84.24	0.08	0.45
633		CORK MANUFACTURES	0.001	0.003	-18.63	-6.49	0.04	0.11
641		PAPER AND PAPERBOARD	0.430	0.082	-71.60	-93.30	0.20	0.05
642		ARTICLES OF PULP,PAPER OR PAPERBOARD	0.139	0.126	74.09	57.10	0.36	0.30
651		TEXTILE YARN AND THREAD	3.503	1.418	76.83	49.40	2.16	1.18
652		COTTON FABRICS,WOVEN	7.596	7.383	99.95	99.96	10.62	10.94
653		TEXTILE FABRICS,WOVEN OTHER THAN COTTON	18.056	5.240	99.43	99.21	9.09	3.73
654		TULLE,LACE,EMBROIDERY,RIBBONS ETC.	0.157	0.208	91.82	92.73	1.16	1.86
655		SPECIAL TEXTILE FABRICS & REL. PRODUCTS	0.186	0.243	-5.87	40.83	0.40	0.59
656		MADE-UP ARTICLES,CHIEFLY OF TEXTILES	6.788	4.481	96.22	98.66	21.43	16.04
657		FLOOR COVERING,TAPESTRIES ETC.	1.898	2.907	99.64	100.00	5.45	7.95
661		LIME,CEMENT,BUILD. MAT. EXC. GLAS & CLAY	0.255	0.738	90.32	40.89	1.07	2.28
662		CLAY & REFRACTORY CONSTRUCTION MATERIALS	0.030	0.145	-66.07	9.88	0.10	0.42
663		MINERAL MANUFACTURES,N.E.S.	0.263	0.379	-2.03	28.37	0.90	1.17
664		GLASS	0.066	0.249	-27.59	39.23	0.19	0.83
665		GLASSWARE	0.088	0.231	19.11	50.85	0.32	0.88
666		POTTERY	0.002	0.007	11.41	65.09	0.01	0.04
671		PIG IRON,SPIEGELEISEN,SPONGE IRON ETC.	2.739	1.869	83.43	87.62	8.47	6.99
672		INGOTS & FORMS OF IRON OR STEEL	0.222	1.142	-23.71	80.44	0.34	1.83
673		IRON & STEEL BARS,RODS,ANGLES ETC.	2.869	2.990	14.37	42.56	2.08	2.34
674		UNIVERSALS,PLATES & SHEETS OF IRON,STEEL	0.025	0.138	-99.31	-93.22	0.01	0.07
675		HOOP & STRIP OF IRON OR STEEL	0.001	0.005	-99.67	-97.37	0.00	0.02

Table A.13 Export performance indicators (continued)

SITC CODE	NOTES	COMMODITY DESCRIPTION	SHARE IN TOTAL EXPORTS OF MANUFACTURES (PER CENT)		NET EXPORTS AS PERCENTAGE OF TOTAL TRADE		EXPORT-PERFORMANCE RATIO	
			1969-1971	1976-1978	1969-1971	1976-1978	1969-1971	1976-1978
[illegible]		RAILS & RAILWAY TRACK CONSTR. MATERIALS	0.786	0.723	96.92	98.88	11.23	9.60
[illegible]		IRON AND STEEL WIRE	0.021	0.060	-85.63	-[illegible].02	0.09	0.33
[illegible]		TUBES,PIPES & FITTINGS OF IRON OR STEEL	1.157	2.045	-7.58	-8.73	1.00	1.45
[illegible]		IRON & STEEL CASTINGS,FORGINGS,UNWORKED	0.[illegible]	0.111	-90.77	-12.88	0.17	0.95
[illegible]		COPPER	0.531	0.037	-82.48	-95.80	0.33	0.04
683		NICKEL	0.001	0.004	-99.71	-98.95	0.00	0.03
684		ALUMINIUM	0.616	0.607	22.72	29.71	0.60	0.69
685		LEAD	0.001	0.002	-99.65	-99.31	0.01	0.02
686		ZINC	0.002	0.001	-99.69	-99.80	0.01	0.01
687		TIN	0.014	0.001	-96.71	-99.71	0.05	0.00
689		MISC. NON-FERR.METALS USED IN METALLURGY	0.012	0.009	-88.94	-93.16	0.06	0.07
[illegible]		FINISHED STRUCTURES & STRUCT.PARTS N.E.S	1.008	0.948	75.16	81.43	2.32	1.26
[illegible]		METAL CONTAINERS FOR STORAGE & TRANSPORT	0.040	0.161	-36.07	2.57	0.21	0.75
[illegible]		WIRE PRODUCTS(EXCL.ELEC.),FENCING GRILLS	0.236	0.426	64.92	89.18	1.05	2.02
694		NAILS,SCREWS,NUTS,BOLTS,RIVETS ETC.	0.140	0.552	9.20	77.29	0.51	1.95
[illegible]		TOOLS FOR USE IN THE HAND OR IN MACHINES	0.403	1.074	16.98	34.94	0.73	2.00
[illegible]		CUTLERY	0.043	0.037	88.06	97.46	0.26	0.29
[illegible]		HOUSEHOLD EQUIPMENT OF BASE METALS	0.316	0.598	75.78	99.30	1.32	2.59
[illegible]		MANUFACTURE OF METALS N.E.S..	0.467	0.976	27.10	47.14	0.55	1.08
711		POWER GENERATING MACHINERY EXC.ELECTRIC	0.491	1.373	-66.63	-28.05	0.21	0.55
712		AGRICULTURAL MACHINERY & IMPLEMENTS	0.052	0.111	-95.84	-58.18	0.05	0.10
714		OFFICE MACHINES	0.211	0.071	-25.58	-59.60	0.11	0.04
715		METALWORKING MACHINERY	0.239	0.453	-80.69	-49.84	0.20	0.44
717		TEXTILE AND LEATHER MACHINERY	0.681	0.441	-32.66	-33.26	0.48	0.46
718		MACHINES FOR SPECIAL INDUSTRIES	0.129	0.405	-91.90	-75.32	0.06	0.18
719		MACHINES,APPLIANCES(EXC.ELECTR.),PARTS	0.793	1.384	-90.58	-79.53	0.13	0.20
722		ELECTRIC POWER MACHINERY,SWITCHGEAR	0.395	0.750	-79.20	-43.23	0.24	0.37
723		EQUIPMENT FOR DISTRIBUTING ELECTRICITY	0.431	0.600	2.33	36.21	1.06	1.33
724		TELECOMMUNICATIONS APPARATUS	0.264	0.272	-66.49	-60.46	0.12	0.10
725		DOMESTIC ELECTRICAL EQUIPMENT	0.184	0.346	70.32	77.36	0.47	0.46
726		ELECTR. APPAR. FOR EDICAL PURPOSES	0.004	0.017	-96.16	-75.73	0.03	0.08
729		OTHER ELECTRICAL MACHINERY & APPARATUS	0.379	0.674	-69.94	-55.88	0.16	0.42
731		RAILWAY VEHICLES	0.333	0.267	-68.09	-34.49	1.09	0.82
732		ROAD MOTOR VEHICLES	1.450	2.039	-30.31	19.43	0.14	0.18
733		ROAD VEHICLES OTHER THAN MOTOR VEHICLES	0.626	0.883	94.13	96.75	2.17	2.13
734		AIRCRAFT	0.009	0.004	-98.58	-99.64	0.00	0.00
735		SHIPS AND BOATS	0.007	0.208	-96.07	2.01	0.00	0.08
812		SANITARY,PLUMBING,HEATING & LIGHT. FIXT.	0.047	0.097	74.79	93.05	0.13	0.29
821		FURNITURE	0.060	0.152	50.08	92.01	0.11	0.19
831		TRAVEL GOODS,HANDBAGS & SIMILAR ARTICLES	0.064	0.268	98.97	99.06	0.47	1.48

Table A.13 Export performance indicators (continued)

SITC CODE	NOTES	COMMODITY DESCRIPTION	SHARE IN TOTAL EXPORTS OF MANUFACTURES (PER CENT)		NET EXPORTS AS PERCENTAGE OF TOTAL TRADE		EXPORT-PERFORMANCE RATIO	
			1969-1971	1976-1978	1969-1971	1976-1978	1969-1971	1976-1978
841		CLOTHING EXCEPT FUR CLOTHING	2.738	9.797	97.20	99.93	1.09	3.60
842		FUR CLOTHING & ARTICLES MADE OF FURSKINS	0.000	0.010	100.00	...	0.00	0.13
851		FOOTWEAR	1.134	0.813	99.96	...	1.40	1.03
861		SCIENTIFIC,MEDICAL,OPTICAL,MEASUR.INSTR.	0.126	0.161	-81.37	-76.03	0.08	0.09
862		PHOTOGRAPHIC & CINEMATOGRAPHIC SUPPLIES	0.003	0.010	-99.22	-95.16	0.01	0.02
864		WATCHES AND CLOCKS	0.002	0.012	-64.55	-91.33	0.00	0.02
891		MUSICAL INSTR.,SOUND RECORDERS & REPROD.	0.058	0.091	15.61	17.54	0.07	0.12
892		PRINTED MATTER	0.163	0.157	-57.00	-43.09	0.20	0.22
893		ARTICLES OF ARTIF. PLASTIC MATLS. N.E.S.	0.146	0.344	61.71	77.56	0.32	0.60
894		PERAMBULATORS,TOYS,GAMES,SPORTING GOODS	0.116	0.422	74.16	97.13	0.18	0.72
895		OFFICE & STATIONERY SUPPLIES N.E.S.	0.057	0.044	68.04	40.54	0.42	0.34
897		JEWELLERY,GOLD AND SILVER WARES	0.265	0.346	97.43	95.14	1.05	0.93
899		MANUFACTURED ARTICLES,N.E.S.	0.257	0.148	86.16	38.42	0.48	0.37

a/ EXCLUDING SITC 012.
b/ EXCLUDING SITC 024.
c/ SITC 073 ONLY.
d/ SITC 2313 ONLY.

Source: UNIDO: Changing Patterns of Trade in World Industry, UN, New York, 1982, Sales No. E82.II.B.1, pp. 24, 25.

Table A.14. Estimated levels of output, employment and exports by small-scale and rural industries (1979/80)

Industry	Output (Value in Rs. millions)	Employment coverage in millions [a]	Exports (Rs. millions)
A. Traditional industries			
1. Khadi	980	1.124	-
2. Village Industries	3,140	1.821	-
3. Handlooms	17,400	6.150	2,610
4. Sericulture	1,310	1.600	490
5. Handicrafts	20,500	2.030	8,350
6. Coir	860	0.559	300
Sub-total (A):	44,190	13.284	11,750
B. Modern small industries			
7. Small-scale industries	190,600	6.460	10,500
8. Powerlooms	32,500	1.100	Neg
Sub-total (B):	223,100	7.560	10,500
C. Others	42,060	2.500	-
TOTAL: (at current prices 1979/80)	309,350	23.344	22,250

Source: India, Planning Commission, Sixth Five-year Development Plan, 1980-1985, New Delhi, p.187.

[a] Employment coverage includes both full-time and part-time.

Table A.15 Cumulative investment in public sector enterprises, 1973-1983

(in Rs. million)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
A. Enterprises Producing & Selling Goods											
Steel	18399	20252	22177	25704	28643	30566	31023	34793	41138	49078	51472
Minerals & Metals	6665	8712	10230	13795	18400	20761	26707	32003	36341	50672	59075
Petroleum	3783	3600	4291	4447	6489	8168	8932	10465	15062	21085	30341
Chemicals & Pharmaceuticals	6491	8181	10514	13932	18237	21226	27375	30742	33377	35733	38190
Heavy Engineering	6574	6748	6924	7762	8038	8267	9273	9762	10967	12263	14335
Medium & Light Engineering	1225	1463	1676	1921	2158	2428	2622	3150	3541	4107	4952
Transportation Equipment	1897	2010	2287	2412	3354	3675	4987	5798	7001	7498	8166
Consumer Goods	484	583	578	754	808	913	1043	1128	1240	5592	6911
Agro-based Enterprises	80	92	91	105	115	140	154	198	215	235	306
Sub-total	45598	51641	58768	70832	86242	96144	112116	128039	148881	186264	213748
B. Service Enterprises											
Trading & Marketing Services	2926	3090	3164	4676	5277	5651	6145	7462	6864	7580	7938
Transportation Services	4220	5281	6396	8607	9333	10796	12541	13762	16544	17056	20900
Contracts & Construction Services	158	159	226	291	381	481	729	953	1244	2010	2441
Industrial Development & Technical Consultancy Services	60	46	41	53	39	68	153	725	633	1007	882
Development of Small Industries	296	341	368	426	463	338	314	298	309	377	390
Tourist Services	137	177	183	202	201	209	246	317	369	488	783
Others	1183	1229	2573	2660	3708	9837	11886	15998	17414	19951	24637
Sub-total (a)	8980	10323	12951	16915	19402	27380	32014	39515	43377	48468	57970
C. Enterprises under Construction	1129	407	889	1978	5321	9624	10961	14696	18767	14426	10755
D. TOTAL (A + B + C)	55707	62371	72608	89725	110965	133148	155091	182250	211025	249158	282474 (b)

Source: Ministry of Finance, Bureau of Public Enterprises, various issues of the Annual Report on the Working of Industrial and Commercial Undertakings of the Central Government.
Quoted from World Bank, India: Structural Change and Development Perspectives, 24 April 1985.

Notes: This breakdown of investment by industry consists of equity participation and loans disbursed from the Central and State Governments and from private parties both local and foreign. Excluded from the totals are working capital (generally financed by the State Bank of India) and investment financed by the enterprises out of their own net earnings. The cumulative investment is as of March 31 each year.

(a) Includes investment in National Textile Corporation and subsidiaries, and insurance companies for the years 1978-1983.

(b) Excludes investment in Central Power Undertakings.

Table A.16 Production targets for selected industries, 1984/85

Industry	Unit	Production 1979/80	Target 1984/85
1. Coal	million tons	107.0	165.0
2. Crude oil	"	11.87	21.60
3. Iron ore	"	39.0	60.0
4. Saleable steel	"	6.0	11.51
5. Aluminium	thousand tons	192.0	300.0
6. Cement	million tons	17.6	34.50
7. Nitrogenous fertilizers	thousand tons	2,226.0	4,200.0
8. Phosphatic fertilizers	"	757.0	1,400.0
9. Sugar	million tons	3.9	7.64
10. Textiles (all yarn)	million kg	1,216.0	1,425.0
11. Cloth (mill sector)	million mtrs	4,085.0	4,900.0
12. Cloth (decentr. sector)	"	6,350.0	8,400.0
13. Jute manufactures	thousand tons	1,337.0	1,500.0
14. Leather footwear (organized sector)	million pairs	13.0	25.0
15. Paper and board	thousand tors	1,058.0	1,500.0
16. Machine tools	Rs. million	1,652.0	2,500.0
17. Mining machinery	"	243.0	450.0
18. Metallurgical machinery	"	406.0	820.0
19. Cement machinery	"	252.9	600.0
20. Chemicals and pharmaceutical machinery	"	739.0	1,300.0
21. Sugar machinery	"	316.0	700.0
22. Paper and pulp machinery	"	321.0	420.0
23. Textile industry	"	2,100.0	2,950.0
24. Boilers	"	2,594.0	3,460.0
25. Tractors	Number	62,500	100,000
26. Diesel and electric locomotives	"	208	288
27. Railway wagons	"	12,000	25.000

Table A.16 (Continued)

Industry	Unit	Production 1979/80	Target 1984/85
28. Shipbuilding	GRT	73,000	140,000
29. Commercial vehicles	Number	57,400	105,000
30. Passenger cars	"	35,000	48,000
31. Scooters, motor cycles mopeds	"	307,000	500,000
32. Bicycles	Number	3,780,000	6.0
33. Typewriters	Number	91,800	143,000
34. Sewing machines	"	385,910	470,000
35. Consumer electronics (radio receivers, TV receivers, tape recorders, calculators, etc.)	Rs. million	1,944.0	5,225.0
36. Industrial electronics (instruments, process control equipment, etc.)	"	1,150.0	3,500.0
37. Communication equipment	"	1,915	5,094
38. Computer systems	"	165	900

Source: India, Planning Commission, "Sixth Five-year Development Plan, 1980-85".

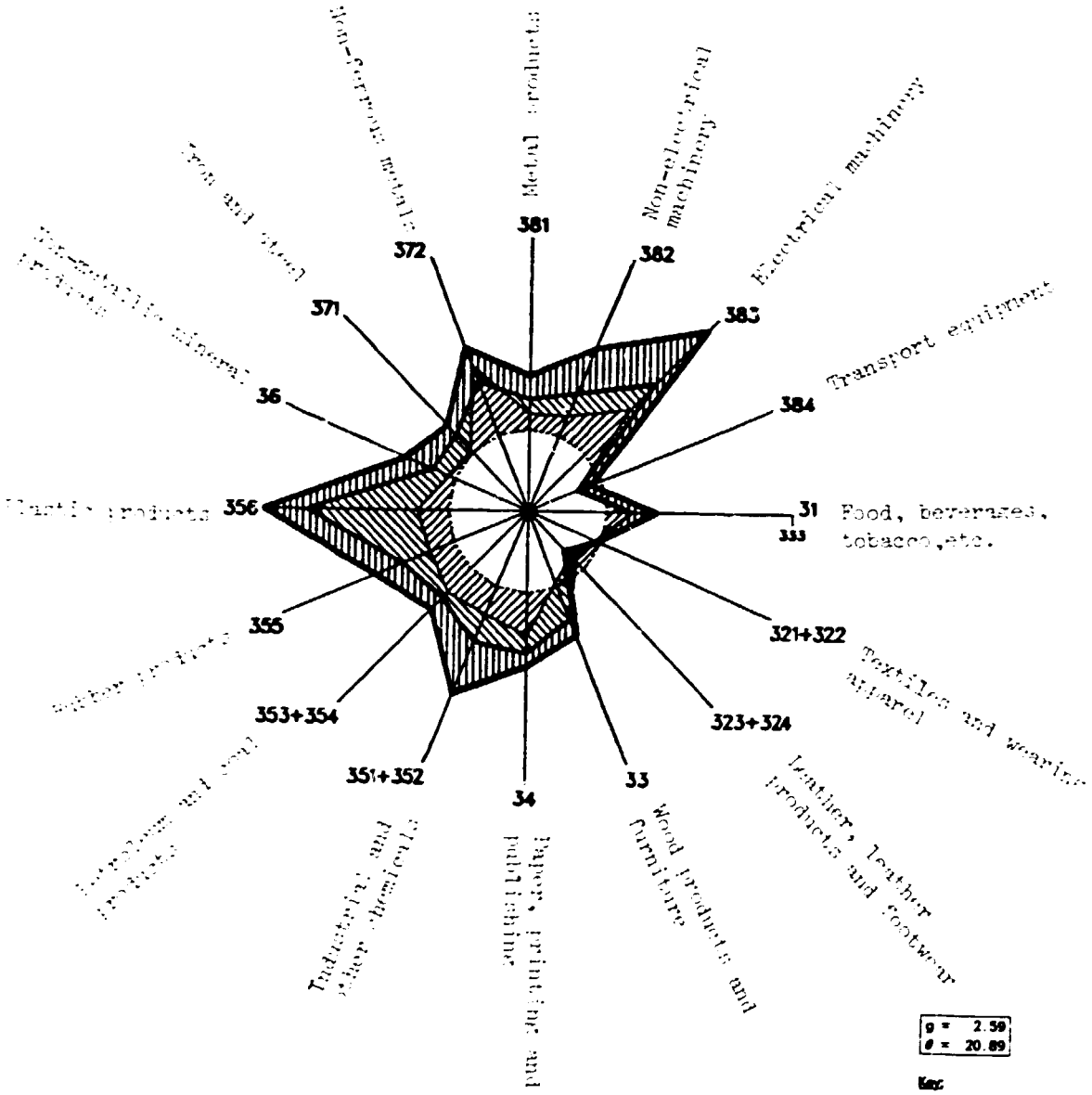
Table A. 17 Index numbers of agricultural production, 1950/51-1983/84 (selected years)

(Base: Triennium ending 1969/70=100)

	WEIGHT	50/51	55/56	60/61	65/66	75/76	80/81	81/82	82/83	83/84
A. FOODGRAINS	68.12	57.1	72.6	86.1	75.8	127.2	137.5	140.5	135.8	160.1
(a) Cereals	60.05	53.8	68.5	82.6	74.2	128.8	143.1	145.5	139.8	166.3
Rice	33.98	56.3	73.2	88.3	78.1	124.7	137.2	136.2	120.5	152.9
Wheat	12.16	37.8	49.2	60.9	57.6	159.9	201.2	207.4	237.0	250.0
Jowar	4.86	62.4	68.3	100.4	76.9	96.3	105.7	122.2	108.9	120.9
(b) Pulses	8.07	81.6	103.4	112.3	88.0	115.3	95.8	103.7	106.4	114.3
Grams	3.58	73.3	103.8	119.9	80.9	112.9	83.2	89.2	101.6	91.4
Tur	1.35	101.9	110.2	117.8	97.4	117.9	110.0	125.7	111.8	137.1
B. NON-FOODGRAINS	31.88	62.0	70.1	88.1	91.3	120.5	130.5	148.0	140.0	146.7
(a) Oilseeds	10.96	66.1	72.9	89.9	85.6	123.8	113.6	138.7	118.0	140.1
Groundnut	4.82	64.3	71.3	91.0	82.6	130.9	97.0	140.0	102.4	141.2
Rape and Mustard	1.73	51.4	57.5	90.2	86.9	129.6	153.8	158.8	147.2	171.1
(b) Fibers	4.03	57.8	79.5	96.3	88.5	103.4	126.3	138.9	129.4	117.7
Cotton(lint)	3.01	54.3	75.5	99.2	86.7	106.2	125.1	140.7	134.5	117.5
Jute	0.81	70.4	89.9	83.2	90.1	89.5	131.2	136.8	119.8	122.1
Mesta	0.15	59.7	104.4	100.9	118.0	127.0	142.2	136.3	105.5	116.9
(c) Plantation Crops	2.28	62.7	68.6	78.3	91.7	129.9	154.7	157.7	155.7	157.5
Tea	1.85	70.1	72.4	81.6	93.1	123.7	145.2	142.2	142.4	149.3
Coffee	0.24	39.2	68.5	86.1	99.5	129.6	182.9	234.6	200.5	154.2
Rubber	0.19	20.6	32.8	36.7	69.7	190.2	211.4	211.1	229.0	242.0
(d) Condiments and Spices	2.31	83.3	88.2	91.0	92.3	110.7	137.2	141.2	137.9	142.0
(e) Fruits and Vegetables	3.97	42.7	47.9	67.9	87.8	135.0	164.6	166.6	163.6	185.0
(f) Miscellaneous Crops	8.33	60.1	64.5	93.3	101.6	116.9	130.2	152.6	n.a	n.a
Sugarcane	7.01	58.1	61.3	94.1	105.3	118.2	129.4	156.3	158.9	198.5
Tobacco	1.14	72.3	83.9	84.5	82.4	98.4	135.1	146.1	163.3	139.2
ALL-CROPS	100.00	58.5	71.9	86.7	80.8	125.1	135.3	142.9	137.1	155.8

Source: Ministry of Agriculture. Quoted from World Bank, India: Structural Change and Development Perspectives, 24 April 1985.

Appendix A. INDUSTRIAL STRUCTURAL CHANGE, 1965-80
(Index of value added: 1965=100)



The measure for structural change is defined as:

$$\cos\theta = \frac{\sum_i s_i(t).s_i(t-1)}{\sqrt{\left(\sum_i s_i(t)^2\right).\left(\sum_i s_i(t-1)^2\right)}}$$

where $s_i(t)$ is the share of the i-th branch of value added in total value added in the year t.

The value θ can be interpreted as the angle between the two vectors $s_i(t-1)$ and $s_i(t)$ measured in degrees.

Source: UNIDO, Industry and Development, Global Report, 1983.

Appendix B. The approved and/or operational technical co-operation projects of UNIDO

Republic of I N D I A

Backstopping Responsibility (Spec.Act.Code)	Project Number	Project Title
IO/INFR (31.3.K)	DP/IND/79/004*	Establishment of primary and transfer pressure standards
IO/INFR (31.3.K)	DP/IND/79/005*	Vacuum standards
IO/FCTY (31.4.B)	DP/IND/84/020**	Strengthening the Cement Research Institute of India (CRI) capability in productivity enhancement of cement industry (PEP)
IO/TRNG (31.5.A)	RP/IND/84/002	Assistance to the Small Industries Extension Training Institute (SIET) in India to strengthen its capacity to offer training programmes for fellows from other developing countries
IO/FEAS (31.6.A)	UC/IND/84/035	Training workshop in industrial project preparation, evaluation and financing
IO/AGRO (31.7.B)	DP/IND/82/006**	Development of hosiery and knitwear industry (phase II) (continuation of DP/IND/73/021)
IO/AGRO (31.7.B)	DP/IND/82/011*	Application of research results in easy care cotton fabrics in the textile industry
IO/AGRO (31.7.D)	DP/IND/82/025*	Strengthening of the college of leather technology, Calcutta (Associated Agency: FAO and UNESCO)
IO/AGRO (31.7.D)	DP/IND/84/009*	Process-cum-product development centre for sports goods, Meerut (U.P)
IO/MET (31.8.A)	DP/IND/79/026**	Welding Research Institute, Tiruchirapalli (phase II of DP/IND/74/014)
IO/MET (31.8.A)	DP/IND/81/015*	Electro-metallurgical production of aluminium silicon alloys from sillimanite concentrate
IO/MET (31.8.A)	SI/IND/82/801	Improvement of anode performance in aluminium smelting
IO/MET (31.8.A)	SI/IND/82/802	Reconstruction study of alumina calciner for energy conservation

* Large-scale project (= total allotment $150,000 or above).
** Total allotment $1 million or above.

Appendix B.(continued)

Republic of I N D I A
(2)

Backstopping Responsibility (Spec.Act.Code)	Project Number	Project Title
IO/MET (31.8.A)	DP/IND/84/004	Techno-economic study for industrial utilization of red mud waste from bauxite processing in Korba
IO/MET (31.8.A)	DP/IND/84/005*	Demonstration unit of alumina calciner for energy conservation, Korba
IO/MET (31.8.A)	DP/IND/84/007*	Assistance for production of super purity aluminium
IO/MET (31.8.A)	RP/IND/85/001	Technical project design of experimental/demonstration unit for the manufacture of special grade alumina (see also RP/IND/85/901)
IO/MET (31.8.A)	RP/IND/85/901	Technical project design of experimental/demonstration unit for the manufacture of special grade alumina (see also RP/IND/85/001)
IO/MET (31.8.C)	DP/IND/81/004*	Standardization of melting technology of sponge iron
IO/MET (31.8.C)	DP/IND/81/035*	Design development for an experimental blast furnace
IO/MET (31.8.C)	DP/IND/81/036**	Design development of a concurrent top and bottom blowing in converter steelmaking operation
IO/MET (31.8.C)	SI/IND/84/802	Technological choice and appraisal of appropriate metallurgical process routes for Maharashtra Electro-Smelt Company of State Industrial and Development Corporation (SICOM)
IO/MET (31.8.D)	DP/IND/83/031*	Process and product development centre for small-scale casting and forging industries at Agra
IO/MET (31.8.E)	DP/IND/85/026*	Establishment of metal handicraft service centre at Moradabad
IO/ENG (31.9.A)	DP/IND/84/017	Emission laboratory for automotive industry
IO/ENG (31.9.B)	DP/IND/79/027**	Sewing machine development centre, Ludhiana
IO/ENG (31.9.B)	DP/IND/81/001*	Development of NMR spectrometers for oilseed characterization

* Large-scale project (= total allotment $150,000 or above).
** Total allotment $1 million or above.

Appendix B. (continued)

Republic of I N D I A
(3)

Backstopping Responsibiiity (Spec.Act.Code)	Project Number	Project Title
IO/ENG (31.9.B)	DP/IND/82/001**	Application of alternative fuels for internal combustion engines, IIP, Dehra Dun
IO/ENG (31.9.B)	DP/IND/82/002**	Evaluation and product-cum-process development centre at the Institute for Design of Electrical Measuring Instruments (IDEMI), Bombay
IO/ENG (31.9.B)	DP/IND/82/019*	Assistance to the metal-working industry in India - computer aids
IO/ENG (31.9.B)	DP/IND/82/032*	Assistance in the setting-up of the Central Institute of Hand Tools, Jullundur
IO/ENG (31.9.B)	DP/IND/82/034*	Appropriate automation promotion programme
IO/ENG (31.9.B)	DP/IND/82/048**	Strengthening of industrial design services at the National Institute of Design, Ahmedabad
IO/ENG (31.9.B)	DP/IND/83/011**	Establishment of a fluid control research institute at Palghat (phase II of DP/IND/81/030)
IO/ENG (31.9.B)	DP/IND/84/013*	Development of micro-precision engineering techniques, HMT Ltd.,
IO/ENG (31.9.C)	DP/IND/81/025*	Development of microprocessor based agro-dairy instruments
IO/ENG (31.9.C)	DP/IND/82/007**	Improvement of testing and evaluation facilities, National Test House (NTH), Calcutta (phase II of DP/IND/75/040)
IO/ENG (31.9.C)	DP/IND/84/015**	Semiconductor devices and electronic sub-systems for transportation
IO/ENG (31.9.C)	UC/IND/84/184	Electronics PCB development
IO/ENG (31.9.D)	DP/IND/79/028**	Bicycle research and development centre
IO/ENG (31.9.D)	DP/IND/83/017**	Fatigue laboratory for automotive industry
IO/ENG (31.9.E)	DP/IND/79/046**	Instruments design, development and facilities centre, Ambala

* Large-scale project (= total allotment $150,000 or above).
** Total allotment $1 million or above.

Appendix B. (continued)

Republic of I N D I A
(4)

Backstopping Responsibility (Spec.Act.Code)	Project Number	Project Title
IO/ENG (31.9.E)	DP/IND/84/030**	Microprocessor application engineering programme
IO/ENG (31.9.K)	DP/IND/82/033**	Computer aided design programme
IO/CHEM (32.1.D)	DP/IND/81/028*	Modernization of facilities for the manufacture of anti-malaria drugs
IO/CHEM (32.1.D)	DP/IND/82/042	Consultancy services for revamping vitamin 'C' plant, Pune
IO/CHEM (32.1.D)	DP/IND/82/043	Assistance in the manufacture of dapsone
IO/CHEM (32.1.D)	UC/IND/84/058	Upgrading of technology in India for the extraction of alkaloids from opium
IO/CHEM (32.1.E)	US/IND/79/206*	Desilification plant for the Ashok Paper Mills Limited
IO/CHEM (32.1.E)	SI/IND/84/803	Study tour on the production of bagasse newsprint paper
IO/CHEM (32.1.F)	DP/IND/78/054*	Modernization of engineering design and consultancy services
IO/CHEM (32.1.F)	DP/IND/81/018*	Investigations to produce sulphur and sulphuric acid from Amjhore pyrite deposits
IO/CHEM (32.1.F)	DP/IND/81/019*	Investigations to use low-grade rock phosphate from Mussoorie deposit
IO/CHEM (32.1.F)	DP/IND/85/006*	Development of expertise in fertilizer plant operations
IO/CHEM (32.1.G)	DP/IND/80/037**	Pesticides development programme in India
IO/CHEM (32.1.H)	DP/IND/80/001*	Technical manpower development for Indian Oil Corporation Limited
IO/CHEM (32.1.H)	DP/IND/80/015*	Consultancy services for Indian petroleum refining industry
IO/CHEM (32.1.H)	DP/IND/81/003**	Development of resins, moulding compounds, curing agents, etc. for use in composite industry
IO/CHEM (32.1.H)	DP/IND/82/044**	Plastics materials and product testing programme in India

* Large-scale project (= total allotment $150,000 or above).
** Total allotment $1 million or above.

Appendix B. (continued)

Republic of I N D I A
(5)

Backstopping Responsibility (Spec.Act.Code)	Project Number	Project Title
IO/CHEM (32.1.H)	DP/IND/84/001**	Performance optimization of the petrochemical complex at the Indian Petrochemicals Coporation Ltd., Baroda
IO/CHEM (32.1.I)	DP/IND/80/003**	Bioscience and engineering
IO/CHEM (32.1.I)	DP/IND/80/004**	Coal gasification
IO/CHEM (32.1.I)	DP/IND/82/040*	Techno-economic feasibility study for the production of synthetic oil from coal
IO/CHEM (32.1.J)	DP/IND/83/008**	Pollution Control Research Institute Hardware (U.P.)

* Large-scale project (= total allotment $150,000 or above).
** Total allotment $1 million or above.

Appendix C. Leading Indian Companies, 1984
(all values in million US dollars)

Rank	Company	Type of Business	Sales/ Turnover	Net Profit/ (Loss)	Employees (number of persons)	Net Current Assets	Ownership
1	Indian Oil	Oil	9,760.3	309.5*	17,000		State
2	Food Corporation of India	Trade	4,016.9				State
3	Steel Authority of India	Steel	3,259.7		199,737		State
4	Oil and Natural Gas Comission	Oil	2,890.2	124.8[5]	22,000		State
5	Hindustan Petroleum	Oil	1,989		12,000		State
6	State Trading Corporation	Trade	1,736		2,500		State
7	Bharat Petroleum	Oil	1,633.7	71			State
8	Minerals and Metals Trading Corp.	Trade	1,141.9				State
9	Bharat Heavy Electricals	Engineering	1,117.2	65.4[1]	65,000		State
10	Tata Iron and Steel	Iron, steel	842.9	18.9	69,600	220.4	Tata
11	Madras Refineries	Oil refining	720.2		684		
12	Telco	Locomotives, engineering	719	28.6	40,382	381.4	Tata
13	Air India[1]	Airline	700.2	65*	15,296		State
14	ACC	Cement	576.1	20.1	27,950	39.8	
15	Shipping Corporation[7]	Shipping	570		13,327		
16	Hindustan Lever[2]	Detergents	559.6	18.4	1,240	84.3	Unilever, UK, Holland
17	Cochin Refineries	Oil refining	550.2				
18	Indian Airlines	Airline	483.7		19,186		
19	Indian Petrochemicals	Petrochemicals	455.5	29.5	6,422	159.7	
20	DCM	Textiles, enginerring	446.8	2.8	33,000	239.3**	
21	Reliance Textiles[1]	Textiles	413.7	30.8		535.4	
22	Voltas	Electrical goods	381.4	4.4	526	168.5**[1]	Tata
23	Indian Explosives	Chemicals	377.8	18.3	500	67	ICI, UK
24	Railway Board[6]	Transport	374.6				
25	Bharat Earth Movers	Earth moving equipment	362.6	19.7	270	229.8	
26	Gwalior Rayon	Textiles	352.5	9.6	19,413	173.5	Birla

Appendix C. (continued)

Rank Company	Type of Business	Sales/ Turnover	Net Profit/ (Loss)	Employees (number of persons)	Net Current Assets	Ownership
27 Mahindra and Mahindra[1]	Steel/ machinery	352.1	13.4	12,975	39.4	
28 Oil India[1]	Oil, gas	346.6	217.8*	5,000		
29 National Fertiliser	Fertiliser	342[7]				
30 Larsen and Toubro	Earth moving equipment, chemicals	330.7	22.1	15,000	272.8**[1]	
31 Dunlop India[2]	Rubber	312.8	5.7	10,882	102.3	Goenka
32 Brooke Bond India	Tea	305.7	8.2	944	47.4	Unilever, UK, Holland
33 Hindustan Motors	Motors	282	12.9	17,500	48.6	
34 Century Spinning[4]	Textiles	275.7	19.5*	24,263	192**[1]	Birla
35 Hindalco	Aluminium	270	6.2		227.1[1]	
36 Escorts	Vehicles	265.3	12.8	6,214	126.2**1	
37 Shaw Wallace	Beer, Liquor	260.2++	18.6*	7,168	11.9	
38 Ashok Leyland[4]	Vehicles	253.9	20.1*	10,768	79.9	46% Leyland, UK
39 Birla Jute	Jute	252est[5]	18.3	14,000	168.2**[1]	
40 Hindustan Aeronautics	Aerospace	234		40,000		
41 Lipton India	Tea, foods	230.3	1.3		46	Unilever, UK
42 Gujarat State Fertiliser	Fertilisers	216.7	35.1*	3,500	306.7**	
43 Rallis India[7]	Chemicals	212	1.6	5,063	77.6**	
44 Tata Power	Power	212	14.5[1]		203.3**[1]	
45 Indal[4]	Aluminium	204.5	6.8	7,978	177.1**	
46 Ballarpur Industries	Paper, chemicals	201.5	3.8	10,000	67.1**	
47 Indian Telephone Industries	Tele-	200.9	19.6*	28,368	97.1	
48 ITC	Tobacco	200.2	7.2		118.4**	
49 VST	Tobacco	194.1	19	125	(39.5)	
50 Calcutta Electricity Supply	Power	192.6	1.5	384	17.6	
51 MRF	Rubber, tyres	191	9*	132	32[1]	
52 EaD Parry[7]	Fertiliser	179	1.2	5,100	60.1**	
53 Golden Tobacco	Tobacco	176.7	1.5	270	34.7	
54 Ambalal Sarabhai[2]	Pharmaceuticals	175.3	(1.3)	14,000	235.7**	
55 Pelco Electronics[2]	Electrical goods	175.2	1.7	2,100	50.9***	Phillips, Netherlands

Appendix C. (continued)

Rank Company	Type of Business	Sales/ Turnover	Net Profit/ (Loss)	Employees (number of persons)	Net Current Assets	Ownership
56 Bajaj Auto	Motor Cycles	174.7	40.7*	9,000	66	
57 Ceat Tyres[+]	Tyres	174.6	2.9	3,656	30.9***	Goenka
58 Nocil[2]	Chemicals	170.1	2	1,096	52.4	
59 JK Synthetics	Febres	168.5		7,500	127.6***	
60 Tata Oil Mills	Detergents	166.9	2.2	889	31	Tata
61 Premier Automobiles	Automobiles	160.3	2.4	2,100	30.6	Goenka
62 Guest Keen Williams[2]	Steel	157.7	1.9	600	49.1	
63 Bata India[2]	Shoes	157.6	1.9	675	16.7	
64 Duncan Agro	Tea, tobacco	157.3	1.7[1]		66.2**[5]	Goenka
65 Bombay Stburban Electric Supply	Power	146.2	5.6	3,300	46.7	
66 Crompton Greaves	Motors, alternators	143.8	1.4	8,000	29.8	
67 Tata Power	Electricity generation	143.6	1.3	167	143**	Tata
68 Modi Rubber[5]	Rubber	142.5	8.5		143.7**	
69 Nirlon Synthetics	Chemicals	139.3	1.2	2,744	33.2	
70 Godfrey Phillips	Tobacco	139.0	1.5*	1,525	7.6	
71 Siemens India	Electrical goods	136.2	16.2	7,087	33.8	Siemens, FRG
72 Metal Box India[2]	Packaging	127.7	0.1*	9,000	110.6**[1]	37% Metal Box, UK
73 Standard Mills	Textiles	125.4	(0.7)	10,000	28.8	
74 Zuari Agro	Fertilisers	124.9[6]	11		89**[1]	
75 Ahmedabad Electricity	Power	119.9	6.2	5,400	176.6**	
76 Tata Chemicals	Chemicals	119.5	8.7	3,900	123.5	Tata
77 Kesoram Industries[1]	Industrial	118.9	11.5	15,300		
78 Raymond Woollen Mills	Textiles	116.9	6.2	6,500	64.2	
79 Bombay Dyeing and Manufacturing	Textiles	115.2	2.5	10,000	31.7	
80 Rallis India	Engineering	114.7	69*	600	283.9***	
81 Forbes Forbes Campbell	Wines, spirits, tools, equipment	113.7		1,236		
82 Glaxo Laboratories	Pharma-ceuticals	112.1	5.3	2,272	7.6	Glaxo, UK

Appendix C. (continued)

Rank	Company	Type of Business	Sales/ Turnover	Net Profit/ (Loss)	Employees (number of persons)	Net Current Assets	Ownership
83	Tata Tea[2]	Tea	107.3	9.7	59,000	20.1	Tata
84	Britannia Industries	Biscuits, bread	106.6	2.5	350	11.3	
85	MICO[6]	Spark plugs	106.1	6.4			
86	Hindustan Construction	Construction	104.1	4.9	145	47.7	
87	Oswal Woollen Mills	Textiles	97.2	1.4	3,500	10.4	
88	Modi Industries	Steel, electrodes	96.3	0.7		16.9***	
89	Greaves Cotton[5]	Diamond tools	96	2.5			
90	Wimco[4]	Engineering processed food	95.3	11.3*	6,000	14	
91	Indian Oxygen	Oxygen	94.9	6.3*			
92	Mafatlal Fine Spinning	Textiles	94.2	1.7	10,000	15	
93	Indian Dyestuffs	Dyes	94	1.3	347	51.3	
94	Scindia Steam	Shipping	93.8	(13.4)	2,906	238.9**[5]	
95	Hindustan Development Corp[4]	Pollution control equipment	93.7				
96	Zenith Steel	Steel, zinc	93.5	1.2	2,000		
97	Jiyajeerao Cotton	Textiles	93.2[1]	1.4	8,000[1]	56.6**[5]	Birla
98	Straw Products[2]	Paper, board	92.4	(0.9)	180	22.8	
99	Indian Rayon	Textiles	91.3	2.8		85.9	
100	Binny[5]	Mill made goods	90.5	(4.6)	20,000		
101	Coromandel Fertilisers[6]	Fertilisers	90	9	6,000	70.1**	
102	Mukand Iron and Steel	Iron and steel	89.9	(2.2)	464	26.9	
103	Hyderabad Asbestos[6]	Asbestos	88.6	4.5			
104	Goodyear India[2]	Tyres	86.2	2.6	2,380	21.1	Goodyear, US
105	Kirloskar Electric[1]	Electrical equipment	86	1.7		12***	
106	Jay Engineering Works	Sewing machines	85.5	0.4	6,000	57.7**	
107	Mohan Meakin	Beverages	85.3	0.7	3,200	38.9	

Appendix C. (continued)

Rank Company	Type of business	Sales/ Turnover	Net Profit/ (Loss)	Employees (number of persons)	Net Current Assets	Ownership
108 Shri Ambika[6]	Textiles	83.1	1.2	13,000		
109 Kelvinator	Regrigerators	83	4.8	4,230	17.3	Kelvinator, USA
110 Ferro Alloys	Chrome, steel	82.7	0.8	4,188	43.5***	
111 Hindustan Photos	Films	82	2.8	3,120	52.3	
112 Amrit Banaspati[1]	Refined oil products	82	1.5	1,400		
113 Indian Tube	Tubes, steel	81.6	0.2	440	27.5	
114 Ciba Geigy[1]	Pharmaceuticals	80.9	5.1			Ciba, Germany, Switzerland
115 Musco	Steel	78.8++	(15.6)++		32.5***	
116 Orissa Cement[2]	Cement	78.5	1.3	90	21	
117 Hoechst Dyes[1]	Chemicals	77.8		353		Hoechst, FRG
118 Food Specialities	Food	75.7	3.2		13.5***	
119 JK Industries	Tyres, tubes	75.1	3.6		0.5	
120 Kamani Engineering	Engineering	74	1.1	2,200	51.7	
121 Tata Hydro Electric	Electricity generation	73.8	2.5	474	66.8	Tata
122 Bayer India[2]	Pesticides	72.8	1.9	1,846	18	Bayer, FRG
123 Rothas Industries[1]	Paper, board	72.8				
124 Alkali and Chemicals[1]	Liquid paints	71.8				ICI, UK (now merged with Indian Explosives
125 Ahmedabad Manufacturing	Calico printing	70.8	7.9*	15,505		
126 National Rayon[2]	Textiles	70.6	12.4	940	14.1	Goenka
127 General Electric[2]	Electrical appliances	70.4	1.7		4.4***	GEC, UK
128 Colgate Palmolive[1]	Cosmetics	69.7				
129 Chroride India	Batteries	69.1	4.9	320	14	
130 Best and Crompton[6]	Electric motors	67.6		4,500		Crompton-Parkinson UK
131 Tinplate Co of India	Tinplate	66.5	1.2	5,548	15.1	
132 Asian Paints[6]	Paints	65.8		2,181		
133 Wipro	Hydraulic cylinders, soaps	65.5	3.4	1,400		

Appendix C. (continued)

Rank	Company	Type of business	Sales/ turnover	Net Profit/ (Loss)	Employees (number of persons)	Net Current Assets	Ownership
134	NGEF	Power	65.2	0.3	6,482	34	AEG, FRG
135	Indian Cements[1]	Cement	64.7				
136	Mcdowell[1]	Beer, liquor	64.3		500		
137	Swadeshi Polytex	Staple fibre	64.3	4.4			
138	Gujarat Steel[5]	Steel tubes	63.7		2,000		
139	Baroda Rayon[6]	Yarn	63.4		3,000		
140	Indian Cable	Cable	63.3	1	280	20.7	
141	Great Eastern Shipping	Shipping	63.1	(4)	1,500	152.3***	
142	Morajee Mills	Textiles	62.6	0.5	130	14.4	
143	Polyolefins	Rubber	61.9[6]		1,343		
144	Kothari Industrial	Textiles, tea fertilisers	61.6				
145	Blue Star	Refrigeration equipment	61.6[5]		3,118		
146	Kirloskar Pneumatic	Power equipment	60.9	0.6	2,700	17.5	
147	Atul Products	Dyes	60.3[6]		3,451		
148	Mohan Meakin	Distillers	60.2	0.7	3,200	6.4***	
149	Shri Ram Fibres	Textiles	59.9	2.7	152	10.9	
150	Gammon India	Chemicals	59.4	0.5	2,000	12.5***	
151	Triveni Engineering	Engineering	59.2	1.4	3,500	10.4	
152	Ilac	Trade	59[6]				
153	Kirloskar Brothers	Power equipment	57.9	-	5,618	10***	
154	Elecon Engineering[2]	Engineering	57.8	2.3		14	
155	Sandoz	Agrochemicals	57.5[6]		1,768		Sandoz, Switzerl.
156	Central India Machinery	Steel, textile machinery	57.3	0.9	180	10	
157	West Coast Paper Mills	Paper	57.2	0.9	174	11.9	
158	Bharat Commerce	Textiles	57[6]				
159	Bharat Vijay Mills	Textiles	56.5[6]		2,000		
160	Jayshree Tea	Tea	55.7[1]		28,000		
161	Hindustan Cocoa	Cocoa, chocolate	55.2++	2.1+		8.5***	
162	Goodlass Nerolac Paints	Paints	54.9	0.9	344	15.1	

Appendix C. (continued)

Rank Company	Type of Business	Sales/ Turnover	Net Profit/ (Loss)	Employees (number of persons)	Net Current Assets	Ownership
163 Color Chem	Textiles	54.8	1	352	15.7	
164 Cable Corporation	Cable, wire	54.7	0.6	1,508	6	
165 Parle Products	Confectionery	54.5		1,500	7.4	
166 Macneil and Magor	Tea, jute	54.3[6]		49,000		
167 Rajasthan Spinning	Textiles	52.8[5]				
168 Indian Hotels	Hotel trade	51.8	6.7*			
169 Garware Nylons[1]	Textiles	51.7	1.3	1,000	35.9***	
170 Kinetic Engineering	Engineering	51.4	2			
171 SSL[2]	Steel	51.2	(6.1)	100	12	
172 Herdillia	Chemicals	50.4	2.5		7.9***	Goenka
173 Bihar Alloy[6]	Steel	50.3		2,500		Birla
174 Mysore Cements	Cement	50.2	4		58.4***	
175 Frick India	Refrigeration equipment	50est				Frick, US

Source: South, May 1985.

Note:
o The Railway Board is a government department.
* Pre Tax profits.
** Total assets.
*** Net fixed assets.
+ 15 month period.
++ 18 month period.
1 1982/3.
2 1983.
3 1984/5.
4 1984.
5 1981/2.
6 1982.
7 1981.

SELECTED REFERENCES

Asian Development Bank, "Key indicators of developing member countries of ADB", Volume XVI, April 1985.

The Hindu, "Survey of Indian Industry, 1984", Madras.

The Economist Intelligence Unit, various issues.

Far Eastern Economic Review, various issues.

Financial Times, various issues.

Government of India and Economic Commission for Asia and the Pacific, Activities of India in Appraisal, Development and Management of Mineral Exploration and Development, Bangkok, January 1976.

India, Central Statistical Organization, Annual Survey of Industries, 1971, Calcutta.

India, Central Statistical Organization, Statistical Abstract - India 1975.

India, Economic Survey, 1980/81.

India, Ministry of Industry, "India's Experience in Development of Infrastructure for Industry", Round Table Ministerial Meeting on Industrial and Technological Co-operation among Developing Countries, New Delhi, 4-8 January 1977, organized by UNIDO in co-operation with the Government of the Republic of India.

India, Ministry of Industry, "India's Experience in Small-scale and Rural Industries", Round Table Ministerial Meeting on Industrial and Technological Co-operation among Developing Countries, UNIDO and Government of India, New Delhi, 4-8 January 1977.

India, Ministry of Industry, "Review of Recent Industrial Development and its Outlook", for the Sixth Session of ESCAP Committee on Industry, Human Settlements and the Environment, Bangkok, 7 September 1982, New Delhi, September 1982.

India, Planning Commission, Sixth Five-year Development Plan 1980-1985.

India, Industrial News Digest, various issues, 1983 and 1984.

Lall Sanjayal, "Exports of Technology by Newly Industrializing Countries: India", World Development, May/June 1984.

Lloyds Bank Group, India, Economic Report, 1983.

Marathe, Sharad S. "A Mid-year Assessment of the Economy 1982-83", paper presented at workshop in New Delhi, associated Chambers of Commerce and Industry of India, 12 January 1983.

UNIDO, "Evaluation Report on Industrial Estates", No. 13, India (Expert Group Meeting on Evaluation of the Effectiveness of Industrial Estates in Developing Countries, Vienna, 13-16 December 1976) ID/WG.231/12, 1976.

World Bank, Economic Situation of India and Resource Mobilization Series, Report No. 4395-N, 11 April 1983.

World Bank, India: Structural Change and Development Perspectives, Vol. I and II, Report No. 5593-IN, April 24, 1985.

World Bank, World Development Report, 1984 and 1985.

Previously issued in the Industrial Development Review Series.

Indonesia	UNIDO/IS.450	1984
Kenya	UNIDO/IS.459	1984
Argentina	UNIDO/IS.460	1984
Paraguay	UNIDO/IS.461	1984
Uruguay	UNIDO/IS.462	1984
Bangladesh	UNIDO/IS.510	1985
Swaziland	UNIDO/IS.516	1985
Zambia	UNIDO/IS.520	1985
The Philippines	UNIDO/IS.527	1985
Pakistan	UNIDO/IS.535	1985
The Sudan	UNIDO/IS.541	1985
Malaysia	UNIDO IS.545	1985