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INDUSTRIAL DEVELOPMENT REVIEW SERIES

YEMEN ARAB REPUBLIC

Diversifying the industrial base

Prepared by the
Regional and Country Studies Branch

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INDUSTRIAL DEVELOPMENT REVIEW SERIES

YEMEN ARAB REPUBLIC

Diversifying the industrial base

PREFACE

This Industrial Development Review is one of a series of country studies prepared by the Regional and Country Studies Branch of the United Nations Industrial Development Organization (UNIDO).

The Reviews present brief factual and analytical surveys of industrial development in developing countries. Such industry-specific Reviews are in demand for a variety of purposes: to provide an information service to relevant sections within UNDIO and other international organizations and aid agencies concerned with technical assistance to industry; to be used as a reference source for financial organizations, public and private industrial enterprises and economic research institutes in developed and developing countries; and to serve as a handy, useful information source for policy-makers in developing countries. The Reviews do not represent in-depth industrial studies. With an exclusive focus on industry they present information and analyses on the broad spectrum of the industrial development process in the countries concerned in a condensed form.

The Reivews draw primarily on information and material available at UNIDO Headquarters from national and international sources as well as data contained in the UNIDO data base. A field survey was undertaken in March 1989 in which industry-specific data was collected with the assistance of the Central Planning Organization and the Ministry of Economy, Supply and Trade. The presentation of up-to-date information on sub-sectoral manufacturing trends is usually constrained by incomplete national data on the industrial sector. To supplement efforts under way in UNIDO, to improve the data base and to monitor industrial progress and changes on a regular basis, it is hoped that the relevant national authorities and institutions and other readers will provide comments and further information. Such response will greatly assist in updating the Reviews.

It should be noted that the Reviews are not official statements of intention or policy by governments nor do the views and comments contained therein necessarily reflect those of the respective governments.

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

Dates divided by a slash (1988/89) indicate a fiscal year or a crop year. Dates divided by a hyphen (1988-1989) indicate a full period, including the beginning and the end years.

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

Percentage may not add to 100.0 precisely due to rounding.

In Tables:

- Three dots (...) indicate that data are not available or not separately reported;

- A hyphen (-) indicates that the item is not applicable or the amount is negligible.

The following abbreviations are used in this document:

GCC	Gulf Co-operation Council
GDI	General Department for Industry
GDIES	General Department for Investment and Economic Studies
GDP	Gross domestic product
GFCF	Gross fixeds capital formation
GNP	Gross national product
IBY	Industral Bank of Yemen
IEDA	Industrial Estates Development Authority
LNG	Liquified natural gas
LPG	Liquified petroleum gas
MEST	Ministry of Economy, Supply and Trade
MVA	Manufacturing value added
NICs	Newly industrializing countries
SFYP	Second Five-Year Plan (1982-1986)
SSE	Small-scale enterprises
TFYP	Third Five-Year Plan (1987-1991)
UNIDO	United Nations Industrial Development Organization
UNDP	United Nations Development Programme
YBRD	Yemen Bank for Reconstruction and Development
YCIF	Yemen Company for Investment and Finance
YR	Yemeni Rial
YTC	Yemen Textile Corporation

BASIC INDICATORS 1
The Economy

GDP (1987)	:	YR43,559 million ($5,232 million)
Population (1986)	:	7,729,231
Expatriate Yemenis	:	1,168,199
Growth rate (1975-86)	:	3.29 per cent per annum
Labour force (1986)	:	1.6 million

Annual growth rate of GDP (per cent)

1970-1981	1982	1983	1984	1985
6.5	9.7	2.4	3.4	4.5

1986	1987
9.4	4.8

Structure of production (per cent)

	1974/75	1986
Agriculture	40.5	25.9
Industry	10.5	17.8
Manufacturing	4.7	11.2
Services	41.1	46.3
Transfers	7.9	9.4

Inflation rate[a/] (per cent per annum)

1982	1983	1984	1985	1986	1987
2.7	5.3	12.6	27.4	29.3	21.8

Exchange rate (Yemeni Rials to $1)

1982	1983	1984	1985	1986
4.56	4.58	5.35	7.36	9.64

1987	1988	Feb 1989
10.34	9.77	10.32

a/ Based on the Sana'a price index.

BASIC INDICATORS 2
Raw materials resources

Exports		
Principal crops ('000 tons, 1987)	:	Vegetables (455), grapes (129), potatoes (110), wheat (100), sorghum and millet (477), maize (48)
Cash crops ('000 tons, 1987)	:	Qat (unknown), coffee (4.2), sesame (40), tobacco (4.7), cotton (4.2)
Livestock ('000, 1987)	:	Sheep and goats (4,297), cattle (1,023), camels (61), chickens (17,697)
Fish landings (tons, 1987)	:	23,000
Mining (1987)	:	Salt (172,000 tons), gypsum (44,407 tons), stone quarrying (247,000 cu m).
Mineral resources (1989)	:	Occurences of marble, gold, lead, zinc, nickel, copper, titanium and uranium have been confirmed.
Energy (1987)	:	Oil (December 1988, 200,000 b/d), electricity (1987, 699 gWh)

BASIC INDICATORS 3
Foreign trade and balance of payments

Exports		
Total value (1987)	:	YR318 million
Principal exports (1987, YR million)	:	Coffee (52.8), cigarettes (49.5), biscuits (43.1), leather (39.9), fresh grapes (27.2), sesame (13.2)
Main destinations (1987, per cent)	:	Saudi Arabia (53.6), PDR Yemen (24.0), Italy (8.2), Japan (4.0)
Imports		
Total value (1987)	:	YR9,176 million
Principal imports (1987, YR million)	:	Food and live animals (2,896), manufactured goods (2,622), machinery and transport equipment (2,014), chemicals and chemical products (845)
Main origins (1987, per cent)	:	Japan (12.0), USA (10.8), Netherlands (10.0), West Germany (7.1), France (6.3), Italy (5.3), Saudi Arabia (5.3)

Balance of payments (current account deficit, $ million) :	1982	1983	1984	1985	1986	1987
	592.1	544.6	313.2	319.2	92.4	606.9

Total external public disbursed debt (1986)	:	$2,052 million
as per cent of GDP	:	41.1
Debt service (1986)	:	$99 million
as per cent of total exports	:	44.9

BASIC INDICATORS 4
The manufacturing sector

MVA (1987) : YR4,812 million ($491 million[a/])

MVA per capita (1987) : YR524 ($53[a/])

Employment in manufacturing (1987) : 57,800[b/]

As per cent of total labourforce : 3.6

Composition of MVA (per cent) :

	1975	1984[b/]	1986
Food & beverages	41.6	38.5	51.9
Textiles & leather	18.1	6.9	8.7
Wood	7.9	1.0	3.9
Paper & printing	3.1	0.9	0.5
Chemicals & plastics	3.2	19.0	9.2
Building materials	11.1	24.5	15.3
Metalworking	8.7	8.8	8.7
Jewellry & crafts	6.3	0.5	1.8

Growth of MVA (per cent) :

1981	1982	1983	1984	1985	1986	1987
10.6	20.3	23.2	7.4	11.7	2.4	8.7

Share of manufactured goods in total exports (1987) : 36.7 per cent

Share of manufactured goods in total imports (1987) : 50.5 per cent

a/ Based on annual average exchange rate of YR9.8=$1.

b/ Only medium and large enterprises.

BASIC INDICATORS 5

Inter-country comparison of selected indicators

	Unit	Yemen AR	Djibouti	Ethiopia	Oman	Somalia	Yemen PDR
I. Demographic indicators							
Population (mid-1986)	million	8.2	0.4	43.5	1.5	5.5	2.2
Population growth (1980-1986)	per cent per annum	2.5	5.2	2.4	4.7	2.9	3.1
Primary school enrollment as percentage of age groups (1985)	per cent male/female	112/22	...	44/28	97/80	32/18a/	96/35a/
Area	thousand sq km	195	22	1,222	300	638	333
Density (1986)	persons per sq km	42	16	36	4	9	7
II. Economic indicators							
GDP (1986)	US$ million	4,760	340	4,960	7,320	2,320	930
GNP per capita (1986)	US$	550	783	120	4,980	280	470
GDP growth rate (1980-1986)	per cent per annum	4.3	1.7	0.8	5.7	4.9	1.7
Agriculture (1986)	per cent of GDP	34a/	4.4	48	3a/	58	15.1
Industry (1986)	per cent of GDP	16a/	18.8	15	59a/	9	20.9
Manufacturing (1986)	per cent of GDP	7a/	8.2	10	3a/	6	...
Services (1986)	per cent of GDP	50a/	76.8	36	38a/	34	64.0
Exports of goods (1986)	per cent of GDP	5	4.0	13	50a/	7	
Gross domestic investment (1986)	per cent of GDP	21a/	...	9	30a/	15	...
External long-term debt (disbursed and outstanding) (1986)	per cent of GNP	41.1	35.0	35.7	38.3	54.4	189.7
III. Industrial indicators							
MVA (1985)	$ million	259	26.2	492	267	138	...
MVA growth (1980-1986)	per cent/annual	16.5	0.9	3.9	...	-3.4	...
Share of manufactured exports in total exports (1986)	per cent	...	...	1	1	1	...
Share of manufactured imports in total imports (1986)	per cent	71	...	60	81	79	32

Note: Based on the World Bank data presented in the World Development Report 1988, excluding the data for Djibouti. It should be noted that the UNIDO data base, United Nations statistics, national statistics and World Bank data base do not always tally precisely and, therefore, discrepancies may be found between Basic Indicators 5, and the text Tables.

a/ For years other than those specified

SUMMARY

The Yemen Arab Republic emerged from subsistance economy in 1962. At that date the economy was almost entirely dependent on agriculture and most of the population were peasants following a subsistence mode of production. Modern industry was non-existent, though craftsmen produced a range of simple tools and consumer goods, and Yemenis went without the manufactured goods taken for granted elsewhere in the world. There was no banking system and the silver Maria Theresia dollar, a currency based on intrinsic value, was used for most commercial purposes. There were few roads so that the economy was fragmented, with regional economies revolving around local markets and having little contact with the capital or world trade. Imports amounted to only 5.7 per cent of GNP and exports 2.7 per cent. Taxation and share cropping contracts mobilised the limited agricultural surplus for the small urban population. There government services and economic planning was unknown. The prospects for rapid economic growth and modernisation were bleak.

Following a period of political upheaval during which the foundations of the modern state were laid economic development began in earnest with the preparation of the First Development Plan covering the period 1973/74 to 1975/76. Infrastructural development was the government's priority since the construction of roads and the spread of government services, such as education and health care, were regarded as the prerequisites of a national economy. While the government undertook large-scale investments in agriculture and industry - a textile mill and cement works, for instance - the private sector was to take the lead in the development of the commodity sectors. Consecutive governments have adopted a liberal market orientation, encouraging private sector initiative through an investment law, promulgated in 1975, which offers generous incentives, a domestic market free of price controls and a system of tariffs and import licences that offers protection to infant industries.

Investment was sustained by substantial inflows from donors and Yemenis working abroad, thought to number 1.2 million by the end of the decade. Private transfers averaged $900 million per annum, approximately half of GDP, between 1973 and 1981 and disbursements from official creditors amounted to $1,007 million between 1976 and 1981. As a result of substantial investment in infrastructure, the construction of domestic accommodation, the proliferation of import substitution projects in the industrial sector and the expansion of government services, GDP grew at an average rate of 9 per cent in real terms between 1970 and 1981. Per capita GNP doubled to $612 over the same period.

Domestic consumption increased as incomes rose and together with substantial investment led to fourfold increase in imports. In 1982 the balance of trade deficit peaked at $1,947.5 million. A sharp drop in the value of external assistance and the inflows in migrants' remittances precipitated a balance of payments crisis. At the same time, a massive increase in recurrent budgetary expenditure and public sector investment as the government initiated its Second Five-Year Plan (SFYP) (1982-86), led to a sudden increase in the budget deficit to YR5.3 billion, 25 per cent of GDP. Faced with rapidly falling reserves the government retrenched. Government investment during the SFYP amounted to 70 per cent of that originally planned. Private sector investment was affected too, both as a result of falling migrants remittances and, in the industrial sector, by the exhaustion of the most obvious import substitution projects. By 1986, private sector gross fixed capital formation was less than half the level of six years before. Meanwhile, strict import controls, while they went a long way to restoring balance of payments equilibrium, led to shortages of raw materials and spare parts. Inevitably output was adversely affected. Environmental factors also played a part in the recession. A severe earthquake hit Dahmar in 1992 and was followed by a drought from 1983 to 1984 which cereal production.

Following the discovery of substantial oil reserves - at least 1 billion barrels - and the inauguration of a pipeline to the Red Sea in 1987 the government hoped that substantial oil revenues would accommodate a less austere budgetary and import regime. However, a sudden increase in government spending by 45 per cent widened the budget deficit to YR9.6 billion. At the same time the relaxation of licensing controls and a massive increase in government imports associated with new investments eroded the balance of payments surplus recorded in 1986 and left an overall deficit of $52.8 million. Although preliminary results suggest that oil revenues have gone some way to reducing the budget deficit in 1988, little attempt has been made to reduce the volume of imports and, as a result of a further fall in private and official transfers, a substantial deficit in the balance of payments is expected.

It is now clear that oil revenues - which could reach YR500 million by 1990 - will not be sufficient to support an ambitious government spending programme. Nor will they make an appreciable difference to the balance-of-payments in the face of falling private transfers and the decline in donor commitments - which were only 25 per cent of their 1982 level in 1987. In these circumstances the government is likely to restore the prudent economic management policies of the 1982-1986 period, including restraint on budgetary expenditure and strict import licensing, in the near future.

An important feature of economic development in the Yemen Arab Republic has been the diversification of the economic base. Agriculture's contribution to GDP has fallen steadily from 40.5 per cent in 1974/75 to 27.9 per cent in 1987. Indeed the growth of the agricultural sector, the mainstay of the economy, has lagged far behind rates of population growth - currently around 3 per cent - necessitating substantial increases in food imports. In contrast, manufacturing industry has enjoyed rapid growth rates, averaging 13.4 per cent between 1977/78 and 1979/80 and 12.8 per cent between 1982 and 1986. Consequently, manufacturing industry's share of GDP has increased from 4.7 per cent in 1974/75 to 11.1 per cent in 1987.

These rapid growth rates were achieved by substantial investments - amounting to YR3,806 million from 1976/77 to 1986 at constant 1981 prices - in a wide range of import substitution projects. Food, beverages and tobacco has emerged as the leading branch accounting for 38.5 per cent of output, according to a survey of enterprises employing five or more persons undertaken in 1984, and 51.9 per cent according government estimates for 1986. The most important enterprises in this branch produce soft drinks, mineral water, dairy products, biscuits and cigarettes. Other important branches are building materials, accounting for 19 per cent of manufacturing value added (MVA) in 1984, and chemical products, such as plastic household utensils, accounting for 24.5 per cent of MVA at that date. There are also embryonic metalworking and textiles branches.

Most of these projects were established by the private sector, which generated almost two-thirds of the gross fixed capital formation in the manufacturing sector during the 1976/77 to 1986 period. Public sector intervention has been limited to projects that are beyond the means of the private sector, such as the integrated textile mill or the cement works. By far the largest number of private sector enterprises are small-scale (employing less than five persons) and they are thought to make an important contribution to urban employment. Many of them have been set up by returning migrants and most use simple, labour-intensive technology. There are also a growing number of large-scale factories using modern technology. By 1984 there were 93 enterprises employing more than 10 people as compared with 59 such enterprises in 1975. According to the 1984 survey, which included only enterprises employing five or more persons, these enterprises generated 85 per cent of MVA whereas the 340 medium-scale enterprises generated 15 per cent of MVA.

This rapid pace of investment has not, however, been accompanied by sustained industrial development. Most of the import substitution projects established in the manufacturing sector depend heavily on imported raw materials. According to the 1984 survey, 70 per cent of the inputs used by the large-scale manufacturing enterprises were imported. In the food, beverages and tobacco branch, where a high proportion of local raw materials would be expected to be used, particularly when the size and diversity of the agricultural sector is considered, the proportion was as high of 84 per cent. There are few linkages within the industrial sector and virtually all capital goods and spare parts are imported. This raises doubts about the viability and competitiveness of local industry. Certainly, the protective tariff and import licensing system has allowed marginal investments and little consideration has been given to comparative advantage in the selection of projects. The negligible volume of exports tends to substantiate this hypothesis. While manufactured and processed products accounted for 36.7 per cent of total exports in 1987 they accounted for only 1.1 per cent of the output of the manufacturing sector.

Furthermore, while many of the new industrial plants employ impressive, modern equipment, this technologically complex development path has been adopted without consideration of the limitations of the local labour force and engineering industry. Technological development has outstripped the ability of educational institutions to graduate trained personnel and the modern sector has come to depend heavily on expatriate staff in managerial, technical and supervisory posts. Nor do capital-intensive industries take account of the growing need for employment generation. Admittedly acute labour shortages during the 1970s and 1980s and soaring wage rates - nominal wage rates rose by approximately 400 per cent between 1975 and 1980 - encouraged entrepreneurs to adopt capital-intensive production methods but now the flow of migrant labourers appears to have reversed and the first signs of urban unemployment have been identified.

What is more, levels of investment in the manufacturing sector have fallen sharply since the late 1970s, dropping to YR171 million in 1984, at constant 1981 prices, from a peak of YR705 million in 1978/79 and recovering to only YR328 million in 1987. To a large extent this may be explained by the deteriorating macro-economic situation. In order to narrow the budget deficit the government axed several proposed industrial development projects. Equally the investible resources of the private sector were squeezed by falling private transfers from emigrant workers.

More important, perhaps, was the fact that most of the obvious import-substitution projects had already been carried out by the mid-1980s. Rather than seek new opportunities entrepreneurs had begun to duplicate existing investments. This led to over-capacities in several branches and, due to the limitations of the local engineering industry, enterprises found it difficult to diversify or alter their production lines. In addition, the strict application of import licensing and foreign exchange allocations forced some enterprises, particularly those dependent on imported inputs, to curtail production due to shortages of raw materials and spare parts. As a result, there was a marked downturn in the rate of growth of MVA, which declined to 2.4 per cent in 1986.

The objective of the Third Five-Year Plan (1987-1991) is to diversify the industrial base through the promotion of projects in the field of intermediate goods, those that use domestic raw materials and those with export potential. While existing productive capacities have not been entirely neglected - the Plan also hopes to improve productivity and capacity utilization rates through the diversification of production lines, upgrading product quality, and developing linkages within the industrial sector through the spread of practices such as subcontracting - the emphasis remains on new investments. Much of the initiative and over half the investment finance for these projects will come from the private sector. An indicative list of 155 new projects for the private sector has been included in the Plan document.

At the same time, the government hopes to reform the incentive system and upgrade the planning and assessment capacities of the Ministry of Economy, Supply and Trade in order to ensure that development follows a path compatible with the government's long-term development goals. These goals are now dominated by the need to build a diverse, competitive and integrated industrial sector in readiness for the post-oil era.

1. THE ECONOMY OF THE YEMEN ARAB REPUBLIC

1.1 Recent economic trends

After a decade of rapid economic growth the economy of the Yemen Arab Republic slowed appreciably from 1983 to 1985, with growth rates falling from an average of 9 per cent in the 1970s to a low of 2.4 per cent in 1983. This was partly due to the government's efforts to control budgetary expenditures following a record deficit of YR5.3 billion in 1982. As external resources dwindled - grant payments from the Gulf States dropped off sharply as oil prices fell - the government scaled down its ambitious development programme. Total investment during the Second Five-Year Plan (SFYP) period (1982-1986) amounted to only 70 per cent of that originally planned. The government also introduced restraints on recurrent expenditures, such as a moratorium on wage rises, and made a significant effort to increase revenues from taxation. Even so the deficit persisted and by financing it through domestic bank lending the government brought strong inflationary pressures to bear. Massive imports relieved pressure however when these were cut back the rate of inflation topped 29 per cent in 1986.

Unforeseen exogenous factors also played a part. A devastating earthquake hit the Dahmar area in December 1982 forcing the government to divert resources from development to reconstruction. Furthermore, a prolonged drought from 1983 to 1984 led to a marked decline in agricultural output. Gross output of cereals dropped by more than half in 1983 and in order to meet the food deficit the government had recourse to substantial food imports.

On the external front, the government tightened import restrictions and devalued the Yemeni Rial by some 110 per cent between 1983 and 1986. A 18 per cent increase in the value of imports in 1982 had wiped out the gain from a rise in the level of external assistance and led to a record current account deficit of $592.1 million. Strict import licensing succeeded in cutting imports by half to $867.7 million in 1986 and in that year the economy recorded a balance of payments surplus even though both private and official transfers were significantly lower than in 1982. Unfortunately this improved balance of payments position was also achieved at the cost of economic growth. Since most new private sector projects depended heavily on imported capital goods import restrictions inevitably curtailed investment while output was adversely affected by shortages of raw materials and intermediate goods. Furthermore, the devaluation of the Yemeni Rial aggravated the strong inflationary pressures within the economy.

Nevertheless, a mood of optimism followed the discovery of oil 1984. Oil revenues would, the government anticipated in its Third Five-Year Plan (TFYP) (1987-91), help finance a more ambitious development programme than circumstances had permitted in the five previous years even though grants and aid receipts were expected to continue their downward tend. Expectations were such

that the plan forecast a budget surplus on current account from 1988. Oil exports would, furthermore, bring about a steady reduction in the current account deficit.

Influenced, perhaps, by popular expectations of an oil bonanza the government relaxed its tight fiscal policy prematurely in 1987. Expenditure increased by 45 per cent and the budget deficit reached a new height of YR9.6 billion, 149 per cent higher than the previous year. Domestic financing nearly doubled to YR6.2 billion, almost 20 per cent of the supply. Credit restrictions only managed to restrict monetary expansion to 10 per cent by depressing bank lending. Even so high inflation persisted at 22 per cent.

Import licensing controls were also relaxed and imports soared to $1.37 billion, 58 per cent higher than the previous year and over one third higher than the planned level of $900 million. Government imports accounted for approximately 70 per cent of this increase. The effect of an increase in official transfers was wiped out by the continued fall in migrants' remittances and the current account registered a deficit of $606.9 million. This was financed by drawing on development and commodity loans, which rose from $141 million in 1986 to $472 million in 1987, and a doubling of suppliers credits, on hard terms, to $264.7 million. As a result debt servicing rose to $145 million in 1987.

Even though exports of oil began in 1988 the macro-economic situation is unlikely to have improved markedly. Oil revenues, which may have reached $500 million in 1988, will have a modest impact on the budget deficit. Improved revenue collection and a stabilization of expenditure were expected to reduce the budget deficit to YR6 billion: a reduction by one-third on the level of the previous year but far cry from the budget surplus anticipated in the Plan. The target for imports in 1988, on the other hand, was higher than in 1987 at $1.5 billion and a considerable boost to imports has been given by the relaxation of the rules on opening letters of credit. Two-thirds of these imports will be financed by the Central Bank from oil revenues and migrants' remittances, which are expected to continue their downward trend, but almost one third will have to be financed by foreign loans and suppliers credits with short and medium-term maturities. This will aggravate the mounting debt servicing obligations which are expected to reach $400 million by 1991.

These trends indicate that economy, even when cushioned by oil revenues at their current level, cannot yet sustain ambitious expansionary policies. The gain from oil exports and revenues is steadily being eroded by the fall in migrants' remittances, as job opportunities in oil rich countries become scarcer, and budgetary assistance declining from the Gulf States. New investment will have to be financed by substantial foreign borrowing since, despite government efforts to improve domestic resource mobilization, the resource gap has shown no signs of narrowing. However, it is unlikely that the balance of payments can support significant increase in servicing charges even if, as the government has stated, loans are only accepted on soft terms. In these circumstances a return to the tight fiscal policy of the mid-1980s looks inevitable.

Hopes are set on new oil discoveries which would both increase oil revenues in the short-term and prolong the period of enhanced export earnings and revenues. At the same time the government is aware that oil is a windfall and, while oil exploitation and exploration have been allocated 14 per cent of investment under the TFYP, government policy is focusing on preparation for the post-oil era. A strong non-oil commodity sector and diversified economic base will be crucial to a smooth transition. The industrial sector will play an important role in this process of economic diversification.

1.2 Economic structure

In 1962 the economy of the Yemen Arab Republic was almost entirely dependent on agriculture: 80 per cent of the population were peasants, most of whom followed a subsistence mode of production. Agricultural methods were primitive and, due to the almost complete absence of inputs, yields were extremely low by international standards. Coffee had once been an important export crop but the imposition of export duties had reduced coffee exports to a quarter of their 1942 level by 1961. There was no industry to speak of. Instead a limited range of goods was produced by craftsmen using simple traditional techniques. Yemenis simply went without the manufactured goods taken for granted elsewhere in the world. Much of the urban population lived off the surplus generated by agriculture collected through sharecropping contracts and an oppressive burden of taxation. There was a small merchant class but trade was limited - exports amounted to 2.7 per cent of GNP in 1961 and imports 5.7 per cent - since the economy was essentially autarkic. Nor was there any opportunity for trade to develop since the country lacked a banking system and still used a currency based on intrinsic value, the Maria Theresia dollar. Besides, with a per capita GNP of $70 few Yemenis had the disposable income to support a flourishing commercial sector. Prospects for the future were bleak. There was no basic infrastructure in terms of roads, telephones or social services. Such developments were beyond the means of the existing state apparatus. Economic planning was unknown. Indeed, the state was determined to maintain the country's economic isolation and considered economic development contrary to its interests.

When seen in the context of this still recent history the achievements of governments since 1962 are remarkable indeed. After a period of political upheaval, economic development began in earnest with the preparation of the First Development Plan covering the 1973/74 to 1975/76 period. The principal objective of government strategy was to improve productivity in the agricultural sector, then, as now, the mainstay of the economy. At the same time the government sought to diversify the economic base through industrialization. Investment in the commodity sectors was to be generated by the private sector and consecutive governments have adopted a liberal market orientation, offered generous incentives and a protective tariff regime in order to encourage private sector initiative. Public sector investment has been directed primarily at infrastructural development, particularly at the integration of the national economy through improved communications and the construction of an electricity network.

This strategy achieved a rapid pace of economic growth with real GDP growth rates averaging 9 per cent per year during the 1970s. Despite population growth rates of around 3 per cent, per capita GNP doubled between 1970 and 1981 when it reached YR2,794 ($612). This was achieved through substantial investments - gross fixed capital formation amounted to 27.6 per cent of GDP during the 1978/79 to 1981 period - which were largely financed from external sources, both from aid to the public sector and the inflow of migrants' remittances to the private sector. Although there is no reliable data on income distribution, the benefits of economic growth are thought to have widely spread.

Since 1982, however, the economy has suffered a downturn in economic fortunes which largely resulted from exogenous factors. A severe earthquake hit the Dhamar region in 1982, forcing the government to divert resources from development projects to reconstruction. From 1983 to 1984 the agricultural sector witnessed a 12 per cent drop in value added due to a nation-wide drought. Worst of all for a country heavily dependent on external sources of finance, income from both aid and migrants' remittances dropped off steeply, precipitating a balance of payments and budget crisis. Import restrictions were imposed and the government cut back on development expenditures. Gross fixed capital formation has not exceeded 20 per cent of GDP since 1982 and in 1986 it dropped as low as 11.9 per cent of GDP (see Annex Table A-1).

As a result real growth rates slowed from 9.7 per cent in 1982 to 2.4 per cent in 1983. Growth accelerated in 1986, with a 9.4 per cent increase in GDP recorded, but slumped back to less than 5 per cent in 1987. These reduced growth rates have hardly been able to keep up with the rapid pace of population increase. GNP per capita increased by only 2 per cent on real terms over the 1981 to 1987 period as a whole. If the devaluation of the Yemeni Rial is taken into account per capita income in dollar terms fell by 7 per cent from 1981 to $570 in 1987. This placed the country near the bottom of the list of lower-middle-income group of developing countries as classified by the World Bank.

It should be pointed, however, that national accounts significantly underestimated agriculture's performance - and thereby the performance of the economy as a whole - by ignoring the production of qat which grew to become the most important cash crop by the early 1980s. According to one estimate qat cultivation and trade contributes about YR15 billion to the economy each year. This would put GNP at YR65 million in 1987, 26.8 per cent higher than the official estimate, and the per capita GNP at $780, on a par with Egypt or Nicaragua.

There has been a radical transformation of economic structure since the early 1970s (Table 1.1). Dependence on agriculture has been reduced significantly, with its contribution to GDP falling from over 50 per cent in the early 1970s to approximately 25 per cent in the mid- 1980s. This may be attributed to agriculture's abysmal performance. Annual growth rates in the agricultural sector averaged just over 1 per cent in the late 1970s. Increasing labour costs, due to substantial out-migration from agricultural areas, and the reduced price of imported agricultural products, brought

about by the appreciation of the Yemeni Rial, undermined traditional agriculture. Growth rates picked up to 4.6 per cent in 1982 but agriculture was then hit by two years of drought and value added only exceeded 1982 levels in 1986.

Table 1.1: Distribution of GDP by sector of origin, 1974/75-1987
(selected years)
(Percent in current prices)

Sector	1974/75	1979/80	1985	1987
Commodity sectors	51.0	40.9	43.7	45.6
- Agriculture, forestry and fisheries	40.5	24.4	25.9	27.9
- Mining & quarries	0.7	1.1	0.8	1.6
- Manufacturing	4.7	7.6	11.2	11.1
- Utilities	0.4	0.5	0.8	1.1
- Construction	4.7	7.3	5.0	3.3
Services	41.1	46.3	46.9	47.1
- Trade	16.8	13.6	12.6	11.9
- Transport and communications	3.8	10.5	11.3	10.9
- Government services	12.3	10.6	11.8	12.2
Import duties and indirect taxes	7.9	12.8	9.4	7.3

Sources: CPO, Statistical Year-book, various issues.

Although the country has the potential to be self-sufficient in food increases in agricultural output have lagged well behind the rate of population increase. Between 1972/73 and 1982 food imports, mostly cereals, fruit and vegetables, increased more than eleven fold at current prices. By 1987 imports of foodstuffs amounted to YR2,896 million, 31 per cent of the total import bill and the Yemen Arab Republic became the recipient of food aid.

Up to 1986 growth rates in the industrial sector were consistently higher than those for the economy as a whole, averaging 13.2 per cent from 1975/76 to 1979/80 and 12.8 per cent from 1981 to 1986. As a result the contribution of manufacturing to GDP rose from 4.7 per cent in 1974/75 to 11.1 per cent in 1987. The driving force of industrialization has been private sector investment - which exceeded public sector investment in every year but 1985 - in a wide range of import substitution projects. Industry has, however, been affected by the deteriorating macro-economic situation since 1982. Public investment was cut back due to the widening budget deficit and the decline in migrants' remittances reduced the funds available for new private sector projects. Gross fixed capital formation in the industrial sector dropped, in real terms, to 35 per cent of the 1979/80 peak in 1984 (see Annex Table A-1). Levels of investment recovered in 1985, largely due to massive public sector investments in the cement plants, but in 1987 they were still only 67 per cent of the

peak level. Output too has been affected by the macro-economic situation, particularly by the foreign exchange controls which have led to shortages of spare parts and raw materials.

Another feature of the structural transformation of the economy is the steady increase of the service sector's contribution to GDP from 41.1 per cent in 1974/75 to 47.1 per cent in 1987. Over the past two decades a sophisticated financial and business services sector, capable of meeting the financial needs of private sector projects, has emerged. Transport and communications have been improved as result of the government's infrastructural development programme. But, unlike many other countries at a comparable stage of economic development, the contribution of government services to GDP, which has increased from 8.7 per cent in 1977/78 to 12.2 per cent in 1987, remains limited.

The structure of employment has also been transformed. In 1975 77.9 per cent of the work-force were employed in agriculture; in 1986 the figure was 58 per cent. There has been a steady stream of migrants from rural areas to the cities and a large proportion of these have found employment in the tertiary sector and the construction industry, which, combined, accounted for 34.9 per cent of employment in 1986 as compared with 18.1 per cent in 1975. Despite the rapid growth of the industrial sector its contribution to total employment remains modest, approximately 3 per cent. This reflects the capital-intensive development path followed by large-scale industrial enterprises.

Two other features of employment in the Yemen Arab Republic are the high level of emigration and the dependence on immigrant skilled workers. Attracted by high wages the number of Yemeni workers abroad is thought to have peaked at about 1.23 million, 16.3 per cent of the population, in the early 1980s. While this can be said to have relieved pressure from a rapidly growing population on the domestic labour market it actually caused shortages of labour in both rural and urban areas and had a detrimental effect on productivity in the late 1970s and early 1980s. These shortages, together with the influence of higher wages in the Gulf states, led to a marked increase in wage rates in the Yemen Arab Republic. Now that the construction boom in the Gulf states has come to an end many emigrants have returned home. When combined the steady growth in the number of new entrants to the labour force and the slowdown in the economy this presents a new threat to Yemen Arab Republic - the spectra of unemployment.

Ironically, the return of emigrant labour has not reduced the economy's dependence on immigrant technicians and professionals. In 1986 2.4 per cent of labour force were immigrants and in professional and technical category this proportion rises to 15 per cent of the workers. This situation has not arisen from emigration but from the limited facilities for technical training in the Yemen Arab Republic. Over the coming decade this will be one of the main constraints on the development of the economy.

Table 1.2: Distribution of employment by economic sector, 1975, 1980 and 1986

Sector	1975		1980		1986	
	'000	Per cent	'000	Per cent	'000	Per cent
Agriculture	826.1	77.9	876.1	65.8	932.5	58.1
Mining & quarrying	0.6	0.1	1.0	0.1	6.4	0.4
Manufacturing	31.4	3.0	51.9	3.9	57.8	3.6
Utilities	1.0	0.1	1.5	0.1	51.4	3.2
Construction	48.7	4.6	148.6	11.2	110.7	6.9
Trade & finance	58.5	5.5	106.7	8.0	170.2	10.6
Transport & communications	10.3	1.0	26.0	2.0	20.8	1.3
Public administration	74.4	7.0	118.7	8.9	255.2	15.9
Total	1,060.0	100.0	1,331.3	100.0	1,605.0	100.0

Source: Ahmed Omar, Economic Planning in the Yemen Arab Republic, 1986, p.77 and CPO, The Third Five-Year Plan, 1987, p.93.

The public sector has been the principal source of gross fixed capital formation, accounting for 60 per cent of total investment in the period 1974/75 to 1987 (see Annex Table A-1). This substantial development effort has, however, only been achieved at the price of a persistent budget deficit. In 1982 the budget deficit peaked at YR5.3 billion, 25 per cent of GDP, due to a 59 per cent increase in recurrent expenditures, which, in turn, was brought about by a 53 per cent increase in wages, benefits and salaries (see Annex Table A-3). Measures were taken to reduce the deficit in 1983 and 1984, which fell to YR4.7 billion in 1984, including improved tax collection procedures, a freeze on wages and a reduction of capital expenditures. This had a marked impact on the public sector investment programme outlined in the Second Five-Year Plan (1982-1986), which bore the brunt of the government's austerity measures: public sector gross fixed capital formation fell from YR3,838 million in 1982, in 1981 prices, to YR1,890 million in 1986 and, over the Plan period as a whole, amounted to only 70 per cent of the investment originally planned.

Since 1987, however, the government, encouraged by the promise of oil revenues, has adopted a more ambitious investment programme. The Third Five-Year Plan (TFYP) anticipates that budgetary capital expenditures, excluding loans repayments, will increase from YR2.3 billion in 1986 to YR4.3 billion in 1991, at constant 1986 prices. In 1987, however, expenditures increased by 45 per cent, attributable to a 130 per cent increase in development expenditures and a 35 per cent in the wage bill, before it had received oil revenues. This pushed the deficit up by 149 per cent over the 1986 level to YR9.6 billion. Much of this increase has, as in the past, been financed by borrowing with consequent inflationary pressures.

The government anticipates that rising oil revenues will allow an increase in expenditure at the same time as a reduction in the budget deficit.

In reality oil revenues are unlikely to make much of an impact on government revenues. On the basis of an admittedly conservative oil price assumption of $15 per barrel, government revenues from the production sharing agreement and associated taxes will not exceed $300 million in 1988 and are unlikely to reach $400 million in 1990. This is less than one tenth of the deficit budgeted in 1988. In these circumstances, a return to more cautious government financing and a revision of the public sector investment programme may be expected.

An important constraint on the government's investment programme has been the reduction in foreign aid commitments since the early 1980s. Cumulative aid payments since the late 1960s, including grants, came to around $4.3 billion by the end of 1987. CPO statistics on the structure of medium and long term debt by creditor up to 1984 reveal that the principal donors have been the USSR, Saudi Arabia, Iraq, China and Kuwait, together with multilateral donors such as Arab Development Funds, the IDA and EEC (see Annex Table A-7). Excluded from these figures are grants, which make up approximately one-half of the total assistance received. Most of these grants have been donated as budgetary assistance by the Gulf states, Saudi Arabia in particular, and they amounted to the equivalent of 27.5 per cent of government revenue in the period 1981 to 1987.

As oil prices fell in the mid-1980s the Yemen Arab Republic's Gulf state donors cut back on their commitments - assistance from Saudi Arabia, for instance, dropped from $600 million in 1982 to $200 million in 1986. Total commitments stood at just one-third of their 1982 level in 1987. In view of the reduced level of external assistance, which the government anticipates will drop by 5.2 per cent per year during the TFYP period, the TFYP anticipates that foreign aid will provide 40 per cent of the planned investment for the TFYP as compared with 60 per cent for the Second Five-Year Plan (SFYP).

During the SFYP private sector investment amounted to YR8,996 million, at constant 1981 prices, as compared with YR13,734 million in the preceding five year period. As economic growth began to slow and the inflow of migrant resources fell after 1982 private sector gross fixed capital formation (GFCF) fell too. To some extent the drop in investment may be ascribed to the diversion of private sector resources to consumption rather than investment: the ratio between private sector consumption and GFCF rose from an average of 5.4 from 1977 to 1981 to 15.44 in 1986 (Table 1.3). Furthermore, as the value of total private sector gross fixed capital formation declined an increasing share was directed towards non-productive sectors (see Annex Table A-1). Real estate's share of total private sector gross fixed capital formation averaged 37 per cent from 1982 to 1986, and exceeded 50 per cent in 1984.

Migrants' remittances are probably the most important source of private sector investible resources. In dollar terms, migrants' remittances have been approximately four times as much as official transfers from 1981 to 1987. The proportion of these resources used to finance investment in the commodity sectors is, however, negligible. A survey of 1,529 migrants in Kuwait undertaken by the Central Planning Office in 1984 revealed that 68.4 per cent of their remittances to the Yemen Arab Republic were used to finance consumption and 14 per cent went towards the purchase of real estate, generally for the construction of a new home. Less than one tenth of one per cent were invested in industrial projects. Clearly, legislation offering generous incentives to investors has been unable to attract migrants' remittances. Nor has legislation facilitating the application for a trading licence and permitting migrants to import equipment worth up to $40,000, introduced in 1988, encouraged a flood of new projects.

Table 1.3: Private sector gross fixed capital formation and final consumption, 1977-87
(YR million at constant 1981 prices)

	1977-81[a/]	1982	1983	1984	1985	1986	1987
Investment	2,547	1,595	1,770	1,593	1,272	1,195	1,571
Consumption	13,829	16,897	17,739	16,293	17,469	18,452	19,632
Ratio	5.43	10.59	10.02	10.23	13.73	15.44	12.50

Source: CPO, Statistical Year-Book, 1987.

a/ Annual average.

As a result of an economic slowdown in the Gulf States the value of migrants' remittances fell from a peak of $1.4 billion in 1977/78 to $1.2 billion in 1982, the year that the construction boom in Saudi Arabia peaked, and then to $669 million in 1986. A slight recovery was recorded in 1987 but preliminary results for 1988 indicate that the value of remittances may be as low as $350 million, less than one-third of level in 1982.

The combined effects of rising consumption and falling foreign aid receipts and private transfers have had a serious impact on the balance of payments situation (see Annex Table A-2). The economy has traditionally run a balance of trade deficit which has been financed by substantial inflows from migrants' remittances and donors. Exports make a marginal contribution to total foreign exchange earnings, covering less than one percent of imports during the period 1975/75 to 1981. The deficit is even greater if one considers that an additional 20 per cent of imports constitute illegal transactions.

In the five years to 1981 the value of imports grew at a rate of 47 per cent per year. This was due to the agricultural sector's inability to keep pace with population growth and the narrow industrial base which not only failed to meet the growth in consumer demand, fuelled by migrants' remittances, widening budget deficit and the over-valuation of the Yemeni Rial, but also generated import requirements in terms of raw materials and intermediate goods.

In 1982 the value of imports reached $1,952.4 million, over two-thirds of GDP, and the balance of trade deficit peaked at $1,947.5 million. Levels of migrants' remittances, though higher than the previous year, and official transfers, which were at a peak, were unable to offset this deficit and the overall balance of payments ran a deficit of $592.1 million, 18 per cent higher than the year before and the equivalent of 9 per cent of GDP. This deficit was financed by a run on reserves which dropped from over $1.4 billion in 1979 to $409 million in 1983, enough to cover only three months of imports.

Stricter import controls, particularly for consumer goods, were introduced to restore balance of payments equilibrium and in June 1983 the government began to devalue the Yemeni Rial from YR4.58=$1 to YR9.64=$1 in 1986. These measures brought about a radical cut in imports, which fell to $867.7 million in 1986, 44 per cent of their level in 1982. Even though the value of migrants' remittances and official transfers had fallen relative to 1982 the current account balance deficit fell to $92.4 million. At the same time substantial increase in capital inflows, financed by suppliers credits for the most part, brought about an overall balance of payments surplus of $194.2 million.

This improvement was achieved at the cost of cuts in the government's development programme, shortages of raw materials and other inputs for the industrial sector which adversely affected output and a surge in the illegal transaction of banned and scarce goods. These factors encouraged the government to relax the import-licensing regime in 1987. But, unfortunately, although migrants' remittances were higher than expected in 1987, at $751.7 million, the sudden jump in imports to $1,370.7 million, according to preliminary estimates, an increase of 57.9 per cent on the previous year and over one-third higher than the planned allocation of $900 million, led to a sharp deterioration in the balance of payments situation with an overall deficit of $52.8 million. Almost 70 per cent of the increase in imports was generated by the government, associated with investments in oil exploitation.

Preliminary results for 1988 are not encouraging. Imports are expected to exceed the target of $1.5 billion, which is over 60 per cent higher than the target for 1987, and imports have been facilitated by new rules on opening letters of credit. A further slump in migrants' remittances was expected. Furthermore, the revenues generated by the export of oil were lower than anticipated.

Oil exports will, however, be the crucial factor in the medium-term balance of payments situation. According to the TFYP income from both migrants' remittances and net official transfers are expected to fall during the TFYP, by an estimated 10 per cent and 5.2 per cent per annum respectively. Oil exports, which will exceed 200,000 b/d in 1989, should absorb this decline and allow the current account deficit to be reduced at a rate 5.6 per cent per year. In view of the results for 1987 and expectations for 1988 this forecast appears unduly optimistic.

In both 1986 and 1987 the government financed imports by recourse to short-term borrowing from private creditors on hard terms. This accounts for a large part of the sudden increase in debt servicing from the relatively stable level of around $67 million in 1984 to $99 million in 1986 and $145 million in 1987 (see Table A-6). Although the economy is by no means heavily indebted by international standards - total public long term disbursed debt amounted to $2,051 million in 1986 and the debt/GNP ratio stood at 44.1 per cent. The terms of official loan assistance have been soft - with an average interest rate of 2.3 per cent and maturity of 23 years. Debt servicing is expected to increase to $400 million in 1991 and this will place a further burden on the balance of payments and on the government budget. In order to reduce the debt burden the government has committed itself to avoiding commercial loans and relying on soft credit with long maturities and grace periods where possible.

Oil revenues will help the government support increasing servicing charges in the medium term, and serve as security for future loans. At current rates of exploitation, however, known oil reserves will be nearing exhaustion towards the end of the 1990s. Consequently the economy must, in the coming decade, develop alternative sources of export revenue to ensure a smooth transition to the post-oil era. In the TFYP considerable emphasis is given to the initiation of export-oriented industries.

Non-oil exports, were relatively stable at around $8 million but doubled in 1986 and nearly doubled again in 1987, reaching $31.4 million. However, this still amounted to only 2.2 per cent of the average value of imports in the 1982 to 1987 period. In 1987, 55.4 per cent live animals, food and food products accounted for 55.4 per cent of total exports, the single most important export commodity being coffee, which accounted for 16.6 per cent of total exports (see Annex Table A-5). Other important export commodities are cigarettes (15.6 per cent of total exports), hides (15.2 per cent) biscuits (13.6 per cent), fresh grapes (8.6 per cent). Apart from cigarettes and biscuits manufactured exports are negligible.

Given the current industrial framework and the high factor costs prevailing in the Yemen Arab Republic, there is little prospect that such industries would prosper through assembly operations as they have in many developing countries. If export oriented industries are to develop this will be through local resource based industries following the country's apparent - but not yet demonstrated - comparative advantage in food processing, leather working and construction materials.

Far greater potential exists for development of indigenous resources in order to continue along the established path of import substitution. This is particularly true in the agricultural sector, since imports of food and food products amounted to 31.6 per cent of total imports in 1987, as compared with 26.2 per cent in 1980 (see Annex Table A-4). Manufactured goods accounted for another 28.6 per cent of imports in 1987. There is little prospect, however, of the Yemen Arab Republic developing an engineering industry capable of producing the capital goods that account for 21.9 per cent of imports. Imports of such products are likely to increase markedly in the near future as the economy continues its development drive through new investment particularly in such capital-intensive areas as oil exploitation.

Oil may alleviate the Yemen Arab Republic's economic problems but is certainly no cure. Indeed the discovery of oil may bring unforeseen problems in its wake as donors reduce their commitments to a supposedly oil rich state and expatriate Yemenis return home to share in the bonanza. The government would do well to proceed cautiously. Indeed, a substantial increase in development expenditure could precipitate a macro-economic crisis since oil will make only marginal impact on the budget and balance of payments deficits. Donors too should be aware that the steady decline in migrants' remittances will erode much of the gain from oil revenues. Although the government hoped that oil would give the economy greater independence it remains as much in need of development assistance and budgetary support as it was in the early 1980s. International co-operation is essential if the economy is to make a successful transition to the post-oil era through the development of other commodity sectors.

1.3 Overview of the manufacturing sector

Thirty years ago the manufacturing sector in the Yemen Arab Republic comprised artisanal workshops producing a limited range of simple artifacts and tools with primitive, traditional techniques. Plunged into the modern world economy by the Revolution of 1962 the country lacked both the experienced entrepreneurs and technicians and the institutional framework modern industry needs.

Despite these inauspicious beginnings the manufacturing sector has grown rapidly. Growth rates averaged 13.2 per cent from 1975/77 to 1979/80 and 12.8 per cent from 1981 to 1986. Manufacturing industry's contribution to GDP rose from 4.7 per cent in 1974/75 to 11.1 per cent in 1987. This rapid rate of industrialization was achieved by the proliferation of import substitution projects in the food, beverage and tobacco, construction materials, chemicals, textiles and metalworking branches. Most of these projects were established by private sector entrepreneurs. They ranged from small workshops, many of which were set up by returning migrants, to large-scale factories using modern technology, some of them owned by private sector conglomerates with their origins in commerce. By 1984 there were 93 enterprises employing more than ten persons each as compared with 59 such enterprises in 1975. These large-scale enterprises generated 85 per cent of MVA and 86 per cent of employment whereas

the 340 medium-scale enterprises contributed only 15 and 14 per cent respectively.

From 1983 to 1988, however, levels of investment in the manufacturing sector have tailed off. To a large extent this was due to the deteriorating macro-economic situation. The government had to cut back on ambitious development projects as a result of the reductions in capital flows from donors while the private sector's investible resources were affected by the drop in migrants' remittances. In addition the strict application of import licensing and foreign exchange allocations forced some companies to curtail production since previously imported raw materials and spare-parts were no longer available. Inevitably, output was adversely affected.

However, the decline in investment also reflects the level of over-crowding in the manufacturing sector. By the mid-1980s most of the obvious import substitution projects had already been undertaken. Entrepreneurs had begun to duplicate existing investments and the market was becoming increasingly competitive. Overcapacities developed for many products and, due to the limitations of the local engineering industry, enterprises found it difficult to diversify their production lines.

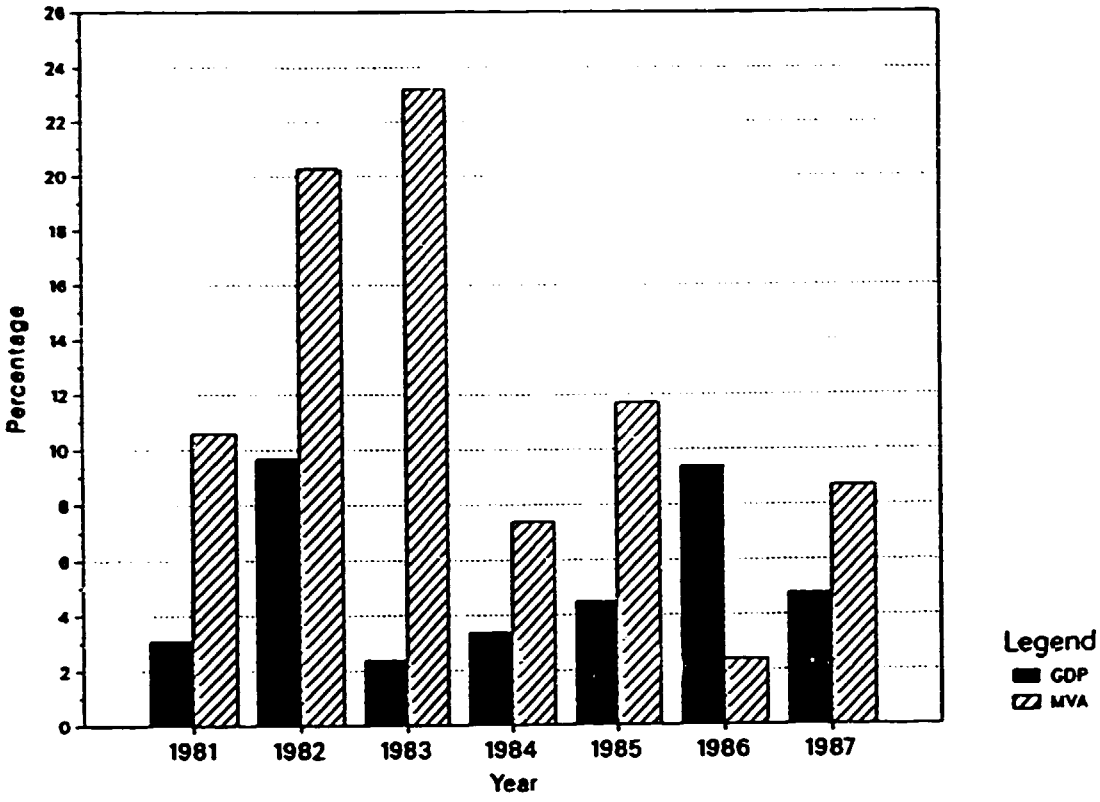
It would be misleading to equate industry's impressive performance in terms of growth with industrial development. Most of the import substitution projects established in the manufacturing sector depend heavily on imports. According to a survey of the manufacturing sector undertaken in 1984, 70 per cent of the inputs used by the large-scale enterprises were imported. In the food, beverages and tobacco branch - where there is a prima facie case for the use of local raw materials - imports accounted for 84 per cent of inputs. There are virtually no linkages between enterprises in the manufacturing sector and almost all capital goods and spare parts - though there is an abundance of vehicle servicing and repair workshops - are imported. Furthermore, the pace of technological development has exceeded the ability of educational institutions to graduate adequately trained personnel and industry has come to depend heavily on expatriate staff particularly in managerial, technical and supervisory roles. This is particularly true of enterprises manufacturing products under licence since the manufacturing procedures of the mother company have generally been adopted without consideration of the technical limitations of the local personnel or engineering industry.

Manufacturing industry in the Yemen Arab Republic is now at a crossroads. While there are still opportunities for further import substitution projects the government has come to realize that development along this path alone will not bring the benefits associated with industrialization. Instead efforts must be made to diversify the industrial base, introduce intermediate products and services - particularly in the field of light engineering, encourage the use of domestic raw materials, such as agricultural products and minerals, and develop linkages within the manufacturing sector through the spread of practices such as sub-contracting. At the same time, there is room to increase the

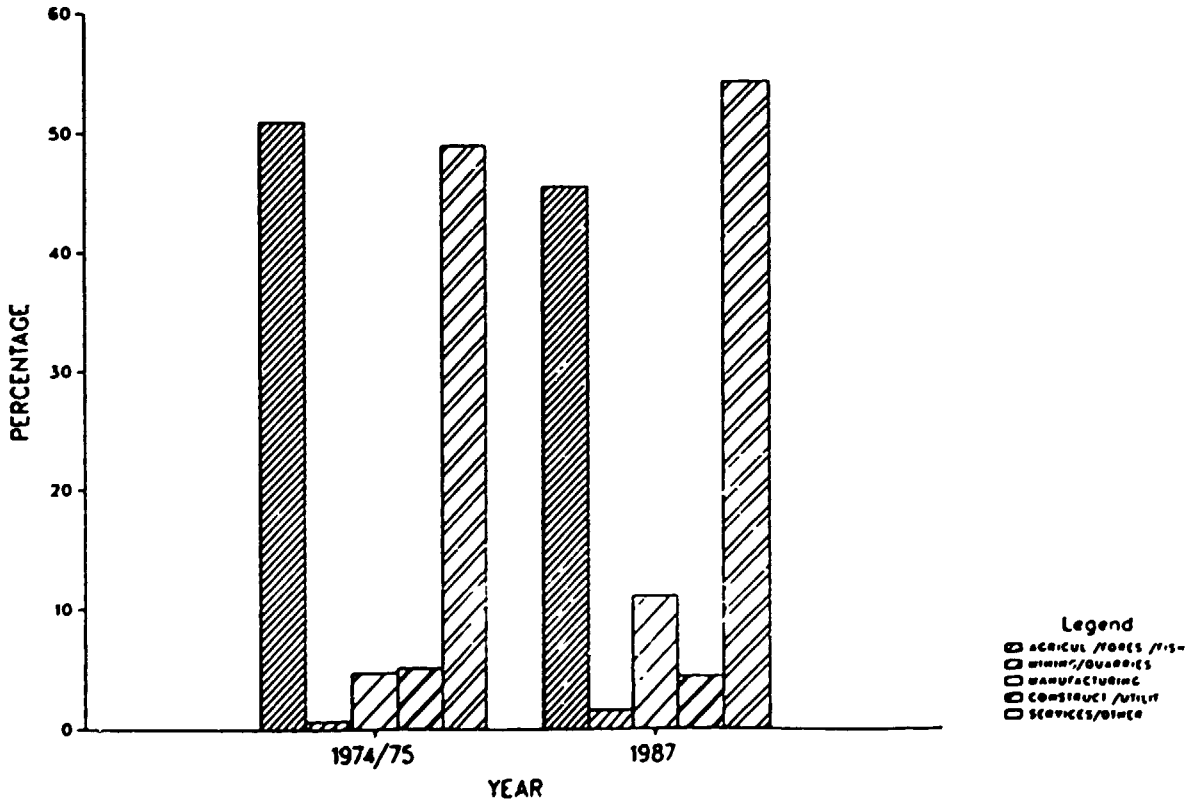
productive capacities of existing enterprises through the diversification of production lines, upgrading product quality and introducing new managerial and production techniques. These developments might bring an additional benefit in increasing the potential for exports which is currently negligible. Such are the objectives of the Third Five-Year Plan (1987-91).

The Plan also seeks to develop an institutional framework capable of realizing the necessary changes in the pattern of industrialization. Within the financial system, for instance, the government hopes to develop a capital market in order to mobilize the capital needed to finance large-scale industrial enterprises. Planning capacities will have to be enhanced in order chart sectoral and branch level development strategies. Incentives too will have to be reformed in order to encourage private sector initiatives in the provinces and in export oriented industries. Further legislation covering quality control and standardization will be enacted. At the same time vocational training will be expanded and modified so that it can meet the needs of modern industrial enterprises. These reforms will enable the government to direct private sector initiatives towards the goals of the industrial development strategy.

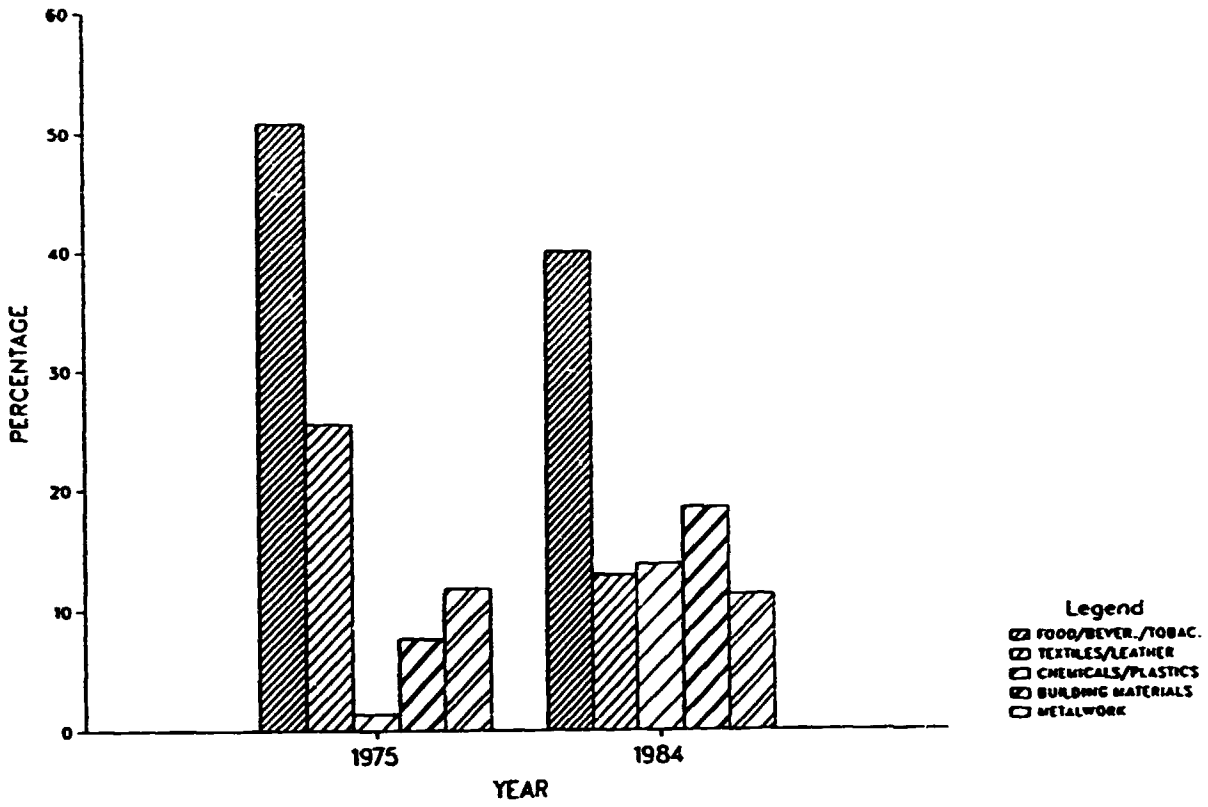
REAL GROWTH RATES OF GDP AND MVA, 1981-87



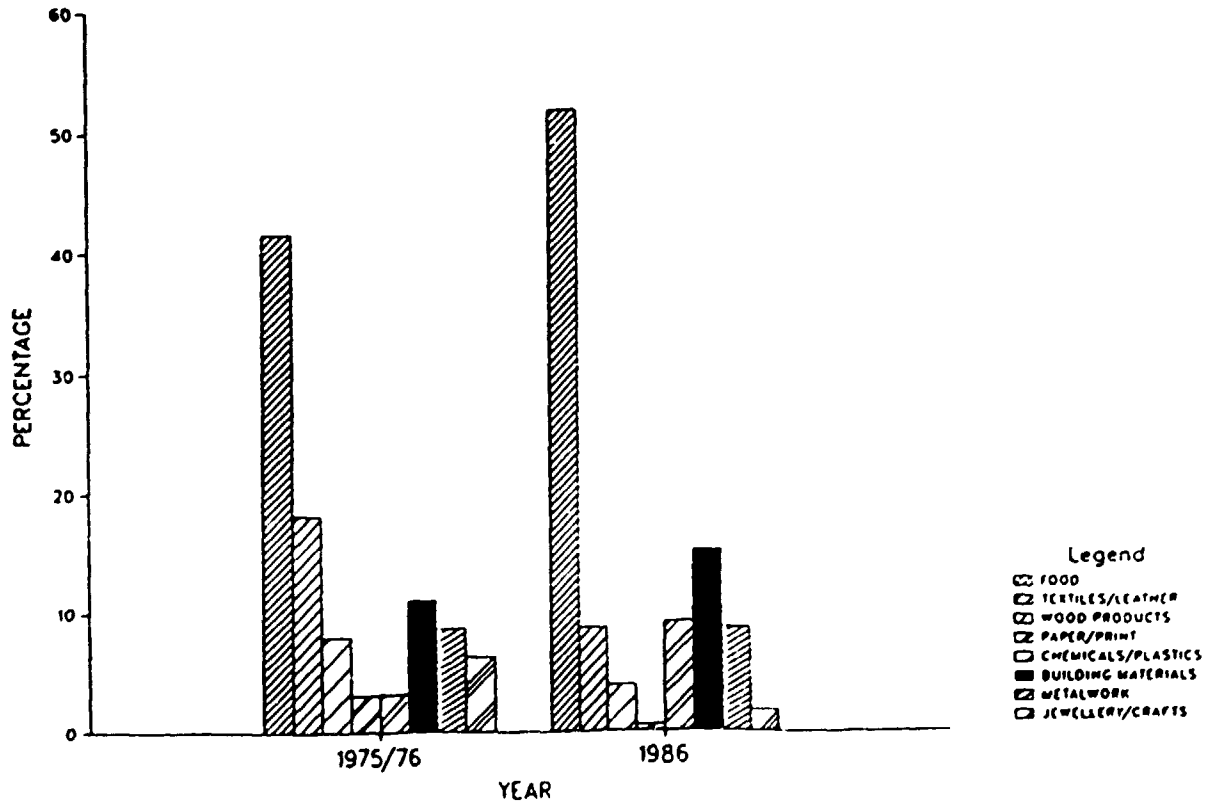
DISTRIBUTION OF GDP BY SECTOR OF ORIGIN, 1974/75 AND 1987



COMPOSITION OF EMPLOYMENT BY SECTOR OF ORIGIN, 1975 AND 1984

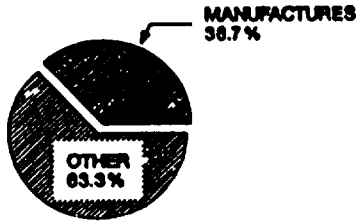


COMPOSITION OF MVA BY BRANCH, 1975/76 AND 1986

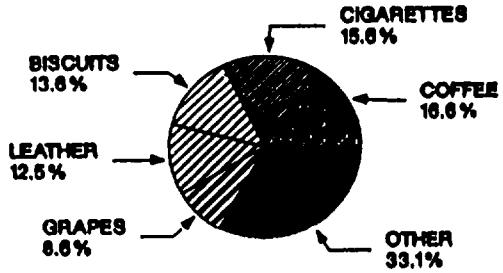


EXPORTS AND IMPORTS, 1987

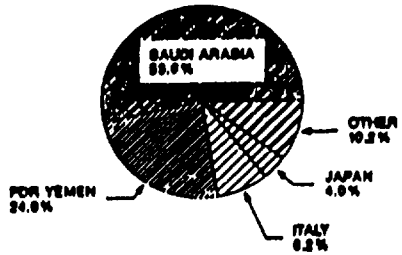
SHARE OF MANUFACTURES IN TOTAL EXPORTS



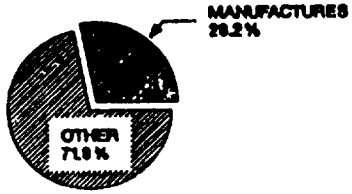
COMPOSITION OF EXPORTS



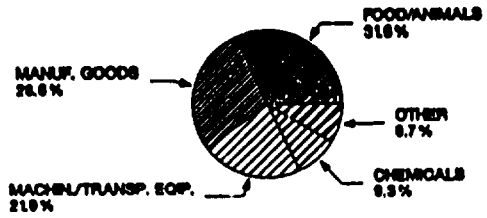
DIRECTION OF EXPORTS



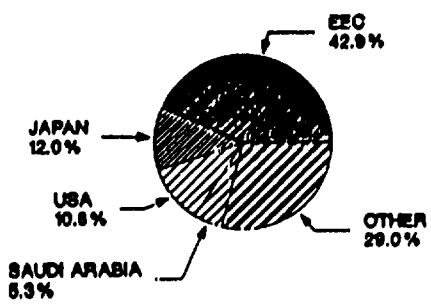
SHARE OF MANUFACTURES IN TOTAL IMPORTS



COMPOSITION OF IMPORTS



ORIGIN OF IMPORTS



2. STRUCTURE AND PERFORMANCE OF THE MANUFACTURING SECTOR

2.1 Growth and structural change[1/]

Prior to the 1962 Revolution there was no modern manufacturing sector in the Yemen Arab Republic only traditional crafts such as handloom weaving, blacksmithing and tanning. Over the following decade the country's first modern industrial enterprises were established and by the time that government undertook its first industrial survey in 1969 the industrial sector comprised 64 enterprises employing more than 5 persons each, 21 of which were publicly owned and 3 were mixed public and private capital. Most of the modern, large-scale enterprises were established by public initiatives: 3,619 of the 4,571 people employed in manufacturing industry worked in the public sector. Furthermore, enterprises were relatively small. Only two enterprises employed more than 50 each people - one of them being the textile mill built with Chinese assistance.

Industrialization began to take-off in the early 1970s due to the rapid growth in the number of enterprises as the private sector took advantage of the opportunities for import substitution. The industrial census of 1975 revealed 11,337 enterprises of which 211 employed between 5 and 9 persons (medium-scale) and 59 employed 10 or more persons (large-scale). By 1980 the number of large-scale enterprises had increased to 69 and the 1984 industrial survey records 93 large-scale and 340 medium-scale enterprises.

Aggregate statistics on the production value and value added generated by the manufacturing sector confirm that the late 1970s was a period of spectacular growth (Table 2.1). Between 1977/8 and 1979/80 production value increased by 13.7 per cent per year and value added by 13.2 per cent in real terms. These rapid growth rates reflected a steady increase in gross output and the diversification of manufacturing industry into new products and brands. Moreover, as a result of a consumer boom considerable progress was made in the improvement of capacity utilization rates in existing plants.

1/ There is no single source providing comparable time series data on the growth and structure of the manufacturing sector. The Central Planning Office provides annual statistics on the output and MVA generated by manufacturing industry but does break these down by branch. Data on the structure of the industrial sector is provided by three surveys of the industrial sector undertaken by the CPO but these surveys cover different categories of enterprises: the 1975 survey covers all industrial enterprises regardless of size, so too does the 1980 survey but this is thought to be incomplete and the statistics on output and MVA are thought to refer only to the medium- and large-scale enterprises, while the 1984 Industrial Survey covers only the medium- and large-scale enterprises. In addition the TFYP document contains data on MVA, output and employment by branch but the source and coverage of this data is unknown. Clearly there is an urgent need for the compilation of reliable, time series data sources which will enable planners to trace the development of manufacturing industry.

Although growth rates fell in 1980/81 and 1981 they picked up again in 1982 and 1983. Since 1984, however, growth rates have slowed appreciably, falling to an estimated 2.4 per cent in 1986. Reduced investment in new projects is one of the main causes of the manufacturing sector's relative stagnation, but since 1985 enterprises have also been affected by the restrictions on foreign exchange budgets which have forced some enterprises to cut back production due to shortages of inputs and spare parts. Over the same period, the reduction in migrants' remittances curtailed consumption and demand for local products.

In view of these constraints manufacturing industry is expected to achieve annual average growth rates of value added of 8 per cent during 1986-1991 as compared with the real average annual growth rates of 13.4 per cent for production value and 12.8 per cent for value added experienced from 1981 to 1986. These forecasts do not include oil refining which could make a considerable contribution to growth in the industrial sector through the development of gas bottling and petrochemicals plants and their multiplier effects. If, for instance, oil refining, which began in 1986, is included in the statistics for the SFYP period real growth rates for the industrial sector are almost 2 percentage points higher.

No sequential branch level breakdown of industrial output and value added is available for the Yemen Arab Republic. Statistics collected by the industrial surveys of 1975, 1980 and 1984 and CPO statistics for 1986 do, however, permit a rough comparison of the structure of manufacturing industry based on value added at current prices (Table 2.2). Common to each of the surveys is the predominance of the food, beverages and tobacco branch which accounted for 41.6 per cent of MVA in 1975/76 and estimated 51.9 per cent of MVA ten years later. The chemical products and building materials branches have also increased their share of total MVA over the 1975 to 1986 period. Textiles and leather and wood products, on the other hand, have declined in importance.

CPO statistics for the 1975/76-1979/80 period[1/] indicate that the chemical products branch witnessed the fastest rates of growth, averaging 38.3 per cent per year, as production diversified into a range of new products such as plastic footwear, paints, utensils and PVC pipes from a low production base. The food, beverages and tobacco branch achieved the second highest growth rates, 19.1 per cent, despite the existence of a significant industrial base in 1975. Much of this increase was accounted for by the expansion of output in soft drinks, confectionery and edible oils. Both the wood products and metalworking industries also achieved above average growth rates in the four years to 1979/80. The textile industry, on the other hand, witnessed a fall in value added of 4.2 per cent in real terms, largely due to the poor performance of the large textile mill.

1/ World Bank, Yemen Arab Republic, Manufacturing Industry: Performance, Policies and Prospects, 1982, Report No.3651-YAR.

Between 1981 and 1986 output of textiles and garments increased by 113 per cent over the period as a whole, according to the TFYP document. But the fastest growth rates were achieved by the building materials branch, 233 per cent, and chemical products, 183 per cent. Output of the food, beverages and tobacco branch increased by 106 per cent over the same period. These high growth rates however, reflect low initial basis.

Table 2.1: Production value and value added of the manufacturing sector, 1977/78 to 1987

	1977/78	1980/1	1981	1982	1983	1984	1985	1986	1987
				YR million in constant 1981 prices					
Production value	1,896	2,765	3,038	3,689	4,567	4,921	5,495	5,626	6,107
Value added	842	1,222	1,352	1,627	2,005	2,153	2,404	2,462	2,675
				Annual Growth Rate					
Production value	13.7[a/]	7.8	9.9	21.4	23.8	7.6	11.7	2.4	8.5
Value added	13.2[a/]	7.8	10.6	20.3	23.2	7.4	11.7	2.4	8.7

Source: CPO, Statistical Year-book, 1987.

a/ Average annual growth rate 1977/78 to 1980/81.

Table 2.2: Distribution of MVA by branch, 1975/76-1991
(Percent based on current prices)

Branch	1975/76	1980	1984	1986	1991
Food	41.6	45.0	38.5	51.9	41.7
Textiles & leather	18.1	8.2	6.9	8.7	10.5
Wood products	7.9	10.7	1.0	3.9	2.1
Paper & printing	3.1	...	0.9	0.5	2.9
Chemicals & plastics	3.2	10.7	19.0	9.2	13.7
Building materials	11.1	10.3	24.5	15.3	18.5
Metalwork	8.7	8.6	8.8	8.7	6.1
Jewellery & crafts	6.3	...	0.5	1.8	4.6
Others	...	6.5	...	...	...

Sources: UNIDO, Long-Term prospects of Industrial Development in the Yemen Arab Republic, 1978; World Bank, Yemen Arab Republic. Manufacturing Industry: Performance, Policies and Prospects, 1982; CPO, Industrial Survey, 1986; CPO,

Projections for the TFYP Plan period (1987-1991) anticipate that the trends established from 1981 to 1986 will continue, with the contribution of building materials, chemicals and textiles to total MVA rising relative to other sectors. New developments are expected in the chemical products sector to take advantage of the remaining import substitution opportunities while possible expansion of oil refining may give the branch an additional boost. The exploitation of local mineral resources is also expected to generate import substitution opportunities for the building materials branch with demand for building materials continuing to increase up to 1991. On the other hand the growth rate of the food, beverages and tobacco branch is expected to fall to 3.2 per cent per year, largely due to the exhaustion of the most obvious import substitution projects. Processing industries based on local agricultural products have been slow to develop. The output of the metalworking branch is expected to remain relatively stable in real terms and woodworking is expected to decline because of substitution of metal in the construction and furniture industry.

These trends and forecasts point to a broadening of the industrial base and a diversification away from the food, beverages and tobacco branch which has been the core of the manufacturing sector since the 1960s. While increasing productivity and capacity utilization rates are expected to play an important part in the increase of manufacturing output and value added new projects and product lines will continue to be the driving force of industrial growth. Most of these new developments will take place along the lines dictated by the import substitution of consumer products.

There is little to indicate that industry will move towards production of intermediate and capital goods. Unfortunately, it is impossible to breakdown industrial output by end use but a glance at the gross output statistics prepared by the CPO (see Annex Table A-18) reveals that virtually the only intermediate and capital goods produced are building materials. Although there are plans, and considerable opportunities, for the development of a light engineering industry the Yemen Arab Republic is likely to remain dependent on imported machinery and spare parts for some time to come.

Another feature of the manufacturing sector is the relatively low ratio of value added to production value, suggesting a low level of processing, which has fallen slightly from 44.4 per cent in 1977/78 to 43.8 per cent in 1986. Detailed statistics from the 1984 industrial survey indicate that the ratio is particularly low in the food, beverages, tobacco and chemical products branches where concentrates are often used (Table 2.3). The textile industry has the best record in this respect since the main enterprise in this branch is fully integrated, producing textiles from raw cotton. One of the objectives of the TFYP is to raise the level of processing in the industrial sector as whole through the substitution of local raw materials for imported semi-finished goods and by moving away from the simple assembly and packaging operations practiced by many enterprises.

2.2 Ownership and investment patterns

In the early years of development planning the government assigned the public sector a central role in industrialization. This was largely because the government considered the private sector incapable of mobilizing the financial and technical resources needed to develop large-scale industry and a basic industrial infrastructure. A survey undertaken in 1969 revealed that 21 of the 64 enterprises employing more than five people each were publicly owned and they employed 79 per cent of the industrial work-force.

During the First Five-Year Plan (1976/77-1980/81) over 70 per cent of planned investment was to be undertaken by the public or mixed sectors. In actual fact only 30.2 per cent of gross fixed capital formation in manufacturing industry was undertaken by the public sector during the five year period (Table 2.4). No new mixed sector enterprises were established and only a fraction of the public sector projects were implemented. The decline continued during the SFYP. Public sector investment in the industrial sector has, but for 1985, accounted for less than half total investment throughout the 1980s and averaged 42.3 per cent during the SFYP (1982-86). The total value of public sector investment fell steadily from 1980 to 1984 as the government cut back on its development programme and then increased almost tenfold in 1985 when the government implemented large projects in the cement industry.

Table 2.3: Production value and value added by branch at factor cost, 1984

Branch	Production '000 YR	Production Per cent	Value added '000 YR	Value added Per cent	Value added gross output Per cent
Food	1,267,570	42.8	463,993	38.5	36.6
Textiles	127,455	4.3	83,318	6.9	65.4
Wood products	21,650	0.7	11,510	0.9	53.2
Paper products	20,336	0.7	10,506	0.9	51.7
Chemical products	666,475	22.5	228,311	19.0	34.3
Building materials	610,386	20.6	294,879	24.5	48.3
Metalwork	229,983	7.8	106,047	8.8	46.1
Gold jewellery	18,019	0.6	6,187	0.5	34.3
Total	2,961,874	100.0	1,204,751	100.0	40.7

Source: CPO, Industrial Survey, 1986.

Table 2.4: Gross fixed capital formation in manufacturing industry by sector, 1976/77-1991 (selected years)
(YR million and per cent distribution)

Sector	1976/77-81[a/]		1982-86a/		1987-91[b/]	
	YR million	Per cent	YR million	Per cent	YR million	Per cent
Private	1,750	69.8	750	57.7	1,850	53.1
Public	756	30.2	550	42.3	42	1.2
Public & mixed	-	-	-	-	1,589	45.6
Total	2,506	100.0	1,300	100.0	3,481	100.0

Sources: CPO, Statistical Year-Book, 1987 and The Third Five-Year Plan, 1987-1991.

a/ Constant prices of 1981.
b/ Planned investment at constant prices of 1986.

Under the TFYP the proportion of public investment in total investment in the manufacturing industry is expected to increase to 46 per cent. Virtually all these funds will be directed towards the refurbishment and expansion of existing public sector enterprises rather than new projects. Where new projects are undertaken preference is given to mixed sector ventures. Only two new public and mixed sector enterprises are planned for the TFYP and these will absorb less than 3 per cent of public sector investment in manufacturing industry.

While the 1984 industrial census records that only 7 of the 93 large-scale industrial enterprises were publicly owned and another two were mixed sector the importance of the public sector should not be underestimated. The five largest operational public and mixed sector enterprises[1/] were thought to account for 11.5 per cent of total production value in 1986 and 12.4 per cent of MVA. As a result of the expansion programmes the public and mixed sectors' contribution to total production value and MVA is expected to increase to 26 per cent and 31 per cent respectively by 1991.

There can be no doubt that the rapid growth of the manufacturing sector in the late 1970s and early 1980s was largely a result of private sector initiatives (Table 2.5). According to the CPO private sector investment in manufacturing industry peaked

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1/ The Public Cement Production Corporation, the Yemeni Corporation for Salt Extraction and Canning, the Yemen Weaving and Textile Corporation, the Yemen Pharmaceutical Corporation and the National Tobacco and Matches Corporation.

at YR501 million, in constant 1981 prices, in 1978/79 and amounted to YR1,750 million during the FFYP. There is some discrepancy with the investment figures collated from licenses granted by the former Ministry of Economy and Industry - now Ministry of Economy, Commerce and Supply - which covered investments totalling YR756 million, at current prices, in the 1976-80 period. This suggests that the CPO over-estimates the level of capital formation. Even so the level of investment achieved in the late 1970s was impressive considering the industrial sector's recent origins.

A total of 167 licences were issued between 1976 and 1980 and 139 of the projects were implemented during this period. More than half these licences went to small-scale projects, with investments of less than YR2 million, though 59 per cent of approved investment was by 22 companies investing YR10 million or more. Investment was concentrated in three sectors: food, building materials and chemicals and plastics which received 41 per cent, 29.2 per cent and 22.8 per cent of approved investment respectively.

Table 2.5: Gross fixed capital formation in the industrial sector, 1979-1987
(YR million in constant 1981 prices)

	1979/ 1980	1980/ 1981	1981	1982	1983	1984	1985	1986	1987
Public	141	168	176	89	54	27	259	121	117
Private	346	312	200	138	139	144	171	161	211
Total	487	480	276	227	193	171	430	282	328

Source: CPO, Statistical Yearbook, 1987.

Private sector investment is, however, sensitive to the prevailing economic conditions and available financial resources. As economic growth began to slow and the inflow of migrant resources fell after 1982 private sector gross fixed capital formation (GFCF) fell too, a trend reinforced by the near exhaustion of obvious import substitution projects.

By 1982 private sector investment in manufacturing industry amounted for only 27 per cent of the 1978/79 peak and was 21 per cent lower than the previous year. Private sector investment in manufacturing continued at this low ebb throughout the mid-1980s and only surpassed the 1981 level, YR200 million, in 1987, when private sector GFCF in manufacturing industry reached YR211 million at 1981 prices.

These trends are reflected in the number of licences issued by the Ministry of Economy. Only 84 projects were approved between 1985 and 1988, an annual average of 21 compared with 33 for the

period 1976 to 1980, and the number has been particularly low since 1985 (Table 2.6). The total value of approved investments has also fallen since 1985, with the exception of 1987. However, nearly 70 per cent of the investment in that year was accounted for by a single project and if this is excluded the downward trend is revealed. Rates of project implementation remain high. By early 1989 68 of the 71 projects licensed before 1988 were operational or under construction. In terms of the branch distribution of approved investment, the food industry continues to take the lions share followed by the metalworking, chemicals and building materials branches (Table 2.7).

Table 2.6: Number of industrial projects licensed by branch, 1985-1988

Branch	1985	1986	1987	1988	1985-88
Food & beverages	13	3	3	1	20
Textiles & leather	3	1	7	-	11
Chemicals & plastic	9	3	-	1	13
Paper products	2	-	-	1	3
Metalwork	5	4	9	5	23
Building materials	6	3	-	5	14
Total	38	14	19	13	84

Source: Data provided by the Ministry of Economy, Commerce and Supply.

Migrants' remittances have been one of the most important source of investment funds for new projects and returning migrants have taken a leading role in the initiation of small-scale businesses. A survey of 896 firms working in the construction and construction materials sectors in Sana'a in 1982 revealed that two-thirds of the proprietors had worked abroad and more than half the total capital invested had been earned abroad[1/]. Another survey of 105 enterprises in Sana'a established in the five years to 1983 reported that 55 per cent were established by returning migrants[2/]. Many of these enterprises were engaged in manufacturing.

1/ Meyer, G, "Labour emigration and internal migration in the Yemen Arab Republic - the urban building sector", p. 155 in Pridham, B. R. (Ed), Economy, Society and Culture in Contemporary Yemen, 1985.

2/ Al-Kasir, A, "The impact of emigration on social structure in the Yemen Arab Republic", p. 128 in Pridham, B. R. (Ed), Economy, Society and Culture in Contemporary Yemen, 1985.

Table 2.7: Approved investments in projects licensed by the Ministry of Economy, Commerce and Supply, 1985-1988
(YR Thousand)

Branch	1985	1986	1987	1988	1985-88	%
Food & beverages	28,718	77,686	796,272	3,500	906,176	48.8
Textiles & leather	21,212	460	97,355	-	119,027	6.4
Chemicals & plastics	142,212	67,557	-	8,414	218,183	11.8
Paper products	44,419	-	-	9,863	54,282	2.9
Metalwork	23,188	20,610	206,687	147,052	397,537	21.4
Building materials	41,445	12,439	-	106,949	160,833	8.7
Total	301,194	178,752	1,100,314	275,778	1,856,038	100.0

Source: Data provided by the Ministry of Economy, Commerce and Supply.

While these surveys confirm that many migrants have taken an active role in the promotion of industry the level of participation is insignificant when compared with the total number of migrants and the value of their remittances. A survey of 1,529 migrants in Kuwait undertaken in 1984 reveals that only one migrant invested his remittances in an industrial project and the capital invested amounted to less one tenth of a per cent of total remittances (Table 2.8). In contrast, 14 per cent of remittances financed real estate development and 4.2 per cent commercial projects. By far the largest share of migrants' remittances, 68 per cent, were, however, used to finance direct consumption. Admittedly, the number of migrants investing in industrial projects would tend to be higher after their return but the value of remittances saved to finance such projects is negligible.

Clearly the mobilization of private sector resources, including migrants' remittances, to finance investment in the industrial sector is one of the most important challenges facing the government in the near future.

Changes in the ownership structure of private sector manufacturing enterprises may facilitate increased investment. Traditionally, family businesses have predominated and the finance of new projects has relied heavily on personal capital supplemented by bank loans. According to the 1984 Industrial Survey, however, 6 of the 93 large-scale enterprises were joint ventures or partnerships, permitting a wider spread of share ownership and greater access to financial resources. The survey also records a public company, the Hayl Said Group, which permits limited public subscription. Considerable public demand for shares in this successful enterprise suggests that other enterprises may be able

to raise capital through share issues. This will enable small-scale investors to participate in the development of large, capital-intensive projects using high technology. Both the to encourage the spread public companies in the future.

Table 2.8: Use of remittances from Yemeni migrants in Kuwait, 1984

Use	Number of migrants	Per cent	Value of remittances in YR	Per cent
Investment in real estate	86	5.6	480,610	14.0
Industrial projects	1	0.0	2,000	0.0
Commercial projects	12	0.1	142,799	4.2
Bank savings	3	0.0	11,000	0.0
Consumption	1,384	90.5	2,348,398	68.4
Other	43	2.8	447,564	13.0
Total	1,529	100.0	3,432,371	100.0

Source: Unpublished Central Statistical Organization Survey, 1984.

Another important trend in the ownership of industrial enterprises is the emergence of industrial conglomerates with a wide spread of business interests some of which employ over 1,000 persons. Prominent amongst these are the Hayl Said Group, the El-Eghil Group, the Yemen Plastic and Chemical Company (YPCC) and the Al Hababi Company for Industry and Commerce. YPCC's holdings, for instance, include a film processing factory and factories producing pipe fittings, plastic pipes, plastic mats, blow moldings, shoes, cement blocks, tiles, furniture, pains, ceramic granulates and glue. Such conglomerates have facilitated the transfer of capital between sectors, particularly from commerce to industry, and it is significant that several of the industrial projects they have funded are based on the manufacture or assembly of goods formerly imported under licence.

2.3 Employment and productivity

The 1975 industrial survey provides the only reliable statistics on employment in the industrial sector. At that time 23,840 people were employed in manufacturing and processing industries. A vast majority of these were employed in small-scale enterprises of less than five workers and half were employed in the food, beverages and tobacco sector (Table 2.9). Subsequent surveys have included only medium- and large-scale enterprises and even then the coverage is thought to be incomplete.

Table 2.9: Employment in manufacturing industry, 1975, 1980 and 1984

Branch	1975 No.	1975 Per cent	1980 No.	1980 Per cent	1984 No.	1984 Per cent
Food, beverages & tobacco	12,109	50.8	3,079	25.0	4,514	40.1
Textiles & leather	6,084	25.5	2,185	17.8	1,453	12.9
Wood & wood products	451	1.9	...	...	178	1.6
Paper & printing	246	1.0	...	...	107	0.9
Chemicals & plastics	337	1.4	..	...	1,560	13.8
Building materials	1,811	7.6	2,018	16.4	2,081	18.5
Metalworking	2,810	11.8	2,844	23.1	1,271	11.3
Other	...		2,171	17.7	104	0.9
Total	23,840	100.0	12,299	100.0	11,268	100.0

Sources: IDCAS, Industrial Survey of YAR, 1975; CPO, Preliminary Results of the 1980 Industrial Survey, 1981; and CPO, Industrial Survey, 1986.

According to CPO estimates, 57,800 people were employed in manufacturing industry in 1986. This suggests that employment in the manufacturing sector has increased by 136.8 percent over the eleven years to 1986, an average annual increment of approximately 3,000 jobs. If the CPO estimate is correct, most of these new jobs were created within the small industrial sector since the 1984 Industrial Survey records that only 11,268 persons were employed in medium- and large-scale enterprises as compared with an estimated 5,000 in 1976.

Licences granted to approved projects from 1976 to 1980 anticipated creating 4,000 new job opportunities, 95 per cent of which were to be in enterprises employing more than 10 people. Assuming that all these jobs were created, employment in the modern, medium- and large-scale industry sector almost doubled over the five year period increasing by an average annual increment of 800 jobs. The rate of job creation is thought to have fallen as investment tailed off in the early 1980s: 1,528 jobs were created by investments approved in 1985 and 1986, an average annual increment of 764 new jobs.

Clearly the modern, medium- and large-scale industrial sector has made only a marginal contribution to employment in the industrial sector. At current rates of job creation, the small-scale industry sector will have to generate over 80 per cent of new employment opportunities if the sector is to reach the TFYP target of 28,900 new jobs by 1991.

Table 2.10: Structure of employment generated by investments approved in 1985 and 1986, 1988

Branch	Employment No.	Employment Per cent	Per cent increase on 1984	Employees per enterprises	Investment per employee (YR '000)
Food	553	36.2	11.1	34.6	192.4
Textiles & leather	69	4.5	3.7	17.3	314.1
Wood products	-	-	-	-	-
Paper products	84	5.5	78.5	42.0	528.8
Chemicals & plastics	495	32.4	28.7	41.3	423.8
Building materials	175	11.5	8.3	19.4	307.9
Metalwork	152	9.9	11.8	16.9	288.1
Total	1,528	100.0	12.4	29.4	314.1

Source: Data provided by the Ministry of Economy, Supply and Trade.

The food, beverages and tobacco branch is the most important employer among the medium- and large-scale enterprises, accounting for 40.1 per cent of the total work-force according to the 1984 Industrial Survey, followed by the building materials, textiles and chemical products branches (Table 2.9). Food, beverages and tobacco have also provided the largest proportion of new jobs: 38 per cent of anticipated new employment in the period 1976-80 and 36.2 per cent of the employment generated by investments licensed in 1985 and 1986. Building materials projects accounted for 24 per cent of anticipated new employment in 1976-80 though this proportion has subsequently fallen to 11.5 per cent in 1985-86.

Medium- and large-scale industry's modest contribution to employment generation is due to the predominance of capital-intensive production methods, particularly in the paper and printing, chemicals, textiles and building materials branches (Table 2.10). This is reflected in productivity, measured in terms of gross output and valued added per employee, which reaches levels comparable to many newly industrialized economies (Table 2.11). Productivity levels are thought to have improved steadily in recent years as a result of new technology and the adoption of improved production practices. According to the CPO productivity increased by an average of 1.4 per cent per year during the SFYP, though this rate is expected to fall to 0.5 per cent per year during the TFYP.

As might be expected productivity is highest in the large-scale manufacturing enterprises and the chemicals and building materials branches, though high levels of output per employee are also recorded in the food, beverages and tobacco enterprises. Productivity levels are lowest in the textile industry due to the poor performance of the large textile mill.

Table 2.11: Labour productivity by size of enterprise and branch, 1984

Sector	Large-scale enterprises I[a/]	Large-scale enterprises II[b/]	Medium-scale enterprises I[a/]	Medium-scale enterprises II[b/]	All enterprises I[a/]	All enterprises II[b/]
Food	286.7	103.3	186.2	94.4	280.8	102.8
Textiles	74.0	50.7	561.8	287.2	87.7	57.3
Wood products	141.9	98.5	18.6	59.6	121.6	64.7
Paper products	142.9	63.8	220.6	120.4	190.1	98.2
Chemical products	407.4	141.9	1,509.6	390.0	427.2	146.4
Building materials	337.2	159.9	192.0	99.6	293.3	141.7
Metalworking	172.8	75.1	198.0	100.9	180.9	83.4
Gold jewellery	-	-	173.3	59.5	173.3	59.5
Total	271.1	107.6	216.5	103.1	262.9	106.9

Source: Based on data provided by the Central Planning Organization, Industrial Survey, 1986.

a/ Production value per employee.
b/ Value added per employee.

Many enterprises adopted capital-intensive production methods as a means of reducing labour costs. Large-scale emigration to the Gulf States during the 1970s brought about an acute shortage of labour and so put upward pressure on wage rates as well as linking the labour market in the Yemen Arab Republic to more affluent markets in the Gulf States (see Section 5.1). Nominal wage rates increased almost 400 per cent between 1975 and 1980 and the average monthly wage reached YR1,650 in 1980, some 50 per cent higher than in the Republic of Korea and higher still if qualitative differences in the labour force are taken into account.

From 1980 to 1984, however, real wage rates fell by 18 per cent due to a reduction in the number of job opportunities and a fall in real wage rates in the Gulf states. While this has undoubtedly contributed to a reduction in wages and salaries as a proportion of total production costs (Table 2.12) high wages are still a heavy burden on the industrial sector. There appears to be little incentive for large-scale enterprises to adopt more labour-intensive practices, particularly as capital investment is effectively subsidized by the concessions available under the investment code whereas labour is not.

Another feature of employment in the industrial sector is the dependence on imported labour. During the 1970s large-scale emigration forced many enterprises to recruit foreign workers from Sudan, Ethiopia and Egypt to work on the shop floor while an acute shortage of skilled labour left many enterprises dependent on foreign technicians. Although the number of emigrant Yemenis has fallen since the early 1980s the number of foreign workers receiving work permits has continued to rise (see Section 5.1).

According to the 1984 industrial survey 8.5 per cent of the industrial work-force was foreign and the proportion was as high as 9.6 per cent in the case of the large-scale enterprises and 28.1 per cent in the case of the paper and printing branch (Table 2.13).

The relative importance of foreign workers in the labour force by branch reflects levels of technical complexity - high in metalworking industry, low in food processing and building materials. Furthermore, in most large- and medium-scale enterprises foreign workers occupy supervisory and technical positions. In the case of the Hayl Said Group - which is unusual because the management has made a considerable effort to train Yemeni personnel - three quarters of the foreign workers may work on the shop-floor but foreigners represent only 2.3 per cent of the total shop-floor work-force, whereas 10.3 per cent of production supervisors and 18.8 per cent of the quality control team are foreigners. This situation reflects the acute shortage of locally trained technical staff and the unsuitability of local training for the needs of what is increasingly a technically complex industrial sector. Ultimately, foreign skilled workers can only be replaced when there are enough local technicians to take their place.

Several large-scale enterprises have recruited female workers for production and office work but the level of female participation is still very low. According to the 1984 Industrial Survey, there were no women at all employed in medium-scale enterprises and only 11.4 per cent of the work-force in large-scale enterprises were women. Female employment is concentrated in the food, beverages and tobacco and textiles branches, which accounted for 82.4 per cent of female employment in the industrial sector. Levels of female employment are unlikely to rise significantly in the near future.

Table 2.12: Wages as a proportion of total operating costs, 1980 and 1984
(Per cent)

Branch	1980	1984
Food, beverages and tobacco	25.0	11.3
Textiles and clothing	...	36.6
Wood products	...	28.9
Paper products	...	19.6
Chemical products	5.0-12.0	8.9
Building materials	45.0	13.5
Metalworking	...	20.6
Gold jewellery	...	16.7
Total	...	12.9
Large-scale	...	12.3
Medium-scale	...	18.0

Source: Based on World Bank, YAR Manufacturing Industry, 1982 and Central Planning Organization, Industrial Survey, 1986.

2.4 Trade in manufactures

As already noted, manufacturing industry has developed along the lines of import substitution and virtually all manufactured products are sold on the domestic market. In 1979/80 exports of manufactured goods totalled YR19 million; 59.7 per cent of total exports but only 1.4 per cent of estimated gross industrial output. Biscuits were the single most important manufactured export, most of which were sold to neighbouring PDR Yemen. In addition YR6 million of textiles were exported to China as part of the repayment for Chinese sponsored rehabilitation of the textile mill. Other manufactured exports, such as mining equipment, were largely re-exports.

Total exports of manufactured and processed goods increased by 130 per cent in real terms from 1980 to YR116.8 million in 1987 and accounted for 36.7 per cent of total exports in that year. The range of goods exported also increased to over fifty products though, two products, cigarettes and biscuits, provided 79.3 per cent of manufactured exports (Table 2.14). Despite this growth exports still represented a negligible 1.1 per cent of total manufacturing output in 1987. This is borne out by statistics on the sales of large-scale enterprises from the 1984 industrial survey (Table 2.15). Even in the food, beverages and tobacco branch, the principal source of manufactured exports, exports generated less than 3 per cent of sales revenue.

Table 2.13: Structure of employment by nationality, branch and size of enterprise, 1984

Branch	Yemeni		Arabs		Foreign		Total
	No.	Per cent	No.	Per cent	No.	Per cent	No.
Food	4,201	93.1	115	2.5	198	4.4	4,514
Textiles	1,313	90.4	6	0.4	134	9.2	1,453
Wood products	165	92.7	-	-	13	7.3	178
Paper products	78	72.9	23	21.5	6	5.6	107
Chemical products	1,381	88.5	91	5.8	88	5.6	1,560
Building materials	1,987	95.5	21	1.0	73	3.5	2,061
Metalwork	1,083	85.2	35	2.8	153	12.0	1,271
Gold jewellery	104	100.0	-	-	-	-	104
Total	10,312	91.5	291	2.6	665	5.9	11,268
Medium scale	1,660	97.8	29	1.7	9	0.5	1,698
Large scale	8,662	90.5	262	2.7	656	6.9	9,570

Source: Central Planning Organization, Industrial Survey, 1986.

This poor export performance reflects the domestic orientation of production - such that the quality and presentation of products rarely meets international standards - high production costs and the absence of export promotion infrastructure, in particular the inadequate training of personnel in the identification and penetration of export markets. Legislation to promote exports is currently under discussion (see Section 4.2) and export promotion has been listed as a priority of the TFYP. As yet no research has been undertaken to identify areas of comparative advantage, although several studies have argued a prima facie case for a comparative advantage in food processing and leather products.

Table 2.14: Exports of manufactured and processed goods, 1987

Products	YR '000	Per cent
Food, beverages & tobacco	100,775	86.2
- Cigarettes	49,495	42.4
- Biscuits	43,069	36.9
Textiles and leather	6,134	5.4
- Leather (tanned)	5,496	4.7
- Bed linen	549	0.5
Chemicals and products	6,040	5.2
- Artificial leather	4,371	3.7
- Toilet soap	1,101	0.9
Metal & engineering products	1,897	1.6
Others	1,828	1.6
Total	116,854	100.0

Source: Compiled from the Ministry of Economy, Commerce and Supply, Directory of Trade Statistics, 1987 (in Arabic).

Without the establishment of specifically export oriented industry, manufactured exports are unlikely to increase dramatically in the near future. Indeed, the construction of a biscuit factory in PDR Yemen will deprive manufacturing industry of its single most important export market.

In these circumstances the path towards industrial development will remain import substitution. Notwithstanding the considerable achievements made in this direction there are still many opportunities for further development. Manufactured goods accounted for 28.2 per cent of total imports in 1987, 50.5 per cent if imports of machinery and equipment are included (see Annex Table A-4). Imports of manufactured goods, machinery and equipment were equivalent to 42 per cent of the gross output of the manufacturing sector in 1987. Besides manufactured goods the Yemen Arab Republic imports a large range of processed foodstuffs and semi-processed

raw materials. If these categories are included, the proportion of manufactured and processed goods in the import bill rises to 72 per cent, equivalent to an estimated 62.4 per cent of the manufacturing sector's gross output and covering approximately 38 per cent of domestic demand for manufactured and processed goods.

Table 2.15: Sales structure of large enterprises, 1984

Branch	Production Value	Sales Value	Exports Value	Exports as % of sales
Food	1,218,041	1,203,150	33,169	2.8
Textiles	104,422	105,199	-	-
Wood products	3,264	3,264	-	-
Paper products	6,000	6,000	-	-
Chemical products	624,206	635,906	5,095	0.8
Building materials	489,595	489,765	213	0.04
Metalwork	148,801	134,785	2,300	1.7
Total	2,594,329	2,578,069	40,777	1.6

Source: Central Planning Organization, Industrial Survey, 1986.

The proportion of manufactured goods in total imports has fallen slightly since 1980, largely as a result of restrictions on import licences. These restrictions create a protective environment for import substitution, more so than the moderate tariff barriers (see Section 4.2). There is a danger, however, that the isolation of domestic industry through import controls will permit the development of marginal or sub-marginal manufacturing industries and it is significant that many industrialists complain of competition from illegal transacted goods. To avoid such a situation, which could place a heavy burden on the country's scarce resources, prospective projects must be carefully assessed from the point of view of their economic viability and the licensing system used to direct investment towards viable projects.

2.5 Inter-industry linkages and the use of domestic raw materials

Manufacturing industry has developed on an project by project basis with little consideration given to sectoral planning or the integration of new investments into the existing industrial infrastructure. Preference for import substitution projects has not, moreover, been paralleled by the identification of investment opportunities on the basis of domestic resources. As a result few linkages have developed between local industries or industry and other commodity sectors. Instead industry, particularly large-

scale industry, is heavily dependent on imported capital, intermediate goods and raw materials.

Industrialists have made little attempt to identify and substitute locally produced alternatives for imported goods preferring to import necessary inputs from the countries on which the production methods are modelled.

Dependence on imported goods begins at the implementation stage. In the case of the 40 new industrial projects put forward for licensing in 1989, for instance, 66.6 per cent of the YR1,125 million total capital expenditure will go towards the purchase of imported equipment and building materials, largely the steel structure. In the case of two animal fodder plants, also to be reviewed in 1989, the anticipated foreign exchange component is $42.9 million, over 90 per cent of capital expenditure.

Imported raw materials and intermediate goods are also widely used in production. The 1984 Industrial Survey revealed that imports accounted for 59.5 per cent of the total operational costs, excluding depreciation, of the 94 large-scale manufacturing enterprises and 70.5 per cent of their inputs (Table 2.16). While the dependence of metalworking and chemical products on imported raw materials may readily be understood - there is no basic metal or chemical industry in the Yemen Arab Republic - the high proportion of imports in total inputs in the case of the food products industry, 84.4 per cent, reveals its limited linkage into domestic agriculture despite agriculture's considerable potential as a resource for industry. Domestic inputs exceeded imports in only three industrial branches; building materials, textiles and paper products.

This dependence on imported raw materials and intermediate goods raises two important questions about the viability of large-scale enterprises in the industrial sector. Firstly, in the absence of systematic studies it is impossible to assess the foreign exchange savings generated by manufacturing industry but the dependence on imported inputs suggests that these savings will be low and, in some cases, negative. Secondly, enterprises using large quantities of imported inputs have been adversely affected by the imposition of strict import controls. Indeed, at least two factories are reported to have stopped production because of shortages of raw materials, spare parts and packaging materials. Other companies have had to reduce output to conserve their foreign exchange quota.

Increased domestic resource utilization, particularly in the case of mineral and oil resources, and the production of a wider range of intermediate goods have been identified as priorities in the TFYP (1986-92). The production of intermediate oil products will, however, demand large-scale capital investments with a substantial foreign exchange component. Small- and medium-scale industries in the minerals and agro-industrial sectors may prove more versatile in this respect since they are less capital-intensive and much of the simple equipment they require can be, or already is, made in the Yemen Arab Republic. They are also thought

to use a large proportion of domestic resources since they are generally unable to apply for import licences directly. A number of large-scale enterprises in the food sector are investigating the potential of the local agricultural sector. An agricultural marketing conglomerate linked to food processing enterprises was established in 1988 and the promoter of a sesame mill has established contracts with farmers to produce necessary raw materials. Such attempts at vertical integration should be encouraged.

Table 2.16: Cost structure of large-scale enterprises by branch (excluding depreciation), 1984

Branch	Total costs ('000 YR)	Per cent of total costs				Imports as % of inputs
		Inputs	Materials	Imports	Wages	
Food	974,767	86.7	67.4	73.2	12.6	84.4
Textiles	61,858	52.0	39.1	16.1	46.2	31.0
Wood products	1,724	57.9	57.5	39.4	39.4	68.0
Paper products	4,456	73.6	68.0	34.2	23.0	46.5
Chemical products	453,606	89.6	8.0	74.3	9.9	83.0
Building materials	321,661	80.0	75.5	5.3	14.8	6.7
Metalwork	112,732	75.8	71.5	61.5	23.0	81.2
Total	1,930,804	84.5	54.1	59.5	14.1	70.5

Source: Based on Central Planning Organization, Industrial Survey, 1986.

In the area of intermediate goods a particularly important project currently under review is a tool and dye workshop producing spare parts and moulds for the chemical and metalworking industry. At present a large number of small-scale workshops produce tools and spare parts but the quality is unreliable. The development of key basic industries such as steel would, on the other hand, be premature.

2.6 Size and regional distribution

The manufacturing sector in the Yemen Arab Republic is characterized by a dualistic structure in terms of size which, to a large extent, corresponds to differences in production methods and technology. While small-scale enterprises probably provide the bulk of employment in the manufacturing sector, medium (5 to 9 employees) and large-scale (more than 10 employees) enterprises are more important in terms of value-added and production value. Modern technology and production methods are largely restricted to the large and, to a lesser extent, medium-scale enterprises.

The 1984 Industrial Survey revealed that the 93 large-scale enterprises dominate the manufacturing sector - defined as enterprises employing more than five persons - generating 86 per cent of employment, 87.6 per cent of production value and 85.5 per cent of value added. Large-scale enterprises predominate in every branch but for wood products and paper and printing, though medium-scale enterprises also make a significant contribution to output in the metalworking and engineering branch (Table 2.17).

To some extent the differences in the medium-scale enterprises' contribution to output and value added between branches reflect differences in the structure of output. Food, beverages and tobacco, for instance, account for 46 per cent of the production value of large-scale enterprises but only 13 per cent of the output of medium-scale enterprises. Conversely, building materials account for almost one-third of the output of medium-scale enterprises but only 18 per cent of large-scale enterprises while for the metalworking branch the figures are 22 per cent and 5.7 per cent respectively. This reflects the large number of medium-scale workshops servicing the building industry and carrying out vehicle repair and maintenance.

In terms of regional distribution, manufacturing industry is concentrated in the governorate containing the three largest cities: Sana'a, Taiz and Hodeidah. According to the 1984 industrial survey 329 of the 433 manufacturing enterprises employing more than 5 persons - 76 per cent - were located in these three cities and only one large-scale was located outside (Table 2.18). Sana'a, Taiz and Hodeidah accounted for 95 per cent of employment in the manufacturing sector. No particular regional specializations have emerged, though the more sophisticated modern industries, such as chemical products and printing, are largely restricted to the main industrial centres. Traditional products and methods, such as carpentry, which is fast being replaced by aluminium in the main urban centres, have persisted on the periphery. The substantial number of building materials enterprises in the capital - 44 per cent of all enterprises in the capital as opposed to 31 per cent nation-wide - reflects the city's rapid growth over the last two decades.

Even though the government has advocated the extension of industrial services to rural areas to encourage the regional dispersal of industry and so prevent the drift to the towns little progress has been made. Only 6 of the 81 projects that received Ministry approval in the period 1985 to 1988 - 7 per cent - were to be located outside the three main cities, and 51 of the enterprises that received licences - 63 per cent - were to be located in the capital. The concentration is even more acute when investment is considered: the peripheral governorate benefiting from only 1.7 per cent of the investments licensed over the 1985 to 1988 period (Table 2.19).

Table 2.17: Medium and large-scale enterprises share of total production value and value added by branch, 1985

Branch	Per cent of total production value		Per cent of total total value added	
	Medium	Large	Medium	Large
Food	3.9	96.1	5.4	94.6
Textiles	18.1	81.9	14.1	85.9
Wood products	84.9	15.1	80.3	19.7
Paper products	70.5	29.5	74.5	25.5
Chemical products	6.3	93.7	4.8	95.2
Building materials	19.8	80.2	21.3	78.7
Metalwork	35.3	64.7	39.0	61.0
Gold jewelry	100.0	-	100.0	-
Total	12.4	87.6	14.5	85.5

Source: Based on CPO, Industrial Survey, 1986.

Table 2.18: Regional distribution of industrial enterprises by branch and size, 1984 (Number of enterprises)

Branch	Sana'a	Taiz	Hodeidah	Other	Total
Food, beverages & tobacco	20	19	24	14	77
Textiles & leather	4	1	3	4	12
Wood products	8	5	9	15	37
Paper & printing	8	1	4	1	14
Chemical & products	11	6	5	-	22
Building materials	68	23	11	33	135
Metalworking	34	32	15	31	112
Gold jewelry	-	10	8	6	24
Total	153	97	79	104	433
Medium	107	79	51	103	340
Large	46	18	28	1	93

Source: Based on Central Planning Organization, Industrial Survey, 1986.

The three main industrial centres have developed a certain momentum and it will prove difficult to attract industry to more remote regions even if the government was to introduce generous

incentives (see Section 4.2). The large industrial enterprises have their roots in the cities - the Hayl Said Group is, for instance, based in Taiz - communications between the smaller urban centres and the main markets are poor, there is a shortage of trained personnel, unreliable and expensive services and inadequate infrastructure in the regions. Although the government may have some success in dispersing resource-based industries, import substitution projects will continue to be based in the three urban centres for these reasons.

Table 2.19: Regional distribution of approved investment by branch, 1985-88
(Per cent)

Branch	Sana'a	Taiz	Hodeidah	Other
Food	19.7	15.5	64.3	0.6
Textiles & leather	65.9	-	34.1	-
Wood products	-	..	-	-
Paper & printing	23.1	-	61.5	15.3
Chemical products	81.5	18.5	-	-
Construction	18.5	23.8	50.5	7.2
Metalworking	75.5	0.1	21.4	3.1
Total investment	35.6	13.2	49.5	1.7

Source: Based on data provided by the Ministry of Economy, Commerce and Supply.

2.7 Small-scale enterprises

Few details are available on the size and structure of the small-scale enterprise (SSE) sector. The only detailed survey was undertaken in 1975 (Table 2.20). This revealed that there were 11,067 SSEs employing less than five people whereas there were only 270 establishments employing more than five. Over 60 per cent of these enterprises were in the food, beverages and tobacco branch and 55 per cent of them were grain mills and coffee roasters. Another 22.8 per cent were tailors. Subsequent surveys ignored SSEs, though a recent study estimated that 90 per cent of registered enterprises were small-scale.

Consequently, statistics on production are inevitably broad estimates. According to the CPO the gross output of the handicrafts sector was YR240 million, 2.4 per cent of total gross output, and handicrafts contributed 1.8 per cent of total MVA.

Table 2.20: Sectoral distribution of small-scale enterprises, 1975

Branch	No.	Per cent
Food	6,785	61.3
- Grain mills & coffee roasting	6,104	55.2
- Vegetable oil extracting	401	3.6
Textiles and leather	2,567	23.2
- Tailoring	2,518	22.8
Wood & wood products	69	6.2
Paper & printing	20	0.2
Chemicals & plastics	-	-
Building materials	506	4.6
Metalworking	1,120	10.1
Total	11,067	100.0

Source: UNIDO, Long-Term Prospects of Industrial Development in the Yemen Arab Republic, 1978.

The importance of the SSE sector lies in its contribution to urban employment and its record of mobilizing capital towards productive sectors rather than its impact on total output. SSEs are concentrated in the major urban centres: 41 per cent in Sana'a, 26 per cent in Taiz and 14 per cent in Hodeidah. Most of the proprietors are migrants from rural areas or returning expatriates. According to the Industrial Bank of Yemen's estimates 95 per cent of the SSE projects have been funded out of personal capital or through family members, less than 5 per cent have had recourse to the banking system. What is more migrants are accredited with the introduction of new techniques and products, such as the manufacture of concrete blocks.

Although no detailed sub-sectoral breakdown is available there is evidence that the structure of the SSE sector is changing. A small and declining proportion of SSEs are engaged in traditional handicraft activities: blacksmiths producing agricultural and construction tools, locks and jambia daggers; traditional tailors; leather tanning and belt makers; and rope, shoe and hat makers. In recent years the number of enterprises engaged these activities in Sana'a Suq has fallen markedly (Table 2.21) largely due to the substitution of cheaper mass-produced imports. Some handicraft industries have been strengthened by the growth in tourism - jambia daggers for instance - but most are evidently in decline.

Efforts to preserve traditional handicrafts have concentrated on the promotion of new techniques and products in tune with market demand. Many traditional craftsmen have already moved out of the old "suqs" to join the now predominant group of the SSE sector:

enterprises on the fringe of the modern sector producing construction materials, clothing, food and drink products, metalwork, simple engineering and repair and maintenance services with labour-intensive techniques and simple technology.

Table 2.21: Enterprises in Sana'a Suq, 1971 and 1988

Sector and branch	1971	1988
Workshops	537	313
- Metalworking	179	136
- Jambia workshops	...	39
- Blacksmiths	...	41
- Silver and goldsmiths	...	56
- Carpentry	91	71
- Textiles	121	40
- Leather	103	39
- Other[a/]	43	27
Retail and wholesale shops	1,016	...
Service sector	129	...

Source: Unpublished USAID survey and data provided the Executive Committee for the Preservation of Old Sana'a.

In 1988, 37 SSEs received licences with approved investments totalling YR1.441 million; 0.5 per cent of the investment in medium and large-scale enterprises approved in the same year. These investments benefited from the Higher Economic Council facilitating the procedure for granting trading licences and permitting them to import equipment costing up to $40,000 from personal funds without application through the foreign exchange quota. This measure will, it is hoped, attract investment by migrants. Further measures to promote SSEs are under discussion, in particular provision of specialist banking facilities. Other support institutions, such as advisory services for financial management and technical facilities, are needed if the SSE sector is to fulfil its potential for rapid growth, diversification and expansion.

3. PROBLEMS AND PROSPECTS OF SUB-SECTORS OF MANUFACTURING

3.1 Food, beverages and tobacco

The food, beverages and tobacco branch is the most important in terms of value added and employment: accounting 38.5 per cent of MVA according to the 1984 Industrial Survey and 40.3 per cent of employment in the manufacturing sector. It has also been one of the most dynamic branches recording a 19.1 per cent annual growth in value added from 1975/76 to 1979/80 and a 106 per cent increase in output from 1981 to 1986.

Food processing is one of the few areas where the Yemen Arab Republic has a prima facie comparative advantage since the country is the most productive agricultural economy in the Arabian Peninsula. However, industrialization has not been based on local agricultural products but on imported raw materials. According to the 1984 Industrial Survey, 84.4 per cent of the inputs used by large-scale enterprises in the food, beverages and tobacco branch were imported - the highest proportion of all the branches of manufacturing. In the TFYP the government identifies the reduction on the dependence on imported raw materials as the priority of the sectoral development strategy.

According to the 1984 Industrial Survey, bakeries and confectionery shops generated 32.3 per cent of the food, beverages and tobacco sector's production value and 34.2 per cent of value added. Small- and medium-scale bakeries predominate numerically - there were 46 bakeries and confectionery shops employing between 5 and 9 persons as opposed to only 8 employing ten or more persons in the 1984 Industrial Survey - but the large bakeries and confectionery factories provide 90.1 per cent of production by value.

In recent years the output of bread has increased steadily from 1,506 tons in 1981 to 3,833 tons in 1987 as wheat bread has become a staple of the urban diet. Over the same period small bakeries have been established in the provincial towns and market centres - two bakeries in Taiz and a third in Ibb applied for Ministry approval in 1989 - where a new market for bread is developing. There is a danger, however, that entrepreneurs, seeing the success of existing bakeries, will duplicate these investments without the preparation of adequate market studies leading to over-capacity.

Output of the two biscuit and confectionery factories established in 1971 and 1977 has increased even faster than that of bread, rising from 15,000 tons in 1978 to 56,400 tons in 1987. Much of this increase may be accounted for by the success of these two enterprises in penetrating export markets, in particular PDR Yemen. Biscuits accounted for almost two-thirds of manufactured exports in 1980 and 36.9 per cent in 1987. Although both enterprises have a strong market presence in the Yemen Arab Republic, helped no doubt by tariff protection from imports, it is likely that the opening of a new biscuit factory in PDR Yemen in 1988 will have a detrimental impact on output in the near future.

Diversification into other cereal products may allow the biscuit factories to maintain a high volume of sales. Within the cereal products sector as a whole, however, the pace of product diversification is relatively slow. The most recent development has been the establishment of a macaroni factory in 1983. The reluctance of entrepreneurs to branch out into new product lines may perhaps be understood when one considers that the macaroni factory produced 490 tons of macaroni in 1987, less than 10 per cent of capacity, due to competition from imported brands and market resistance to new products.

Enterprises based on cereals products have depended almost entirely on imported flour, at a considerable cost in foreign exchange. Flour produced from local grain, and much of the imported grain, is generally milled within the home or by small-scale mills - the 1975 survey records 6,104 small-scale mills and coffee roasters and reported that their output amounted to some 582,921 tons of flour - for domestic use. It was only in 1985 that an industrial grain mill was established in Hodeidah by a private company. The mill has a capacity of 250 tons per day and is now working at near full capacity. The flour is milled from imported grain and sold for industrial and domestic use. According to the enterprises' calculations the plant generates a foreign exchange saving of $20 per ton of flour produced despite its dependence on imported grain. Given currently low world market price for cereals it seems unlikely that the mill will start using local grains in the near future. Besides flour the plant produces valuable by-products such as the husks, some 50 per cent of which are exported and the remainder are sold for the production of animal feeds. The enterprise has plans to branch out in this direction by building a fodder plant to use its by-products. One of the main problems facing the mill is the high cost of electricity.

Even though the Yemen Arab Republic is the most productive agricultural economy on Arabian Peninsula the development of fruit and vegetable processing industries has been hampered by shortages of agricultural products, high prices for agricultural produce and the geographical dispersal of surplus producing regions (see Section 5.2). A tomato paste plant was established at Bajil near Hodeidah with Italian assistance during the SFYP. Despite its limited capacity, 3,500 tons of paste per year, the plant is operating under capacity, 1,253 tons in 1987, due to inadequate supplies of tomatoes. The problem of limited and unreliable raw materials supplies has been resolved by diversification of the product lines. The plant now processes cans beans and peas.

Potatoes are one of the few crops which the Yemen Arab Republic regularly produces a surplus over local demand. In 1986 demand for potatoes was estimated at 143,000 tons while production exceeded 200,000 tons. Both demand for and the supply of potatoes is likely to increase in the near future: potatoes are fast becoming a dietary staple and high farm gate prices are encouraging farmers to increase the area under potato cultivation. Studies have suggested that processing facilities could be installed to increase the value added and use the surplus. A plant producing potato chips has already been established in 1984, with capacity of 260 kg per hour, and a number of other projects have been

proposed including the processing of potato flour, starch and glucose. Potato flour can be mixed with cereal flours in bakery products, starch can be used in the food and textile industries as a binder, glucose can be used in confectionery and soft drinks, while the waste can be added to animal feeds. A plant along these lines has been included in indicative list of private sector projects for the TFYP.

Although a project for a date processing plant has been submitted to the Higher Economic Council for approval, the only fruit processing industry currently in operation is the production of fruit juices and concentrates from locally grown and imported grapes, mangoes, pineapples, limes and oranges. This has been a spectacular success. Output of fruit syrups has increased steadily from 15.8 million litres in 1983 to 72 million litres in 1987. Manufacture of these products is dominated by large enterprises which use imported packaging materials, concentrates and, where prices are favourable, imported fruit. This has led to major problems for the largest enterprise in this market, the Al-Khaid Company for Vimto. Established at Hodeidah in 1981 with two plants, one producing concentrates in 750 ml bottles with capacity of 4,000 containers per hour the other, expanded in 1986 to meet rising demand, with two lines producing fruit drinks in 250 ml cartons each with a capacity of 6,000 containers per hour, was forced to cease production temporarily in 1987 due to shortages of packaging materials.

Development of the distribution system with adequate chill storage facilities is a prerequisite of a fruit and vegetable processing industry. The private sector has taken up this challenge. In May 1988, a group of bankers, estate owners from the Marib region and prominent business formed the Bilqis Company for marketing and Agricultural Services, which will store, package and market agricultural produce. Such enterprises will help mobilize and generate agricultural surpluses that can form the foundation of a processing industry.

The processing of <u>livestock products</u> suffers from the same constraints as the agricultural sector. There are three main abattoirs at Sana'a, Taiz and Hodeidah but no meat packaging or processing facilities. Methods of butchering and distribution are primitive and unhygienic. Furthermore, the dairies and ice cream factories that have proved successful in recent years - output of milk has increased from 10.3 million litres in 1983 to 65 million litres in 1987 and output of ice cream has increased from 622 tons to 1,258 tons over the same period - are largely based on imported raw materials, such as milk powder, and packaging materials. Although a number of commercial dairy farms have developed their milk is distributed fresh rather than fed into the processing industry. A number of new product lines, such as yoghurt and floured milk, have been introduced by companies trying to build up their market share.

<u>Mineral waters and beverages</u> have proved one of the most dynamic elements in the food, beverages and tobacco branch in terms of private sector investment. In 1978 there was only one mineral water bottling plant based but by 1984 there were six. This

duplication of investment has not been accompanied by a commensurate growth in output. Production of mineral water rose from 14,000 cu m in 1979 to 100,000 cu m in 1984 but has subsequently increased to only 106,000 cu m in 1987, suggesting that the market has reached saturation point. Admittedly two of the six plants are based outside Sana'a, in Taiz and Hodeidah, and so have carved out regional markets of their own but the national market appears to have reached absorption capacity.

A similar duplication of productive capacity has taken place in the soft drinks market. In 1972 and 1973 bottling plants were established for the production of Canada Dry and Coca Cola under licence. Three other plants, also producing brands under licence, were established in 1978, 1981 and 1982. While output increased from 63 million litres in 1979 to 108 million litres in 1984 it subsequently fell to 48 million litres in 1987 both a result of reduced availability of inputs as foreign exchange allocations were tightened and as soft drinks faced increasing competition from other drink products.

An area which offers considerable potential for import substitution is the production of vegetable oils and fats. Imports of vegetable oils and fats amounted to YR173.8 million in 1987. In the same year the Yemen Arab Republic exported YR13 million worth of oil seeds, mostly sesame. Local production of vegetable oils is largely an artisanal operation. According to the 1975 Industrial Survey there were 403 enterprises involved in oil pressing and all but two of these employed less than four workers. Only one oil press employing more than four people was recorded in the 1984 Industrial Survey. An attempt was made to establish an industrial oil press at the textile mill in 1975, using cotton seed, but the plant foundered, primarily due to shortages of raw materials.

Plans to develop a vegetable oil industry have focused on the rehabilitation of the cottonseed oil mill and the processing of imported oleaginous grains such as soya. Rehabilitation of the cottonseed mill is feasible though the mill cannot produce high quality, refined oil and a bleaching, deodorizing and packaging line would have to be built. It is doubtful, however, whether the current supply of cottonseed would merit the reopening of the plant. An alternative is to import soya beans, though a new oil mill would have to be built since the extraction procedure is raw material specific.

Attention has now turned to the higher value sesame seed oils, which are currently produced by small-scale mills. Sesame oil is widely used in Yemeni cooking and would have export potential if production could reach levels sufficient to meet local demand. Included on the indicative list of private sector projects in the TFYP, a sesame oil mill project has been taken up by a private sector enterprise. Once again the major problem appears to be guaranteeing an adequate and reliable supply of raw materials. However, the promoter has tried to overcome this problem by contracting farmers to cultivate sesame. The mill is now under construction. If this project proves successful further private sector developments in sesame seed milling are anticipated.

The rapid growth of the poultry farming and the beginnings of intensive cattle farming (see Section 5.2) have created a significant market for animal feeds and feed supplements. Local production of such foodstuffs is limited - a few of the larger poultry farms produce their own - and in 1987 imports amounted to YR256 million. Two large-scale animal feed plants are, however, awaiting approval by the Ministry of Economy, Supply and Trade (MEST). These plants will use meat and bone waste from the three slaughter houses in Taiz, Hodeidah and Sana'a and husks from flour milling that are currently exported. A number of other raw materials are, or could be, available locally including millet, sorghum, oil cakes and fish meal, but concentrates will have to be imported.

Fish processing in the Yemen Arab Republic has traditionally been limited to drying and salting. In 1987 exports of fish cured in this fashion amounted to YR142,940 but most of the catch is consumed domestically and distributed fresh, which inevitably leads to high levels of wastage. Modern canning and freezing facilities have been considered as means of increasing the value added of the fish catch. In 1984 the government set up a shrimp processing and freezing facility with capacity of 5 tons per day in Hodeidah. The plant had not yet begun operations by late 1986 due to litigation over a shrimp peeling machine that did not meet specifications. At that time the government planned to open the plant either as a mixed sector enterprise or by selling it to the private sector. The present status of the plant is not known, though in 1987 exports of shrimps amounted to YR1.96 million.

While there is certainly a need for fish preservation facilities, it is doubtful whether the present scale and growth of the fisheries sector merits the development of processing facilities for lower value species. A 1,000 tons per year canning and deep freezing plant to be based at Hodeidah featured in the SFYP but the project was not implemented. It has now been put forward in TFYP and is included in the indicative list of private sector projects. Not only does the proposed plant seem to be too small to be economic, it would only make a marginal contribution to the value added of the fisheries sector since the total catch amounted to 23,000 tons in 1987 and is expected to reach 24,500 tons in 1991. A detailed feasibility study should be undertaken to identify the optimum scale and appropriate technology before the project goes ahead. One option that could be considered would be small-scale fish meal plants which could be used as animal feed supplement.

A cigarette factory, the National Tobacco and Match Company, was established with mixed private and public capital in 1971. Although the leading product is marketed under a local brand name, Kamran, virtually all the materials are imported and production is closely supervised by a British manufacturer. A second cigarette manufacturer was established in 1984. Again most of the inputs are imported and the same British company provides technical support. There has been a significant rise in output from 38,700 cartons in 1983 to 467,500 cartons in 1987. Most of this increase has been accommodated by a growth in export sales which were valued at

YR49.5 million in 1987 - 42.4 per cent of total manufactured exports.

One of the most pressing problems facing the food processing industry is the absence of suitable quality control procedures. Laboratory tests undertaken by the Ministry of Health in 1986 revealed that 11 of the 20 samples of canned food and juice examined were unsuitable for consumption, as were 2 out of 2 samples of soft drinks and 2 out of 4 samples of meat. The MEST has clamped down on unhygienic practices in recent years - two factories were closed temporarily for this reason in 1988 - but considerably more needs to be done if local products are to be accepted in international markets.

Ultimately the growth and development of food and beverage industries will depend on the performance of the agricultural sector. Until Yemeni agriculture can generate a substantial surplus there can be little opportunity for food processing industries and entrepreneurs will continue to identify investment opportunities on the basis of import substitution which depend on imported raw materials.

3.2 Textiles and leather

From 1975/76 to 1979/80 the textiles branch, which accounted for 18.1 per cent of MVA in 1975/76, recorded a 4.2 per cent annual decline in value added in real terms. By 1979/80 textiles and leather generated only 8.2 per cent of total MVA. This poor performance may be explained by the interruptions in output of the textile mill. Performance improved in the 1980s, with the sector registering a 113 per cent real increase in production value between 1981 and 1986, largely due to increased productivity at the mill, but also as a result of increased output of ready made garments.

A textile mill was built in Sana'a in 1967 with Chinese assistance and in 1973 the Yemen Textile Corporation (YTC) was founded to manage this mill and another a Bajil. With its own ginning, spinning, weaving and finishing plant the Sana'a mill is a fully integrated operation with a rated capacity of 10 million metres of 100 per cent cotton cloth per year.

Up to 1974 the Sana'a plant operated at near capacity. An oil press was added to extract oil and oil cake from the cotton seeds and China assisted with the establishment of a garment manufacturing unit, for the production of about 300 uniforms and shirts per day, employing 80 workers. From 1975, however, the mill began to run into problems. Labour costs rose at an average of 30 per cent per year from 1972 to 1977 even though the labour force was reduced from 1,700 to 1,581 workers. Shortages of raw materials also developed as raw cotton production, which peaked at 27,200 tons in 1974/75 dropped to 2,800 tons in 1979/80 (see Section 4.2). By raising the producer price by over 40 per cent in 1980 YTC hoped to raise local production to 14,000 tons. Production did increase but only to 6,500 tons in 1984 and subsequently fell to 4,200 tons in 1987. Furthermore, the design and choice of fabrics was inappropriate for the local market.

Quality was poor, particularly in printing and finishing, and most Yemenis preferred the cotton-synthetic fibre mixes of imported textiles to the 100 per cent cotton textiles produced by the mill. Consequently, the mill's market share dropped. Within the plant, poor maintenance and repair, largely due to poorly trained maintenance staff and inadequate management supervision, led to repeated breakdowns in the Sana'a plant and eventually brought the Bajil factory to a standstill. By 1980 YTC was operating at less than half of rated capacity and incurring regular operating losses.

At this point, the government organized a rehabilitation programme for the mill with financial and technical assistance from the People's Republic of China. New polyester-cotton blend spinning frames have been installed together with new weaving equipment. As a result the gross output of woven cloth has picked up from 3.4 million yards in 1981 to 9.1 million yards in 1987.

Nevertheless, the plant still only supplies a fraction of the local market and faces stiff competition from imported, higher quality yet cheaper textiles. This could be resolved by improving the methods of dyeing and finishing cloth, such as in the print register and the design of appropriate patterns. Moreover, the plant continues to produce a wide range of fabrics and specialization, perhaps in the khaki drill used in uniforms, might help reduce unit costs. Technical assistance is also needed in the field of maintenance, particularly the maintenance of electrical equipment.

Plans for further public sector developments in the textile sector have been discussed by the government. In the early 1980s a new textile mill was planned for Dhamar and YTC hoped to bring the Bajil plant back into operation by replacing the machinery with equipment from the Sana'a mill. These plans now appear to have been shelved, largely because the government has been unable to raise cotton output to a level that could support a large textile industry, and the YTC has concentrated its efforts on the rehabilitation and modernization of existing facilities. A total of YR377 million has been allocated for investments in the YTC during the TFYP and this is expected to bring about a 25.2 per cent annual increase in production value during the Plan period.

Two private sector companies have become involved in the production of textiles in recent years. An underwear and knitting mill began operations in 1981. Designed by French technicians and partly financed by a credit from the French supplier the plant was manned, initially, by skilled Chinese workers. Output peaked in 1983 at 2 million pieces of underwear but subsequently fell to 983,000 pieces. A private sector enterprise manufacturing blankets began operations in 1984 and a second blanket manufacturer is awaiting approval from the Higher Economic Council. Another recent initiative awaiting government approval is a sock manufacturing plant. These enterprises face competition from imported goods, manufactured on large production lines in East Asia using cheap labour and advanced technology.

Most of the private sector enterprises in the textiles branch are engaged in the manufacture of ready made garments. Tailoring

has a strong tradition in the Yemen Arab Republic. The 1975 Industrial Survey listed 2,543 tailoring enterprises of which all but 25 employed less than 5 persons. Most of these enterprises were associated with textile shops and produced traditional garments or imitations of imported goods for the lower end of the market. Aside from these small-scale tailoring workshops the YTC produces a range of military uniforms and provides pre-cuts of khaki drill for assembly in 14 enterprises in Sana'a, 3 in Taiz and 2 in Hodeidah. One of the largest of these enterprises, established by the El-Eghil conglomerate in 1987 with an investment of YR85 million, has capacity to produce 7 million pieces per year.

Even before this new development there was thought to be over-capacity for the manufacture of uniforms and the development of new product lines is considered a prerequisite of increased output in the ready-made garment sub-branch. Unfortunately, most enterprises lack the skilled labour necessary to design and produce ready-made clothing for an increasingly discriminating civilian market. In order to upgrade design and manufacturing skills so that garment factories can diversify their production lines UNIDO has proposed establishing an Industrial Garment Production Training Centre for Women within the YTC's Sana'a mill. The 1984 Industrial Survey revealed that 32.5 per cent of the work-force employed in the three large-scale textile enterprises were female and the expansion of the garment manufacturing industry will provide an avenue for increasing female participation in the industrial sector.

Notwithstanding the lack of skilled personnel, the ready-made garments industry is also handicapped by the quality and narrow range of locally produced textiles which leave it dependent on imported cloth. As a late comer to the world market, handicapped by high labour costs and increasingly protectionist trade policies the Yemen Arab Republic is unlikely to develop export markets. Successful projects will be those that can identify suitable import substitution opportunities. The diversity of recent project proposals submitted to MEST offers encouragement in this respect but care must be taken that bandwagon effect that seems to characterize industrial development in the Yemen Arab Republic does not result in the installation of over-capacities. It is worth noting that the TFYP indicative project list for the textile branch duplicates most of the project ideas - proposing 5 underwear projects, for instance, 2 plants for manufacture of socks and 2 for the production of towels.

The Yemen Arab Republic has considerable potential for the development of a leather industry. According to one estimate 1.3 million sheepskins, 800,000 goatskins and 200,000 cattle hides are available every year. Only a small proportion of these skins are cured. In 1987 leather worth YR53.7 million was exported but only 10.2 per cent of this was tanned, much of the remainder was exported cleaned but otherwise unprocessed. This represents a considerable loss of value added and waste of natural resources.

The 1975 Industrial Survey records that were six small-scale tanneries using traditional methods and employing 14 people but by 1986 there was only one plant, the Shammarkh Tannery and Leather

Company, based in Hodeidah, operating nation-wide. The plant has installed capacity of 25,000 sq feet of cured leather per month but the capacity utilization rate is only 60 per cent due to shortages of skins of suitable quality. In order to improve collection and storage methods the company has provided buyers with loans and offers higher prices for skins that are correctly prepared and cut. Nevertheless, further work is needed to propagate appropriate slaughtering and butchering techniques. Moreover, the company lacks detailed information of the size and location of the country's herd resources.

Approximately 90 per cent of the company's inputs are locally produced skins and salt, the remainder are imported chemicals. While production has been unaffected by the shortage of foreign exchange, the development of the plant's raw material collection system has been hampered by the restrictions on imports of vehicles. With exports valued at $4 million in 1983 the company has a favourable foreign exchange balance. The company is trying to develop new export markets in the Middle East and Europe. It is experimenting with new products - such as coloured leather for shoes - and has recruited technicians from China to help train the 80 workers in new production techniques.

Given the low rates of capacity utilization in the Hodeidah tannery the development of new tanning facilities - proposed by several companies engaged in the export of raw hides in the 1970s - is unwarranted until the problems of raw materials supplies have been resolved. Further efforts could be made to develop enterprises producing leather goods such as shoes, bags, luggage and gloves and so raise levels of processing.

Traditional cobblers have been pushed out of business by plastic injection moulded sandals. Few of those cobblers still working have training in modern methods of leather preparation and shoe making. In order to overcome this problem, a UNIDO mission advised that a pilot demonstration plant producing 150,000 pairs of shoes per year be established[1/]. The private sector as already taken the initiative in this field. A leather shoe manufacturing plant with installed capacity of 3,000 pairs of shoes per day began operations in 1985, but gross output fell by 25 per cent over the following three years. No details are available on the enterprises' current status. Four more projects for the production of leather shoes are included in the indicative list of private sector projects in the TFYP, one of which is to be submitted to the Higher Economic Council in 1989. Developments along these lines are expected to raise production in the leather industry by 7 per cent per year up to 1991.

1/ UNIDO, "Preparatory assistance project in leather and leather products industries development. Terminal Report", April 1980 (UNIDO/IOD.348).

3.3 Wood processing

Wood is widely used in traditional construction methods for load bearing structures, window and door frames and for preparing concrete moldings in the modern construction sector. Most of the prefabricated frames are produced by small- and medium-scale workshops. There are also a small number of workshops producing simple furniture from plywood and particle board.

From 1975/76 to 1979/80 the branch recorded an impressive growth rate of value added of 16.1 per cent per year. During the 1980s however, the rising cost of timber, all of which has to be imported, and labour, together with the spread of modern construction techniques, in which steel is substituted for wood in load bearing structures and aluminium for wood in the production of window and door frames, have brought about a period of relative stagnation. Although one furniture workshop in Hodeidah opened in 1986 and two other wooden furniture workshops will go before the Higher Economic Council in 1989, no other projects in this sector received licences between 1985 and 1988. Shortages of foreign exchange have, furthermore, made it difficult for small-scale workshops to procure raw materials and gross output of furniture limbs has fallen by nearly 90 per cent from 1983 to 1987. Over the TFYP period the wood processing branch is expected to decline by 4.2 per cent per year in real terms.

Despite this pessimistic prognosis, there is potential for further development within the wood products sector. One of the major problems facing the industry is the predominance of small-scale workshops - only one enterprises was classified as large-scale by the 1984 Industrial Survey - which are characterized by simple technology and labour-intensive techniques. Development of a large plant would permit increased automation and standardization, thereby reducing labour costs, which are the second highest as a proportion of costs in the industrial sector. A large plant could, moreover, use saw dust to produce pressed boards and so reduce materials costs. A second problem is quality control and design, neither of which are given a high priority in traditional workshops. Since production costs are high, product quality is crucial to secure sales. Technical assistance in the field of carpentry techniques and design will be needed if quality is to be improved.

3.4 Construction materials

The construction industry enjoyed a boom in the 1970s, recording average annual growth rates of value added of 23 per cent between 1973/74 and 1978/79. This period of rapid growth was accompanied by a modernization of construction techniques as builders adopted building materials such as reinforced concrete, concrete blocks and prefabricated steel structures. Although the construction boom did not bring about a commensurate growth in the construction materials branch, indeed its average annual increase in value added of 6.3 per cent over this period lagged far behind the construction sector. It should however, be remembered that the main indigenous building material, stone, is included in the mining sector which recorded an annual growth rate of 25 per cent.

Moreover, the 1970s were a period of structural transformation within the construction materials branch as enterprises introduced new materials such as cement and concrete blocks to accommodate changing construction techniques and as substitutes for imports. Consequently, when the performance of the construction industry deteriorated in the 1980s, production value falling by 21.7 per cent in real terms between 1981 and 1986, as the recession led to cuts in public works projects and residential building, the construction materials sector recorded a real increase in production value of 233 per cent by reclaiming its market share through import substitution, even though demand tailed off from 1983.

Central to the development of the construction materials branch has been the emergence of a cement industry. The first cement production line, built with the assistance of the Soviet Union, was opened at Bajil in 1973 with a production capacity of 72,000 tons per year and a second production line with a capacity of 200,000 tons was opened in 1983. In that year a second plant began operations at Amran, 50 km north of Sana'a, with a capacity of 500,000 tons per year. These developments allowed an increase in cement output from 66,000 tons in 1978 to 787,000 tons in 1987.

The importance of the cement industry may be gauged by the fact that it accounted for 61 per cent of the production value and 63.4 per cent of value added generated by the construction materials sector according to the 1984 industrial survey[1/]. Furthermore, the cement industry provides the basic materials for other construction materials, such as the cement block manufacturers.

However, production is still insufficient to meet local demand, estimated at 1.5 million tons, and the government has proposed another round of projects to increase capacity to 3 million tons per year and achieve an average growth rate of 47 per cent during the TFYP period. This includes the construction of a new plant at Al-Barh near Al-Mafraq, by a Japanese company, with an initial capacity of 500,000 tons later to be expanded to 1 million tons and, contingent upon the availability of funds, the expansion of the Bajil plant to 500,000 tons per year in the first phase and then doubling capacity to 1 million tons and increasing capacity at Amran to 1 million tons. The Al-Mafraq project alone will entail investments of YR859.6 million, about half the total investment in the public and mixed sectors during the TFYP.

1/ Statistics provided by the CPO for 1986 suggest that the role of the cement industry is less - but still- important, accouanting for 33.4 per cent of production value and 28.7 per cent of value added in the construction materials sector.

There is some concern that these projects will result in considerable over-capacity within the cement industry since demand is expected to reach only 2.5 million tons by the year 2000. Consequently, the government may forego the expansion of existing plants and limit the development programme to the construction of the new facility at Al-Mafraq. Two UNIDO missions have advised that considerable improvement in productivity could be achieved by training in management and maintenance. As a result of these studies UNIDO has formulated a technical assistance project (SF/YEM/87/001).

Cement blocks, are mainly manufactured to a standard size of 20x20x40 cm, and tiles have become one of the most commonly used building materials since the 1970s. The 1975 Industrial Survey recorded 19 enterprises, only three of which employed five or more workers, manufacturing cement blocks and tiles but by 1984 the number has increased to 93 medium-scale and 13 large-scale enterprises. The number of small-scale enterprises producing cement blocks, including construction companies producing blocks on site, is likely to run into the hundreds. Most of these enterprises were established by returning migrants who are accredited with introducing the technique from construction projects in the Gulf States.[1/]

The rapid proliferation of enterprises resulted in a steady growth in the output of tiles and blocks from 12,000 cu m in 1979 to 90,000 cu m in 1985 but, with the drop in construction activity, output fell to 61,000 cu m in 1987. The output of cement bricks, widely used as a substitute for traditional clay bricks, also increased during construction boom, peaking at 3.6 million units in 1983, but has subsequently fallen to 1.6 million units in 1987. One of the major problems with the concrete blocks, tiles and bricks manufactured in the Yemen Arab Republic is their poor quality. Although the larger companies with automated production lines generally maintain adequate product standards they work under capacity due to fierce competition from smaller plants which use substandard materials. Many of the blocks produced by these plants are inappropriate for use in load bearing walls. Similarly, cement and mosaic tiles are generally of poor quality - the aggregate is not graded, chips are not matched in colour and this generally poorly disguised by the use of coloured cement. Further they are inadequately polished and the range of sizes and patterns is narrow. Most large-scale construction projects therefore prefer to import tiles from Italy, Pakistan and China. A UNIDO mission has advised that efforts should be made to ensure adequate quality control, perhaps by ministerial supervision, and technical assistance should be provided to upgrade production methods and design in the case of cement and mosaic tiles.

1/ Basman, M., "Mission Report on the training needs and capabilities in the field of cement industry in Yemen", May 1982, UNIDO/IO/R.19.; and Boeck, H. C., "Mission report and proposals for the implementation of the Mafraq Cement Plant Project and overall economy at the Amran and Bajil cement plants", February 1982, UNIDO/IO/R.18.

Another important use of cement has been in the manufacture of ornamental screens decorated with inset coloured glass, called quamaria, by small, artisanal workshops instead of the traditional gypsum plaster. Widely used in residential building the output of manufactured arches peaked at 14,000 units but has subsequently fallen to 1,700 units in 1987.

A wide range of other projects for the manufacture of specialized cement based products have been proposed by various UNIDO missions. These include the manufacture of pre-cast lintels and sills, kerbs, pipes, posts and power and telephone cable poles, and asbestos concrete sheets. Many of these products are already produced on a small scale by workshops but, as in the rest of the construction materials sector, little attempt is made to ensure standardization and quality control.

Large-scale production of concrete pipes would certainly be viable from the point of view of demand. The government is currently engaged in a major urban sewerage and water supply project in Sana'a and similar projects are underway in most of the large cities, in addition considerable investments are underway in the expansion of irrigation schemes all of which will require pre-cast pipes. A UNIDO study has proposed that a 24,000 cu m capacity plant should be built.[1/] The current status of this project is not known. On the other hand, the manufacture of asbestos-cement sheeting has been ruled out because of the need to import asbestos fibres.

Fired bricks are one the traditional building materials used in the Yemen Arab Republic and production has traditionally been small-scale and labour-intensive. In 1975 there were 22 small and 10 medium-scale enterprises producing red bricks, in 1984 there were 17 medium- and 3 large-scale enterprises. The quality has generally been poor. Higher quality bricks were produced in four mechanized plants with a combined capacity of 137,000 tons per year based in Sana'a, Taiz, Al-Mansurya and Haiz but these too were not up international standards due to problems with the firing process and the quality of the raw-materials used. These technical difficulties forced two of plants at Sana'a and Al-Mansuriya to close down in the early 1980s, while the other plants have faced marketing difficulties, in part because of the high cost of transport and competition from concrete blocks. Even when output peaked at 6.3 million bricks per year in 1985, the red brick industry suffered from excess capacity which reduced profit levels. Output was estimated at 3.8 million bricks in 1987. Sales performance could be improved by raising the quality of the bricks produced by both the artisanal and mechanized plants. This would require technical assistance in the fields of production methods, management and the identification of appropriate raw material sources.

1/ World Bank and UNIDO Co-operative Programme, "The Construction Industry: A Survey and Identification Report", Report No. 17, July 1981.

Natural stone is another traditional building material and accounts for approximately 35 per cent of the total demand for external walling materials in Sana'a though this market share rises to above 50 per cent in the highlands. Quarries are dispersed throughout the country and a wide range of stones - chiefly granites and limestones - are used. Most of the stones are hand finished since the rough texture is preferred. This work is generally carried out by small-scale enterprises: only 6 stone cutting enterprises are recorded by the 1984 Industrial Survey of industrial enterprises employing five or more persons. High production costs, particularly for labour, have resulted in stone being replaced by cheaper building materials.

Despite market resistance to mechanically finished stone UNIDO experts considered a mechanized plant with a capacity of 70 cu m of stone blocks and slabs a viable means of reducing production costs and thereby maintaining the use of the traditional building material. The current status of this project is uncertain.

The government is particularly eager to promote the production of marble tiles, including five marble projects in the indicative list for the TFYP, in view of the country's extensive marble deposits which, until the early 1980s, were unused. There is now one marble processing plant operating in Sana'a, run by Al-Raiby Trading, Industry and Contracting, producing 250 m sq of 2-4 cm thick marble tiles per day. This represents a fraction of the resource and market potential. Most of the marble used in prestige developments and higher cost residential properties is still imported from Italy. If a suitable quarry can be identified the Yemen Arab Republic could, potentially, export marble products. The Arab Mining Company (Armico), based in Jordan, is currently investigating the potential of developing these resources.

Two other important resources for the construction materials industry are gypsum and lime. Gypsum has long been used in the production of goss, a soft white plaster used as mortar in the highlands and in the manufacture of quamaria. It has also been used for external plaster work but it is of poor quality and deteriorates rapidly. Once again small-scale artisanal plants predominate and the quality is unreliable. Industrial manufacture of gypsum plaster is restricted to the cement works where it is used as an additive to cement and the remainder is sold to the building industry. Output increased from 3,800 tons in 1981 to 90,823 tons in 1985 and then fell to 44,000 tons in 1987. Demand for gypsum could be increased by the development of a plant producing plaster boards and panels for internal walling. Introduction of this building technique would, however, meet resistance from local contractors and builders since plaster boards are unknown in Yemen. Plaster boards are fragile and thus unsuitable for current building and transportation practices.

Lime is also produced at an artisanal level for the preparation of whitewash. The quality is poor and firing methods are costly. There is scope for the introduction of an industrial lime plant. Vertical kilns with 20,000 tons per year capacity havebeen suggested. Alternatively technical assistance could be

provided to upgrade the production techniques of small-scale producers.

The TFYP sets an ambitious target of an 12 per cent annual growth rate for the construction materials branch up to 1991. Much of this increase will be accounted for by expansion of the large industrial cement works. Growth in other sub-sectors will, however, face two major constraints:

- Shortages of skilled labour. Many of the enterprises in the construction materials sector were established by and employ returned migrant labourers with experience of the construction industry but few technical skills in the manufacture of building materials.

- Intense competition. The rapid and opportunistic growth of the construction materials sector has undoubtedly led to the installation of over-capacity. If the economic recession continues, the stagnation of the construction of the industrial sector will intensify this problem. Furthermore, since many of the products of the construction materials sector are interchangeable - concrete blocks, bricks, stone and reinforced concrete - the expansion of one sub-sector is likely to affect the output of another.

In addition there is an urgent need for the government to identify potential mineral resources and provide legislation that will facilitate their exploitation. Of particular importance will be the control of water consumption in view of the acute water shortage of the major urban centres (see Section 5.4).

3.5 Chemicals

The chemicals branch has achieved consistently high growth rates - averaging a 38.3 per cent annual increase in value added between 1974/76 and 1979/80 and registering a 183 per cent real increase in production value between 1981 and 1986 - and accounted for 19 per cent of MVA according to the 1984 Industrial Survey. Unlike other branches, large-scale enterprises are numerically preponderant - numbering 17 as opposed to only 5 medium-scale plants - as well as preponderant in terms of output. Most of these enterprises have developed on an *ad hoc* basis as and when import substitution opportunities have been identified. There are virtually no linkages within the sector. As a result enterprises are heavily dependent on imported raw materials which, according to the 1984 Industrial Survey, accounted for 74.3 per cent of total costs, the highest proportion in the industrial sector, and 83 per cent of inputs.

Most - 13 of the 19 - of the companies operational in the chemicals branch in 1986 are engaged in the manufacture of plastic products from imported PVC, polyethylene and polyurethane. Of these companies eight were established before 1980. The range of products includes moulded shoes, buckets, household utensils, sponges, water tubes, plastic sheets and bags, tubes, bottle crates and plastic string. Output, as measured by an unweighted index of

gross output, has increased steadily reaching 386.5 in 1987 (1978=100) though there have been wide variations in performance between the products. The output index for plastic buckets, for instance, reached 1,960.7 by 1987, plastic sheets 849.7 and household utensils 446.8. Only bottle crates registered a fall in output over the same period.

Despite this spectacular performance in terms of output growth the plastic products sub-branch suffers from considerable over capacity. In the case of home appliances and buckets, for instance, peak output amounted to an estimated 30 per cent of capacity. One of the principal causes of over-capacity is the fact that enterprises cannot easily diversify their output since all the injection moulds are imported. The establishment of a company capable of manufacturing injection moulds would give the industry considerably more flexibility.

Other chemical products based on imported inputs include paints, detergents and soap. Gross output in both these sub-branches has increased as a result of the installation of new capacity and firms to take advantage of the opportunities for import substitution. Output of paint increased from 1,400 tons in 1978 to 6,893 tons in 1986 with the establishment of new plants in 1983 and 1984. Output subsequently dropped to 4,993 tons in 1987. Similarly, output of soaps and detergents increased from 900 tons in 1980 to 20,468 tons in 1987 with the establishment of a new, automated detergent factory in 1981. Both these sub-branches are heavily dependent on imported inputs and expertise. The first paint factory, established in 1971, still operates under the terms of a licensing agreement with a British manufacturer.

One of the success stories of the chemicals branch has been the Yemen Drug Company which produces a range of pharmaceuticals under licence using imported pharmaceutical chemicals and packaging materials. Production began in 1984 with four products. By 1987 it had expanded to 14 products - packaged as pills, capsules, syrups and ointments - employed over 300 staff. In that year the company registered profits of YR74.5 million on sales of YR267 million - about 15 per cent of the local drug market. Sales of the companies own products amounted to YR120 million and the balance was made up of imports. The company has requested UNIDO assistance to help introduce seven new products and establish quality control facilities. A related sector is that of cosmetics. In recent years production has diversified away from local brands, based, in part, on local inputs, to brands made under licence.

Most of the projects listed in the indicative list of the TFP Plan follow a similar pattern: diversification of the consumer goods produced along the lines of import substitution using imported raw materials. Attempts have been made, however, to identify industries that could be based on local raw materials. The development of a large-scale refinery - currently being considered by the government - could, for instance, provide the means of diversifying the industrial sector through the production of basic chemicals. A nitrogenous fertilizer plant based on natural gas, of which there are plentiful supplies, was one option. The Yemen Fertilizer Company commissioned a feasibility study for

an ammonia/urea complex in early 1988. The plant, which would use gas from the Marib field, would cost an estimated $120 million. The local market is expected to be too narrow to support an economically viable plant. Besides the low world price of fertilizers undermines the rational for domestic production.

Another project based on local raw materials is the production of glass for hollow bottles from silica sand deposits at Dhaban, near Sana'a. A UNIDO study[1/] concluded that a plant producing 14,550 tons of bottles per year would be sufficient to meet domestic demand in the late 1980s. The only raw material not available locally is soda ash which accounts for 18.5 per cent of the product by weight - though a plant manufacturing soda ash might become viable when the glass factory began operations.

Initially the furnaces were to be electric but the discovery and exploitation of gas now offers an opportunity to substantially reduce this element of operational costs. Total project cost amounted to $16.7 million when it was first proposed in 1981. As yet no action has been taken on the project though it remains on the indicative list for the TFYP. The problem lies in the fact that the dairies, soft drinks and mineral water enterprises all prefer to use plastic non-returnable bottles on the grounds of lower cost. The market could be increased by developing the project within the context of a co-operation agreement with PDR Yemen an option that has been considered by a ECSWA project identification report.

Salt is another raw material that could be used in the manufacture of basic chemicals. At present salt is produced near Hodeidah for domestic use in the local market with some exports (YR203,000 in 1987). Output has risen, erratically, from 58,000 tons in 1978 to 172,000 tons in 1987 but could be increased further if the salt was used in the manufacture of chlorines, soda ash and caustic soda. A soda ash plant was considered in conjunction with the development of a glass industry while other salt derivatives are used in the manufacture of soaps and detergents. This project has been shelved along with the hollow glass manufacturing plant.

Besides the problem of dependence on imported raw materials the chemical products industry also suffers from low quality and inadequate maintenance. Most of the plants have been established by entrepreneurs with little technical experience, often former importers, and quality control is given a low priority. Furthermore, the branch suffers from an acute shortage of trained production and supervisory staff. Other than companies producing under licence, quality control is given a low priority. Since enterprises manufacturing bulky products enjoy a considerable degree of natural protection, this may not necessarily impair their market performance. Quality will, however, become increasingly important as competition between enterprises in the branch intensifies. Already, entrepreneurs have shown a tendency to jump

1/ World Bank and UNIDO Co-operative programme, "Feasibility study for a Hollow Glass Manufacturing Project", Report 15 April 1981.

on the bandwagon, duplicating existing investments. Further diversification at both a branch and plant level would be desirable. For some time to come this diversification will continue to follow the lines of import substitution. No progress has yet been made in the development of a basic chemicals industry.

3.6 Engineering and metalworking

The engineering and metalworking branch is still at the early stages of development in the Yemen Arab Republic. The branch recorded an annual average growth rate of GDP of 13.3 per cent between 1975/6 and 1979/80, slightly above the average for the manufacturing sector as a whole. Unfortunately, statistics on real growth of value added and production value are not available for the period 1980 to 1987 but an unweighted index of gross output, based on those products manufactured in the base year, 1980, shows a 75.9 per cent increase in output from 1980 to 1987. Much of this increase is, however, accounted for by the growth in output of metal cases. Output only increased in the case of one other product over the period as a whole. This suggests that the engineering and metalworking sector has stagnated during the 1980s. In terms of its share of total MVA, the contribution of the engineering and metalwork branch has remained below 9 per cent in all the surveys undertaken between 1975/76 and 1986.

Engineering is in fact limited to the repair and maintenance of vehicles and, to lesser extent, industrial machinery in numerous small workshops. A few workshops manufacture custom made spare parts but the quality is poor, despite their use of modern equipment, and their capacity limited. There are no enterprises manufacturing machinery. The metalworking sector is, likewise, restricted to simple products many of which are produced by small workshops. According to the 1984 Industrial Survey medium-scale enterprises accounted for 39 per cent of value added in the engineering and metalworking sector.

Of the 101 medium and large-scale enterprises operating in 1984, 76 manufactured metal doors and windows from welded steel panels. At that time the production of doors and windows accounted for 27 per cent of value added generated by the engineering and metalworking branch. Other metal products manufactured from welded steel plates and bars are barrels and bed frames. Output of all these products has fallen dramatically in recent years: the number of barrels, including galvanized barrels, produced has fallen from 110,400 in 1983 to 33,100 in 1987, the number of beds from 8,000 to 4,400 over the same period and the quantity of doors and windows from 18,855 sq m to 4,467 sq m. This deteriorating performance may be ascribed to shortages of raw materials, which result from the constraints of foreign exchange budgets, and the saturation of the local market.

A factory producing household aluminium utensils was established in Taiz in 1964, at the very start of the Yemen Arab Republic's industrialization. Since then three other enterprises have been established - two in 1978 and one in 1981 - producing similar products and a fourth producing aluminium building hardware. Production increased to 1,517 tons in 1986, but then

fell to 825 tons in 1987. Even at peak production enterprises were working below capacity since the proliferation of enterprises brought about over-capacity in the Yemen Arab Republic's limited market. Product diversification could allow these enterprises to increase capacity utilization but there are no facilities for the production of new press moulds in the Yemen Arab Republic. Nor do enterprises have the skilled technicians needed to design and install production facilities for new products: most of the products currently manufactured are copies of those manufactured elsewhere in the Middle East. Although the products are generally of low quality they face limited competition from imports because their bulk gives them natural protection. Even so it is desirable to improve quality at a plant level as a means of securing a large market share in an increasingly competitive market environment.

There has been little diversification within the engineering and metalworking branch. Instead new enterprises have tended to move into established markets where simple technology and established techniques are in use. Since the 1980s several enterprises have begun manufacturing window and door frames and screens from imported aluminium. The technology employed derives from the carpentry industry and depends on imported pre-cast components. Steel bars and panels are now used in the manufacture of metal office and domestic furniture. An agricultural implements factory was established in 1987 and another plant produces steel structures and panels for buildings. Here too the technology is relatively simple.

A recent development has been the installation of two assembly plants which began production of LPG ovens and batteries in 1987. Although the high cost of labour in the Yemen Arab Republic and the narrow market discourage the development of large-scale assembly industries a number of other assembly projects have been included in the indicative list of private sector projects for the TFYP: vacuum flasks, telephones, welding electrodes, irrigation pumps, domestic refrigerators and washing machines, commercial refrigerating equipment, vehicle petrol tanks and agricultural tools.

As yet the private sector has shown little interest in these assembly industries - with the exception of agricultural tools and welding electrodes. Nor do they represent the most promising path for the development of the sector from a macro-economic perspective. Such projects are likely to be set up through the granting of manufacturing licences for products currently imported. The battery plant established at Al-Burh near Taiz, for instance, is a joint venture between the Al-Ghannami Industrial Group and the British company Exide International, who supply expertise, machinery and components. Since most of the components will continue to come from the supplier such projects will make a limited contribution to value added, foreign exchange savings or the development of engineering skills.

At present one of the main constraints facing the metalworking sector in particular and the manufacturing sector in general is the lack of facilities to design, manufacture and repair tools and

machinery. Not only do enterprises have to close down because of delays in receiving spare parts from abroad but product diversification is constrained by the difficulty in acquiring new toolings and moulds. This could be a major handicap for the development of the industrial sector.

To address this problem UNIDO has proposed that the government establish an Engineering Industry Prototype Development and Training Centre. This centre would develop the skills necessary for the design and manufacture of machine tools and tooled parts rather than operate as a commercial venture. It would provide assistance to existing engineering and metalworking enterprises on request. Its other function would be to improve quality control procedures within the engineering sector. Spare parts manufactured in the Yemen Arab Republic have a poor reputation and many enterprises prefer to use imports despite the delays and higher costs involved. If the engineering industry is to develop this prejudice will have to be overcome.

An essential step in the development of the engineering industry will be the upgrading and expansion of foundry facilities since many spare parts and engineering components are castings. There is one medium size foundry already in operation, producing sanitary pipes and covers, and four small-scale foundries manufacturing castings spare parts for textiles machines and water pumps. Once again the quality is poor. Expansion of foundry facilities could provide the basis of a number of manufacturing projects such as the assembly of water pumps, the manufacture of gas cylinders and heavy industrial spare parts all of which have been included in the indicative list for the TFYP.

The government has also investigated the possibility of establishing a heavy metalworking industry producing basic metals. Virtually all the raw materials used by the metalworking industry are imported: according to the 1984 Industrial Survey, imports represent 81.2 per cent of total cost of inputs. In order to reduce to the substantial import bill for steel - which is widely used for reinforcing and building frames in the construction industry - the government allocated YR250 million to implement a mini-steel plant producing steel bars and rods during the SFYP. This project has now been shelved because the estimated demand for steel, approximately 80,000 tons, was below the capacity of the minimum sized viable plant, sufficient supplies of scrap could not be guaranteed and the electricity costs were prohibitive.

The engineering and metalworking branch has suffered from the absence of a sectoral development strategy. Projects based on import substitution have not been encouraged to establish links local suppliers nor has the government provided the skilled labour needed to upgrade production methods and ensure quality control. The planned Engineering Industry Prototype Development and Training Centre will be the important step in overcoming the second of these problems. There is also considerable room for the improvement of linkages between enterprises both through the identification of suppliers and the development of subcontracting arrangements to utilize existing spare capacity.

4. STRATEGIES, POLICIES AND INSTITUTIONS FOR INDUSTRIAL DEVELOPMENT

4.1 Development strategy

Balanced economic growth and the maximization of the country's resource and human potential have been the guiding objectives of the country's development strategy. Since 1973 this strategy has been embodied in Plan documents, the first covering three years and subsequently five years, which now combine a indicative list of government projects, comprising the public investment programme, with targets for private sector investment and the performance of each sector of the economy.

In the early years of development planning, up to 1981, priority was given to the development of infrastructure, in particular transport and communications, as the government sought to overcome the long-standing fragmentation of the Yemen Arab Republic into regional economies and achieve national integration (Table 4.1). Emphasis was also placed on the development of government services, such as education and health care, in order to bring them within the reach of all Yemenis. Agriculture, regarded as the engine of economic development, benefited from substantial investments in such projects as the Tihama Development Authority but much of the initiative - and finance - for agricultural development was expected to come from the private sector. This was equally true of manufacturing industry, where public investment was restricted to projects beyond the means of public sector investment. Government policy has consistently been to assign the private sector the central role in the development of the commodity sectors. Private sector initiatives have been encouraged by a liberal economic regime, incentives and protection from imports.

By the time of the Second Five-Year Plan (SFYP), 1982-86) the most important road construction projects had been completed and attention turned to the development of utilities. Since funding for these projects had been earmarked by donors they were less affected by the deteriorating economic situation which forced the government to impose austerity measures, including radical cuts in capital expenditures and the shelving of many development projects. Efforts were also made to maintain expenditure on social services, in particular the development of human resources since the shortage of trained personnel was identified as a major constraint on development in most sectors.

Under the TFYP (1987-91) the government, influenced by pressing macro-economic problems, hopes to achieve "a better balance between the provision of basic services necessary for the welfare of the population and the expansion of production"[1/]. In line with this objective nearly 65 per cent of planned investment is to be devoted to increasing production capacity and raising operating levels in the commodity-producing sectors and profit-making services. Even so government services will receive 35 per cent of the budget. The Plan pays particular attention to the country's manpower needs and outlines a strategy for manpower development to reduce dependence on immigrant labour.

Table 4.1: Planned and allocated investments in the Five-Year Plans
(Percentages)

Sectors	TYP (1973-76) Actual	FFYP (1977-81) Planned	FFYP (1977-81) Actual	SFYP (1982-86) Planned	SFYP (1982-86) Actual	TFYP (1987-91) Planned
Agriculture	14.8	14.3	7.0	13.8	11.6	8.0
Industry	9.8	22.2	15.4	23.3	24.1	29.7
- manufacturing	-	-	8.4	11.7	6.6	8.9
- electricity & water	-	-	7.0	8.4	15.8	6.7
- mining & quarrying	-	-	-	3.2	1.6	14.1
Construction	10.4	2.8	6.9	3.0	1.6	0.5
Housing	-	13.1	17.0	13.3	17.1	8.0
Trade	4.4	3.9	-	10.2	4.1	5.1
Transport & communications	31.2	30.8	24.8	16.5	14.8	12.5
Banking & finance	-	0.6	-	6.7	1.1	0.8
Services	29.4	12.3	15.9	19.4	25.7	35.4
Total investment (Million YR)	936	16,550	11,558	28,100	19,871	38,582

Sources: Ahmed Omar, Economic Planning in YAR, 1986, and CPO, The Third Five-Year Plan, 1987.

Despite the abysmal performance of recent years, agriculture is still regarded as a priority area since food-security and self-reliance, which can only be seen as long-term goals, are regarded as preconditions of successful growth. Growth in the industrial sector too, is seen as a means of reducing the country's dependence on imported manufactures. Oil and gas will, however, benefit from the largest share of investment among the commodity sectors. Huge investments are required to ensure the exploitation of known oil and gas reserves and for further exploration. Ultimately, the expansion of both the oil and gas and industrial sectors will provide the economy with a broader economic base and may lay the foundations of self sustained growth.

Strategies for industrial development

In the early stages development for planning industrialization was seen as a goal in itself: a prerequisite of balanced economic growth. To achieve this goal the government sought to mobilize private sector investment by providing generous incentives, a liberal economic environment with minimal interference in domestic market forces while providing nascent industries with adequate

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1/ Central Planning Organization, The Third Five-Year Plan, 1987-1991, p. 45.

protection from imports. Public sector investment in the industrial sector was restricted to projects too large or too risky to attract private sector capital, such as the textile mill or cement factory. Instead, the role of the government was one of support. Infrastructure, in terms of communications, utilities and industrial estates, and human resource development were the most important government inputs into the industrial sector.

Within the framework of a liberal economic environment the government hoped to use private sector initiatives to meet the broader goals of national economic development as expressed in a government industrial development strategy. In particular, the government sought to increase the valorization of local resources, develop a skilled technical and managerial work-force and reduce dependence on imported consumer and intermediate goods. The government concentrated on building an industrial base but did not select projects on clearly defined development criteria. This has resulted in a proliferation of import substitution projects which depend heavily on imported raw materials, capital and intermediate goods and rely on immigrant labour to run often complex production facilities based on foreign technology. Few linkages have developed within the industrial sector and, other than the construction materials branch, manufacturing industry has tended to turn its back on potential local resources. Manufactured exports are negligible and since little attention has been given to the identification of areas of comparative advantage the potential for exports is limited. In short the industrial sector grew rapidly in the period up to the mid-1980s but did not develop further thereafter.

To some extent this path of development was unavoidable for a country which lacked an industrial base in the early 1970s. In the TFYP, however, the government has determined to revise this pattern of industrialization in order to decrease reliance on the outside world by using local resources and diversify the industrial base away from import substitution projects. The government's strategy may be summarized as:

- The gradual development of large-scale industries using local raw materials, in particular industries based on crude oil and natural gas.

- Expanding manufacturing industries which use inputs from the agricultural sector or mining activities in order to meet anticipated growth in demand for food and building materials.

- Giving priority to activities that promote a strong integration of industries producing consumer goods, intermediate and capital goods so as to establish the technical basis for future industrialization. Such industries will, moreover, diversify the country's industrial base and strengthen the internal integration of the industrial sector.

- Maximizing local value added by encouraging industries that produce consumer and intermediate goods. By meeting local demand projects identified on the basis of import substitution will optimize the use of foreign exchange resources.

- Achieving a better regional distribution of industry in order to restrict the migration from rural areas to the main urban centres by the provision of industrial services and encouraging industries to locate near raw materials and labour sources.

- Improving the advisory services available to investors and facilitating access to credit. Not only will this promote private sector initiative it will also ensure that initiatives are directed at feasible ventures that reflect the governments goals for industrialization.

- Supporting small-scale industries and handicrafts by providing them with information and development opportunities.

- Encouraging the establishment of export oriented industries, particularly those which use local raw materials and labour and are directed at the markets of neighbouring countries.

- Improving the performance of the industrial sector by providing training, financial and technical advice to overcome problems and market limitations. Scientific centres will be established to select appropriate technologies and provide technical support.

Clearly the emphasis remains growth through new investment rather than consolidation and rehabilitation of existing productive capacities. Private sector investment is expected to account for 53.2 per cent of total investment in manufacturing industry during the Plan period, based on an indicative list of 155 projects (Annex D). In the public and mixed sector too new projects, such as the construction of a new cement works at Mafraq and the expansion of production lines at existing factories, will take much of the investment. As a result of these investments the output of the manufacturing sector is expected to rise by 8 per cent annually in real terms up to 1991.

If the government can impose this strategy on the industrial sector there is no doubt that a stronger, more self-sufficient industrial base would result. Unfortunately, given the central role played by the private sector in industrialization and the weakness of the planning and regulatory institutions it is unlikely that the government will be able to translate its strategy into action in the short term. Admittedly the most obvious import substitution projects have now been exhausted but, given the protection enjoyed by import substitution industries, the stagnation of agriculture and limited range of mineral resources, except for those suitable for construction materials, import substitution remains the most attractive area of investment for the private sector.

Public sector initiatives will, consequently, play an important role in the instigation of a new industrial order, an order in which the production of intermediate and capital goods and the use local raw materials play an important part. This does not necessarily imply substantial public investment in industrial projects. Rather the government may act within its established

support role through the preparation of feasibility studies, the provision of credit facilities, technical and managerial consultancy services and, perhaps most important, the strengthening of its regulatory functions to ensure that private initiatives are directed towards projects that are viable at an enterprise level and desirable on the basis of macro-economic criteria.

4.2 Policy issues and initiatives

Promotion of private sector investment

The principal instrument for the promotion of private sector investment is the Law No. 18 of 1975 "Regarding the Promotion and Organization of Investment in the Yemen Arab Republic". The law offers a generous range of incentives for projects in industry, agriculture, livestock and tourism. To qualify new industrial projects must exceed a capital investment threshold of YR250,000 where they are funded by national capital, $125,000 in the case of joint ventures where the foreign capital exceeds 90 per cent of total investment and $250,000 in the case of completely foreign owned projects. The thresholds are slightly higher in the case of projects in the agricultural - YR500,000, $500,000 and $1 million respectively - and tourism sectors - YR5 million, $2.5 million and $5 million respectively. Where existing plant is expanded the thresholds are half the above amount.

Projects should comply with following general conditions:

- contribute to the increase in production of commodities or services and assist in their export, or eliminate or reduce the import of such commodities thereby effecting reasonable savings of foreign exchange;

- use suitable modern scientific machinery, equipment and methods of production;

- employ the largest possible number of yemeni administrative and technical personnel and that it will manage to train them so that they should replace the foreign administrative and technical personnel.

Where these conditions are met the projects qualify for the following discretionary exemptions and concessions:

- exemption from all kinds of taxes, custom duties and import duties on machinery, equipment, spare parts and building materials for the execution or expansion of an investment project can be granted for a period of five years with a possible extension for an additional period of three years;

- reduction of customs duties, taxes and import duties to the extent of 25 per cent their c.i.f. value at the port of arrival for a period of five years beginning from the initial production of the project. The raw materials and primary products exempted be specified by the Committee;

- all investment projects will be exempted from commercial, industrial or business taxes for a period of five years commencing from the date of commercial production;

- the committee may also exempt the project from export taxes and duties on their production.

Statistics on the total number of projects that have benefited from the Investment Law are not available though data provided by the Ministry of Economy, Commerce and Supply indicate that 369 projects were exempted from customs and import duty exemptions between 1983 and 1988 (Table 4.2). Only 8? projects received exemption from profit taxes over the same period. What proportion of these were new projects and what proportion covered the expansion of existing plants is not known. Nor is data available to assess the opportunity cost of tax and custom duty exemptions, the scale of investment brought about by these projects, the value of their output and value added, effects on employment and foreign exchange savings or generation let alone evaluate the impact of the law on investment in the industrial sector.

The data permits only a crude sectoral breakdown of the exemptions. Clearly the industrial sector has been the principal beneficiary, accounting for 93 per cent of customs duties exemptions and 88 per cent of income tax exemptions. Projects in the chemicals and plastics sector, followed by the construction materials and food products sectors have received the largest number of exemptions. The number of exemptions has fallen steadily since 1984. This appears to reflect both a fall in the number of applications and more stringent assessment. In 1987 and 1988, the only years for which data are available, 11 and 28 applicants respectively were rejected.

Notwithstanding the limitations of the data available a number of weaknesses may be identified in the existing legislation. Firstly, the law is administered by an Investment Exemptions Committee chaired by the Minister of Economy and including representatives of the Central Bank and Customs authorities. The Committee meets periodically and does not have a permanent secretariat, which may account for occasional delays. There is no timetable though applicants are generally informed of the decision within 9 months. A number of projects have, however, been under consideration since 1985 due to the changing economic situation. Application procedures are currently being reviewed in order to speed up processing. This may not necessarily be an advantage from the government's point of view. The number of applications discussed at any one sitting, and the limited facilities for project appraisal within the Ministry (see Section 4.3), already prohibit serious examination of project proposals from wide range of criteria demanded by the Law.

There are, furthermore, confusions inherent in the legislation. From the industrialists point of view the concessions are discretionary and so cannot be guaranteed. On the other hand, the authorities tend not to use their discretionary powers except in the case of the exemptions covering raw materials. More important, the legislation does not specify the minimum extent to

which a project must expand to qualify for the same exemptions offered to new projects and whether the exemptions should cover profits of the plant as a whole or merely those generated by the extension. In practice the profit tax exemptions tend to cover the plant as a whole where the extension costs over 50 per cent of the original investment.

Taken as a package the incentives are extremely generous. Perhaps too generous since the weakness of appraisal and verification of procedures makes it impossible to assess how far the projects correspond with the wider macro-economic and manpower development objectives of the law. Nor can one assess to what extent the macro-economic benefits compensate for the opportunity cost of lost government revenues or to what extent the law has permitted rather than encouraged a marginally remunerative investment. In this sense the law operates as a blanket covering virtually all investment above the critical threshold.

At present the Investment Law is under review and new legislation is expected before the end of 1989. One option under discussion is a rise in the threshold for industrial development projects, perhaps to as much as four times the current level, with a view to promoting high technology industry. While it is true that inflation has drastically lowered the real value of the threshold it seems premature to consider such modifications to the legislation before undertaking a detailed assessment of the law's impact. An increase in the threshold alone would not necessarily increase the number of high technology projects, though it is likely to discourage investments in smaller scale less capital-intensive industries.

If the intention is to give preferential concessions to high technology enterprises this could best be achieved by the introduction of additional discretionary concessions for such enterprises, though high technology projects would have to be carefully defined and their implementation verified. Similar incentives could be given to projects that provide training, use local raw materials, generate employment or set up in the less privileged regions. Such clauses would help to target investment in line with the government's broad policy objectives whilst reducing the opportunity cost through a more discriminatory application of the legislation.

The government is eager to attract foreign investment, particularly where investors provide foreign exchange for their projects, introduce modern technology and train nationals in its use. There are no restrictions on foreign equity participation in local companies and both direct investment and joint ventures are encouraged through the Investment Law which grants foreign owned enterprises the same privileges as nationals, allows them to expatriate dividends untaxed and capital gains and guarantees investments against nationalization or sequestration. Since 1981 the Yemen Arab Republic has been a signatory of the Inter-Arab Agreement of Investment which provides further protection for investments. Partnerships and joint-ventures are preferred and virtually all foreign investment has taken place within this framework.

Table 4.2: Tax exemptions approved under the Investment Law of 1975, 1983-88

Sector	1983	1984	1985	1986	1987	1988	1983-88	Per cent
Projects receiving customs duties exemptions								
Industry	83	103	91	47	8	10	342	92.7
- Metalworking	9	9	6	4	1	-	29	7.9
- Food products	5	25	27	12	4	3	76	20.6
- Chemicals & plastics	20	41	23	16	1	3	104	28.2
- Construction materials	34	21	26	6	-	-	87	23.6
- Wood & products	1	-	1	1	-	-	3	0.8
- Textiles & leather	7	3	4	4	-	3	21	5.7
- Paper & printing	6	3	4	4	2	1	20	5.4
- Pharmaceuticals	1	1	-	-	-	-	2	0.5
Agriculture	6	-	-	-	3	5	14	3.8
Restaurants & tourism	3	-	-	-	1	-	4	1.1
Transport & communications	5	1	1	1	1	-	9	2.4
Total	97	104	92	48	13	15	369	100.0
Projects receiving profit tax exemptions								
Industry	12	6	21	18	11	5	73	88.0
Agriculture	1	1	1	-	-	-	3	3.6
Restaurants & tourism	3	-	3	-	-	-	6	7.2
Transport & communications	1	-	-	-	-	-	1	1.2
Total	17	7	25	18	11	5	83	100.0

Source: Data provided by the Ministry of Economy, Commerce and Supply.

Productive use of migrants' remittances

Migrants' remittances are one of the main sources of household disposable income and personal savings. Most of these funds have gone towards direct consumption, often on imported goods, and where investment has taken place it has usually been on the construction

of houses or the purchase of agricultural land. Investment in industrial projects represents only a small proportion of the total income remitted even though migrants have been involved in a large number of the small-scale industries established in recent years (see Section 2.2). Little attempt has been made to encourage investment by migrants, other than the general incentives available under the Investment Law. The high thresholds applicable under this legislation exclude most migrant sponsored activities.

Higher Economic Council Resolution No. 1 of 1988 is the first measure specifically intended to mobilize migrants' financial resources. This facilitates access to import and trading licences for small-scale and craft-work enterprises where the total investment in machinery and equipment is less than $40,000, provided the capital, including any foreign exchange for imported equipment, is provided by the promoter and the project is in a sector approved by the Ministry of Economy, Commerce and Supply and the Industrial Bank of Yemen. In 1988 37 small enterprises were licensed under the terms of this resolution with a total investment of $1.078 million, an average of $29,130 per enterprise. The number is expected to increase in 1989.

Closer ties between the government and expatriate Yemenis would help disseminate information about investment policy and opportunities. At present Embassies and Consulates are the only contact between expatriates and the government. A General Secretariat for the Union of Yemeni Emigrants (GSUYE) has been formed primarily to assist families whilst migrants are abroad. This organization could also provide the vehicle for training and arrange credit facilities for migrants on their return to help them identify and implement viable industrial projects.

Mobilizing savings

At the end of 1987 YR20,159 million, 59 per cent of the money supply, was held as currency outside the banks. In addition a considerable amount of currency is held as Saudi Arabian Rials by emigrant workers and their families. There has also been a tendency for wealthy Yemenis to expatriate part of their savings in recent years rather than invest them in the domestic financial system. These factors point to a significant drain on the country's financial resources and the government has identified the mobilization of domestic savings through the banking system as one of its priorities in the TFYP.

Many Yemenis are distrustful of banks or refuse to participate in the banking system because of the Islamic prohibition on paying and charging interest. Furthermore, many rural Yemenis are distant from banks and so unable to deposit their savings. Banks have been encouraged to extend their branch-networks into rural areas: the Yemen Branch for Reconstruction and Development (YBRD) now has 35 branches, 25 of them outside the capital. The scale of the YBRD's branch network accounts for its predominant place in the financial system. The YBRD has also established a special branch in Sana'a to deal with migrants' affairs, encouraging them to pass their remittances through official channels. Other commercial banks and specialized lending institutions, with the exception of the

Agricultural Credit Bank (ACB), have been unwilling to open branches outside the three largest cities because of the high administrative costs.

In recent years inflation has lowered real interest rates significantly to the extent that many of them have become negative. This does not appear to have discouraged deposits and many deposit holders refuse interest payments anyway. In order to cater for these customers and encourage deposits by others with misgivings about paying and charging interest the government is considering the establishment of an Islamic bank or credit unions.

Stock and bond issues are a third area of development in the financial sector. Most enterprises are small and family owned and even the larger industrial conglomerates tend to have very restricted share ownership. Only one, the Hayl Said Group, based in Taiz, has limited public subscription. Its shares are heavily over-subscribed indicating that there is public interest in equity holdings particularly in the case of financially successful companies. Both the Industrial Bank of Yemen (IBY) and Yemen Company for Investment and Finance (YCIF) hold equity in industrial projects and hope to increase their role in this field. The IBY has also underwritten public share issues in four industrial projects. Developments along these lines will greatly enhance the financial resources available to medium- and large-scale enterprises. In the near future, however, the government will have to introduce legislation, covering such aspects as the publication of company results, to enhance market confidence.

Protection

General tariff rates fall into three bands: 5-10 per cent for imported raw materials, 10-15 per cent for intermediate goods and 20-40 per cent for finished products. Most items of capital equipment carry a tariff of 5 per cent, although exemptions are available for enterprises approved under the Investment Law. An additional 8 per cent tariff is levied through statistical, defence and earthquake taxes.

In 1972, when the current tariff system was first introduced, a few local industries enjoyed protection through higher tariffs amounting to 30 to 40 per cent. The number of industries covered by such protection was, however, increased when the protection of domestic production from imported goods was adopted as a policy in 1981. Protection has not been negotiated between the promoter and the government at the time of project formulation, though once becoming established the government has generally acceded to their requests for an increased tariff rate on competing imports. Most of these increases amount to 10 per cent on top of the general tariff. In mid-1987 tariff rates for biscuits, for instance, were 50 per cent, mineral water 40 per cent, cement 30 per cent, cotton textiles 50 per cent and synthetic textiles 40 per cent.

While these tariff rates may still not seem excessive the import licensing system adopted in 1983 has provided a further barrier to imports as the economy moved from its liberal trading stance to one of close government control. An Import Licensing

and Rationalization Committee was established to regulate the total value of imports in line with the Commodity and Foreign exchange budget and allocated licences on a quarterly basis in line with its priorities: food, machinery and raw materials, medicine and petroleum products. Foreign exchange transactions were, furthermore, restricted to the Central Bank and commercial banks prohibited from accepting foreign exchange in order to finance imports.

From 1984 to July 1986 goods could still be imported without licences but at a flat rate tariff of 107 per cent. This resulted in a general increase in the tariff rate, with the average tariff depending on the proportion of licensed to unlicensed imports of any commodity. In the first quarter of 1986, for instance, the effective tariff rate for soft drinks reached 107 per cent because no import licences were available for these goods. Controls were introduced on local producer prices to protect consumers - as, for instance, on soft drinks - and so reduced the effective protection but the effective level of protection still increased. Imports of a number of agricultural products were banned.

Since mid-1986 customs officials have prohibited entry to all goods without licences and imports of many luxury goods were temporarily banned. Consequently, the foreign exchange budget and value of import licences have been squeezed and domestic industry has become increasingly isolated from competition. A 30 per cent increase in the value of import licences from $900 million in 1987 to $1,237 million in 1988 and relaxation of rules governing the opening of letters of credit - required cash deposits were reduced from 40 to 25 per cent for food, petrochemicals and medicine and 60 to 35 per cent for other commodities - have recently allowed for some increase in imports but import restrictions are likely to remain in force for some time to come.

However, the protection afforded by the licensing system is not complete. High tariffs and import restrictions have encouraged illegal transactions which have a long tradition in the Yemen Arab Republic. Although imports of cars have been banned since 1985 new cars are much in evidence, illegal transactions from neighbouring countries. This is equally true of a whole range of consumer durables, food stuffs and capital equipment and illegally imported goods may represent an additional 20-25 per cent on top of official imports. The Yemen Arab Republic's long borders, lack of trained customs personnel and the large volume of foreign currency outside he banking system make it virtually impossible to stamp out this illicit trade. Where companies complain of competition from imports is almost invariably competition from goods illegally imported into the country.

Import licences and foreign exchange allocations

Import controls are a double edged sword. Although imports of raw materials and selected capital goods for new projects are considered priorities and were allocated 27.9 per cent of the import licences by value in 1988 numerous companies have suffered shortages of raw materials and have been unable to purchase equipment for expansion. Part of the problem lies in the fact that

enterprises are allocated foreign exchange on the basis of their previous years' application rather than immediate need. Moreover, allocations have been cut across the board in an effort to reduce total imports and there is no adequate priority list for enterprises and commodities within the industrial sector. The government has also withdrawn the exemptions on raw material and intermediate good imports available under the investment law in an effort to make enterprises cut-back on the number of imported inputs.

These restrictions are commonly regarded as one of the principal constraints on industrial growth. A more detailed priority list of import commodities may be one solution. At the same time the Ministry of Economy, Commerce and Supply is introducing world-market information systems and attempting to organize the bulk purchase of commodities - mostly food products but also some key industrial raw materials - in order to reduce the price of imported raw materials. These initiatives will also help reduce the sometimes excessive margins charged by import agents and middle men. They will not, however, result in an appreciable improvement in the foreign exchange budget which ultimately depends on the balance of payments situation.

Export promotion

Export promotion has been a government priority since the mid-1970s and projects with export potential have always been looked upon favourably in their applications under the Investment Code. It was not until 1984, however, that the first measures to stimulate exports were only introduced. In that year the government abolished export taxes and introduced a draw back scheme allowing exporters to receive refunds on the duty paid on imported components of manufactured goods.

However, the drawback scheme is little known and applications are discouraged by the lengthy delays and administrative hurdles to a refund. Furthermore, it is unclear whether the scheme covers products subject to the consumption tax paid on some products. At the same time Central Bank control of foreign exchange transactions discourages exporters since it has become difficult to retain control of their foreign exchange earnings to finance imports. A reform of the legislation covering exports will be undertaken during the TFYP and will, it is hoped, provide a comprehensive range of export incentives and the necessary institutional framework.

Encouraging small-scale industries

Small-scale industry in the Yemen Arab Republic is characterized by its entrepreneurship and opportunism. It has attracted considerable investment from returning migrant workers and is perhaps the most important source of employment for such individuals. But, despite its undoubted potential for growth and development small-scale industries have suffered from, at best, benign neglect on the part of the government. Small-scale industry is excluded from the benefits of the Investment Law and, while the financial system does not specifically exclude small-scale

ventures, loans are difficult to come by. This is equally true of support services and training. Those that exist are geared to the needs of large and medium-scale enterprises.

Over the past two years, however, a number of measures have been introduced to promote small-scale industry. The most important of these are Higher Economic Council Resolutions No.1 and No.4 of 1988. The first resolution is specifically directed towards the promotion of investment by migrant workers (see above), allowing them to import machinery outside the import quotas and waiving the obligation to provide a feasibility study. The second allows the Ministry of Economy, Commerce and Supply to grant licences directly, without application to the Higher Economic Council, for small marble, tailoring and spare-parts workshops thereby reducing delays and allowing the Ministry to relax the requirements for feasibility studies. This privilege will be extended to a wider range projects in the near future. Statistics on the number of workshops set up under Resolution No. 4 are not yet available.

The financial system has also responded to the potential of small-scale industry. There are plans for the introduction of new concessionary credit facilities through the Industrial Bank of Yemen and the establishment of a specialized finance department for small-industries (see Section 4.3). This department may also provide support services in the field of project preparation.

Traditional crafts, in Sana'a at least, will also benefit from technical assistance. A Crafts Development Project has been set up by the government sponsored Executive Office for the Preservation of the Old City of Sana'a in the hope of revitalizing artisanal activities. Studies of the handicrafts sector have been prepared to preserve the traditional techniques for posterity and identify new products, labour saving and quality enhancing techniques that will make these enterprises more profitable in the future. The Crafts Development Project is eager for the government to increase the tariff and non-tariff barriers to reduce imports of mass-produced articles, mainly from East Asia, that undercut local products manufactured with labour-intensive techniques.

Craft co-operatives could provide a framework for technical assistance, a channel for central government or bank credits and allow craftsmen to reduce materials cost by bulk purchasing. A General Co-operative Law has been in place since 1963, but it was not until 1974 that the first specialized co-operative was established. There are now 17 handicrafts co-operatives - 12 in Sana'a, 2 in Dhamar, 2 in Saadah and 1 in Hodeidah - comprising 841 members with a total share capital, funded by members contributions, of YR3.45 million. At present these co-operatives are inactive, largely due to the inexperience of their executives. Technical assistance would help them develop clear development strategies and enhance the productive capacities of their members.

There are, however, no technical support facilities for those industries operating on the fringe of the modern sector. These industries have escaped close government supervision and have no tradition of association, unlike the traditional crafts. Under

these circumstances extension services giving managerial, financial and technical advice could best be provided by a specialized institution. The first step towards such a policy could be a detailed census of the small-scale industry sector.

Standardization and quality control

Most industrial enterprises in the Yemen Arab Republic take little care of quality control and product standardization is virtually unknown outside those companies producing goods under license. Within the food processing sector poor quality produce poses a major health risk: 4 out of 7 milk samples examined by the Ministry of Health in 1986 were unsuitable for consumption and in the case of canned fruit and juice the proportions were 11:20, soft drinks 2:2, meat 2:4, and cheese 3:5. For a country at the early stages of industrialization this is certainly not unusual but, in view of the rapid pace of industrial growth and diversification, the introduction of international standards and quality controls would ensure the rational selection of products, protect consumers and assist in the export of Yemeni products.

The first step towards a national policy was made in 1986 with the promulgation of a law on metrology (Law No.5) and the establishment of a small metrology workshop in the Ministry of Economy, Commerce and Supply. Technical assistance nas been provided by UNIDO and in the long term the government envisages the establishment of a National Institute of Standardization, Quality Control and Metrology. These institutional developments should be complimented by the provision of training facilities in quality control for private sector entrepreneurs and efforts to encourage enterprises to introduce quality control procedures. Enforcement of standards will provide a spur to private sector action: in 1988 the Ministry of Economy closed several enterprises producing food products on grounds of health.

4.3 Institutions for industrial development

Planning and policy making

The Higher Economic Council, chaired by the Prime Minister, determines economic policy on the advice of specialist Ministries and institutions. These economic policies are embodied in Five-Year Development Plans prepared by the Central Planning Organization. The Plans identify the overall economic strategy, investment priorities and targets and provide projections of economic growth at a sectoral and branch level. These targets are determined following close co-ordination between the specialist Ministries and the planning organization and are revised annually on the basis of sectoral and national economic performance and the funds available for investment. While the Five-Year Plan document is undoubtedly important as a statement of government policy the projections of both investment and growth should be used with caution. Accurate economic forecasting is virtually impossible due to the lack of information about the activities of the private sector.

Specialist Ministries are co-ordinated through the Central Planning Organization in the formulation of the Five-Year Plan. Otherwise inter-ministerial co-operation takes place on an informal rather than institutional basis. Direct and regular meetings between the Ministries could, however, facilitate integrated economic development and the use of domestic raw materials, both of which are identified as policy objectives.

Ministry of Economy, Supply and Trade (MEST)

Formed by the amalgamation of two separate Ministries in 1986, the Ministry of Economy, Supply and Trade supervises internal trade, foreign trade, price, quality control, foreign exchange allocations and industrial development. Two departments are specifically concerned with the industrial sector: the General Department for Investment and Economic Studies (GDIES) and the General Department for Industry (GDI). These departments each comprise three branches: the Branch for Investment Studies and Research, the Branch for Investment Promotion and Branch for Exemptions within GDIES and the Branch for Registration and Industrial Statistics, the Branch for Industrial Projects, and Branch for Industrial Production within GDI.

Broadly speaking GDIES is responsible for projects up to implementation and GDI supervises enterprises thereafter. GDIES principal functions are to:

- identify industrial development projects;
- appraise project proposals;
- issue licences;
- assess applications under the Investment Code and determine appropriate tax exemptions.

An indicative list of project ideas is prepared by the Ministry for inclusion in the Five-Year Plan - consisting of 157 projects based on 83 project ideas in the case of the TFYP - on the basis of project proposals advanced by private sector entrepreneurs or other institutions involved in the industrial sector, such as the Industrial Bank of Yemen. The Ministry itself appears to play a minor role in the initiation of projects ideas and those that it does propose are generally based on an market and feasibility studies. This list is not exclusive, the Ministry welcomes applications for any industrial project, but the Ministry will promote projects on the indicative list through Chambers of Commerce, the press and its Embassies abroad.

Promoters of projects where the value of equipment and machinery exceeds YR30,000, whether new or an expansion of existing capacity, must apply for a trading licence under No.20 of 1976 before they can set up an industrial plant. These applications are made on either a "short" or a "long" form, depending on the scale of the investment and the promoter has to attach a detailed feasibility study. A temporary, generally six month, license may be granted pending the preparation of feasibility studies. These applications are then appraised on the basis of their technical and financial feasibility and their contribution to the economy in terms of employment, training, manufacturing value added and

foreign exchange savings. Since 1986, all licence applications have been submitted to the Higher Economic Council for final approval, though the Ministry of Economy has been permitted to grant licences to small-scale projects since 1988 (see Section 4.2).

Theoretically, appraisal should take less than a year. In practice it may take much longer and at the end of 1987 there was a backlog of some 200 projects awaiting review. Lengthy delays may be explained, in part, by the inadequate preparation of feasibility studies. Moreover, the criteria and methodology for project assessment are by no means clearly defined and those criteria in use do not necessarily relate to the broad Ministry's policy objectives. There appears to be no clear procedure for ranking projects on the basis of their financial profitability or risk let alone by broad macro-economic criteria. Furthermore procedures differ slightly for those enterprises applying for incentives under the Investment Law (No.18 of 1975) which adds an unnecessary complication. No statistics are available to indicate how many of the applications are rejected. On the whole, the licensing is permissive and projects are rejected where they are manifestly not viable or where the market is already saturated.

The importance of the licensing procedure cannot be understated since this is the first step in the establishment of industrial enterprises and inadequate appraisal has, in the past, allowed inappropriate investments to take place. In order to improve these procedures there is an urgent need to give promoters assistance in the formulation of their project proposals - perhaps in the form of compulsory courses through a support institution. MEST should, furthermore, formulate and introduce strict criteria and a methodology for project appraisal that would be of sufficient quality to be used by banks in their financial assessments of project viability. This demands the upgrading of the personnel capacities of MEST - in 1987 GDIES had only 6 staff members of University level - training in appraisal methods and the provision of detailed and up to date statistics on the existing industrial infrastructure, market potential, export markets and costs. At present the Ministry lacks such information which leads to questioning the value of the appraisals carried out.

Once a licence has been granted a promoter may apply for tax exemptions under the Investment Law. As stated above (Section 4.0), the application for tax exemptions is also often a lengthy procedure and the guidelines are by no means clear.

All licensed projects are registered by the GDI and the register is supposed to be updated every six months. Registration could provide an invaluable source of data on the industrial sector for planning and the identification of projects in need of technical assistance. However, the register is neither up to date nor sufficiently broad in scope to be a useful planning tool. Registration procedures could be improved and enterprises required to give data on both the current and anticipated financial situation, cost structure, products - which may differ from those in the licence, production capacity and capacity utilization, import requirements and foreign exchange earnings, employment and

training facilities and needs. Enterprises could be compelled to provide such information by a the introduction of a re-licensing system or making the provision of such information on a standardized form suitable for future computerization a condition of the application for foreign exchange. Technical assistance will be needed to implement these procedural changes and UNIDO has approved a technical assistance project along these lines[1/].

Lack of adequate information is an important constraint on the GDI's principal function: the provision of industrial support facilities. Given the shortage of trained managers and industrialists support services could provide a means of problem solving, innovation and planning within established industrial enterprises. However, the GDI lacks both the means and the competence - only 16 of its personnel have university level training - to provide technical financial and managerial guidance to enterprises in a wide range of industrial sub-sectors. UNIDO has agreed to provide technical assistance in order to establish an Industrial Advisory Service within GDI[2/]. Private sector consultancy services are expected to follow.

Enhancement of the institutional capacity of the Ministry of Economy, Commerce and Supply will complement private sector initiative and direct them towards investments that are desirable from a macro-economic perspective. Until services are upgraded and administrative procedures streamlined the private sector will continue to regard the Ministry as essentially a regulatory body rather than a partner in the field of industrial development.

Industrial Estates Development Authority (IEDA)

Inadequate infrastructure is a major constraint on the development of the industrial sector. Market rents for cleared land with the basic utilities are high, averaging YR180 sq m in Sana'a, and such sites are in short supply. New enterprises generally have to clear land, build access roads and arrange for the utilities to be attached themselves causing lengthy delays and considerable expense. In the absence of strict planning controls the distribution of factories is haphazard, with factory buildings often built in close proximity to residential areas.

1/ "Strengthening the appraisal and registration capacity of the Ministry of Economy, Supply and Trade", Project DP/YEM/87/020/A/01/37.

2/ "Industrial Advisory Services", Project DP/YEM/87/021/B/01/37.

The Industrial Estates Development Authority (IDEA) was set up in 1973 under the aegis of the Ministry of Industry (MEST) to overcome these problems. A site was selected on the outskirts of Sana'a and three factories covering 3,600 sq m were completed in 1977. A total of 13 hectares was cleared and utilities and access roads provided for 29 units which enterprises could rent and build upon. Although entrepreneurs were initially reluctant to build on a government controlled site the Al Thowra Industrial Complex is now full. Low rents, YR15 sq m, are the main attraction though the IDEA also provides technical assistance to its tenants and a tool workshop for the manufacture of spare parts will be operational by 1990.

A new estate is urgently needed to provide facilities for further growth. The present site cannot be extended since it is now surrounded by recent commercial and residential developments. Instead, the IDEA plans to clear and provide utilities on a 100 hectare site 18 km from Sana'a on the road Taiz by 1993. The project is extremely ambitious since the IDEA conceives a new industrial town, modelled on the development at Jeddah in Saudi Arabia, where enterprises would provide housing as well as build factories on rented sites. It is more likely that the estate will develop along the lines of Al Thowra Industrial Complex in which case a site closer to the capital would be more realistic since most of the workers will have to use bus transportation.

Forty-five enterprises have already applied for sites in the new industrial estate but finance for the development has yet to be made available. Legislation governing the IDEA permits the authority to sell plots in the Al Thowra complex to raise capital for new developments but the IDEA is still awaiting approval for the sale of its capital. Additional funds would have to be provided from the development budget if the project is to go ahead and this remains the principal stumbling block.

A shortage of funds has also forced the IDEA to shelve plans for a 40 hectare industrial estate at Taiz and a 50 hectare estate at Hodeidah which have been mooted since the early 1980s. Land has been purchased at Taiz and 10 hectare workshop estate for small enterprises has been finished. The workshop estate now contains 114 small-scale enterprises and MEST has been able to enforce a rigid zoning policy, relocating workshops from residential areas. A similar 20 hectare workshop estate at Hodeidah has yet to be finished.

Developments along these lines in the regional capitals would assist the dispersal of industrial activity between the regions. Equally important, the completion of ongoing or planned industrial and workshop estates in the three main industrial centres - Sana'a, Hodeidah and Taiz - would do much to relieve urban congestion and contribute to a healthier residential environment.

Commercial and development banks

The banking system plays an important part in the finance of industrial development through the provision of loans and, to a lesser extent, equity participation in private sector industrial

projects. The nine commercial banks operating in the Yemen Arab Republic - eight of which are either part or wholly foreign owned and one local bank the government sponsored Yemen Bank for Reconstruction and Development (YBRD), founded in 1962, which accounts for some 80 per cent of local banking business - supplied 87 per cent of outstanding credit at the end of 1983 and approximately 80 per cent at the end of 1987. The YBRD is easily the single most important source of credit for the private sector. At the end of 1987 its loan and advance portfolio amounted to YR3,322 million, 75.7 per cent of total commercial bank lending (see Annex Table A-9).

Most commercial banking business is trade related. Credit facilities for the industrial sector are largely limited to the provision of working capital. Approximately 85 per cent of the YBRD's loan portfolio is short term lending and credit facilities are generally restricted to account holders. In 1987 only six medium term loans, worth YR145 million, 4.4 per cent of the YBRD's portfolio, were granted to the industrial sector and all of these were to finance the expansion of existing enterprises. Commercial banks insist on generous collateral or guarantees and a well prepared project proposal. High risk, small-scale projects find it difficult even impossible to gain commercial bank loans. Even so the value of bad debts in the YBRD portfolio has recently increased from YR4.7 million in 1986 to YR70 million in 1987.

The structure of interest rates has also discouraged commercial bank participation in investment finance since there has long been a narrow margin between the effective interest rate cost of time and savings deposits and the 15 per cent interest rate ceiling on lending. In early 1988 the Central Bank reduced the interest rates by one percentage point, increased the banks overdraft exposure limit by 25 per cent and doubled the level at which Central Bank approval for lending is required from YR2.5 million to YR5 million. These measures should encourage commercial bank participation in industrial finance in the future and stimulate investment in the short term. Banking activity was adversely affected by the recent slowdown in economic growth with commercial bank lending to the private sector falling by 14 per cent from 1986 to 1987 and an 8.6 per cent reduction in the YBRD's loan and advance portfolio recorded over the same period. The value of loans is thought to have recovered in 1988.

Medium- and long-term finance for industrial projects is mostly provided by two specialized lending institutions. The oldest of these, the Industrial Bank of Yemen (IBY) was established in 1976, with 70 per cent government and 30 per cent private sector equity participation, in order to provide funds for industrial sector projects. Lines of credit have since been provided by the International Development Association (IDA) and the Kuwait Fund for Arab Economic Development (KFAED). These concessionary credit facilities allow the IBY to charge clients interest rates approximately 4 per cent lower than the maximum commercial bank lending rate and grant grace periods up to one year following installation.

Initially the IBY operated in much the same fashion as a commercial bank, waiting for prospective investors to apply for loans. An average of 50 to 60 applications for medium- and long-term loans have been made each year. These projects are rigorously tested on the basis of their financial viability and macro-economic criteria such as valued added and foreign exchange savings. The IBY's project department also undertakes feasibility studies on behalf of clients and charges about 1 per cent of the total loan value for this service. Working capital for 3 months has to be provided by commercial bank loans or from the promoter(s)'s personal capital.

Lending strategies are conservative. The IBY insists on 125 per cent security - collateral or guarantees - for all its loans and an average of 25 loans, less than half the number of applicants, were approved per year between 1976-77 and 1986, with a peak of 33 loans in 1985. Nevertheless, the IBY has faced problems with arrears and the overall provision for losses at the end of 1987 amounted to 11.39 per cent of the total investment portfolio as compared with 9.75 per cent in 1986. This has been a matter of concern to the IBY's creditors and the bank has made efforts to reschedule loans where clients face difficulties with repayments and has increased the level of penalties. Even so seven creditors were classified as serious problems at the end of 1988 and four were in court. An additional problem is the use of loan capital for purposes outside the project specifications - such as real estate speculation and commerce - and here too the IBY has sought to tighten its control.

The build up of arrears reflects the increasingly difficult financial environment for young companies which has also affected the number of loans granted. While the value and number of loans approved increased gradually over the first decade of operations a 45.9 per cent fall in the value of approved loans was recorded from 1986 to 1987. The value of loans increased in 1988, according to provisional results, and the management anticipates a 10 per cent annual increase in the value of its loan portfolio up to the end of the TFYP. The total value of the loans granted between 1976-77 and 1987 was YR377 million of which nearly 30 per cent went to projects in the construction materials sector, 18.7 per cent to food industries and 10.2 per cent to food industries (Table 4.3). Loans have been geographically concentrated in the three main industrial centres Sana'a, Hodeidah and Taiz.

Although the IBY may fund up to 60 per cent of each project, up to a limit of 15 per cent of its capital, the average participation between 1984 and 1987 has been 33.2 per cent ranging from 57.1 per cent in the textile and clothing sub-sector to 20.9 per cent in the food and beverages sub-sector (Table 4.4). Most of the projects financed are large or medium scale. Small-scale industry - less than YR1 million total investment - may account for nearly one-third of the number of loans granted between 1984 and 1987 but such projects received only 2.9 per cent of the total value of loans.

Since the mid-1980s the IBY has taken a more active and innovative role in the promotion of industry. In 1984 the bank's

feasibility studies department began to prepare project proposals for the private sector. Out of an initial list of 40 projects 6 have been adopted by MEST, 5 have been rejected and project profiles for the remaining 29 were made available for YR1,000 in 1988. However, little interest has been shown in the projects to date: despite advertising through the trade press and television and guaranteeing loans of up to 60 per cent of the anticipated investment costs only 25 of these profiles have been sold.

Credit and support facilities for small-scale industries are to be enhanced with funds provided by the United Nations Capital Development Fund (UNCDF) and the Netherlands Government under an agreement expected to be signed in mid-1989. It is thought that the IBY has provided funds for less than 5 per cent of the small-scale industry projects undertaken since 1976 and that the remainder have been financed out of personal capital or informal personal loans. Small enterprises in financial difficulties may be forced to borrow from moneylenders whose charges are exorbitant. Entrepreneurs in this sector are discouraged from applying to the IBY by the conditions on loan security and the need to prepare a detailed project feasibility study. The IBY, for its part, is ill equipped to deal with the particular problems of small-scale enterprises. To overcome these problems the IBY plans to establish a specialist separately funded small-scale industry promotion department.

A second specialist banking institution for the industrial sector, the Yemen Company for Investment and Finance (YCIF) was established 1981, with the YBRD holding 99.5 per cent of the share capital and the IBY 0.5 per cent. The YCIF's mandate is broader than that of the IBY. It may participate in the funding of development projects in any sector, though industry has received the lion's share of loans. Between 1981 and 1987 YCIF approved loans worth YR206.8 million, of which YR147 million, 71 per cent, went to industrial sector projects. The structure of the loan portfolio is slightly different to that of the IBY with loans to the chemicals sub-sector accounting for the largest proportion of loans to industry (Table 4.5). Most of the loans are to medium and large companies and geographically concentrated in the three main industrial centres, Sana'a, Hodeidah and Taiz. The YCIF also pursues a cautious lending strategy with securities exceeding the value of the loan and has been able to keep the proportion of bad debts very low - 4 per cent of the total loan portfolio at the end of 1987.

Besides providing loans both the IBY and the YCIF may invest in industrial development projects and act as guarantors for share issues and loans from other sources. They are, in effect, the institutions of the Yemen Arab Republic's capital market. The IBY has been extremely cautious on this front, with shareholdings in two industrial projects amounting to only YR3.875 million on December 31, 1987 (Table 4.6). Equally, the IBY has given only three guarantees, two to companies that secured more favourable terms from foreign banks which were waived in 1981 when these commitments were paid up and a third to a chemical company in 1982.

Table 4.3: Sectoral and regional distribution of loans accorded by the Industrial Bank of Yemen, 1977-1987
('000 YR)

Sub-sector	1977-81 No.	1977-81 Value	1982-86 No.	1982-86 Value	1987 No.	1987 Value	1977-81 No.	1977-81 Value	Per cent Distrib. (Value)
Construction materials	34	40,903	34	56,050	2	15,250	70	112,203	29.7
Food	8	13,823	14	56,599	-	-	22	70,422	18.7
Metalworking	18	10,773	21	24,898	1	1,500	40	37,171	9.9
Plastic	5	9,106	6	14,691	1	4,000	12	27,797	7.4
Chemicals	6	12,660	9	24,500	1	4,000	16	41,160	10.9
Wood	16	1,677	8	19,020	1	200	25	20,897	5.5
Leather	-	-	3	8,850	1	3,000	4	11,850	3.1
Paper & printing	2	752	4	20,852	-	-	6	21,604	5.7
Textiles	1	410	1	1,200	2	11,500	4	13,110	3.5
Tobacco	-	-	1	16,000	-	-	1	16,000	4.2
Services	9	2,291	10	2,495	2	320	21	5,106	1.4
Total	99	92,395	111	245,155	11	39,770	221	377,320	100.0
Average per year	24.7	23,099	22.2	49,031	11	39,770	22.1	37,732	-
Sana'a	52	30,847	64	87,929	7	30,020	123	148,796	39.4
Taiz	17	21,931	16	44,848	1	4,000	34	70,779	18.8
Hodeidah	17	29,494	17	94,102	-	-	34	123,596	32.8
Dahmar	4	6,200	4	1,725	1	250	9	8,175	2.2
Other	9	3,923	10	16,551	2	5,500	21	25,974	6.9

Source: Industrial Bank of Yemen, Tenth Annual Report, 1987, and Review of first ten years of operations, 1987.

On the other hand, the IBY has sought to broaden equity participation in private and mixed sector ventures and has promoted the share issues of four mixed sector - 75 per cent public, 25 per cent private - projects: the ceramic, gypsum, lime and sand brick factories. However, these projects have yet to find sufficient backing to become operational despite widespread publicity.

Table 4.4: Proportion of Industrial Bank of Yemen loans of less than YR500,000 and ratio of loans to total investment, 1984-87

Sector	Number of loans	Loans of less than YR500,000 No.	Loans of less than YR500,000 Per cent	Total Investment YR'000	IBY loan YR'000	Investment loan ratio (Per cent)
Construction materials	21	7	33.3	100,230	46,218	46.1
Food	9	2	22.2	201,132	41,945	20.9
Metalworking	15	5	33.3	62,678	21,479	34.3
Plastic	3	-	-	25,618	9,383	36.6
Chemicals	6	1	16.7	46,579	20,731	44.5
Wood	7	3	42.9	51,853	19,120	36.9
Leather	3	-	-	38,090	9,850	25.9
Paper & printing	2	-	-	74,953	20,600	27.5
Textiles	3	-	-	22,234	12,700	57.1
Tobacco	1	-	-	33,410	16,000	47.9
Services	7	5	71.4	4,418	1,650	37.3
Total	77	23	29.9	661,195	219,676	33.2

Source: Industrial Bank of Yemen, Tenth Annual Report, 1987, and Review of first ten years of operations, 1987.

Table 4.5: Sectoral distribution of loans from the Yemen Company for Investment and Finance, 1981-1987
('000 YR)

Sector	Number	Total cost	YCIF loans	Cost: loan ratio	Per cent total loans
Industrial sector	47	476,682	147,003	31	71.1
- Building materials	17	54,447	25,418	49	12.3
- Foodstuffs & beverages	4	83,237	21,485	26	10.4
- Chemicals	7	22,226	56,000	25	27.1
- Fabrics & textiles	2	2,718	1,200	44	0.6
- Metal products	11	53,402	14,950	28	7.2
- Paper industry & printing	3	58,678	27,000	46	13.1
- Other industries	4	2,974	950	25	0.5
Agricultural sector	47	09,477	44,128	49	21.3
Services sector	23	33,846	15,677	46	7.6
Total	117	601,005	206,809	34	100.0

Source: Yemen Company for Investment and Finance, Seventh Annual Report, 1987, p. 16.

The YCIF was initially established to manage the YBRD's portfolio of long term investments and has taken a more active role than the IBY. By the end of 1987 it had stood guarantor for 7 companies, 5 of them in the industrial sector, for loans totalling FF82.7 million and British Pound 7.45 million and its equity participation extended to 16 companies, 8 of them industrial projects, varying from 2 per cent to 62.5 per cent of the companies' paid up capital and with a nominal share value of YR83.6 million (Table 4.6). At that date the YCIF had plans to extend its exposure to equity investments through subscriptions for shares in four new industrial projects.

Further developments along these lines are planned. The YCIF may represent the government in a joint investment company with the Libyan Government which is currently under discussion. The company would have capital of $50 million and invest in a wide range of development and social infrastructure projects. Such innovations are encouraged by the government which regards bond and stock markets as a means of mobilizing capital towards development.

Chamber of Commerce and Industry

There are seven local Chambers of Commerce and Industry, which were first established in the 1960s, and a General Federation of Chambers of Commerce and Industry founded in 1982. The local chambers deal with the problems of individual merchants and enterprises in relation to municipal authorities, tax and licensing problems and serve as the first instance for the resolution of commercial disputes. The General Federation, on the other hand, lobbies on behalf of companies and merchants with ministries in charge of overall economic policy and regulatory activities. A representative of the Federation sits on the Five-Year Plan, investment law, taxation and vocational training committees and advises the High Arbitration court.

In addition the Federation provides businessmen with advice and information, publishing a Trade Directory and a monthly magazine covering general economic developments as well as details of business opportunities. The Federation also promotes the Yemen Arab Republic abroad through its attendance at trade fairs and membership of regional and Islamic organizations and links with European and North American Chambers of Commerce and produces the certificate of origin.

The range of support services available to potential investors or exporters is, however, very narrow. There is no up to date and comprehensive directory of business activity - the existing Trade Directory is three years old and by no means complete - nor is there an adequate library of economic statistics on the local or potential export markets. While the Federation will undertake pre-feasibility studies it has neither the personnel or the facilities to undertake a detailed market analysis. This is equally true of the export promotion services. Nor does the Federation actively promote training seminars on management methods for new entrepreneurs, though the local Chambers do provide training irregularly and several Arab Chambers of Commerce have provided occasional management training courses abroad.

Table 4.6: Equity investment by Industrial Bank of Yemen and the Yemen Company for Investment and Finance, 31 December 1987

Sector	Number of companies	Nominal	Capital Paid-up	Share-holding	Per cent
		Industrial Bank of Yemen			
Industrial	2	38,000	-	3,875	10.2
Services	1	100,000	-	500	0.5
		Yemen Company for Investment and Finance			
Industrial	8	198,400	145,125	17,554	12.1
Agriculture	1	5,000	5,000	1,734	34.7
Services	7	652,000	539,447	64,286	11.9

Source: Yemen Company for Investment and Finance, Seventh Annual Report, 1987, p. 16; Industrial Bank of Yemen, Tenth Annual Report, 1987, and Review of first ten years of operations, 1987.

Investment in information systems, data and new buildings and, more important, personnel training will be needed if the Federation is to overcome these problems. This would, however, ultimately strengthen the Chamber of Commerce's role in the industrial community and assist in the transfer of management techniques, information and goods and services at this particularly dynamic time in Yemen Arab Republic's industrial development.

5. RESOURCES FOR INDUSTRIAL DEVELOPMENT

5.1 Human resources

Population and labour force

Rapid population growth is one of the most pressing problems facing the Yemen Arab Republic. The rate of natural increase between the 1975 and 1986 censuses was 3.29 per cent and it is expected to increase 3.7 per cent by the end of the century. Over 47 per cent of the population was thought to be under 14 years of age in 1985. The 1986 census, the full results of which have yet to be published, estimates that the total population numbered 9.27 million of which 7.73 million were residents (Table 5.1). At an annual growth rate of 3 per cent a population of 12 million can be expected by the end of the century and the population will double in 23 years.

Such rapid rates of population growth will inevitably put pressure on the labour market and underline the need for job creation policies. Details of the total labour force are only available for the 1975 and 1986 censuses. These indicate that the labour force has increased by 477,700 over the eleven year period, an annual increment of 43,400 persons. During the TFYP (1987-91) period, however, the government anticipates that there will be an annual incremental growth in the labour force of about 84,400, 422,000 thousand for the period as a whole. Of these some 2 per cent will be foreign workers.

Job creation is particularly important in urban areas since the rapid natural increase of population has been accompanied by rapid urbanization. Between 1970 and 1982 the urban population increased at an annual rate of 8.2 per cent and Sana'a, the capital, grew from about 200,000 in 1975 to 278,000 in 1981 and 427,000 in 1986. By 1982 14 per cent of the population lived in urban areas, as compared with 11.9 per cent in 1975, and this proportion will increase to 35 per cent by the end of the century if these growth rates are maintained. Although increasing productivity in the agricultural sector and rising household incomes in rural areas may stem the flow of migrants to urban areas it is clear that the rate of increase of the urban labour force will be considerably higher than the national average.

It should be pointed out, moreover, that low female participation rates and the large-scale migration of able-bodied males abroad and to the cities have, in the past, restricted the growth of the labour force. Indeed migration is thought to have caused severe shortages of manpower in some rural areas. The 1975 census revealed that female participation rates were only 11.7 per cent and were still only 12.1 per cent by the time of the 1981 pilot demographic survey. Nevertheless, the government reports that female employment has been increasing, particularly in Central Government, though it is still largely restricted to secretarial and clerical work in the modern sector. But, in view of the slow growth of female attendance in secondary and higher education, estimated at only 15 per cent for the 6-17 age group in 1985-86,

rates of female participation are unlikely to increase dramatically in the near future.

Table 5.1: Population, migration and labour force, 1975, 1981 and 1986

	1975		1981[a/]		1986	
	Number	Per cent	Number	Per cent	Number	Per cent
Resident population	5,258.5	81.0	7,145.3	83.7	8,104.0	87.4
- Recorded	4,540.2	69.9	6,439.4	75.4	7,730.0	83.3
- Manpower (over 10 years)	2,816.4	43.4	...	...	...	...
Migrants outside YAR	1,234.0	19.0	1,394.8	16.3	1,170.0	12.6
Total population	6,492.5	100.0	8,540.1	100.0	9,274.0	100.0
Labour force of which	1,127.6	100.0	7.2	100.0	1,605.3	...
- Employed	1,057.6	93.8	7.0	97.2	...	...
- Unemployed	70.0	6.2	.2	2.8	...	...

Sources: World Bank, Country Economic Memorandum, 1986, Report No. 5621-YAR, p. 52 and CPO, Statistical Year-book, 1987, pp. 37 and 64-5.

a/ Pilot Demographic Survey.

Estimates of the number of Yemeni migrants abroad vary widely. According to the census data, some 1.23 million persons lived outside the Yemen Arab Republic in 1975, rising to 1.39 million in 1981 and then falling to 1.17 million in 1986 (Table 5.1). These figures are probably overestimates. A survey undertaken in 1980 revealed that there were 336,100 official migrant workers from the Yemen Arab Republic in the GCC states, the principal destination. Statistics from receiving countries suggest that the number had risen to 452,000 in 1985. Even at these lower figures the proportion of the labour force employed abroad remains substantial: approximately 20 per cent in 1986. Measures were introduced to curtail the outflow of labour but they appear to have had little impact.

Emigration has affected rural areas most of all, with up to 40 per cent of the able-bodied men departing temporarily in some villages. This has brought about a change in cropping patterns from labour-intensive crops such as cotton and coffee to less labour-intensive qat and led to the abandonment of cultivable land (see Section 5.2). The level of unemployment - largely an urban phenomenon - dropped from 6.2 per cent of the labour force in 1975 to 2.8 per cent in 1981 and shortages developed in the construction industry and skilled occupations. According to a recent survey the economy suffered a labour shortage at all levels during the FFYP (1976/77-1980/81). The shortage was particularly acute in the case of high level cadres, amounting to nearly 40 per cent of incremental growth in demand. Migration also affected wage rates, which, heavily influenced by the earnings possible in neighbouring GCC states, quadrupled between 1972 and 1980 and reached $5,300 per year for an unskilled worker in 1982.

Since the early 1980s, however, the rate of growth of employment opportunities for Yemeni migrants in the GCC states has decelerated as a result of the recession and changing recruitment practices, which now favour cheaper Asian labour. The number of renewed permits has also fallen and this, together with a narrowing of the real income differential between GCC countries and the Yemen Arab Republic, has prompted an increase in the return flow of migrants.

Signs of unemployment were reported in the TFYP document and, although the scale of the problem cannot be properly assessed until the results of the 1986 census are available, unemployment rates are probably about 5 per cent and are expected to increase in the coming decade. The problem is not simply one of crude labour force growth rates, rather the structure of the labour force has not changed at the same pace as the structure of employment opportunities. The growth of commerce, the civil service and industry has increased the proportion of labour employed in skilled clerical, commercial and technical occupational categories while the traditional sources of employment in the agricultural sector have declined (Table 5.2). What is more the spread of modern technology in every sector, and the growth of capital-intensive industries, has given training a premium. There are not enough trained Yemenis to fill these posts.

As in the past, much of this deficit will be met by the recruitment of suitably trained labour from overseas. Between 1978-79 and 1987 the number of expatriate workers in Yemen Arab Republic quadrupled (see Table 5.4) and the ratio of foreign workers to the total labour force increased from 1.5 per cent in 1981 to 2.4 per cent in 1986. In the professional and technical category some 15 per cent of the work-force is expatriate. Approximately two-thirds of expatriate workers are in government service, particularly in teaching - in 1981-82 87.2 per cent of teachers in the Yemen Arab Republic were foreigners, most of whom were paid by donor governments - medicine, and engineering and accounted for 24 per cent of the total number of government employees. This proportion declined to 17 per cent in 1986 due to the government's efforts to recruit nationals but the importance of foreign labour in the private sector has continued to increase.

The structural changes in employment are expected to accelerate during the TFYP period. On the basis of planned growth of employment opportunities during the TFYP and forecasts of labour force growth the government anticipates an overall surplus of nearly 10,000. However, the surplus of semi and unskilled categories is expected to be 90,000, while the deficit of skilled and professional labour is expected to be about 80,000 (Table 5.3).

Table 5.2: Distribution of employment by occupational category, 1975, 1986 and 1991
(Thousands)

Occupational category	1975 Number	1975 Per cent	1986 Number	1986 Per cent	1991 Number	1991 Per cent
Professionals & technicians	45.5	4.0	37.9	2.4	54.1	2.9
Administrative	5.7	0.5	30.0	1.9	46.9	2.5
Clerical	12.4	1.1	57.5	3.6	89.1	4.7
Commercial	53.0	4.7	125.5	7.8	151.3	8.0
Services	54.3	4.8	117.2	7.3	160.7	8.5
Agriculture, fishing & hunting	799.6	70.9	940.8	58.6	1,032.5	54.6
Production and labour	140.0	12.4	296.4	18.5	356.4	18.9
Not stated	16.9	1.5	...	...	...	...
Total	1,127.6	100.0	1,605.3	100.0	1,891.0	100.0

Source: CPO, The Third Five-Year Plan, 1987-1991, p. 88 and World Bank, Manpower development in the Yemen Arab Republic, 1981.

Table 5.3: Incremental demand for labour by occupational category, 1987-1991

Occupational category	Labour demand	Labour Supply: Domestic sources	Labour Supply: Foreign sources	Labour Supply: Total supply	Deficit/ Surplus
Professional (Science)	11,507	783	4,405	5,188	-6,319
Professional (Arts)	43,156	7,367	1,495	8,862	-34,294
Sub-professional (Sciences)	11,881	495	160	655	-11,226
Sub-professional (Arts)	2,494	2,462	-	2,462	-32
Skilled Office/ Teaching	63,485	48,733	-	48,733	-14,752
Skilled Manual	15,389	8,815	-	8,815	-6,574
Semi-skilled	56,247	126,880	-	126,880	+70,633
Unskilled	208,020	220,405	-	220,405	+12,385
Total	412,179	415,940	6,060	422,000	+9,821

Source: Central Planning Organization, Third Five-Year Plan, 1987-91, 1986, p. 94.

Table 5.4: Work permits issued to foreigners by occupation, 1978-87

Occupation	1978-79	1982	1984	1986	1987
Administrators	383	398	1,118	1,398	2,047
Technicians	1,241	3,108	1,473	3,841	7,226
Physicians	29	44	155	222	377
Medical Technician	103	73	138	256	465
Engineers	989	1,105	1,114	1,388	2,626
Other workers	2,544	731	2,437	4,738	7,854
Other experts	0	0	0	105	196
Total	5,289	5,459	6,435	11,948	20,742

Source: Central Planning Organization, Statistical Year-book, 1987, pp. 313-15.

Training

Not only is a vast majority of the labour force ill-equipped for the technologically complex development path the Yemen Arab Republic is following most lack even the most rudimentary skills. In 1981 illiteracy rates were 57.9 per cent for males and 92.5 per cent for females. In 1977 primary school enrolment rates for the age group that would now provide junior technicians and managers were only 26 per cent. Levels of training are even lower among the older age groups. Clearly manpower development is one of the most important issues facing the government.

Emphasis has been placed on the expansion of primary, intermediate and secondary academic education and the government has had considerable success in increasing the number of students attending school (Table 5.5). Nevertheless, levels of school attendance are still extremely low. It is estimated that only 41 per cent of school age (6-17 years) children were enrolled in 1985-86. The vast majority of these were in primary education. Attendance is particularly low at secondary school level where only 14 per cent of children attended school in 1985-86 as compared with 9 per cent in 1980-81. What is more increases in the school population have not been paralleled by a commensurate increase in the number of schools, classes and teachers and the pupil teacher ratio in primary schools averages 60:1.

Facilities for vocational training are extremely limited. The first commercial secondary school, where students are taught basic secretarial, clerical and accountancy skills with some general management training on a three year course after intermediate or secondary school, was established in 1969. By 1986-87 there were six such schools and 832 pupils. A Vocational Training Centre was set up by the Ministry of Labour in 1971 with two year courses in mechanics, electrical and construction skills (Annex Table A-10). There are now four of these institutions 834 students. In 1979-80 the Ministry of Industry set up technical and agricultural secondary schools and there are now two of the former and three of the latter with 771 and 311 students respectively. A third technical secondary school is under construction at Hoddeidah with a planned capacity of 240 students. Courses at the technical secondary schools are more academic and broader in scope than those offered at the Vocational Training Centres which take most of their students straight from intermediate schools.

In sum 2,420 students were enrolled in vocational training in 1986/87. This is only 0.2 per cent of the total number enrolled in educational establishments and considerably fewer than the number of students needed to meet demands of the labour market.

Vocational training has suffered from low esteem in the eyes of potential students. In 1982 the Ministry of Education resorted to an advertising campaign to boost student numbers. Now most of the vocational institutes have to run courses in two shifts because the number of students enrolled exceeds classroom capacity. The government has allocated YR380 million to vocational training during the TFYP, 11.9 per cent of the education budget, of which YR291 will be spent on the expansion of technical training

facilities. The number of students in vocational training is expected to increase to 7,652 by 1991, though this will still be far less than one per cent of the total student population.

From the point of view of the industrial sector the supply of locally trained personnel is further curtailed by emigration and the declared preference of students for public sector employment. A 1984 survey of migrant workers in Kuwait revealed that the educational structure of emigrant workers was not significantly different from that of the population as a whole: only 1 per cent had received vocational training and 75 per cent had received primary education or less (Table A-0). Nevertheless, if these figures are extrapolated to the emigrant population as a whole some 450 technical institute graduates are working abroad, a substantial loss given the limited number of graduates available. More important is the concentration of graduates in the public sector which employs about 80 per cent of those with vocational training. According to a survey undertaken by the Ministry of Education approximately 95 per cent of students aspire to government employment, perhaps because of the greater job security and work schedule.

Table 5.5: Number of students by educational establishment, (selected years)

Establishment	1975-76	1981-82	1984-85	1986-87	1991
Primary	252,726	589,186	786,410	985,721	1,292,731
Preparatory	15,619	32,243	76,856	136,684	266,679
Secondary	6,050	10,297	19,690	37,335	102,945
Technical & Vocational	1,872	2,571	9,464	15,226	35,083
- Commercial Secondary	348	322	718	832	2,203
- Technical Secondary	218	210	591	771	1,910
- Agricultural Secondary	-	...	311	187	865
- Vocational Training Centres	-	137	834	630	2,114
- Polytechnic Institute	-	-	-	-	580
- Teacher Training	1,306	1,902	7,010	12,806	27,411
University	2,343	5,172	11,249	13,837	23,100
(Students on Grants Abroad)		(652)	(4,559)	(1,013)	
Total	278,610	639,469	903,669	1,188,803	1,720,538

Source: CPO, Statistical Yearbook, various issues.

Furthermore, there are indications that the training provided at these vocational institutes does not correspond directly with the needs of the private sector and the Ministry of Education is currently carrying out a survey to identify areas for curriculum development. Further work is needed to assess what proportion of students actually use their vocational training.

Table 5.6: Distribution of enrolled students between educational levels, selected years
(Percentages)

Educational level	1975-76	1981-82	1984-85	1986-87	1991
General education	98.487	98.789	97.708	97.555	96.618
Higher education	.841	.809	1.245	1.164	1.343
Vocational education	.672	.402	1.047	1.281	2.039
- Technical	.203	.105	.272	.204	.446

Source: Based on Table 5.5.

Most companies run some form of informal training programme for their recruits. In the case of the Haeyl Saeed Group, based in Taiz, however, this training is provided through a private technical training institute. The institute has an excellent reputation and is used by a number of other companies on a fee paying basis. Developments along these lines indicate the importance attached to training by many of the larger, more prescient companies.

Higher level training is currently only available through the University of Sana'a or at institutions abroad. The number of students at the University has increased six-fold from 1975-76 to 1986-87 when nearly 14,000 students were enrolled. By far the largest Faculty is the management related Faculty of Commerce and Economics which accounts for 34 per cent of the total number of students and the second largest faculty is that of Law, 29 per cent of the students. There are plans to establish a specialist Management Institute to provide vocational training at undergraduate and postgraduate level. A National Institute for Public Administration already provides management training for recruits to the public sector and it is hoped that the new management centre will be directed at the needs of and the graduates will find employment in the private sector.

Both the Faculties of Science and Engineering, on the other hand, are under represented - only 2.6 and 2.8 per cent of the total number of students respectively. In view of the growing technological complexity of the industrial sector it is desirable to increase the number of graduates in these fields. Whilst the country lacks engineers with a broad technical training it will remain dependent on expatriate technicians to fill supervisory posts.

An intermediate Polytechnic Institute, which will take students from academic or technical secondary schools, is currently under construction. This will provide 28 month courses in engineering, with specializations in metalworking, electric power and control, mechanics and construction, and enrol 216 students per year. Hopefully this will meet part of the demand for higher skilled, more versatile technicians than currently provided by the vocational training institutions.

These developments are encouraging but the number of skilled technical and managerial staff graduating from the vocational training and higher education institutions will still fall short of the economy's needs. Consequently the Yemen Arab Republic will continue to depend heavily on expatriate labour during the TFYP and beyond.

5.2 Agricultural resources

Agriculture is the most important economic activity in the Yemen Arab Republic accounting for 27.9 per cent of GDP in 1987 and employing 58 per cent of the work-force. It is also potentially the most important resource for industrial development. The range of crops produced is extremely diverse due to regional differences in climate, water supply, soil quality ranging from the hot, dry Tihama plain where a wide range of vegetables and tropical fruits can be grown if sufficient irrigation water is available to the high central uplands (2,000-3,000 m) where rainfall may reach 800 mm, and where temperate crops are cultivated with only supplementary irrigation or none at all. This diversity, together with the high rainfall received in the central plateau gives the Yemen Arab Republic the greatest agricultural potential of any country in the Arabian Peninsula.

However, the performance of the agricultural sector has been disappointing. Between 1972/73 and 1982 agricultural value added increased by less than 1 per cent per annum in real terms, whereas GDP increased 8 per cent per annum over the same period. In terms of gross output the growth rate between 1975 and 1980 was only 1.4 per cent (Tables 5.7 and 5.8). In 1983 and 1984 agricultural value added actually fell in real terms and the index of gross output fell by nearly one-fifth between 1980 and 1984. This sudden fall in output may be ascribed to the drought conditions that prevailed from 1982 to 1985: production increased significantly in 1986 and 1987 when rainfall conditions returned to normal. The annual growth rate for the SFYP period was 2.4 per cent, just over half the level planned.

Agricultural production has not kept pace with population growth and Yemen Arab Republic, once a net-food exporter has become increasingly dependent on food imports. The cost of food imports increased eleven-fold between 1972-73 and 1982 and by 42 per cent between 1982 and 1987 when food imports, costing YR2,896.3 million, accounted for 31.6 per cent of total imports.

Rapid growth is ruled out by the structure of the agricultural sector. Small family farms - 55 per cent of farmers own less than one hectare of land - predominate and agriculture remains,

primarily, a subsistence activity with only 50 per cent of total production marketed. There is a tendency towards farm agglomeration but land prices are very high in the fertile lands near markets and farm sizes are increasing only slowly. A number of modern commercial horticultural farms have developed, a result of private and public sector initiatives, but their contribution to total agricultural production is, as yet, insignificant. Such agribusiness developments are to be encouraged under the TFYP.

Basic education levels are low and virtually no farmers have training in modern agricultural methods. New techniques and crops meet considerable resistance. Nevertheless, the government has given priority to the development of extension services and the diffusion of high yielding varieties, fertilizers and insecticides. Seed preparation is often undertaken by local farmers and the government has allocated YR43 million to the distribution of improved cereal varieties during the TFYP. Other inputs are currently imported and relatively expensive on the open market. Where grants have been made available the government has distributed fertilizers and other inputs at subsidized prices. Imports of fertilizers by value have more than doubled since 1982 and stood at YR47 million in 1987.

Emigration has deprived many rural communities of up to one-third of their able bodied labour force in recent years even though population has grown at rate of 3 per cent per year. As a result 7.5 per cent of the cultivable area was abandoned between 1975 and 1980 and many of the terraces, which provide 95 per cent of the cultivable area, have been neglected leading to massive soil erosion. Wage rates have increased too, encouraging farmers to employ tractors but only 40 per cent of farmers are thought to employ such machinery.

During the Second Plan the agricultural sector received 15.7 per cent of total public sector investment and 8.3 per cent of private sector investment. When one considers that 58 per cent of the population is employed in agriculture these shares seem paltry. By far the largest part of the government investment was spent on the development of large-scale irrigation projects, notably in the Tihama irrigation scheme and the Marib Dam. Within the private sector too, irrigation has received the bulk of investment as the rapid multiplication of tube wells demonstrates. Rates of water extraction now threaten a major water crisis (see Section 5.4). However, together with the increasing use of inputs the expansion of irrigation has had beneficial effect on yields which have increased by between 5-10 per cent since the early 1970s.

Under these circumstances the government's target of a 3 per cent annual increase in agricultural production during the TFYP (1986-91) seems realistic. There appears to be little opportunity for the production of large agricultural surpluses in the near future and this will inevitably constrain the development of food processing industries. Opportunities will ultimately be determined by the structural change in agricultural production.

Table 5.7: Agricultural production, 1975-1991 (selected years)
('000 tons)

Crops	1975/6	1980	1984	1985	1986	1987	1991[a/]
Cereals	940.0	798.0	372.2	419.3	666.0	665.0	820.4
- Wheat	62.0	65.0	37.3	63.4	85.0	100.0	200.0
- Maize	35.0	49.0	38.5	43.1	49.2	48.0	57.0
- Sorghum and millet	785.0	636.0	267.9	281.0	491.0	477.0	516.1
- Barley	58.0	48.0	28.5	31.8	40.8	40.0	47.3
Vegetables	335.0	472.0	578.8	610.4	687.4	603.5	880.1
- Tomatoes	...	...	...	...	111.4	...	142.2
- Onions	...	...	...	...	15.2	...	19.4
- Water-melon	...	...	...	...	75.0	...	95.7
- Dry legumes	76.0	84.0	37.6	44.2	46.8	39.0	62.6
- Potatoes	76.0	127.0	194.7	195.7	208.3	110.0	265.8
Fruit	113.3	138.3	183.3	185.9	233.4	264.9	315.0
- Dates	6.3	6.3	13.4	13.4	13.6	15.1	14.3
- Grapes	42.0	55.0	81.6	80.5	116.0	128.8	155.2
- Bananas	...	...	...	...	25.4	...	35.6
- Papayas	...	...	...	...	...	...	69.8
- Other fruit tree	65.0	77.0	88.3	92.0	28.6	121.0	40.1
Industrial crops	64.6	65.6	64.5	70.5	77.6	85.2	91.7
- Alfalfa	40.0	44.0	49.0	54.0	60.0	68.0	71.9
- Sesame	5.5	6.0	3.3	4.0	4.8	4.0	4.5
- Tobacco	5.6	7.0	4.3	4.5	4.5	4.8	5.2
- Cotton	13.5	5.0	3.7	4.0	4.2	4.2	4.9
- Coffee	3.0	3.6	4.2	4.0	4.1	4.2	5.2

Source: Central Statistical Organization, Statistical Year-book, 1987 and Third Five-Year Plan 1987-1991, 1986.

a/ Planned.

Table 5.8: Index of agricultural production, 1980 to 1991 (selected years) (Output in tonnes 1975-76 = 100)

Crop type	1980	1984	1985	1986	1987	1991 a/
Cereals	84.9	39.6	44.6	70.9	70.7	87.3
Vegetables	140.9	172.8	182.2	205.2	180.1	262.7
Fruit	122.1	161.8	164.1	206.0	233.8	278.0
Industrial crops	101.5	99.9	109.1	120.1	131.9	142.0
Total	101.4	82.5	88.5	114.6	111.4	145.0

Source: Central Statistical Organization, Statistical Year-book, 1987 and Third Five-Year Plan 1987-1991, 1986.

a/ Planned.

Food crops

The most important change in recent years has been the rapid decline in production of cereals. Notwithstanding the exceptional circumstances of the 1983-85 drought production of the traditional staples sorghum and millet has fallen steadily since the mid-1970s and was 39 per cent lower in 1987 than 1975-76 (Table 5.7). This has more than offset the 52 per cent increase in wheat and maize production, with total production in cereals falling by 29 per cent over the same period. Inevitably grain imports have had to increase to cover the growing cereals deficit and reached YR1,004 million in 1987, 34 per cent of food imports and 10.9 per cent of total imports.

These imports have consistently undercut local producers burdened with heavy input costs and low yields, a situation aggravated by the high exchange rate in the late 1970s and early 1980s. Farmers reallocated land to more remunerative crops and the total area under cereals dropped by a third between 1975-76 and 1987. In the interests of food security the government hopes to revive cereal cultivation during the TFYP through the distribution of higher yielding varieties of wheat and maize but market conditions continue to favour the substitution of other crops.

Production of fruit and vegetables increased by 134 and 80 per cent respectively between 1975-76 and 1987 and is now more important to total agricultural output than cereals. Much of this increase has occurred at the expense of grain production, encouraged by high market prices and made possible through the proliferation of tube wells. High prices have also enccuraged the establishment of a number of commercial farms and the sector as a whole is characterized by more intensive use of inputs and more

innovative marketing techniques than in the grain sector, even though cultivation of both crops often takes place side by side on the same farms. Fruit and vegetables enjoy a high degree of natural protection afforded by the perishable nature of the produce. Even so the government imposed a ban on fruit and vegetable imports in 1984. While this has stimulated increases in output high prices have been passed on to consumers and a flourishing trade in smuggled fruit has developed.

Surpluses of vegetables and fruit have developed as production increased and in 1987 exports of these products were valued at YR58.9 million, 18.5 per cent of total exports. Production of grapes, which are of extremely high quality, tripled between 1975-76 and 1987 and in that year exports of fresh grapes amounted to YR27 million and raisins to YR9.5 million. Other fruit exports include citrus fruits, mangoes, papayas and water-melons. On the other hand, the only vegetables exported in significant quantities are potatoes. Furthermore only potatoes offer a sufficiently large and dependable surplus to merit the development of a vegetable processing industry. Other crops are still subject to intermittent shortages or are not ideally suited to processing. While the staggered harvesting times between the different agricultural regions offers a great advantage to large-scale processing industry the large distance between these regions and the high cost of the produce are liable to undermine the competitiveness of such ventures.

What is more the distribution of fruit and vegetable produce is poorly organized. It is largely in the hands of small-scale urban merchants who charge a substantial mark up when the produce is sold in the main urban areas and the transport costs are extremely high. There are few storage facilities, packaging is rudimentary or not used at all and consequently levels of wastage reach 30 per cent in the case of perishable items.

Improved distribution facilities are a priority of the TFYP and the first private sector agricultural marketing company, Bilqis Company for Marketing and Development, which will install storage facilities, was established in 1988. Another encouraging development is the spread of contract cropping linking processing facilities and farmers. This strategy is to be used by a sesame mill currently under construction to guarantee supplies of raw materials. Further developments along these lines are essential if the agricultural surplus is to be mobilized.

Cash crops

Even more dramatic has been the spread of qat cultivation. A mild, harmless narcotic qat was traditionally chewed by a small minority of the affluent urban population. As incomes rose in the 1970s the practice became widespread and prices increased tenfold from 1970 to 1980. This encouraged the rapid spread of qat cultivation in areas suitable for vegetable, fruit or cash crop cultivation. Although no official statistics are available, 7 per cent of the total cultivated area was thought to be under qat by 1980 and qat is now undoubtedly the most important cash crop grown. This rapid diffusion demonstrates convincingly how Yemeni farmers

can respond quickly to market opportunities. Qat has to be consumed within a couple of days of harvesting and undergoes no processing. Consequently, while its economic importance should not be underestimated, it is of little interest from the point of view of industry.

In some regions qat has displaced other cash crops. This is particularly true of coffee which has been produced in Yemen since ancient times. Production stagnated during early the 1980s because qat cultivation was far more remunerative. However, the area under coffee more than doubled from 7,000 hectares to 16,000 hectares in 1984 largely in response to high prices for the good quality beans in the Yemen Arab Republic and Saudi Arabia. This increase is yet to be reflected in output which is only 600 tons higher than the 1971-72 level at 4,200 tons. Despite the stagnation of recent years coffee is still the most important commodity export, apart from oil, valued at YR52.8 million in 1987, 16.6 per cent of total exports.

The cultivation of cotton expanded rapidly during the early 1970s finding a market in the local textile industry and reached a peak of 27,000 tons in 1974-75. Output subsequently declined as production costs rose - cotton cultivation is both labour and input intensive - and higher priced crops such as qat, fruit and vegetables were substituted for cotton on valuable irrigable land even though the government had introduced price support measures and a ban on cotton imports. By 1987 cotton production amounted to only 4,200 tons, one-sixth of the peak output.

Two other important cash crops are grown, tobacco and sesame. Both have witnessed a slight decline in production since the mid-1970s. Nevertheless, exports of sesame are significant, amounting to YR13 million in 1987 and exports of tobacco were valued at YR2.4 million. Most of the harvest is, however, consumed locally.

Livestock

Although only 1 per cent of the population are nomadic pastoralists livestock is an important part of the rural economy providing dietary supplements - meat, milk and milk products - hides and skins. Herding methods are traditional with little attempt to improve stock through selective breeding or increase productivity through the use of feed supplements. The actual herd strength is not known - the statistics provided by the Central Planning Organization (Table 5.9) are only estimates since no comprehensive livestock survey has been undertaken - though its is clear that only small proportion of the herd is marketed in urban areas.

Table 5.9: Estimated herd strength, 1976 to 1987
(selected years)
('000 head)

	1976	1980	1984	1985	1986	1987
Sheep and goats	2,460	3,751	4,050	4,131	4,213	4,297
Cattle	800	883	960	984	1,003	1,023
Camels	60	57	59	60	60	61
Poultry local	2,494	2,800	3,231	3,296	4,100	4,182
Poultry commercial		1,300	7,272	9,741	13,250	13,515

Source: Central Statistical Organization, Statistical Year-book, 1987, p.84.

While the volume of red-meat production has increased by 18.6 per cent between 1980 and 1987 (Table 5.10) this has not kept pace with population growth and the change in diet as an affluent urban population has emerged. The cost of imports of live animals for slaughter has risen sixfold from YR60.6 million in 1980 to YR464 million. Imports of dairy products, on the other hand, valued at YR385.6 million in 1987, declined during the early 1980s, largely as a result of increasing domestic production of eggs, but are now 70 per cent above the 1982 level. Milk processing facilities are still largely dependent on imported milk products.

Productivity is likely to improve in the near future as more intensive husbandry techniques are adopted. Rapidly rising prices have encouraged the intervention of urban merchants and considerable investment. Notable developments in recent years include the establishment of a number of cattle and sheep fattening farms and commercial dairy farms using irrigated fodder. While feed supplements are rarely used and then only intermittently with minimal effect on productivity there has been a steady increase in the production of alfalfa (Table 5.7) used as fodder to fatten animals before slaughter.

It is clear that the volume of meat imports would have increased at faster rate had the commercial poultry flock and poultry meat production not increased more than tenfold over the 1980 to 1987 period. Commercial poultry farming is extremely profitable and has attracted private sector investment. Between 1980 and 1987 the Yemen Company for Investment and Finance (YCIF) alone helped finance 34 poultry farms, with a total investment of over YR60 million. Still more ambitious projects are on the way. A new poultry farm beginning operations in 1989 will produce approximately 30 million a year. Growth rates are expected to fall as the market nears saturation during the TFYP - per capita consumption of poultry meat increased by 40 per cent between 1982 and 1987 - but farmers are investigating the potential of export

markets in PDR Yemen and Djibouti. Production methods are intensive and poultry farmers consume most of the YR256 million of animal feed imported.

Fisheries

The Yemen Arab Republic's fisheries resources are modest. Conservative estimates put the potential annual catch at about 30,000 tons including 2,500 tons of shrimp and lobster. Traditional fishing methods predominate, there are few storage facilities and, outside the main ports, Yemenis are unaccustomed to eating fish. Nevertheless domestic production, which nearly doubled between 1980 and 1987 (Table 5.10), is unable to meet demand and YR21 million of fish and fish products were imported in 1987.

Table 5.10: Estimates of animal and fish production, 1976 to 1991 (selected years)

Product	1976	1980	1984	1985	1986	1987	1991[a/]
Milk ('000 tons)	75	90	100	105	107	108	122
Hides (tons)	3,704	3,954	4,350	4,437	4,526	4,594	4,997
Eggs (million)	105	117	178	215	232	236	287
Wool (tons)	1,765	1,875	2,011	2,071	2,112	2,987	2,332
Beef and mutton (tons)	18,400	19,981	22,000	23,100	23,562	23,689	26,780
Poultry	3,586	5,862	29,834	48,698	51,000	53,000	59,123
Fish	12,639	16,300	18,700	21,000	22,000	23,000	24,891

Source: Central Planning Organization, Statistical Year-book, 1987, p. 85.

New harbour and storage facilities are under construction at Khawbah, Mokkah and Hoddaidah as part of a $30 million fisheries development project initiated in 1982. During the SFYP (1982-86) a project for a fish processing and canning facility was also mooted but the total catch is well below levels which would merit such a plant. However, a shrimp processing plant has been established with a rated capacity of 5 tons of shelled and frozen shrimps per day. Further developments along these lines will stimulate development in the fishing industry and generate export revenues. In 1987 fish exports amounted to YR2.3 million, 85 per cent of which were high value shrimps, and potential exports markets have been identified in the Saudi Arabia and Egypt.

5.3 Energy

Until the opening of a small oil refinery at Marib in 1986 the Yemen Arab Republic's only domestic source of primary energy was fuelwood which accounted for 50 per cent of total energy

production. This dependence on wood fuel in both rural and urban areas has led to severe deforestation. The second source of primary energy was imported petroleum products which cost over YR800 million, 11.6 per cent of total imports, in 1982. With the discovery of substantial oil and gas reserves the situation has changed for the better. Although domestic production of petroleum products covers only one-quarter of domestic demand the cost of oil imports, aided by falling market prices, fell to YR257 million in 1987, 2.8 per cent of total imports. The long term development of oil and gas reserves offers the prospect of energy self-sufficiency by the early 1990s and a drastic reduction in the use of wood fuel.

Oil

Commercial quantities of oil were first discovered by Yemen Hunt Oil Company in July 1984 in the Marib-Al Jawf Basin. In March 1986 production began at the Alif field and, with the completion of a 430 km underground pipeline from Marib to the Salif terminal at Ras Issa in December 1987, rose to 160,000 b/d by mid-1988. Production at the nearby Azal field began in June 1988 and the total output increased to 180,000 b/d by the third quarter of 1988.

A production target of 200,000 b/d was set for the end of 1988 and, according to the TFYP, production is expected to remain at this level up to 1991. However, the discovery of an important gas/condensate field at Asad Al-Kamil 15 km from the Azal field provides an opportunity to increase production to 225,000 b/d in the near future. Studies are also underway to examine the potential for an increase in production at the Alif field. Under the production sharing arrangement the government receives 68,000 b/d at a production level of 200,000 b/d.

Recoverable oil reserves are officially estimated at 1 billion barrels of which 500 million are in the Alif field. These estimates are conservative and do not include the recently discovered Asad Al-Kamil field. The crude oil produced at Alif is high quality: about 39.4° API with a 0.08 per cent sulphur content while the Asad Al-Kamil field is 44-45° API. If a ceiling is set at the current production level the known reserves will last at least 15 years. However, there are good prospects for further oil discoveries.

In June 1988 a joint exploration company, the Yemen Oil Company for Investments and Mineral Resources (YCIOMR), was established by the governments of the Yemen Arab Republic and PDR Yemen to prospect in 2,200 sq km border zone. Exploration is already underway in the Dhamar Governorate (YOMINCO), in the Red Sea north of Hoddeida (Offshore Yemen Hunt Oil Company) and inland at the Mokka-Khawkha concession (CPF-Total).

Domestic consumption of petroleum products is currently estimated at about 40,000 b/d three quarters of which is imported. Consumption is expected to rise dramatically in the coming decade as the oil revenues fuel economic growth (Table 5.11). At present the only oil refining facility is a 10,000 b/d capacity plant (divided approximately equally between gasoline, diesel and fuel

oil) at Marib which began operations in April 1986. Plans for a larger oil refinery covering domestic demand were shelved until the critical level of known reserves, 1 billion barrels, was attained. Recently the government commissioned a study for a 100,000 b/d capacity oil refinery at the Salif terminal but the project is unlikely to be completed before the end of the TFYP. In the meantime, 90 per cent of domestic oil production is exported or swapped for imported petroleum products.

Table 5.11: Projected increase in consumption of petroleum products, 1970-2000 (selected years)
('000 tons)

Petroleum product	1975	1980	1985	1990	1995	2000
Gasoline	49.0	208.0	350.0	420.2	436.9	481.4
Kerosene & jet fuel	44.0	102.0	113.0	136.9	172.6	207.9
Middle distillates	94.0	399.0	556.0	2,689.9	3,013.5	3,354.9
Heavy fuel oil	10.0	6.0	42.0	36.1	42.3	47.4

Source: Kuwait Institute for Scientific Research.

Gas

Gas may be economically more important than oil in the long term. According to official estimates reserves of associated and non-associated gas amount to 5.5 trillion cu ft, though other estimates put reserves as high as 10-15 trillion cu ft. Even at the government's conservative figure the value of the gas reserves is about twice that of known oil reserves.

A recent World Bank study argues that these reserves should be used in the production of LPG for industrial and domestic use, while electricity generating capacity should be converted for the use of dry gas. The use of gas in the production of LNG, methanol and fertilizers was ruled out on economic grounds.

These recommendations tie in with the government's strategy. At present gas is reinjected into the oil fields but it will come on stream by the end of the TFYP period. The government has announced its intention to build a LPG separation plant at Marib and a pipeline from the Alif and Azal fields to Sana'a and then to Hodeida at a estimated cost of $250 million. A gas bottling plant will be built near Sana'a with a 2,000 LPG bottles per hour capacity and initial storage capacity of 9,000 tons. At the same time the capacity of an existing bottling plant at Hoddeidah will be increased from 1,000 to 1,600 bottles per hour. The pipeline will enable the substitution of domestic gas for imported butane and kerosene gas. At present all the LPG used is imported. Possible future developments include the extension of the pipeline to the Amran and Bajil cement works and major urban areas.

Gas consumption currently runs at about 80,000 tons per year but is expected to increase to 185,000 tons by 1991 and the country should to become self sufficient by 1996 at the latest. It is hoped that LPG will eventually replace kerosene and fuelwood in domestic use since the price, per unit of end use energy, is currently one third or less that of fuel wood.

Electricity

During the SFYP (1982-86) the expansion of electricity generating capacity was regarded as a development priority and a prerequisite of growth in other productive sectors. The number of generators in operation doubled between 1981 and 1986 and generating capacity increased by 180 per cent from 109MW to 307MW over the same period, expanding to 467 MW with the completion of the Mokka power station in the early years of the TFYP (1987-91). Growth in total electricity consumption and the peak load was equally dramatic, registering increases of 197 per cent and 186 per cent respectively (Table 5.12).

Investment in new power generating capacity will tail off during the TFYP. Apart from the completion of two ongoing projects, the Mokka power station and permanent power supplies at Amran and Bajil cement works, the Plan concentrates on the extension of the mains electricity network to smaller urban centres and rural areas. The largest of these projects, the Fourth Power Project, will serve 38,000 consumers at a cost of YR589 million. In addition the government is currently reviewing plans to build a 132 kV transmission line between Hiswa Power Station in PDR Yemen and Taiz. At the same time the Yemen Electricity Corporation is trying to improve operating efficiency and plans to build a central control office for the power and substations throughout the country.

As a result of these developments consumption of electricity produced by the Yemen Electricity Corporation (YEC) is expected to rise by 135 per cent during the five years to 1991. Attachment of new consumers to the grid will account for much of this increase, as it has in the past. In the mid-1980s YEC accounted for only 56 per cent of total electricity production. This share is expected to rise to 80 per cent by the 1996.

Household consumers will continue to predominate though their share of total energy consumption is expected to fall from 40.5 per cent in 1986 to 35.0 per cent in 1991 (Table 5.13). The most significant change anticipated is the increase in industrial consumption, which is expected to rise threefold, following a fivefold increase in the period 1980 to 1986. To some extent this rapid growth may be attributed to the development of heavy industries, namely the cement works. But increased electricity consumption is expected to result from the growth of the industrial sector.

Table 5.12: Electricity production, capacity and consumption, 1980-91 (selected years)

	1980	1982	1984	1986	1987	1991[a/]
Peak load MW	43.8	62.3	76.6	125.3	135.1	...
Generated power GWh	188.0	283.1	445.8	697.1	699.6	1,261.0
Sales GWH	135.7	203.8	287.4	420.0	451.5	946.0
Number of generators	44	45	84	93	100	...
Capacity MW	109[b/]	...	...	307	467	...

Source: CPO, Statistical Year-book, 1987 p. 112 and The Third Five-Year Plan, 1987-1991.

a/ Planned.
b/ 1981.

The Yemen Electricity Corporation intends to accommodate the growth in demand from industrial consumers by increasing the number of linkages to the grid at medium and high tension. At present only seventy large consumers - more than 100,000 units per month supplied on medium and high tension - receive a concessionary tariff of YR0.65 per unit. In addition the two largest consumers, the Amran and Bajil cement companies, which consume over 80 million units per year, have a tariff of YR0.60 per unit. Otherwise industrial consumers are charged at the flat rate of YR1.10 applied to domestic and commercial customers. This charge is relatively high by international standards. Approximately 20 large consumers have their own generating facilities.

Since all the power stations are currently oil powered there is little opportunity for overall reduction in the electricity tariff and the heavy investments in power generating and distribution equipment will impose a heavy burden on consumers well into the future. A solution may be to convert major power stations to gas fulled generating equipment, though this option has yet to be fully costed.

Considerable potential exists for the development of non-traditional power sources. Solar water heaters of good quality are already produced in the country, by Al-Raiby Trading, Industry and Contracting, though they are not yet widely used. The government has examined the potential for geothermal power and announced plans to drill four 2,000 m deep exploratory wells in the Dhamar and Rada'a regions in the early 1980's. However, this project appears to have been abandoned in favour of the development of conventional power sources during the TFYP.

Table 5.13: Electric power consumption by economic sector, 1980, 1986 and 1991

Economic sector	1980 KWh	1980 Per cent	1986 KWh	1986 Per cent	1991 KWh	1991 Per cent
Households, shops and hotels	97.6	71.9	273.1	65.0	511.0	54.0
- Households	...	...	170.0	40.5	331.0	35.0
- Commercial	...	...	103.1	24.5	180.0	19.0
Factories and workshops	13.1	9.7	85.4	20.3	350.0	37.0
- Workshops	...	...	37.4	8.9	66.0	7.0
- Industrial	...	...	48.0	11.4	284.0	30.0
Government departments	18.7	13.8	49.4	11.8	66.0	7.0
Other	6.2	4.7	...	...	...	...
- Agricultural	...	...	12.0	28.6	19.0	20.1
Total	135.7	100.0	420.0	100.0	946.0	100.0

Source: Central Planning Organization, Statistical Year Book, 1987, p. 115 and The Third Five-Year Plan, p. 160.

5.4 Water

Water is an important constraint on the expansion of agriculture in the Tihama - coastal - plain where most of the country's exotic fruits are cultivated and the arid, low lying eastern regions. Traditionally farmers diverted spate water from seasonal rivers to irrigate their lands but for a small proportion irrigated from wells. Since the early 1970s, however, the use of pumps has become widespread and the rates of aquifer exploitation have exceeded rates of recharge. Rapid urbanization - 8.3 per cent per year between 1970 and 1982 and expected to reach 9 per cent per year from 1987 to 1991 - has aggravated this trend and rates of extraction now threaten a water crisis.

Over 3,000 wells have been drilled in the Tawilah sandstone aquifer that supplies Sana'a, most of them to the north of the city for the purpose of irrigation. Extraction is virtually uncontrolled and during the last decade water levels have fallen at a rate of between 1 and 4.5 metres a year, up to 8 metres a year in areas close to well fields. If this continues the aquifer will be exhausted by the year 2010. Water quality has already been affected, with marked increases in salt content reported to the north of the city, and yields have fallen in a number of older, shallower wells. The cities of Sadah and Ta'iz face similar problems, while at Hoddeidah on the coast the expansion of pump irrigation in the Tihama plain - with a tenfold increase in the

number of motor pumps during the 1970s - has led to the intrusion of salt water.

It is neither economically or technically feasible to ship water from surplus to deficit regions due to the extreme variations in altitude and the rugged terrain. Plans for a dam at Al-Khader, near Sana'a, are under review and this may provide supplementary drinking water for the capital but in the long term the introduction of water conservation measures and water use controls, particularly in irrigation, offer the only solution. To this end the government established a High Water Council in 1982 to prepare a water masterplan and legislation covering water extraction and use. At present most farmers, households and industries drill and exploit wells without even informing the government. A new system of licences and regulation for private irrigation and industrial wells which would include a levy is under review.

Expansion of the National Water and Sewerage Authority's network will help increase government control of water resources as well as improve water quality. From 1983 to 1987 the volume of water distributed in the major cities by the Authority increased by over 50 per cent to 17 million cu m. A further 59 per cent increase is planned for the TFYP period (1987-1991) while the number of connections to the network is expected to increase by 47 per cent from 87,500 in 1986 to 129,000 in 1991. Nevertheless, the proportion of the urban population served will decrease from 68 per cent to 66 per cent over the same period due to the rapid rate of urbanization.

Details of the sectoral consumption of water are not available though it is thought that industry is relatively unimportant as a consumer. Less than 10 per cent of the National Water and Sewerage Authority's clients are identified as commercial enterprises and most large-scale industrial plants use their own wells. Attachment to the grid is discouraged by a flat rate tariff of YR20 per cu m as opposed to the highest rate of YR15.5 paid by domestic consumers. Introduction of a digressive tariff might help increase the number of industrial enterprises using the network and so introduce some control of water consumption and encourage conservation measures.

From industry's point of view water quality rather than quantity is the immediate problem. Wells tend to be rather saline and salt contents have increased in recent years. Moreover, 28 of 41 water samples tested by the Food and Water Department of the Ministry of Health in 1986 were identified as unsuitable for consumption.

In the longer term the threat of water shortages provides an important argument for the dispersal of industrial activity. This could contribute to a reduction in the growth rates of the major urban centres and relieve pressure on their water supplies. Until this can be achieved a combined strategy of regulation and progressive pricing will provide the only means of averting the immanent water crisis.

5.5 Hard Minerals

Geological mapping is still at its early stages in the Yemen Arab Republic: four 1:250,000 maps have been completed, an airborne geophysical survey has been carried out in conjunction with PDR Yemen and backed by UNDP while various foreign organizations and companies have undertaken detailed field studies at a local level. While still incomplete these studies have pointed to a number of geological anomalies which merit further research and identified a range of mineral resources that may be of economic interest. Under the TFYP (1987-1991) the government has allocated YR317 million to mineral exploration and quarrying, concentrating on deposits identified by earlier surveys and products potentially useful to manufacturing industry, such as gypsum. Private sector participation in the development of mining and quarrying resources will be encouraged and the government intends to promulgate regulatory legislation that will provide the framework for investment. In 1988 the government signed a contract with the Arab Mining Company, based in Amman, to carry out a feasibility study of the country's marble and granite resources.

The principal mineral resources and mineralization complexes may be summarized, in alphabetical order, as follows:

Copper-nickel-titanium mineralization - A copper-nickel mineralization (pyrotite, pentlandite, chalcopyrite, iron and titanium oxides) deposit, occurring as massive and vein-type impregnations, has been discovered at Al-Hamura. According to a preliminary analysis by Geomin, on the basis of a copper cut-off of 0.5 per cent and nickel content above 0.5 per cent, the ore grades are 0.349 per cent copper, 0.329 per cent nickel and 3.48 per cent titanium. The total metal content of the reserves is estimated to be 47,750 tonnes, 45,000 tonnes and 476,800 tonnes respectively. Subsequent studies have revealed new mineralization with higher grades nearby. Further research will be undertaken during the TFYP with the drilling of core samples, chemical analysis and resource evaluation.

Gold - Evidence of ancient gold mines has encouraged exploration but no commercially viable gold deposits have yet been found. A recent survey[1/] of the Sa'dah and Jabal Lawdh concluded that most of the gold bearing quartz veins discovered were too narrow for commercial mining though five of the veins merited assay reports. More detailed surveys will go ahead if these samples indicate that the veins could be high yielding. The study advised that the chances of finding a major unknown gold deposit were not high. However, potential gold bearing strata have been identified at Hajjah.

1/ Ministry of Oil and Mineral Resources, Sillitoe R. H., Gold Potential of the Sa'dah and Jabal Lawdh Areas, July 1988.

Granite - Deposits of granite suitable as a building material are found in numerous locations. The most important are at Jabal Sabir near Taiz, with reserves of 1,000 million cu m; al-Bayda, in Dahmar governorate, 50 million cu m; and Bajil, 100 million cu m. Distance from urban centres would make exploitation of some of the smaller known deposits uneconomic.

Gypsum - Gypsum is currently mined in the Al-Salif area for the Bajil cement works. Reserves amount to 1 million cu m, with a gypsum content varying from 67 per cent to 84 per cent. Other potentially exploitable reserves are found nearby at Jabal Qimmali and Marab. On the basis of preliminary investigations reserves are thought to be 1 million cu m at each site. Smaller deposits are currently exploited at an artisanal scale near Sana'a at Al-Mahjir, where the deposits are thought to be of high quality but reserves amount to only 200,000 cu m.

Limestone - Limestones and Jurassic dolomitic limestones are used in the production of cement at the Bajil and Amran cement works and locally in the manufacture of building blocks and lime. The most important deposits are: Jabal Duraf, reserves of 50 million cu m suitable for building stone and cement manufacture; Jenadiba, 30 km north of Sana'a, reserves of 7.5 million cu m which are possibly suitable for the manufacture of lime; Jabal Adh Dhamir, 10 km from Bajil, which could be used for glass manufacture but are not suitable for cement; Jabal Balq Al Qibli, with reserves suitable for ornamental building tiles amounting to 200 million cu m; and Khamir, where there are high quality limestones suitable for industrial use as a flux or constituent of food products, chemicals and construction materials.

Marble - There are two large marble deposits in the Yemen Arab Republic but until recently most of the marble used in the building industry was imported from Italy. The first deposit, at Wadi Maksab, on the road from Mokka to Taiz, is about 250 metres thick but has numerous faults and is shot through with basalt dikes. The second deposit, at Shiban, 40 km south of Taiz, is of higher quality, white in colour and has reserves of 40 million tonnes according to a 1964 survey. A project for the preparation of terrazzo tiles at this deposit was proposed by UNIDO in 1979.

Salt - Deposits are already exploited at Salif. Production amounted to 172,000 tons in 1987. There is also potential for the production of marine salt.

Sandstone - As part of a feasibility study for a hollow glass manufacturing project UNIDO financed a survey of suitable sandstone sources. A deposit at Thagban, 14 km from Sana'a, was identified as being of particular importance. Reserves amount to 420,000 tonnes, more than 70 per cent of which would be of suitable quality for direct input into the glass plant. Production of white glass as well as green and amber bottle glass would, however, demand considerable investment in dressing machinery. Another deposit thought to be suitable for use in glass manufacture has been identified north of Sadah.

Uranium - Traces of uranium have been found in Hajjah region.

Zinc-silver-lead mineralization - A deposit of more than 4 million tonnes of complex zinc ore suitable for open cast mining has been discovered at Jabali 68 km north east of Sana'a. The deposit contains 17.5 per cent zinc, 2.0 per cent lead and 143 grammes of silver per tonne with a cut-off grade of 7.7 per cent zinc. However, the ore has a high magnesium content which would penalize the recovery of zinc metal. Further metallurgical and geological analysis is needed to assess the economic viability of the deposit.

5.6 Infrastructure

In 1962 the total length of asphalted roads was 231 km and communications between the major towns were difficult. In order to achieve national integration, the development of infrastructure was a priority of the government's development strategy. In the 1970s roads were built from Sana'a to Hodeidah, with Chinese assistance; Taiz and Hodiedah, with assistance of the USSR; and Sana'a and Taiz with assistance from the USA and the Federal Republic of Germany. By 1987 the total length of asphalted roads had increased to 2,359 km and the total length of roads was 3,896 km. Major road construction projects are still underway between the urban centres and the network of feeder roads is very poor.

Capacity at the main port of Hodeidah, already expanded with assistance from the USSR, will be expanded threefold to 1.75 million tons by allowing 5,000 tons to offload. Mokha harbour has also been upgraded and Salif harbour is currently being rebuilt.

In 1987 there were 69,700 telephone subscribers, as compared with 5,000 in 1975 and 27,000 in 1981, nearly half of whom were in Sana'a. An earth satellite system was established in 1976.

These developments have laid the foundation of the country's infrastructure and helped achieve the goal of national integration. Nevertheless, many rural areas are extremely isolated both from the communications network, social services and utilities. This is a major handicap to the mobilization of agricultural surpluses and the exploitation of the country's mineral wealth.

5.7 The role of technical assistance in industrial development

In view of the shortage of skilled technical and managerial personnel in the Yemen Arab Republic, technical assistance has been given a high priority by both the government and donor organizations. This shortage is particularly acute in the planning and administrative institutions which have been left behind by the rapid pace of industrialization. To help overcome their shortcomings UNDP has directed a considerable part of its funds - 60 per cent in the Third Country Programme - to institution building. Within the framework of the Fourth Country Programme (1989-1992), four out of the six projects in the industrial sector are concerned with the improvement of administrative and planning skills and methods in the Ministry of Economy, Supply and Trade.

Ultimately, the government's goal is to increase private sector investment, promote cost-effective technologies and help increase productivity. The institution building projects

identified by UNDP all seek to further these goals, either by enhancing the environment for private sector investment or through direct assistance at enterprise level to improve management and production methods.

A complete list of past and ongoing UNIDO projects is included in Annex E. UNDP assistance is currently directed at the following areas:

- In order to overcome delays in the licensing of industrial projects, improve the government's ability to select appropriate industrial projects and provide a data base for industrial planning UNIDO will provide technical assistance for Improving the Registration Capabilities of the Ministry of Economy, Supply and Trade (MEST). The aim is to draw up a clear statement of policy on the criteria for the selection and rejection of projects proposed by private sector promoters, provide training so that the Ministry can adequately assess projects on the basis of these criteria and introduce administrative reforms to streamline the process of licence application. This will greatly assist the private sector in the formulation of their project proposals and should prevent the unwarranted and unprofitable duplication of industrial projects. Registration could, furthermore, provide the means of collecting a data base on the industrial sector which could be up dated by the attachment of forms to the import licence application.

- Another project intended to upgrade the planning and management capabilities of the Ministry of Economy, Supply and Trade is Support to the Statistical Unit of MEST. This will enhance the capabilities of the statistical department to collect data and establish a management information system for decision makers. The absence of a reliable data base on the industrial sector is currently one of the main handicaps for planners and promoters hoping to identify potential industrial projects.

- UNIDO has already provided laboratory equipment for a quality control laboratory within MEST. Now UNIDO is to provide Assistance to the National Centre for Standardization, Quality Control and Metrology. The aim is to introduce legislation and procedures for the regulation of quality control and standardization and so protect consumers and facilitate exports by raising product quality. Particular attention will be paid to the food industry, chemicals and building materials.

- Pre-Investment Studies and Advisory Services for Priority Industries follows from the recommendations of a UNIDO programming mission undertaken in 1986 which identified potential investment opportunities in agricultural machinery, garment and animal feed production. The project will include the preparation of pre-feasibility and feasibility studies for potential investors. These studies will be prepared in close co-operation with the Industrial Bank of Yemen which may provide promoters with financial backing. In addition the

mission identified a number of existing industries that were working below capacity and face managerial, financial and technical problems. Expert advice will be provided to help resolve these difficulties and increase productivity. At least 30 enterprises are expected to benefit from these consultancy services and at least 15 of them are expected to show improvements in productivity.

- Small-scale handicrafts enterprises are to benefit from a similar range of consultancy services within the framework of a project entitled Improvement in the Quality and Productivity of Handicrafts. The project, which is being undertaken by UNDP and ILO, responds to the threat posed by cheap and high quality imports to traditional handicrafts and hopes to identify new techniques, products and markets that will help artisans compete successfully. This project is one of the few in the industrial sector that is likely to expand the employment opportunities and training for women.

- In line with the government's policy to increase the added value of local industry by increasing the use of local materials a project for the Development of Marble Processing Industries has been put forward. There are thought to be substantial marble reserves in the Yemen Arab Republic and the quality of some of the deposits would merit export. The project will identify exploitable reserves, prepare a development strategy and policy guidelines for a processing and exporting industry.

- Among the pipeline projects currently being investigated by the government and UNIDO is an Engineering Industries Prototype Development Centre. The project entails training local personnel in the techniques needed to design and manufacture industrial tools, dyes, jigs and moulds. Instruction will be provided in factory workshops. This will solve one of the main problems facing the industrial sector at present: absence of an adequate light engineering facility for the manufacture of spare parts and simple, but reliable, equipment. It will enable small companies to diversify their production lines and thereby eliminate much of the spare capacity that has come into being through the duplication of production lines.

Outside the framework of the UNDP Country Programme donors generally provide technical assistance in order to oversee the installation and startup of industrial plants financed by their credits. Such assistance is often of a lengthy duration. Institutional support is less common. The Netherlands Government has, however, provided technical assistance to the Industrial Bank of Yemen in order to help assess and identify industrial projects. This will be backed up by a grant - currently under negotiation - from the Netherlands Government and UNCDF to help the Industrial Bank of Yemen finance small-scale industry.

Technical assistance and training will continue to be important to the industrial sector in the coming years and institutions are likely to remain the principal beneficiary. It

should be pointed out, however, that the industrial sector has received a very small share of the donors' technical assistance budget: less than 1 per cent in 1987 and 10.2 per cent of the indicative planning figure of $27.8 million for the UNDP's Fourth Country Programme.

More important, in terms of numbers at least, are personnel hired by the private or public sector. Private sector entrepreneurs, particularly in the large enterprises, are already accustomed to using expatriate technicians and managers who are maintained - at some considerable cost - on their payroll. The government too has had to recruit numerous foreign workers to fulfil administrative posts. Such personnel are, however, engaged in executive rather than didactic functions and the skills transfer is thought to be relatively slow. The government would prefer foreign experts to spend a shorter period in the country - such as in the case of a technical assistance project - and concern themselves largely with training. This is UNDP's priority too.

ANNEX A

STATISTICAL TABLES

Table A-1: Gross fixed capital formation by sector and ownership, 1974/75 to 1987
(YR million in constant 1981 prices)

Sectors	1974/75-1977/78 a/	1978/79-1981 a/	1982	1983	1984	1985	1986	1987
			Private sector					
Agriculture	136	230	127	180	143	88	120	158
Mining & quarrying	2	6	7	7	9	5	4	6
Manufacturing	206	340	138	139	144	171	121	211
Utilities	13	38	34	34	33	34	31	41
Construction	73	193	50	50	71	77	72	95
Transport & communication	203	400	321	347	114	46	43	57
Real estate	845	1,097	651	713	814	612	577	756
Other	116	585	267	300	265	239	227	247
Sub-total	1,521	2,889	1,595	1,770	1,593	1,272	1,195	1,571
			Public sector					
Agriculture	112	338	281	367	391	373	209	354
Mining & quarrying	25	45	62	50	132	21	28	55
Manufacturing	98	172	89	54	27	259	123	117
Utilities	51	800	966	463	466	591	469	452
Construction	48	140	-	-	-	-	-	-
Transport & communication	513	1,481	748	417	372	194	314	736
Real estate	-	-	-	-	-	-	-	-
Social services	...	911	1,668	876	893	655	700	834
Other	345	2	24	60	36	21	49	30
Sub-total	1,192	3,889	3,838	2,287	2,317	2,114	1,890	2,578
Total	2,713	6,778	5,433	4,057	3,910	3,386	3,085	4,149

Source: World Bank, Yemen Arab Republic: Current Position and Prospects, Report No. 5621-YAR, 1986, and CPO, Statistical Year-Book, 1987.

a/ Annual average.

Table A-2: Balance of payments, 1982-87
($ million)[a/]

	1982	1983	1984	1985	1986	1987[b/]
Trade Balance	-1,947.5	-1,786.2	-1,404.7	-1,097.9	-851.3	-1,301.8
- Exports fob	4.9	9.8	9.0	8.2	16.4	69.0
- Imports fob	-1,952.4	-1,796.0	-1,413.7	-1,106.1	-867.7	-1,370.7
Services balance	-37.3	-51.5	-45.8	-71.6	-77.0	-184.9
- Exports	338.2	299.6	242.9	189.1	171.5	183.5
- Imports	-375.5	-351.1	-288.7	-260.7	-248.5	-368.4
Net unrequited transfers	1,392.7	1,293.1	1,137.3	850.2	835.9	879.8
- Receipts	1,660.1	1,433.8	1,210.4	912.0	909.5	923.9
- Official	468.7	189.4	143.4	102.8	240.5	162.2
- Private	1,191.4	1,244.4	1,067.0	809.2	669.0	761.7
- Payments	-267.4	-140.7	-73.1	-61.8	-73.6	-44.1
Current account balance	-592.1	-544.6	-313.2	-319.3	-92.4	-606.9
Non-monetary capital	192.9	282.5	115.3	147.8	225.7	493.8
- Drawing on loans	231.8	234.3	226.6	167.4	142.0	472.1
- Repayments of loans	-43.8	-23.6	-63.7	-48.0	-61.7	-110.2
- Suppliers credit	-	-	-	10.7	130.0	264.7
- Repayments of suppliers credit	-	-	-	-	-	-123.0
Net errors and omissions	88.7	45.7	76.6	10.4	60.9	60.2
Overall balance	-310.5	-216.4	-121.3	-161.1	194.2	-52.8
Monetary movements	310.5	216.4	121.3	161.1	-194.2	52.8
- Central bank net foreign assets	407.1	226.0	-26.4	-22.9	-243.4	-100.6
- Valuation adjustments	-42.9	8.0	106.3	70.6	144.5	36.9
- Commercial banks' net foreign assets	-53.7	-17.6	41.4	113.4	-95.3	116.5

Source: Central Bank of Yemen and IMF, International Financial Statistics.

a/ Converted at YR4.5=$1 in 1982 and 1983, YR6 in 1984, YR6.42 for transactions concluded by the CBY and YR7.44 for transactions concluded by commercial banks in 1985; YR7.398 for transactions concluded by the CBY and YR9.31 transactions concluded by the commercial banks in 1986; and YR8.99 for transactions concluded by the CBY and YR10.2 for transactions concluded by commercial banks in 1987.

b/ Preliminary.

Table A-3: Government finances, 1981 to 1988
(YR million)

	1981	1982	1983	1984	1985	1986	1987a/
Revenue	3,335	3,696	4,408	4,677	5,341	7,189	7,536
- taxes	2,614	3,042	3,660	3,761	4,354	5,652	5,395
Grants	1,519	2,018	852	761	661	1,838	1,460
Expenditure	6,271	8,251	8,446	8,268	8,679	9,668	16,299
Net lending	734	834	698	652	999	...	...
Extra-budgetary expenditure	788	1,890	922	1,208	1,784	2,166	2,186
Balance	-2,940	-5,262	-4,808	-4,689	-5,063	-3,806	-9,489
Domestic financing	2,019	4,415	3,907	3,787	4,228	3,212	6,238
Foreign financing	921	847	900	903	835	594	3,251

Sources: IMF, International Financial Statistics, and Ministry of Finance.

a/ Preliminary.

Table A-4: Imports by commodity groups, 1980 and 1987 in current prices

Commodity groups	1980 YR million	1980 Per cent	1987 YR million	1987 Per cent
Food and live animals	2,212.6	26.2	2,896.3	31.6
- Live animals	60.6	0.7	464.5	5.1
- Meat and meat products	208.1	2.5	358.6	3.9
- Cereals and preparations	395.8	4.7	1,004.6	10.9
- Vegetables and fruit	538.5	6.4	170.1	1.9
- Sugar and sugar products	363.0	4.3	114.1	1.2
- Coffee, tea and spices	59.7	0.7	63.1	0.7
- Animal feeds	...	...	256.1	2.8
Beverages and tobacco	103.6	1.2	223.4	2.4
- Beverages	7.0	0.1	6.1	0.1
- Tobacco	96.6	1.1	217.4	2.4
Raw materials	652.4	7.7	630.8	5.8
- Cork and wood	...	...	56.3	0.6
- Textile fibres	...	...	9.8	0.1
- Mineral fuel & lubricants	609.2	7.2	516.8	5.6
Animal and vegetable oils	65.9	0.8	195.8	2.1
Chemicals and products	432.2	5.1	845.2	9.2
- Organic contribution	...	...	23.5	0.3
- Inorganic chemicals	...	...	63.2	0.7
- Medicinal & pharmaceutical	160.0	1.9	360.0	3.9
- Fertilizers	7.9	0.1	14.6	0.2
- Resins & plastic materials	82.2	1.0	238.1	2.6
Manufactured goods	2,140.1	25.3	2,052.4	22.4
- Leather products	2.6	0.0	7.5	0.1
- Rubber products	133.4	1.6	90.6	1.0
- Cork and wood products	400.4	4.7	127.0	1.4
Machinery and transport equipment	2,348.0	27.8	2,013.6	21.9
- Power generating	...	...	63.3	0.7
- Industrial machinery	...	...	784.4	8.5
- Metalworking machinery	...	...	53.1	0.6
- Office machinery	...	...	42.4	0.5
- Telecommunications	...	...	181.9	2.0
- Electrical	...	...	249.3	2.7
- Transport equipment	999.6	11.8	639.4	7.0
Miscellaneous manufactures	456.4	5.4	570.0	6.2
- Furniture	74.6	0.9	51.4	0.6
- Clothing	109.9	1.3	131.0	1.4
- Footwear	71.3	0.8	63.1	0.7
Total	8,454.3	100.0	9,176.4	100.0

Source: CPO.

Table A-5: Exports by commodity group, 1987
(YR million)

Commodity group	Value	Per cent
Food and live animals	176.3	55.4
- Fish, crustaceans and preparations	2.3	0.7
- Cereals and preparations	50.1	15.8
- Vegetables and fruit	58.9	18.5
- Sugar and honey	5.1	1.6
- Coffee, tea, cocoa and spices	59.4	18.7
Beverages and tobacco	54.0	17.0
- Beverages	0.5	0.2
- Tobacco manufactures	53.5	16.8
Crude materials	69.4	21.2
- Hides, skins and furs	48.2	15.2
- Oil seeds	13.3	4.2
- Crude fertilizers	1.9	0.6
- Metalliferous ores and scrap metal	3.3	1.0
- Crude animal and vegetable material	2.1	0.6
Chemicals and related products	1.4	0.5
- Essential oils and perfumes	1.4	0.5
Manufactured goods	14.1	4.4
- Leather products	9.9	3.1
- Rubber manufactures	0.9	0.3
Miscellaneous manufactured goods	2.9	0.9
- Furniture and furniture parts	0.9	0.3
Total	318.3	100.0

Source: CPO, Statistical Year-Book, 1987, pp. 383-387.

Table A-6: Public external long debt, 1981-86
($ million)

	1981	1982	1983	1984	1985	1986
Total, incl. undisbursed	1,995.1	2,356.6	2,429.8	2,473.8	2,560.9	2,666.7
Disbursed only	1,116.7	1,311.8	1,573.6	1,689.2	1,871.1	2,051.6
- Official creditors	1,103.1	1,298.6	1,562.4	1,679.6	1,860.9	1,973.4
- multilateral	212.6	278.5	315.6	369.2	452.6	514.5
- bilateral	890.6	1,020.1	1,246.8	1,310.4	1,408.3	1,458.9
- Private creditors	13.6	13.2	11.1	9.6	10.2	78.1
- suppliers	-	-	-	-	-	-
- financial markets	13.6	13.2	11.1	9.6	10.2	78.1
Debt service	63.0	55.0	42.3	67.6	74.3	99.1
- Principal	53.0	44.5	29.0	51.2	56.1	57.0
- Interest	9.9	10.5	13.3	16.4	18.2	42.1
Debt service ratio (%)	17.3	16.2	13.9	26.9	33.0	44.9
Disbursed debt/GNP (%)	33.9	32.1	35.9	41.7	45.7	41.1
Concessional loans' share of disbursed debt (%)	96.7	95.9	97.3	95.1	91.3	83.1

Source: World Bank, World Debt Tables, 1988.

Table A-7: Outstanding external public and long term debt by creditor, 1980 to 1984
($ million)

Source	1980	1981	1982	1983	1984
Official sources					
Multilateral	168.3	212.6	278.5	318.7	372.7
- IDA	101.9	119.3	137.5	169.5	193.0
- AFESD	63.3	87.3	100.2	107.3	100.5
- IFAD	-	0.2	1.8	5.9	12.4
- Islamic DB	0.3	0.2	5.7	5.8	5.6
- Opec fund	2.8	5.7	9.0	10.1	17.8
- Arab Monetary Fund	-	-	24.3	20.2	39.3
- Kuwait Fund	-	-	-	-	4.1
Bilateral	705.8	881.8	1,012.9	1,237.0	1,301.4
- China	90.6	81.2	77.0	70.4	64.8
- Iraq	69.4	118.9	180.6	178.7	168.3
- Saudi Arabia	146.8	200.6	224.1	252.3	247.7
- USSR	304.3	359.6	374.7	577.3	646.3
- USA	1.3	1.3	4.6	5.0	6.0
- UAE	15.5	20.4	25.9	32.8	34.3
- Kuwait	43.8	46.1	50.1	59.6	63.0
- European countries	25.9	33.7	32.7	13.5	25.0
- Japan	8.2	20.0	43.2	47.5	46.0
Private creditors	25.6	22.4	20.4	18.2	13.8
- Suppliers	10.2	8.8	7.2	7.1	4.2
- Financial institutions	15.3	13.6	13.2	11.1	9.6
Total disbursed	899.7	1,116.7	1,311.9	1,573.9	1,687.9
Undisbursed	755.4	902.3	1,068.9	829.1	710.3
Total	1,655.1	2,019.0	2,380.8	2,403.0	2,398.2

Source: CPO in World Bank, Country Economic Memorandum, 1986, Report No.5621-YAR, p. 61.

Table A-8: Output of industrial products, 1978 to 1987

Products	1978	1980	1982	1984	1985	1986	1987
Extraction industries							
- Salt ('000 tons)	58	154	70	167	169	133	172
- Quarried stone ('000 cu m)	19	76	529	509	478	360	247
- Gypsum (tons)	-	-	4,500	59,227	90,823	68,933	44,407
Food, beverages and tobacco							
Food industries							
- Bread (tons)	-	-	2,144	2,181	2,417	2,489	3,833
- Biscuits ('000 tons)	15	20	26	38.2	50.3	52.9	56.4
- Ghee and edible oils ('000 tons)	4.6	13.2	16.6	22.3	36.9	40.7	59.2
- Beans (canned) (tons)	-	-	-	2,195	6,111	3,409	5,398
- Potato chips (tons)	-	-	-	-	147	209	99
- Beans (canned) (tons)	-	-	-	-	436	2,352	2,326
- Green peas (tons)	-	-	-	-	51	668	557
- Tomato paste (tons)	-	-	-	554	-	1,376	1,253
- Macaroni (tons)	-	-	-	-	-	-	490
- Cereal (tons)	-	-	-	-	-	-	248
Flour products							
- Flour ('000 tons)	-	-	-	-	-	-	129.7
- Bran ('000 tons)	-	-	-	-	-	-	25.2
Soft drinks and ice							
- Soft drinks (million litres)	29	74	83	108	101	68	48
- Mineral water ('000 cu m)	-	27	60	100	119	113	106
- Vimto drinks ('000 litres)	-	207	745	1,307	1,686	2,673	1,787
- Ice ('000 tons)	-	11	20	47.8	51	57	50.2
- Milk ('000 litres)	-	2,131	6,718	18,167	22,145	68,106	65,191
- Fruit syrup & products ('000 litres)	-	-	-	25,153	47,048	66,888	72,026
- Ice cream (tons)	...	368	448	785	701	1,049	1,258
Tobacco industries							
- Cigarettes ('000 cart)	10	17	21	121.7	236.3	438.1	467.5
Textiles							
- Ginning (tons)	...	...	2,712	110	865	945	1,003
- Spinning (tons)	...	...	27	26	-	-	-
- Weaving ('000 yds)	...	5,410	6,989	7,680	8,175	8,063	9,088
- Underwear ('000 pcs)	-	-	1,782	934	967	700	983
- Woollen pullover ('000 pcs)	-	-	42	67	113	45	106
- Blankets ('000 pcs)	-	-	-	301	390	730	347
- Pads (large) ('000 pcs)	-	-	-	-	-	-	724
- Pads (medium) ('000 pcs)	-	-	-	-	-	-	2,423
- Pads (small) ('000 pcs)	-	-	-	-	-	-	254
- Ladies sanitary towels ('000 pcs)	-	-	-	-	-	-	2,067

Table A-8 (continued)

Products	1978	1980	1982	1984	1985	1986	1987
Wood industries							
- Furniture limbs (pcs)	95	277	765	473	203	172	277
Leather and tanning							
- Tanning ('000 skins)	306	299	-	-	-	-	-
- Leather shoes ('000 pcs)	-	-	-	-	240	217	178
Metalworking and engineering							
- Household utensils (tons)	585	708	1,668	1,506	1,034	1,517	825
- Metallic scrubbers (tons)	36	29	91	87	75	94	88
- Barrels ('000)	17	115	107	99.5	65.7	58	33.1
- Tins ('000)	...	459	143	61	69	41	17
- Doors & windows (sq m)	-	6,000	4,578	16,158	15,769	9,913	4,467
- Stationery ('000 pcs)	-	-	1	-	-	-	1.3
- Metal suitcases ('000)	-	-	34	40	37	23	56
- Beds ('000)	-	-	19	5.7	14	7.4	4.4
- LPG ovens ('000)	-	-	-	-	-	-	7.3
- Cables and wires (tons)	-	-	-	-	-	-	236
- Dry batteries (large) ('000 pcs)	-	-	-	-	-	-	7,508
- Dry batteries (medium)	-	-	-	-	-	-	1,245
- Dry batteries (small)	-	-	-	-	-	-	2,481
Non-metallic products							
- Cement ('000 tons)	66	81	243	708.5	698.2	708.1	787
- Red bricks ('000)	...	4,800	1,420	5,173	6,328	5,776	3,800
- Cement bricks ('000)	-	1,290	3,599	2,021	1,835	1,466	1,647
- Tiles ('000)	...	...	6,749	8,509	8,200	9,555	8,133
- Cement blocks & tiles ('000 cu m)	...	22	32	88.6	90	64.4	61
- Arches ('000)	-	-	14	3.6	3.4	1.5	1.7
- Pottery industry ('000 pcs)	-	-	20	72	87	89	72
- Marble ('000 sq m)	-	-	-	69	-	10	32
Paper and printing							
- School books ('000)	-	-	974	1,667	2,398	3,518	3,140
- Other printings ('000 sheets)	-	-	1,226	1,913	2,967	2,275	5,749
- Paper tissues (tons)	-	72	47	248	269	284	371
- Cartons (tons)	-	1,000	1,769	6,144	10,599	11,635	12,692
- School exercise books ('000 dozen)	-	-	-	-	-	-	1,480
- Lining paper ('000 ream)	-	-	-	-	-	-	37

Table A-8 (continued)

Products	1978	1980	1982	1984	1985	1986	1987
Chemical products							
Pharmaceuticals							
- Tablets & capsules ('000 pkts)	-	-	-	2,696	4,582	8,817	3,322
- Syrups ('000 bottles)	-	-	-	578	1,187	1,463	2,574
- Ointments ('000 tubes)	-	-	-	-	-	-	527
Plastic products							
- Plastic footwear (million pairs)	-	4.1	4.1	3.8	4.7	5.8	5.1
- Sponge (tons)	1,500	1,667	1,931	2,839	1,740	1,208	1,304
- House utensils (tons)	-	141	508	470	277	326	630
- Buckets (tons)	...	112	1,169	1,717	2,029	1,946	2,196
- Water tubes (tons)	-	378	702	583	485	325	262
- Plastic sheets (tons)	300	364	1,044	2,351	3,056	3,640	3,093
- Polythene bags (tons)	-	213	...	...	...	...	...
- Beverage boxes ('000)	300	277	428	162	72	105	57
- Plastic tubes (tons)	1,300	3,687	3,324	4,651	5,520	4,953	4,259
- Strings (tons)	...	72	15	68	122	146	144
- Other plastics (tons)	...	...	...	234	585	570	669
- Fountain pens ('000)	4,000	1,000	-	-	-	-	-
Other chemical industries							
- Paints ('000 litres)	1,400	2,222	3,095	5,063	6,855	6,893	4,993
- Soap & detergents (tons)	...	900	3,706	5,851	7,716	18,600	20,468
- Perfumes ('000 oz)	360	563	448	411	541	362	572
- Hair oil ('000 cart)	...	...	19	73.6	62.5	33.3	36.5
- Heat insulation (tons)	...	9	11	11.8	17.9	19.6	13.5
- Decoration (sq m)	...	6,163	4,927	2,294	4,213	1,605	1,174
- Carbon dioxide (tons)	180	755	368	68	141	40	-
- Oxygen (cylinders)	-	4,400	9,600	17,710	30,571	26,745	20,883
- Kerosene gas ('000 cylinders)	-	-	900	1,823	3,369	5,086	5,989
- Bryl cream (tons)	-	-	-	-	-	-	213
- Shampoo ('000 cylinder)	-	-	-	-	-	-	21,703
- Nivea (tons)	-	-	-	-	-	-	92.5
- Household insecticides ('000 litres)	-	-	-	-	-	-	749
- Air freshner ('000 litres)	-	-	-	-	-	-	43
Petroleum products							
- Motor spirit ('000 barr)	-	-	-	-	-	-	866
- Solar ('000 barr)	-	-	-	-	-	-	918
- Fuel oil ('000 barr)	-	-	-	-	-	-	884

Source: CPO, Statistical Year-book, various issues.

Table A-9: Consolidated balance sheet of commercial banks, 1981-87
(YR million)

	1981	1983	1985	1986	1987
Assets					
Reserves	1,039.8	2,316.6	4,742.9	4,917.3	9,068.2
- Central Bank balance	903.1	2,153.7	4,655.5	4,760.9	8,867.6
Foreign Assets	761.4	1,067.7	1,781.3	2,990.1	1,266.6
Advances and loans					
- Public enterprises	197.9	276.2	557.0	337.5	291.9
- Private sector	2,054.1	2,609.7	3,865.4	4,776.1	4,094.7
Other	786.7	1,166.5	1,635.1	2,800.8	3,250.9
Total	4,839.9	7,436.3	12,581.7	15,821.8	17,972.3
Liabilities					
Deposits	2,811.6	4,707.6	7,760.1	9,557.7	11,920.6
- Government	17.5	32.5	65.3	155.9	214.3
- Demand	824.2	1,855.4	2,636.0	3,307.4	4,645.7
- Time	1,151.3	972.0	1,273.4	1,392.5	2,147.2
- Savings	302.2	725.9	1,311.1	1,638.8	2,334.8
- Foreign currency	104.7	798.9	1,868.3	2,410.4	1,086.7
- Ear marked	411.7	322.9	606.0	652.7	1,491.9
Foreign liabilities	272.7	259.7	2,036.5	2,357.8	1,822.3
Central Bank Credit	27.9	83.3	-	-	-
Capital & reserves	616.3	712.1	641.9	701.6	711.8
Other	1,111.4	1,682.4	2,143.2	2,420.4	3,517.6

Source: Central Bank of Yemen.

Table A-10: Students enrolled in vocational training institutions by course, 1981-89

Courses	1981-82 Vocational Training Centres	1981-82 Secondary Technical Schools	1988-89 Vocational Training Centres	1988-89 Secondary Technical Schools
Civil Engineering	-	33	-	101
Electricity	65	37	238	72
Surveying	-	-	-	9
Road Construction	-	21	-	82
Building	35	104	93	268
Refrigeration	-	-	-	84
Mechanics	81	30	204	122
Automechanics	67	83	250	175
Electronics	-	84	-	279
Sanitary piping	-	-	52	-
Carpentry	24	-	139	-
Sanitary and welding	38	-	70	-
Surveying	12	-	-	-
Total	322	392	1,046	1,192

Source: Ministry of Education.

Table A-11: Migrants in Kuwait by education, 1984

Educational level	Number	Per cent
University Science Graduate	9	0.5
University Arts Graduate	11	0.6
Higher Secondary School Science	8	0.5
Higher Secondary School Arts	9	0.5
Secondary School	110	6.5
Vocational Training Centre	81	4.8
Intermediate School	207	12.1
Primary School or without education	1,269	74.5
Total	1,704	100.0

Source: Unpublished Central Statistical Organization survey.

ANNEX B

PRIVATE SECTOR PROJECTS - INDICATIVE LIST

ANNEX B

Private sector projects - Indicative list

		Number of projects
Food processing industries/Production projects		
1.	Concentrated juices from local raw materials	2
2.	Dairy products	1
3.	Fresh milk from local farms	2
4.	Salt refining and canning	1
5.	Macaroni	1
6.	Cottonseed oil	1
7.	Vegetable oils (sesame)	1
8.	Unrefined oils	2
9.	Starch glucose	1
10.	Animal feed	1
11.	Fish conservation	1
12.	Building of crop silos	1
13.	Fish canning	1
Wood processing industries/Production projects		
1.	Veneering	3
2.	Furniture and wood products	5
Paper, paperboard and printing industries/Production projects		
1.	Paperboard	2
2.	Labels and industrial posters	2
3.	Printing machines	1
4.	Printing plants	2
Chemical and plastic industries/Production projects		
1.	Detergents and soap	1
2.	Batteries	1
3.	Sulfonic acid	1
4.	Plastic pellets	1
5.	Fertilizers	1
6.	Field pumps	1
7.	Petroleum products (lube and greases)	1
8.	Rubber rings and belts	1
9.	Tyre retreading	1
10.	Tyre manufacturing	1
11.	Car painting	2
12.	Glucose	2
13.	Boric acid	2
14.	Distilled water for tanks and batteries	2
15.	Brooms and toothbrushes	2

Annex B (continued)

	Number of projects
16. Foam for drilling water wells	1
17. Pesticides	1
18. Fiberglass fishing boats	1
19. Pharmaceuticals	1

Textiles and leather products/Production projects

1. Leather shoes	4
2. Ready-made garments, curtains and veils	5
3. Underwear	5
4. Socks and buttons	2
5. Moquettes	1
6. Carpets	1
7. Towels	2
8. Large sacks	2
9. Spinning and weaving	3
10. Sterile cotton	2

Building materials industries/Production projects

1. Steel rods (for concrete blocks)	2
2. Ceramics	1
3. Tiles	1
4. Marble	5
5. Glass products	1
6. Building insulation materials	1
7. Ceramic sanitary products	2
8. Sand bricks	2
9. Concrete and reinforced concrete products	2
10. Concrete blocks	2
11. Granite	2
12. Gypsum	2

Metalwork and engineering industries/Production projects

1. Water pipes (galvanized metal)	1
2. Filters	2
3. Corrugated steel sheets	1
4. Spare parts	10
5. Electric parts	4
6. Washer and refrigerator production and assembling	2
7. Range and oven production and assembling	2
8. Car and bycicle assembling	1
9. Plow assembling	1
10. Phone assembling	1
11. Welding electrodes	2
12. Irrigation pump assembly	2
13. Power distribution panels	1
14. House utensils	3

Annex B (continued)

		Number of projects
15.	Vacuum flasks	2
16.	Bottles	2
17.	Heavy equipment spare parts from iron scraps	3
18.	Cast iron	1
19.	Agricultural tools	1
20.	Car and vehicle production	2
21.	Door and window joints, locks and handles	4
22.	Aluminium products	2
23.	Gas cylinders	2

ANNEX C

THE COMPLETED, OPERATIONAL AND/OR APPROVED TECHNICAL CO-OPERATION PROJECTS OF UNIDO

UNIDO's Completed Technical Co-operation Projects

YEMEN Arab Republic
since 1972

Project Number	Backstopping Responsibility	Spec.Act./ All.Acc.Code	Project Title
SI/YEM/75/803	IO/IIS/INFR	31.3.A	Assistance to the Federation of Industrialists and Chambers of Commerce
TS/YEM/75/001	IO/IIS/INFR	31.3.B	Exploratory mission on the establishment of an industrial information service within the Ministry of Economy
RP/YEM/72/002	IO/IIS/INFR	00.0	Industrial estates
DP/YEM/71/004	IO/IIS/INFR	31.4.01	Small-scale industries
TS/YEM/73/001	IO/IIS/INFR	31.4.01	Appraisal of the industrial estate project Sanaa
DP/YEM/71/517	IO/IIS/INFR	31.4.02	Small-scale industrial estates
RP/YEM/79/002	IO/IIS/INFR	31.3.E	Feasibility study for establishment of three industrial areas and two industrial estates
DP/YEM/72/012	IO/IIS/INFR	31.3.L	Industrial promotion and advisory unit, phase I
DP/YEM/78/006	IO/IIS/INFR	J12103	Industrial Advisory Service to the Ministry of Economy and Industry
DP/YEM/84/001	IO/IIS/INFR	J12103	Institutional support to the industrial division of the Ministry of Economy and Industry
RP/YEM/72/001	IO/IIS/INFR	00.0	Project financing
RP/YEM/80/002	IO/IIS/INFR	31.3.M	Assistance to the Ministry of Economy
SI/YEM/77/801	IO/IIS/IMR	31.4.B	Assistance in the management of state enterprises
SI/YEM/74/816	IO/T/AGRO	31.7.C	Development of drinks industry
SM/YEM/74/016	IO/T/AGRO	31.7.C	Development of drinks industry
SM/YEM/75/013	IO/T/AGRO	31.7.D	Assistance to the leather industry

UNIDO's Completed Technical Co-operation Projects

YEMEN Arab Republic
since 1972

Project Number	Backstopping Responsibility	Spec.Act./ All.Acc.Code	Project Title
RP/YEM/80/001	IO/T/AGRO	31.7.D	Leather and leather products industries development, preparatory assistance
RP/YEM/76/004	IO/T/MET	31.8.C	Exploratory mission on evaluation of offers for a steel rolling mill
RP/YEM/81/002	IO/T/MET	31.8.C	Detailed project report for the establishment of a mini steel plant in the Yemen Arab Republic
VC/YEM/70/003	IO/T/ENG	00.0	Complex service team in maintenance and repair of equipment in the Yemen Arab Republic
SM/YEM/71/803	IO/T/ENG	30.1.05	Complex service team in manufacture and repair of industrial equipment
SI/YEM/75/805	IO/T/ENG	31.9.F	Development of the printing industry
SM/YEM/75/005	IO/T/ENG	31.9.F	Development of the printing industry
SI/YEM/75/811	IO/T/ENG	31.9.E	Assistance to Jumaan factory
RP/YEM/81/001	IO/T/CHEM	32.1.A	Assistance to the cement industry
RP/YEM/83/002	IO/T/CHEM	32.1.A	Assistance to the Auran Cement Plant
RP/YEM/84/002	IO/T/CHEM	32.1.A	Cement fact-finding and project formulation mission
SF/YEM/85/001	IO/T/CHEM	J13419	Assistance to the Amran Cement Company
SI/YEM/86/801	IO/T/CHEM	J13419	Investigation of concrete structures in the Amran Cement Plant
RP/YEM/76/003	IO/T/CHEM/PH	32.1.D	Pharmaceutical expert
RP/YEM/77/001	IO/T/CHEM/PH	32.1.D	Assistance in the establishment of pharmaceutical industries
SI/YEM/78/802	IO/T/CHEM/PH	32.1.D	Assistance in the establishment of a pharmaceutical plant
SI/YEM/79/801	IO/T/CHEM	32.1.E	Exploratory mission to assess the possibility of starting a pulp and paper industry

UNIDO's Completed Technical Co-operation Projects

YEMEN Arab Republic
since 1972

Project Number	Backstopping Responsibility	Spec.Act./ All.Acc.Code	Project Title
SI/YEM/78/803	IO/T/CHEM	32.1.G	Assistance to the production of pesticides
RP/YEM/83/001	IO/SD/TRNG	31.5.B	Industrial economics with emphasis on project identification and investment promotion
XP/YEM/86/155	PPD/AREA/LDC	E02600	Consultations with high-level Government officials
RP/YEM/78/001	PPD/SPA/ECDC	30.9.Z	Exchange of experience between Yemen Arab Republic and Jordan in the field of administrative structure and management
RP/YEM/82/001	PPD/SPA/ECDC	30.9.Z	Solidarity ministerial meeting for co-operation in the industrial development of the Yemen Arab Republic
RP/YEM/84/001	PPD/SPA/ECDC	30.9.Z	Solidarity ministerial meeting for co-operation in the industrial development of the Yemen Arab Republic
DP/YEM/78/021	IPCT/II	31.1.D	Training in investment promotion
RP/YEM/79/001	IPCT/II	31.1.C	Pre-feasibility - construction materials
RP/YEM/80/003	IPCT/II	31.1.C	Survey of local construction industry
RP/YEM/77/002	IPCT/CONSULT	30.3.Z	Consultation meeting on vegetable oils and fats, 12 to 16 December 1977

UNIDO's Approved and/or Operational Technical Co-operation Projects
(approved = PAD issued)

YEMEN ARAB REPUBLIC

Project Number	Backstopping Responsibility	All.Acc.Code	Project Title
DP/YEM/87/003**	IO/IIS/INFR	J12102	Establishment of the National Institute for Standardization, Quality Control and Metrology
DP/YEM/87/021*	IO/IIS/IMR	J12206	Industrial advisory services
SI/YEM/89/801	IO/T/AGRO	J13102	Techno-managerial appraisal of the Yemen Weaving and Textile Corporation
UC/YEM/79/201	IO/T/AGRO	J13103	Establishment of food testing and quality control laboratory in the Yemen Arab Republic (multifund to UT/YEM/79/201)
UT/YEM/79/201	IO/T/AGRO	J13103	Establishment of food testing and quality control laboratory in the Yemen Arab Republic (multifund to UC/YEM/79/201)
DP/YEM/88/017	IO/T/ENG	J13312	Establishment of an engineering industries prototype development and training centre - preparatory assistance
SF/YEM/87/001*	IO/T/CHEM	J13419	Technical assistance to the Yemen Corporation for Cement Industry and Marketing
DP/YEM/87/020*	IO/SD/FEAS	J14102	Strengthening the appraisal and registration capacity of the Ministry of Economy, Commerce and Supply

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

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* Also available in French.
** Restricted.