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PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN:  
A FRAMEWORK FOR TECHNICAL ASSISTANCE PROGRAMMING  
IN THE INDUSTRIAL SECTOR \*

Prepared by the

Regional and Country Studies Branch  
Studies and Research Division

- 
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## I. INTRODUCTION

Upon request of UNDP and the Government of PDR Yemen, UNIDO has prepared the working paper presented here which is to serve as an analytical basis for technical assistance programming for the industrial sector of PDR Yemen. Its basic objective is not to give operational recommendations on individual technical assistance projects but essentially to provide background information on the basis of which such projects can subsequently be identified.

Chapter II starts with a review of the macroeconomic and economic policy framework, in order to establish the general setting within which technical assistance will need to operate.

Chapter III surveys in more detail the country's manufacturing sector with a view to identify structural changes that have recently taken place in its branch composition, ownership pattern, employment and productivity.

Chapter IV, adopting a sectoral approach, proceeds to broadly identify the development prospects and main constraints in the most important branches of manufacturing while chapter V concentrates on more general issues of industrial development which cut across various branches. On this basis, focal points for technical assistance requirements are identified.

A UNIDO Mission was fielded between 19 November - 2 December 1986 to carry out the required field research. The Mission team consisted of Wilfried Luetkenhorst, Industrial Development Officer, Regional and Country Studies Branch and Najim Kassab, Regional Adviser, ESCWA/UNIDO Joint Industry Division. The members of the Mission wish to express their thanks particularly to Mr. W. Bryan Wannop, Resident Representative, UNDP, and to Mr. Basabrain Selim, Deputy Minister, Ministry for Industry, Trade and Domestic Supply as well as to their staff for organizing and coordinating the Mission's work program. Without their continuous support and cooperation the tasks foreseen could not have been accomplished in such short time, considering the complexity of the exercise.

## II. MACRO-ECONOMIC AND ECONOMIC POLICY FRAMEWORK

### 1. Development Planning: Approach and Achievements

The PDR Yemen belongs to the group of least developed countries. While this fact is somewhat obscured by a per capita GNP which, based on the official exchange rate, exceeds US \$500 there can be no doubt that the actual level of the population's standard of living is very low by international standards. Life expectancy stands at 47 years (1984) thus being slightly lower than the average for sub-Saharan African countries. The short- to medium-term development prospects of the country are severely limited by a number of constraints among which the narrow resource base, the smallness of the domestic market and the low productivity figure prominently.

Before independence in 1967 the economy was essentially characterized by the sharp contrast between a large traditional subsistence sector in the sparsely populated rural areas and a modern service sector resulting from and sustained by the regional importance of the port and the refinery of Aden. When the closure of the Suez Canal drastically reduced their role the country was faced with the difficult task to transform a service-oriented into a production-oriented economy - in a situation of serious financial constraints which were partly due to the withdrawal of budgetary support from the United Kingdom. The economic policy approach adopted after independence was one of central planning and collective ownership of the means of production. Public sector investment hence was supposed to be the main motor of development. On the other hand, the private sector has not ceased to make substantial contributions and accounted in 1980 still for some 45 per cent of total production and more than one quarter of industrial production.

The planning approach in the PDR Yemen has since been characterized by a certain flexibility. This applies both to the micro-level where individual units possess a limited degree of autonomy in their production decisions and to the macro-level where - within a basic Five Year Plan framework - annual modifications and revisions of plan figures are common. Annual progress reports prepared by the Ministry of Planning often lead to a reconsideration of priorities at the project level reflecting changing resource availabilities, emerging budget constraints or changes in planning parameters beyond the Government's control.

The first development plan - which in fact was more an investment programme than a full-fledged planning exercise - covered the three year period from 1971 to 1974. Of the targeted YD40 million only a bit more than three quarters (YD25 million) were actually spent during that period. 1974-78 was the time period of the First Five Year Plan (FFYP) which, after an interim period of two years <sup>1/</sup>, was followed by the Second Five Year Plan (SFYP) covering 1981-85. The basic development objectives of the hitherto implemented plans have not been subject to major changes and are adequately represented by those given in the SFYP. These are:

- to satisfy the basic needs of the population for food, shelter, consumer goods, employment, health care and other social services;

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<sup>1/</sup> This was due to the perceived need to synchronize the development plans of Arab countries as recommended by the Council of Arab Economic Unity.

- to develop the production capacity of the economy, in particular in industry, agriculture and fisheries;
- to strengthen the physical infrastructure;
- to explore and utilize the mineral resources of the country;
- to raise the educational standard of the population and the technical skills of the labour force;
- to improve the balance of payments situation by increasing exports of domestic products, by import substitution and by mobilizing greater amounts of remittances;
- to increase labour productivity and encourage women to participate in economic and social activities; and
- to promote balanced regional and sectoral growth and an equitable distribution of income.

Looking at the sectoral allocation of development expenditures (Table 1) the high emphasis given to the productive sectors of the economy is obvious. While the share of agriculture and fisheries was, however, halved in the SFYP (as compared to the FFYP), that of industry continued to increase to a planned allocation of 26 per cent (actual share 24 per cent), surpassed only by social services which accounted for slightly more than one quarter of actual development expenditures after having received much lower shares in the seventies. Transport and communication, on the other hand, substantially declined in relative importance to 18 per cent within the SFYP.

Table 1. Sectoral allocation of development expenditures, 1971-1985  
(percentage shares)

	<u>First</u> <u>Three Year Plan</u> 1971-74 (Actual)	<u>First</u> <u>Five Year Plan</u> 1974-78 (Actual)	<u>Second</u> <u>Five Year Plan</u> 1981-85 (Planned) <sup>a/</sup>	(Actual)
Agriculture and fisheries	30.7	35.1	17.2	17.9
Industry	16.7	19.5	26.1	24.3
- Manufacturing	...	(6.5)	(6.0)	...
- Electricity	...	(3.8)	(13.5)	...
- Oil and minerals	...	(6.2)	(5.5)	...
- Construction	...	(3.0)	(1.1)	...
Transport and communications	37.0	26.8	18.0	...
Social services <sup>b/</sup>	10.0	14.2	32.3	25.5
Other services	4.7	4.4	6.4	...

Source: Ministry of Planning, World Bank (1984) and IMF.

a/ In prices of 1980.

b/ Education, health, housing and water.

Some further observations regarding the relatively high allocation for industry in the SFYP are in order. The rise in the industrial sector's expenditure share between the FFYP and the SFYP is entirely due to the high allocation given to electrical power generation which was to be improved in both urban and rural areas. Industrial production proper, i.e. the manufacturing sector, claimed less than one-quarter of the total given to industry which puts its share in all development expenditures at a continuously low 6 per cent.

The Third Five-Year Plan (1986-90)<sup>1/</sup>, the directions of which were already endorsed by the Council of Ministers in late 1985 and which was to be finalized in early 1986, has not yet been fully put into effect. Unforeseen reconstruction work in the wake of the January 1986 events as well as a required reassessment of available financial resources have led to the decision to adopt only a one-year investment plan for 1986, while reviewing at the same time the 1987-90 plans within the Ministries concerned. In particular, it is now foreseen to cancel all those projects which fulfill the triple requirements of (i) being completely new, (ii) being locally financed and (iii) having substantial foreign exchange components.

The major theme of the TFYP which foresees a total investment of YD 560 million is its strong emphasis on consolidation of past achievements rather than on venturing into totally new projects which - given the country's high dependence on foreign financing - would bear the risk of further increasing the already high debt burden. Accordingly, major emphasis is given to the completion of ongoing projects as well as to rehabilitation and reconstruction needs, i.e. to the improved utilization of existing capacities.

The sectoral allocation of development expenditures envisaged in the TFYP reflects the persistent lead role assigned to the economy's productive sectors: Agriculture, fisheries and industry together are the recipients of 58 per cent of the total, 24 per cent have been earmarked for social services and another 18 per cent for transport and communications. The exact share of the industrial sector is yet undetermined but it is expected to receive the largest allocation of all sectors as it is seen by the Government to hold the key to accelerated economic growth and development.

## 2. Basic Characteristics of the PDRY Economy

### a. Resource endowment

The PDRY is a country with an extremely poor endowment of natural resources effectively limiting the potential for a resource-based pattern of industrialization. The country's potentially cultivable land is estimated at some 300,000 hectares (less than 1 per cent of the total area) of which currently only roughly one third is used for agricultural production. The single most important constraint to a fuller utilization of the given potential is limited water availability, with most of agriculture being directly dependent on traditional spate irrigation systems. In the Second Five-Year Plan the Government allocated almost two thirds of investment in agriculture to water and irrigation schemes. Limited success was achieved with agricultural production increasing by 2.4 per cent annually between 1980-84. Nevertheless the authorities' policy objective of substantially

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<sup>1/</sup> Information on the TFYP is partly drawn from the Fourth UNDP Country Programme for the PDR Yemen.

reducing the country's dependency on food imports and eventually achieving self-sufficiency in the production of certain food items is still far from being achieved. Between 1980-85 food and beverages imports have continued to account for roughly 30 per cent of total imports with cereals and their products alone being responsible for more than 10 per cent of imports (some 85 per cent of domestic wheat requirements are being imported).

As can be seen from Table 2, the greatest progress has been made in the production of vegetables where output increased by 35 per cent and acreage by 40 per cent in the first half of the eighties leading to almost self-sufficiency. Further major crops include fodder, coarse grain, fruits, dates and cotton while products such as rice, sugar and tea which have become staples cannot be grown domestically.

The country's only natural resource that is available in substantial quantities is its enormous fish wealth. As will be shown below, the fisheries sector has always been of vital importance in the PDRY economy in terms of meeting domestic food requirements, providing productive employment opportunities and generating significant export earnings. This still holds true although the annual fish catch fell drastically in the late seventies (due to serious overfishing) from a peak level of 160,000 tons to around 50,000 tons from which it recovered in the early eighties to a range of between 70,000 - 85,000 tons (see Table 3). Between 1980-84 the catch of surface water fish has lost in importance whereas the catch of deep water fish has been roughly doubled both in volume and in value terms. Moreover, it was possible to slightly increase the high-value catch of lobsters and shrimps which is totally export-oriented and fetches high prices in international markets. In a medium-term projection for the remainder of the eighties, the Ministry of Fish Wealth assumes a steady increase of total fish catch from 86.2 thousand tons in 1986 to 95.8 thousand tons in 1990.

Minerals availability again is very limited. Historically, salt, gypsum and limestone used to be the only minerals mined in the country. More recently, deposits of silica and marble have been discovered. Gold, copper and lead are furthermore thought to exist but available quantities have yet remained undetermined. Geological surveys and mapping operations have been assigned high priority by the Government and are currently actively pursued, partly in cooperation with the Yemen Arab Republic. In view of their potential as inputs for the construction materials industry, deposits of clay and limestone are particularly noteworthy.

Oil deposits have been discovered in the late seventies and early eighties. They have, however, so far not fulfilled initial expectations that the country might soon become an oil exporter.

#### b. Distribution of GDP

The sectoral breakdown of GDP is given in Table 4. From this Table it can be seen that in 1984 the share of agriculture and fisheries in GDP was 12.2 per cent (roughly 1/3 per cent for fisheries alone); the share of industry stood at 9.5 per cent while construction accounted for 15.7 per cent. Further major shares were held by trade, hotels and restaurants (16.4 per cent), by transport, storage and communications (12.1 per cent) and - by far the largest share of all - by Government services (28.8 per cent). Whereas the structure of GDP has not been subject to major changes in the 1980-1984 period (except for a noticeable reduction in the industrial sector's share which dropped below 10 per cent), two trends have clearly emerged in the longer run between



Table 2. Output, acreage and yield of main agricultural crops, 1980 - 1985

	1980	1981	1982	1983	1984	1985 <sup>a/</sup>
<b>Cotton</b>						
Production <sup>b/</sup>	4.6	5.2	3.9	2.9	2.2	1.2
Acreage <sup>c/</sup>	15.5	16.6	13.1	11.1	7.5	6.8
Yield	0.30	0.31	0.30	0.26	0.29	0.18
<b>Sesame</b>						
Production	1.5	1.8	1.4	1.7	1.6	1.9
Acreage	9.2	9.8	10.1	13.1	7.4	8.9
Yield	0.16	0.18	0.14	0.13	0.22	0.21
<b>Wheat</b>						
Production	7.8	7.5	7.3	7.9	11.1	10.0
Acreage	13.0	13.0	11.7	13.1	13.6	16.3
Yield	0.60	0.58	0.62	0.60	0.82	0.61
<b>Coarse grains</b>						
Production	19.9	27.5	21.8	18.4	19.9	17.9
Acreage	56.8	82.0	59.6	56.2	60.0	66.0
Yield	0.35	0.34	0.36	0.33	0.33	0.27
<b>Fodder</b>						
Production	134.7	273.9	139.7	215.9	214.2	202.8
Acreage	27.7	45.8	26.2	41.6	31.4	31.3
Yield	4.86	5.98	5.33	5.19	6.82	6.48
<b>Vegetables</b>						
Production	33.8	36.8	32.1	46.1	50.1	45.71
Acreage	8.9	9.2	9.8	11.0	12.2	12.5
Yield	3.80	4.00	3.28	4.19	4.11	3.66
<b>Melons</b>						
Production	8.6	16.4	10.0	11.5	7.5	9.7
Acreage	2.6	4.6	4.5	4.9	3.0	3.6
Yield	3.31	3.57	2.22	2.35	2.50	2.69
<b>Fruits</b>						
Production	14.9	10.9	9.7	11.0	11.4	11.7
Acreage	2.9	2.0	2.2	2.6	2.7	2.8
Yield	5.14	5.45	4.41	4.23	4.22	4.18
<b>Dates</b>						
Production	7.9	10.3	11.1	18.5	17.3	17.2
Acreage	11.6	14.0	14.1	11.9	13.6	14.1
Yield	0.68	0.74	0.79	1.55	1.27	1.22

**Source:** Central Statistical Organization, Statistical Yearbook 1984 (1985 data provided to the Mission).

**a/** Estimate.

**b/** In thousand tons.

**c/** In thousand acres.

Table 3: Quantity and value of fish catch, by species (1980 - 1984)

Fish Catch	1980	1981	1982	1983	1984
Surface Water Fish					
- Value <sup>a/</sup>	5180.3	4978.9	4475.7	4474.3	4643.7
- Quantity <sup>b/</sup>	51.8	55.5	36.9	36.2	38.2
Deep Water Fish					
- Value	1772.8	1837.4	2468.5	2987.7	3446.8
- Quantity	20.3	20.2	29.2	34.9	41.0
Cuttle Fish					
- Value	9272.8	2749.4	2736.8	1568.5	3697.9
- Quantity	9.6	2.9	2.8	1.6	3.8
Lobster and Shrimps					
- Value	900.9	1031.9	766.3	1322.3	1115.0
- Quantity	0.9	0.9	0.8	1.4	1.1
Other					
- Value	320.1	71.3	4.9	5.0	5.3
- Quantity	0.3	0.2	0.01	0.02	0.02
TOTAL					
- Value	17446.9	10668.8	10452.2	10357.8	12908.7
- Quantity	82.8	79.6	69.7	74.1	84.1

Source: Ministry of Fish Wealth (published in: Central Statistical Organization, Statistical Yearbook 1984).

a/ In thousand YD at constant prices.

b/ In thousand tons.

1973-1984: the agricultural share in GDP was almost halved from 21.7 to 12.2 per cent while on the other hand construction showed a particularly dynamic upward development increasing its share almost threefold from 5.7 to 15.7 per cent.

In the context of this study it can be noted that - despite the fact that industry has been assigned top priority in development efforts - the industrial sector has not increased its relative importance within the overall economy. At least from a macro perspective, i.e. ignoring changing patterns of production within the sector, it does not seem so far to have played a particularly dynamic role as driving force of economic development.

Moreover, as revealed clearly by Table 5, the lion's share of GDP has continued to be claimed by the distribution and services sectors of the economy which accounted for 63 per cent of total GDP in 1984. Hence, it can be stated that the persistent objective of successive Governments, namely to transform the PDRY economy from a service-oriented to a production-oriented pattern, has so far not met with success. The combined share of all commodity sectors (agriculture, fisheries, industry, construction) in GDP rather

Table 4. Distribution of GDP by economic sectors, 1973 and 1980-1984  
(in YD million, at current prices)

Sector	1973	1980	1981	1982	1983	1984
Agriculture and fisheries	16.4	28.1	33.4	31.5	34.0	34.4
Industry <sup>a/</sup>	8.9	24.2	22.7	23.6	26.7	27.0
Construction	4.3	28.2	36.3	43.4	45.8	44.5
Trade, hotels and restaurants	15.1	34.8	38.9	43.5	45.6	46.5
Transport, storage and communications	6.0	24.0	29.0	29.6	32.5	34.2
Finance, insurance and real estate	1.3	9.2	10.0	11.0	13.0	12.0
Business and personal services	2.6	1.8	2.0	2.2	2.5	2.7
Government services	21.0	52.3	62.0	65.0	80.0	81.5
GDP at factor cost	75.6	202.6	234.3	249.8	280.1	282.8
Net indirect taxes	8.5	36.8	50.1	58.1	64.9	63.1
GDP at market prices	84.1	239.4	284.4	307.9	345.0	345.9

Source: Central Statistical Organization.

a/ Mostly manufacturing; also includes mining, quarrying, electricity and water.

Table 5. Share of commodity sectors in GDP, 1973 and 1980-1984  
(percentages)

	1973	1980	1981	1982	1983	1984
Commodity sectors <sup>a/</sup>	39.2	39.7	39.4	39.4	38.0	37.4
Distribution and service sectors <sup>b/</sup>	60.8	60.3	60.6	60.6	62.0	62.6
GDP at factor cost	100	100	100	100	100	100

Source: Data presented in Table 4.

a/ Agriculture, fisheries, industry and construction

b/ All remaining sectors, as in Table 4.

declined recently to 37 per cent after having been stable for roughly one decade. This share is in fact among the lowest of all developing countries <sup>1/</sup>, largely due to the extremely narrow agricultural production base of the PDR Yemen.

c. Distribution of employment

The distribution of employment among the major economic sectors displays a pattern distinctly different from that of the sectoral shares in GDP. While in the latter case only about one third is accounted for by the commodity sectors, they generate at the same time almost two thirds of total employment (Table 6). Specifically, agriculture alone absorbed 40.6 per cent of the

Table 6. Distribution of employment by economic sectors, 1980-1985  
(in thousands)

	1980	1981	1982	1983	1984	1985 <sup>a/</sup>
Agriculture	195	196	196	198	200	203
Fisheries	9	9	9	9	10	10
Industry	45	48	49	52	54	55
Construction	30	36	40	41	44	46
Transport	27	29	29	31	32	33
Trade and supply	39	42	44	45	46	48
Other services	93	96	99	101	103	105
<b>TOTAL</b>	<b>439</b>	<b>455</b>	<b>467</b>	<b>477</b>	<b>488</b>	<b>500</b>

Source: 1980-84: Central Statistical Organization, Statistical Yearbook 1984.  
1985: Ministry of Planning.

a/ Estimate

domestic labour force in 1985 (44.4 per cent in 1980), fisheries 2.0 per cent (2.1 per cent in 1980), industry 11.0 per cent (10.3 per cent in 1980), construction 9.2 per cent (6.8 per cent in 1980) and all services sectors a combined share of 37.2 per cent (36.2 per cent in 1980).

When related to the corresponding GDP shares, these figures imply that labour productivity in the agricultural sector is extremely low, in the industrial sector it roughly equals the national average whereas fisheries and construction are characterized by significantly above-average productivity levels. Translated into average annual growth rates, the data of Table 5 show that industrial employment increased by 4.1 per cent per annum (1980-1985) a performance which was notably above the national average of 2.6 per cent and was surpassed only by the construction sector's yearly employment increase of 8.9 per cent.

1/ It is lower only in such exceptional cases as Panama, Hong Kong and Singapore.

As to employment by ownership, estimates for the early eighties point to an important role of the private sector, employing almost 60 per cent of the labour force. With the mixed sector accounting for only 1 per cent the remaining 40 per cent fall within the public and cooperative sectors of the economy.

As a consequence of the oil-related development drive in neighbouring Arab countries, a substantial portion of Yemeni workers has migrated since the early seventies seeking higher paid jobs abroad. The total number of migrant workers is estimated at approximately 100,000 (three quarters of which went to Saudi-Arabia, Kuwait and the UAE alone) thus amounting to one fifth of the domestic labour force. The resulting remittances have assumed a critical importance for the country's balance-of-payments situation (see below). At the same time, the majority of migrants being young, partly skilled male workers, shortages in certain skill categories, particularly in construction, have resulted. Two related more recent developments are the emergence of return migration to the PDR Yemen and the employment of expatriate labour in the country, mostly in the construction sector. On both trends, detailed figures are, however, lacking.

d. Balance of payments situation

The balance of payments situation of the PDR Yemen has always been characterized by an almost marginal contribution of exports to total foreign exchange earnings and by the persistence of extremely high trade deficits (Table 7). Due to substantial (and until very recently steadily growing) private transfers, almost exclusively in the form of worker remittances, the current account deficit has had a much lower order of magnitude. However, with the sharp decline in foreign aid grants that occurred from 1983 onwards, the current account deficit widened to reach a 95 million YD peak level in 1984. As the same downward tendency applies also to foreign loans which were considerably reduced in 1984 and 1985, the current account deficit has recently increasingly been financed by drawing on the country's foreign exchange reserves. This situation is projected to continue also in 1986 as a combined result of an improved trade balance on the one hand but further declines in net services income and private transfers on the other hand.

The following indicators shed some light on the structure of the country's external sector and the relative importance of some of the components of the balance of payments for the overall economy:

- The import-export ratio stood at 11.2 in 1980 and more than doubled in the first half of the eighties to reach 19.5 in 1985 (peak level of 26.7 in 1984).
- Between 1980-1984 the share of exports in GDP (at market prices) declined from 8.6 to 3.1 per cent, the corresponding import share went down from 96.7 to 82.3 per cent. Accordingly, the trade deficit as percentage of GDP was somewhat reduced but still accounted for -79.3 per cent, i.e. almost four fifths of the total domestic product.
- The current account balance widened not only in absolute but also in relative terms amounting to more than one quarter (-27.5 per cent) of GDP in 1984.

Table 7. Balance of payments, 1980 - 1986  
(in million YD)

	1980	1981	1982	1983	1984	1985 <sup>a/</sup>	1986 <sup>b/</sup>
Exports (f.o.b.)	20.6	16.8	13.1	13.9	10.6	12.5	16.1
- Domestic exports	(13.3)	(9.8)	(7.1)	(8.7)	(8.3)	(10.4)	
- Re-exports	(7.3)	(7.0)	(6.0)	(5.2)	(2.3)	(2.1)	
Imports <sup>c/</sup> (c.i.f.)	-231.4	-248.8	-268.1	-265.3	-284.8	-242.0	-206.9
- Petroleum	(-51.9)	(-54.2)	(-53.5)	(-57.0)	(-28.5)	(-36.6)	
- Other	(-179.5)	(-194.6)	(-214.6)	(-208.3)	(-256.3)	(-205.4)	
Trade balance	-210.8	-232.0	-255.0	-251.4	-274.2	-229.5	-190.8
Services (net)	17.1	17.6	14.9	4.5	3.3	-2.5	-9.5
Unrequited transfers (net)	138.9	173.0	192.2	166.7	175.8	150.6	133.7
- Private transfers	(111.9)	(131.9)	(148.8)	(152.1)	(166.2)	(140.3)	(124.6)
- Official grants	(27.0)	(41.1)	(43.4)	(14.6)	(9.6)	(10.3)	(9.1)
Current account balance	-54.8	-41.4	-47.9	-80.2	-95.1	-81.4	-66.5
Government Loans(net)	29.6	60.7	60.5	67.0	48.0	37.7	36.4
Other capital	11.5	-	-2.0	23.8	-1.0	-12.2	-0.4
Net errors and omissions	32.5	-5.2	-7.2	-6.6	23.5	15.7	-
Overall balance	18.8	14.1	3.4	4.0	-24.6	-40.2	-30.5

Source: 1980-84: Central Statistical Organization, Statistical Yearbook 1984  
1985: Bank of Yemen  
1986: International Monetary Fund.

- a/ Estimate.  
b/ Projection.  
c/ Excluding imports of Aden Refinery which are re-exported.

Taking a closer look now at the commodity composition of exports (Table 8) it emerges that food items assume a clearly dominant role accounting for 60.2 per cent of total exports in 1985 (52.6 per cent in 1980). Within food exports, fish and fish products are of overriding importance. They were responsible for 43.9 per cent of total exports in 1980. After a drastic decline to only 20.7 per cent in 1983 (largely due to biological cycles in some of the exportable species) the traditionally high share was soon regained

reaching a new peak level with 44.5 per cent of total exports in 1985. Raw materials (except fuels) have considerably lost in importance as exports items (down to 14 per cent in 1985), above all because of the sharp decline in cotton yarn exports as a consequence of output reductions. Tobacco has become another notable foreign exchange earner contributing slightly more than 10 per cent to total exports in 1985.

Exports of manufactured products (SITC 5-8) have throughout the period considered here remained insignificant. Moreover, a downward tendency was to be observed in the early eighties (share in total exports between 2 - 4 per cent in 1982-84) before in 1985 an exceptionally good performance of almost 8 per cent of total exports was recorded. As in that particular year more than half of all manufactured exports were accounted for by perfume oils and footwear alone (both of which showed extremely high growth rates) it seems too early to make any judgements on the sustainability of this relatively high level.

On the import side, the contribution of food, beverages and tobacco is again very high (30.2 per cent in 1980; 30.6 per cent in 1985), but less pronounced than in the case of exports (Table 9). Petroleum products have considerably declined in their relative share and in 1985 were down to only 15.2 per cent of total imports. On the other hand, manufactured imports have become more and more important. After an increase of some 10 percentage points in 5 years they represented almost half of all imports (48 per cent) in 1985, machinery and transport equipment alone accounting for 22 per cent. In overall terms, imports were sharply curtailed in 1985 (by 15 per cent) as a consequence of tightened import controls imposed by the Government to counter the decline in foreign exchange reserves.

The geographical distribution of exports and imports is shown in Annex Table A-6 and A-7. In 1985 almost half of all exports (44 per cent) went to developed market economies countries with Japan absorbing more than one-third of the total because of its high imports of Yemeni fish. Arab countries accounted for another third of exports; here the dominant position of the Yemen Arab Republic as the second largest export market after Japan is noteworthy. The most important import sources for the PDR Yemen are the USSR (largely oil-related), Australia, the United Kingdom and Japan.

As mentioned earlier, the role of private transfers (worker remittances) as the major source of foreign exchange earnings is a crucial one for the PDR Yemen. Following a period of two-digit average annual growth rates, private transfers peaked at YD 166 million in 1984 thereby amounting to half of the country's GDP (48 per cent) and reaching a level 16 times higher than total commodity exports. After 1984, however, they started to decline sharply as a consequence of the ending construction boom in the Arab oil-exporting countries. Estimates point to a 16 per cent reduction in 1985 and another 12 per cent drop in 1986.

Table 8. Exports and re-exports by commodities, 1980 - 1985  
(in thousand YD)

	1980	1981	1982	1983	1984	1985
<u>Food and live animals</u>	7,645	4,074	4,448	5,071	6,019	6,988
- Fish & fish products	(6,387)	(2,004)	(2,400)	(2,100)	(4,121)	(5,167)
- Sugar & sugar products	(379)	(793)	(1,057)	(1,750)	(868)	(694)
- Caffee, tea & spices	...	...	(433)	(735)	(376)	(569)
<u>Beverages and tobacco</u>	958	868	817	967	1,021	1,265
- Tobacco	..	...	(663)	(762)	(890)	(1,194)
<u>Raw materials, inedible except fuels</u>	4,321	1,348	1,535	2,678	945	1,625
- Cotton yarn	(3,068)	(448)	(580)	(1,802)	(114)	(404)
- Natural fertilizers & crude materials	(206)	(275)	(224)	(412)	(359)	(390)
- Animal & vegetable crude materials	(620)	(310)	(587)	(286)	(348)	(574)
<u>Mineral, fuels &amp; lubricants <sup>a/</sup></u>	875	818	1,097	1,161	1,149	817
- Natural gas	...	...	(1,094)	(1,156)	(1,148)	(817)
<u>Animal and vegetable oil &amp; fat</u>	40	56	21	3	60	1
<u>Chemicals</u>	33	27	77	33	20	523
- Perfume oils & products	...	...	(8)	(4)	(2)	(348)
<u>Manufactured goods</u>	422	152	99	84	50	78
- Paper & paper products	...	...	(13)	(9)	(25)	(37)
- Textile yarn, fabrics etc.	...	...	(52)	(24)	(14)	(27)
<u>Machinery &amp; transport equipment</u>	33	21	12	31	32	61
- Electrical equipment	...	...	(2)	(2)	-	(38)
<u>Misc. manufactured articles</u>	220	174	123	100	189	249
- Footwear	(67)	(24)	-	-	5	(175)
<b>TOTAL</b>	<b>14,547</b>	<b>7,538</b>	<b>8,229</b>	<b>10,128</b>	<b>9,485</b>	<b>11,607</b>

Source: Central Statistical Organization.

a/ Excluding re-exports of Aden Refinery.



Table 9. Imports by commodities, 1980 - 1985  
(in thousand YD)

	1980	1981	1982	1983	1984	1985
<u>Food and live animals</u>	66,117	66,386	62,986	60,400	77,676	70,819
- Cereals & their products	(27,757)	(24,065)	(18,316)	(20,348)	(29,163)	(31,260)
- Dairy products & eggs	(8,713)	(14,432)	(14,464)	(12,544)	(10,979)	(11,606)
- Vegetables & fruits	(8,088)	(8,791)	(8,792)	(8,817)	(10,193)	(7,422)
- Sugar & sugar products	(14,779)	(10,769)	(8,716)	(5,889)	(7,912)	(5,318)
- Coffee, tea & spices	(3,786)	(3,809)				
<u>Beverages and tobacco</u>	5,338	2,620	2,086	2,385	2,219	2,989
<u>Raw materials, inedible except fuels</u>	9,537	3,579	4,627	6,965	8,090	5,771
<u>Mineral, fuels &amp; lubricants</u>	51,920	54,203	53,477	57,030	28,515	36,551
<u>Animal and vegetable oil &amp; fat</u>	5,497	4,909	8,047	2,909	8,882	9,222
<u>Chemicals</u>	8,103	11,112	10,595	10,334	11,966	10,938
<u>Manufactured goods</u>	30,098	32,690	46,368	40,418	45,521	39,574
<u>Machinery &amp; transport equipment</u>	50,847	58,211	62,003	68,520	87,599	52,948
<u>Misc. manufactured articles</u>	8,802	9,206	11,226	12,212	13,158	12,341
<b>TOTAL</b>	<b>236,259</b>	<b>242,918</b>	<b>261,455</b>	<b>261,187</b>	<b>283,626</b>	<b>241,153</b>

Source: Central Statistical Organization.

### III. PATTERNS OF MANUFACTURING DEVELOPMENT: 1980 TO 1990

This chapter presents a condensed quantitative analysis of the main structural features of the PDR Yemen's manufacturing sector in a 10-year period covering both the recent past and the near future.<sup>1/</sup> However, from the outset it has to be stressed that the data presented below and hence the conclusions drawn therefrom do suffer from a number of shortcomings which tend to limit their overall significance.

First of all, it is only those manufacturing units under the supervision of the Ministry of Industry, Trade and Domestic Supply which are reviewed below. This effectively reduces the coverage to some 40 per cent of total manufacturing production. The remaining 60 per cent of the country's manufacturing sector are roughly distributed as follows (average figures for the first half of the eighties): some 15 per cent of manufacturing output are generated by the oil refinery, some 20 per cent fall under the supervision of other Ministries (Agriculture; Construction; Fish Wealth) and approximately one quarter is generated by small-scale private units under the responsibility of various municipalities. While the two former aspects will be taken care of further below, there is practically no reliable information available on the small-scale private sector.

Secondly, the reader should keep in mind that the analysis presented below is based on a fairly small total number of units amounting to less than sixty in 1985. This tends to make sectoral developments and resulting structural patterns highly dependent on performance elements of single manufacturing factories.

Thirdly, as the projections for 1990 are based on the original TFYP allocations, they will be subject to further changes in accordance with the envisaged plan revisions.

The analysis below will be carried out in relative terms, i.e. by concentrating on the percentage distribution of relevant indicators. The reader interested in the underlying absolute numbers is referred to Annex tables A-1 to A-5.

#### 1. Production Value and Value Added

Manufacturing production in the PDR Yemen takes place under four different ownership categories, i.e. in (i) completely public-sector owned factories; (ii) mixed factories combining public and private capital shares, partly under the new 1981 Investment Law (see below); (iii) industrial cooperatives which so far are exclusively engaged in textiles and clothing; and (iv) private industrial units. After the national independence, the state was concentrating primarily on developing the public and cooperative sector industries. However, there were also laws encouraging private investment in the mixed and private sector (Investment Organization and Encouragement Law No. 27 of 1969; Industry Organization and Industrial Investment Encouragement

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<sup>1/</sup> All data have been taken from: Planning and Statistics Office, "Review of Production Plan Indicators for the Factories Supervised by the Ministry of Industry, Trade and Supply" - Industrial Sector Third Five-Year Plan 1986-90, July 1986 (in Arabic).

Law No. 23 of 1971; Investment Encouragement Law No. 25 of 1981). Accordingly, private enterprises have been encouraged in certain areas even though the private sector as a whole has been envisaged to grow less fast than the public and the mixed sector.

The actual development during the first half of the eighties was slightly different, however. According to data provided by the Ministry of Industry, average annual output growth (in real terms) reached 10 per cent in 1980-85 and can be broken down as follows: 10.8 per cent for public sector industries, 7.1 per cent for mixed sector industries, 41.2 per cent for cooperatives <sup>1/</sup> and an above-average 11.2 per cent as well for private sector industries. Accordingly, as shown in Table 10, the mixed sector's share in total output was considerably reduced (from 42 to 36 per cent) and is obviously expected to continue this downward trend in the remaining years of the decade. Comparing the shares in production value to those in value added further shows that up to 1985 the mixed sector contributed substantially more to value added, but this performance is expected to be reversed until 1990. <sup>2/</sup>

Table 10. Production value and value added by ownership, 1980/1985/1990  
(percentage shares)

Sector	Production value			Value added		
	1980	1985 <sup>a/</sup>	1990 <sup>b/</sup>	1980 <sup>c/</sup>	1985 <sup>c/</sup>	1990 <sup>c/</sup>
Public	48.4	49.1	53.6	39.4	47.8	55.8
Mixed	41.8	35.9	32.5	49.4	40.0	30.7
Cooperative	2.0	6.9	5.5	3.5	7.4	7.5
Private	7.8	8.1	8.4	7.7	4.8	6.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculated from data provided by the Ministry of Industry, Trade and Domestic Supply.

a/ In 1980 prices.

b/ In 1985 prices.

c/ In current prices.

<sup>1/</sup> The strikingly high rate is largely to be explained by the transfer of the Coastal Carpentry Cooperative from the Ministry of Agriculture and Agrarian Reform to the Ministry of Industry. This cooperative accounts for roughly 50 per cent of the output of all industrial cooperatives.

<sup>2/</sup> From Annex table A-4 it emerges that in particular the cigarette factory will become much less value-added generating, and that with the new detergent complex a factory characterized by a relatively low value-added ratio will be added to the sector.

Table 11 reviews the sectoral structure of production value and value added. Above all, the dominant position of agro-processing industries (food, beverages and tobacco) is obvious as these have been contributing roughly one half of the total value of production, though with a declining tendency from 52 per cent in 1980 to 47 per cent in 1985. Chemical industries come second accounting for a bit less than one-quarter being followed by metalworking which in 1985 held a relatively high share of 12 per cent in total production value. At the same time, metalworking and paper and wood are those branches which have shown the highest average annual output growth rates between 1980-85 (23 per cent and 31 per cent respectively), in both cases largely due to the setting up of new plants within that period.

Table 11. Production value and value added by industrial branches, 1980/1985/1990  
(Percentage shares)

Industrial branch	Production value			Value added		
	1980	1985 <sup>a/</sup>	1990 <sup>b/</sup>	1980 <sup>c/</sup>	1985 <sup>c/</sup>	1990 <sup>c/</sup>
Food, beverages and tobacco	52.4	46.6	46.3	41.5	46.2	42.6
Textiles and clothing	9.3	6.8	6.6	10.4	7.5	6.7
Leather	4.9	3.7	4.3	6.3	3.1	3.9
Paper and wood	3.1	7.3	5.4	4.2	8.0	7.6
Construction materials	-	0.1	1.3	-	0.1	0.8
Chemical	22.7	22.4	23.6	28.2	23.4	24.6
Metalworking	7.0	11.9	10.5	8.3	10.2	12.4
Extraction (salt)	0.6	1.2	2.0	1.1	1.4	1.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculated from data provided by the Ministry of Industry, Trade and Domestic Supply.

a/ In 1980 prices.

b/ In 1985 prices.

c/ In current prices.

A significant trend revealed by Table 12 for the period 1980-85 is the substantial increase in the share of value-added in total production value indicating a rising level of industrial processing. The corresponding ratio stood at 0.37 in 1985 which when seen in a cross-country perspective is not at all a low figure. Moreover, with the exception of leather and of extraction (salt), all branches of manufacturing have positively contributed to this upward trend with paper and wood and construction materials showing the highest MVA/gross output ratios.

## 2. Employment and Productivity

In 1985, out of a total of some 5,500 manufacturing employees under the Ministry of Industry, Trade and Domestic Supply, more than 3,000 (57.6 per cent) were working in public sector factories (Table 13). Hence, the public

Table 12. Share of value added in production value, by industrial branches, 1980/1985  
(Percentage, based on current prices)

Industrial branch	1980	1985
Food, beverages and tobacco	0.22	0.35
Textiles and clothing	0.32	0.39
Leather	0.36	0.32
Paper and wood	0.39	0.44
Construction materials	-	0.43
Chemical	0.35	0.40
Metalworking	0.33	0.34
Extraction (salt)	0.51	0.28
TOTAL	0.28	0.37

Source: Calculated from data provided by the Ministry of Industry, Trade and Domestic Supply.

Table 13. Employment and labour productivity, by ownership, 1980/1985/1990

Sector	Employment			Labour productivity					
	1980	1985	1990	1980		1985		1990	
				I <sup>a/</sup>	II <sup>b/</sup>	I	II	I	II
Public	3,106	3,167	3,560	3,025	695	4,952	1,973	8,287	2,771
Mixed	927	1,180	1,471	8,766	2,922	9,733	4,410	12,172	3,697
Cooperative	363	848	973	1,080	523	2,600	1,137	3,114	1,366
Private	339	361	471	4,475	1,250	7,155	1,745	9,851	2,253
TOTAL	4,740	5,550	6,475	4,099	1,157	5,758	2,358	8,506	2,733

Source: Calculated from data provided by the Ministry of Industry, Trade and Domestic Supply.

a/ Production value per employee (1980 and 1985 in prices of 1980; 1990 in prices of 1985).

b/ Value added per employee (current prices).

sector's employment share exceeded the same sector's share in production value by more than 7 percentage points. In 1980, with a public sector employment share of exactly two-thirds, the corresponding difference had amounted to more than 15 percentage points. While the private sector roughly maintained its relative employment position, industrial cooperatives almost doubled their share between 1980-85 and the mixed sector recorded another slight increase. The employment pattern established in 1985 obviously is expected to continue in broad terms for the rest of the eighties.

Notwithstanding the above-mentioned incompleteness of the statistical data base (it is particularly to employment that small-scale private units make a substantial contribution), Table 13 does allow to draw a number of important tentative conclusions regarding the various sectors' comparative productivity. In view of their overwhelming importance, the focus is on the performance of the public and mixed sectors only.

- With labour productivity defined as production value per employee (column I in Table 13), it emerges that mixed sector productivity is clearly above-average whilst public sector factories show below-average productivity figures. The ratio of mixed sector to public sector productivity was 2.9 in 1980 and 2.0 in 1985.
- As these results could be largely due to different input/output structures (varying degree of processing), it is more significant to look at productivity in terms of value added per employee (column II in Table 13). This being done, the edge of mixed sector factories becomes even more pronounced. In 1985 their productivity level was 4.2 times higher than that of public sector factories. Between 1980-85 the productivity gap was almost halved in relative terms leaving, however, the public sector at only less than 50 per cent of mixed sector productivity. Furthermore, it should be noted that both in 1980 and in 1985 the value added/output ratio of the mixed sector was about 10 percentage points above that of the public sector.

While an in-depth study would seem to be required to firmly establish a case for the superiority of mixed sector investments in the PDR Yemen context and in particular to identify the specific reasons potentially underlying it, there is so far at least a strong indication for the latter's higher productivity. This may to some extent be explained by different branch structures within the two sectors (e.g. reflecting a higher amount of social and strategic-related projects in the public sector) although this does not appear to be the major determinant.

### 3. Size and Regional Distribution

Manufacturing enterprises in the PDR Yemen tend to be rather small in employment size. Both in 1980 and in 1985 some 90 per cent of all units employed less than 200 workers and almost 50 per cent had less than 50 employees. No major changes in these figures are expected to occur up to 1990.

In regional terms, manufacturing activities are extremely unevenly distributed. As Table 14 shows, in 1980 the Governorate of Aden accounted for 94.7 per cent of the country's total production value, the adjoining Governorate of Lahej for another 4.5 per cent leaving less than 1 per cent for the remaining four Governorates.

In 1985 the situation had slightly improved with the Aden Governorate's share down to 88.5 per cent while the hadramawt region with 6.5 per cent accounted for a quite substantial share of manufacturing production. Again, up to 1990 no major changes in these relative shares are projected which in view of the given infrastructure, resource and market constraints appears to be a realistic assessment. No doubt that any opportunity to reduce the (industrial) development gap between the country's capital and its further Governorates should receive top priority in development planning (see below).

Table 14. Production value by Governorates, 1980/1985/1990  
(Percentage)

Governorate	1980	1985	1990
Aden	94.5	88.5	88.4
Lahej	4.5	4.2	6.0
Abyan	0.2	0.1	0.9
Shabwa	0.3	0.7	0.6
Hadramawt	0.4	6.5	5.0
Al Mahra	-	-	-

Source: Calculated from data provided by the Ministry of Industry, Trade and Domestic Supply.

#### IV. POTENTIALS AND CONSTRAINTS IN SPECIFIC BRANCHES OF MANUFACTURING

##### 1. Fish-Processing

Fish is the PDR Yemen's major natural resource. As mentioned above, the fisheries sector contributes some 4 per cent to the country's GDP and more than 40 per cent to total exports.

As early as 1970 the country had started to build up a sizeable fishmeal industry which, however, turned out to be a costly failure. The first stationary factory that was established had a production capacity of 150 tons/day. To this a floating factory with a capacity of 500 t/day was added and construction of a third stationary factory of the same capacity was started. The fishmeal output which amounts to some 16 per cent of raw materials input was intended to be almost exclusively exported.

Although the total fish catch would have been large enough to support the fishmealing industry, two major problems soon emerged. First, due to a lack of locational flexibility of the large-scale units, the fish catch had to be transported over long distances leading to spoiling. Second, and more importantly, increasing production costs (energy, wages, transport) coupled with constant product prices prevented the industry from operating competitively at any time. Consequently, in 1980 it was decided to close down all fishmealing activities.<sup>1/</sup>

An alternative option which the Ministry of Fish Wealth is now in the process of investigating, is the establishment of small fishmeal units which could work at lower unit costs and would have the additional advantage of locational flexibility. In this context, the Mission strongly supports the Ministry's request for UNIDO assistance in conducting a feasibility study on the economics of small-scale fishmealing in PDR Yemen. At the same time, this feasibility study should closely analyze the potentials of freezing low value fish <sup>2/</sup> (such as sardines, makreles) for export markets. While apparently Arab investors are generally interested, a careful analysis of demand trends, cost structures and in particular of major competing countries would have to be carried out before any action in this direction may be considered to be taken.

Fish canning is being undertaken in two factories, one in Shuqrah (financed by a Japanese loan) and one in Al Mukalla (financed by a loan from the USSR) which together have a capacity of some 13.6 million cans on a one-shift basis. The canned fish is to 100 per cent sold on the domestic market and the installed capacity is sufficient to process the available catch. As in the future more emphasis will be given to freezing facilities, it might become possible to reduce canning which due to the need to import all required raw materials, is a relatively costly process.

In October 1986, work on the Aden Fisheries Project (under assistance of the Soviet Union) was taken up. In the project's first two phases a number of

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<sup>1/</sup> The floating factory was sold, the factory under construction was left uncompleted, the first one (150t/day) was closed down.

<sup>2/</sup> Freezing of high value catch (cattlefish, lobsters) is currently being undertaken with rather sophisticated technology (partly through joint ventures) and poses no major problems as the high costs can easily be recovered in export markets.



Table 15. Production of canned fish, 1980-1990  
(in thousand tins)

Year	Shuqra canning factory	Al Mukalla canning factory	TOTAL
1980	1,401	1,917	3,318
1981	2,243	2,718	4,961
1982	1,590	4,205	5,795
1983	2,161	4,169	6,330
1984	3,089	4,495	7,584
1985	4,008	4,568	8,576
1986 <sup>a/</sup>	3,500	4,225	7,725
1987	3,900	4,350	8,250
1988	4,300	4,475	8,775
1989	4,640	4,600	9,240
1990	5,000	4,725	9,725

Source: Ministry of Fish Wealth.

a/ From 1986 onwards figures refer to planned production.

central installations are to be built, including a 3,000 ton cold storage plant, a 100 ton ice plant, a 2,000 ton ice preserving store, a fish fillet production unit (capacity 5 tons/day), a smoked fish production unit (capacity 1 ton/day) as well as a factory for weaving nets and maintenance of fishing equipment. <sup>1/</sup>

Fish resources being the major natural resource of the country, much depends on a careful, step-wise future development of the sector in order not to repeat the failures of overambitious expansion programmes of the past. Both infrastructural investments and in particular training efforts will have to play an important role to pave the way for future success. The World Bank Fisheries III project, currently under way, aims at expanding and modernizing the Fisheries Manpower Development Centre (construction of a new building is to be started in early 1987) and at providing crucial extension services to five fishing villages.

## 2. Construction Materials

Apart from the gypsum and chalk factory under the Ministry of Industry, Trade and Domestic Supply, a small number of firms in construction materials industry are being operated under the supervision of the Ministry of Construction and Housing.

There is one plant producing parts for prefabricated houses with equipment and know-how purchased from Hungary. Being largely based on cement as raw

<sup>1/</sup> Cf. Economist Intelligence Unit, Country Report Bahrain, Qatar, Oman, the Yemens, No. 4/1986, p. 26.

material, the factory is totally dependent on imports. Nominal capacity is 500 flats per year (of 100 sqm each) of which on an average 50 per cent has been utilized. Since more than one year production is down to 20 per cent of capacity due to lacking domestic demand. Furthermore, there is a tile factory which is operating in a situation of excess demand (enlargement is being considered) and the country has four cement block factories of which three come under the Ministry of Construction and Housing and one belongs to the Governorate of Aden. <sup>1/</sup>

Previous plans to establish a cement factory in PDR Yemen have meanwhile been shelved and will not be further pursued unless the technical and economic feasibility of the project can be convincingly proved. The apparent scepticism of the Government about developing a local cement industry is fully shared by the Mission. The guiding principle in building materials industry (as well as in other branches) in the PDR Yemen should be to reduce import dependence and to rely to the maximum extent possible on domestically available natural resources the industrial processing of which can substitute for imports. In many branches of manufacturing this guideline is difficult to follow given the narrowness of the country's resource base. However, with clay, sandstone, limestone, granite and gypsum being available in abundant supply, prospects of construction materials are better than those in most other segments of industry.

In contrast to some civil engineering structures, such as roads and dams, a wide range of substitutions even among conventional building materials is possible for residential buildings. For example, gypsum wallboards may be substituted for bricks in interior walls in countries where gypsum is widely available. Furthermore, methods to use clay and clay bricks in construction have been developed in many countries and could be particularly suitable for the climatic conditions prevailing in PDR Yemen. Not only would the acceptance of new houses by the population be enhanced but also, from an economic angle, considerable savings in maintenance costs could be achieved. Further advantages of using domestically available traditional building materials include: <sup>2/</sup>

- high value added generation: clay bricks have the highest value added ratio of all building materials due to their relatively labour-intensive production;
- small-scale suitability: the production of bricks is particularly suitable for small-scale plants. In making, firing and drying bricks economies of scale tend to be insignificant even in developed countries. Case studies of developing countries show that in the brickmaking industry larger plants may sometimes even produce at higher units costs;
- transport cost considerations: in view of the low value/weight ratio of building materials transportation costs constitute a more serious constraint for this industry than for virtually any other. Every opportunity to better synchronize raw materials deposits and production sites should thus be seized. This in turn requires a high flexibility

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<sup>1/</sup> In addition, there are some 40 very small units producing cement blocks within the unorganized private sector.

<sup>2/</sup> For more details cf. UNIDO, The Building Materials Industry in Developing Countries: An Analytical Appraisal, IS.512, 29 January 1985.

and divisibility of production, conditions that can best be met by traditional building materials.

The Government is currently putting great emphasis on the development of the country's construction materials industry. To strengthen this important and comparatively promising area in general and those materials with low cement content <sup>1/</sup> in particular technical assistance is recommended in the following fields:

- enhancement of information on the range of internationally available technologies suitable for the PDR Yemen circumstances and on conditions and terms of their potential transfer;
- establishment of a pilot plant and demonstration centre for the production and utilization of clay bricks in construction of residential buildings;
- promotion of related vocational training to generate required professional skills;
- strengthening of links between the work of the Research and Studies Department in the Ministry of Construction and Housing and the operational activities of the public sector factories.

### 3. Food Processing

Food processing (incl. beverages and tobacco) is by far the country's most important manufacturing branch accounting for almost 50 per cent of total manufacturing production under the supervision of the Ministry of Industry, Trade and Domestic Supply. The largest factories within this branch in terms of output value include the cigarettes factory (mixed sector), the flour mill (public sector), the brewery (public sector), the tomato paste factory (public sector) and the soft drink bottling factory (public sector). Compared with these five largest production units which together generate some 90 per cent of production value in food processing the remaining factories, with the only further exception of the public corporation for dairy products, are operated on a small-scale basis. They comprise several bakeries and one factory each in ice making, ice cream and macaroni production. (In addition, the Ministry of Agriculture supervises two cotton mills and a small palm date packing unit in Hadramawt.)

The vegetable oil factory, with a production value of some YD 400,000 in 1980, has run into difficulties due to the deterioration of the cotton growing sector which in turn was, inter alia, caused by the tendency of farmers to focus on more remunerative crops such as horticultural products and animal fodder. In 1985, no output of edible oils was reported. A recent feasibility study <sup>2/</sup> suggests to postpone any further investment in the rehabilitation of the country's edible oil industry until the future situation of the cotton growing sector is clarified. The potential of introducing other oilseeds such as groundnut and sunflower is currently being studied but cultivation trials have not been conclusive so far.

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<sup>1/</sup> Clay bricks have a cement content of less than 10 per cent.

<sup>2/</sup> Cf. Manderstam Consulting Services, Feasibility Study on the Edible Oil Industry in the PDRY, April 1985.

New projects under the ongoing Third Five Year Plan include a bakery at Saywun (mixed sector) and a public sector biscuits and sweets factory, both being under construction. After completion, the biscuits and sweets unit is expected to belong to the largest in food processing with a planned production value of YD 3.4 million in 1990. The manufacture of biscuits and sweets represents an entirely new venture in the PDR Yemen. At the moment, there is no production of either commodity. The factory now under construction is located adjacent to the bread bakery at Al Mansoura which in view of water and electricity availability, transport infrastructure and economies of input delivery (flour for both factories) is considered an excellent site. A recent feasibility study <sup>1/</sup> shows that the rate of return on investment appears to be high.

As regards bakeries a recent UNIDO report <sup>2/</sup> has concluded that the establishment of further production units does not seem to be required as existing capacities are sufficient to meet the demand for wheat bread. It is rather suggested, with a view to enhancing the capacity utilization of the bakery at Mansoura (below 40 per cent in 1985), to diversify production by including items such as sponge cake and wheat fancy biscuits. Technical assistance will be required in this context to advise on necessary adjustments in the production process and to maintain a high degree of production flexibility.

By and large, the country's food industry is seriously constrained by the lack or inadequacy of locally available agricultural raw materials. Hence, only limited potentially viable investment opportunities can be identified. Subject to further careful investigation, these may include areas such as biscuits and confectionary, soft drinks, fruit juices (from imported concentrates) or potato products.

Capacity utilization of existing plants in food processing could be increased although being at comparatively high levels when seen against most other branches of manufacturing within the country. High attention should be given to improving the quality of products which will require both the replacement of outdated equipment and the introduction of quality control measures. Furthermore, technical assistance will be needed in the following fields:

- to explore the potential of multi-purpose factories adaptable to seasonal fluctuations of agricultural production (this could be of great importance to the tomato paste factory which is currently operating at only some 30 per cent of capacity);
- to study the feasibility of establishing a tomato factory in the Hadramawt region (where tomatoes are grown) to produce either directly double concentrate or triple concentrate in order to substitute for the latter's high imports;
- to improve the generally poorly developed packing facilities with a view to reducing the high losses due to spoiling of food products during transport.

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<sup>1/</sup> Cf. Manderstam Consulting Services, Feasibility Study for a Biscuits and Sweets Factory in PDRY, June 1984.

<sup>2/</sup> Cf. Final Report of Project SI/PDY/85/802, August 1986.

#### 4. Metalworking

Between 1980-85 the metalworking branch has been one of the most dynamic in the country. Total production value almost trebled in real terms during that period as a result of an annual average growth of 23 per cent. As reported by the Ministry of Industry, Trade and Domestic Supply, the branch contribution to total manufacturing production rose to more than 10 per cent in 1985.

In absolute terms, metalworking activities have remained fairly limited, however. (The production value of the whole branch is below that of the cigarettes factory alone.) The branch comprises seven separate units. Specifically, these are three small private sector factories producing aluminium doors and windows and nails, two mixed sector factories (aluminium, household items) and two larger public sector factories, viz. Agriculture and Metal Works factory and Al-Thourah Spare Parts factory.

The Agricultural and Metal Works factory was established with an installed capacity of 1,200 thousand pieces of different agricultural implements on a one-shift basis. In addition, it has a wire drawing and netting unit. However, it soon emerged that the agricultural implements production by far exceeded market demand even though actual production never really approached the capacity limit. From 1979 onwards, the production of agricultural implements was effectively stopped. At present, only the netting unit is operating (producing mashed wire) in addition to the aluminium doors and window frames unit which was recently attached to the factory.

The Al-Thourah Spare Parts factory (also Revolution Spare Parts Factory or REVOMETAL) is currently the only operating industrial scale metal-working factory in the country. It comprises a metal-furniture/metalworking production unit and a foundry. However, the foundry part is not yet operational due to delays that have occurred in contract arrangements and commissioning of the imported equipment. The range of metal products at present being manufactured includes office furniture, school furniture, hospital furniture, domestic appliances, material handling products, safes and others. Market demand has been increasing in recent years resulting in substantially improved capacity utilization rates. As the Government has imposed a ban on imports of competing metal products, REVOMETAL has been put in a position to benefit from economics of scale and to enlarge its product mix. Recently, REVOMETAL has decided to set up an independent tool room to serve both the metalfurniture part and the foundry part of the factory the ultimate aim being to have a common engineering service centre for the whole industry. <sup>1/</sup>

In shaping the metalworking sector's future development the following issues deserve priority attention:

- The foundry component of REVOMETAL should be put into operation as soon as possible to allow the utilization of local iron and steel scrap. The foundry could respond to various demands of engineering products such as agricultural implements and construction equipment.

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<sup>1/</sup> This idea has been developed in the context of an ongoing UNIDO technical assistance project (DP/PDY/85/006, "Assistance to REVOMETAL") which is recommended by the Mission to be extended.

- One promising area for expanding the sectors's activities might be to establish a multi-purpose tin can factory which could cater for various canning requirements (soft drinks, beer, paints). An in-depth feasibility study would be needed, however, prior to any investment decision. The same applies to the envisaged production of electrical wires.
- In general, the lack of systematic quality control is a constraint for the sector's further development. This is particularly true for aluminium household goods, to a lesser extent also for the metal furniture items produced.

By and large, the importance of the metalworking sector as nucleus for the creation of industrial skills needs to be emphasized. In view of the resulting spillovers to other sectors, metalworking activities play an important role in the country's human resource development. The focus also in the future will have to remain on import substitution potentials, i.e. on the replacement of imports of bulky, unsophisticated metal goods.

It is a difficult task to strike a balance between the need for multi-product factories on the one hand and specialization requirements on the other. The former appear to be dictated by the smallness of the domestic market (with no significant export potential), however, they severely limit potential productivity increases which could only result from a higher level of specialization.

Given that the country's metalworking industry is of vital importance for further industrial development, that performance so far leaves considerable scope for improvements and that the sector is still only in its advanced infancy stage, it is strongly recommended to launch a masterplan study on options and strategies for its future development.

## 5. Chemicals

In terms of production value the chemical branch is the second largest within the country's manufacturing sector. It is clearly dominated by mixed sector factories which account for some 85 per cent of production value in chemicals, specifically producing items such as perfume and cosmetics, paints, matches and batteries. The largest public factory in the chemical branch is the Al Gundi Plastics factory (established in 1972) which is equipped among others with intruders, injection moulding machines and bag making facilities. The factory has faced considerable difficulties in the past due to a number of reasons, such as lack of maintenance facilities, shortages of skilled manpower and problems with raw materials supplies. Capacity utilization in 1985 was as low as 16 per cent for plastic bags production and 14 per cent for other plastic products.

This is in striking contrast to the extraordinarily high capacity utilization rates of most mixed sector firms in the chemical branch (figures for 1985): 58 per cent in sponge production, 72 per cent for paint and emulsion and as high as 95 per cent in the case of perfumes. As mentioned earlier, perfumes recently have also made substantial export contributions. The mixed sector batteries factory, however, is operating at only some 30 per cent of capacity implying that it is actually producing losses.

A major new large-scale project is under preparation in the current Plan period in the form of a mixed sector detergent complex. The project was

initiated by private sector investors. Its hard currency component is to be financed by Yemeni migrants. The project has in principle been approved and a Board of Investors been established, yet the detailed modalities are still being negotiated.

In the chemical branch, even more so than in most others, consolidation and performance improvements of existing factories, including their selective expansion, is now called for rather than engaging in major new ventures. In the PDR Yemen development context with its narrow natural resources base the manufacture of chemical products is of necessity based on final stage transformation of imported raw materials, with relatively little value added domestically. Furthermore, unit costs of production tend to be substantially higher than those of imported products as economies of scale play a significant role. Therefore, the potential to widen the range of chemical products manufactured in the country appears to be limited.

Technical assistance is above all required to design rehabilitation programmes at the plant level with a focus on increasing the utilization of the existing capacities, including the concomitant training requirements. Particularly in connection with the expansion of Al-Gundi Plastic Factory into a blow moulding line technical experts may be needed to initially assist in running the plant.

## 6. Textiles

The country's only industrial scale fabric manufacturer is the Al-Mansoura weaving and spinning factory established with assistance from China and opened in 1975. It was initially planned to operate purely on the basis of domestically-produced cotton inputs. Most of local cotton production at that time being in the form of medium and long staple (geared to export markets) whereas the new factory required short staple inputs, domestic production of cotton had to be reoriented to serve the needs of industrial processing. Additional problems emerged in the field of marketing as consumer preferences tended to be in favour of blends of cotton and man-made fibres. Employment in the textile factory went down from some 1,500 in the initial years of operation to about 800 in 1985 which still leaves it as the single most important industrial employer in the country (excluding the oil refinery).

Although faced with a situation of excess demand, the textile factory has continuously been beset with difficulties, partly due to problems related to cotton supply, more recently also because of shortcomings in the production process itself. The present status can be summarized as follows: <sup>1/</sup>

- The production facilities are outdated, under-utilized and overstaffed;
- the air-conditioning facilities are in urgent need of substantial replacement;
- the spinning facility is unsuitable for the production of coarse and medium yarns;

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1/ The following paragraphs draw heavily on a recently prepared feasibility study. Cf. Ministry of Industry (PDRY), Feasibility Study for Cotton-Based Industry, March 1984 (prepared by Atkins Planning).

- the looms are reaching the end of their economic lifespan making their replacement with a smaller number of modern technology looms eventually inevitable;
- printing is of low quality necessitating the introduction of modern screen printing equipment;
- training and re-training of personnel at all levels appears essential, including visits by engineers to overseas production facilities.

On the basis of raw materials availability and quality, the size and structure of domestic market demand and the processing constraints of the textiles mill the same study goes on to assess various options for the country's textiles industry. It concludes that both the establishment of a new cotton spinning mill and of a new weaving mill would generate negative internal rates of return while for a new knitting and garment making factory the return on investment would be positive but highly sensitive to only slight variations in crucial parameters. Hence, all of these options are not recommended. What proved feasible, however, is the rehabilitation of the Al-Mansoura textile mill along the lines suggested by the Ministry of Industry in 1983. Furthermore, the modernization of the factory on the basis of the production programme and product mix proposed by the Ministry of Industry, but with the additional introduction of a knitting and garment making component, has been examined and found to have a very robust financial performance.

In the short to medium term, the Government seems to have opted for a modest modernization strategy including the introduction of new machinery in the factory's weaving section and the upgrading of existing machinery in the spinning section. A further important component in the rehabilitation of the textile mill appears to be assistance in marketing activities (identification of local demand patterns; introduction of new designs etc.) which is currently provided by UNIDO. <sup>1/</sup>

## 7. Oil Refinery

Looking beyond manufacturing proper, the Aden oil refinery - built in 1954 by the British Petroleum Company and transferred to Government ownership in 1977 - is the single largest industrial establishment in the country with a total work force of some 2,300 people. Since the closing of the Suez canal the refinery along with the Port of Aden has drastically lost in importance and has been forced to operate far below its capacity of 8.5 million metric tons/year ever since. After the Government's take over annual throughput increased to an average of 3.5 to 4 million tons, a level that was also reached in 1985 (of which some two thirds were processed under contract for Iran in view of the latter's war-affected Abadan refinery). In 1986, the situation sharply worsened. The only remaining contracts were with Kuwait on 0.5 million tons and with the Soviet Union on 0.6 million tons which together with a small amount of processing for domestic consumption appears just sufficient to keep the refinery operational <sup>2/</sup>. With the break-even point

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<sup>1/</sup> Under project XP/DPY/86/002.

<sup>2/</sup> In January 1987, it was agreed, however, that Aden refinery is to process an additional 1.0 million tons/year of Kuwaiti crude oil. The contract is reported to be for one year, and to be renewable.



having risen to 6.0 million tons/year due to a higher wage level, the refinery is currently generating high operational deficits.

With many technologically more advanced refineries having been established in neighbouring oil-exporting countries, the Aden refinery's loss of competitiveness seems to be irreversible given the age and rundown conditions of most of its facilities. With this structural weakness in mind it should, however, be feasible to reduce its competitive disadvantage. The alternatives, bluntly put, are to shut down the refinery immediately (which in view of the employment consequences alone is not a realistic option) or to modernize its infrastructure and equipment. The Government has opted for the latter approach which should not be expected to make the refinery fully competitive but is to be considered the only way to achieve an annual throughput closer to the break-even level than at present.

To this end, a rehabilitation and modernization programme comprising three major components is being implemented:

- (1) Upgrading of harbour facilities: The harbour's current ability to accommodate only tankers of below 50,000 tons capacity is the major bottleneck for attracting new orders. Implementation of the harbour extension program aimed at allowing the accommodation of tankers of up to 110,000 tons capacity has been started on a priority basis. The work calling for the construction of four deep water berths and one shallow berth has drawn lower bids than expected. Hence, the second phase of the extension program, i.e. construction of a grain silo for bulk carriers, may be speeded up.
- (2) Rehabilitation/replacement of tanks: Due to leakages and safety problems of existing tanks up to 2,500 tons of oil per month are being lost and only some 60 per cent of tankage capacity can effectively be used. Financial allocations in the Plan have been requested by the refinery to allow the replacement of some tanks and the rehabilitation of most of the tankage.
- (3) Rehabilitation of the power station: A third urgent component of the modernization program is the rehabilitation of the refinery's power station which now is over 30 years old. In particular investments are required to replace many auxiliaries of the turbines, such as boilers, main switch gears and cooling water pumps.

In general, the introduction of energy conservation concepts in the oil refinery appears to be essential. Technical assistance may be needed to fully explore and utilize the potential for small energy savings projects which would not require major new investments beyond the country's financing capability.

Furthermore, the refinery's overall performance is expected to be strengthened as a result of increased efforts at diversification. Both the asphalt plant and the vacuum distillation unit have been completed and are having test runs now. The asphalt plant has an annual capacity of 110,000 tons/year of which, depending on the domestic demand, up to 90 per cent is to be exported with target markets including Somalia, Ethiopia, Yemen Arab Republic and Oman.

## V. CROSS-SECTORAL ISSUES OF INDUSTRIAL DEVELOPMENT

### 1. Institutional Framework

Regarding the institutional framework of industrial planning and policy implementation, a certain fragmentation of competences is to be observed. As small private industrial operations come under the responsibility of municipalities and as a number of large industrial enterprises have been attached to various other Ministries (such as Fish Wealth, Agriculture, Construction), only roughly half of total manufacturing output is actually under the supervision of the Ministry of Industry, Trade and Domestic Supply.

The resulting frictions have serious repercussions on the effectiveness of industrial planning which in many cases has been lacking overall consistency. Remedial action can theoretically proceed in two alternative ways: either the area of responsibility of the Ministry of Industry is substantially widened to cover the whole field of manufacturing or effective coordination mechanisms between the concerned Ministries are being established. In view of the already strained planning, implementation and monitoring capacities of the Ministry of Industry<sup>1/</sup> the second option seems to be more promising. It is thus strongly recommended by the Mission to establish Inter-Ministerial Coordination Committees between the Ministry of Industry and each of the concerned other line Ministries with the former acting as focal point. These Committees should be operated at the level of Deputy Ministers or Assistant Deputy Ministers and should also include one representative of the Ministry of Planning. Their main function would be to ensure in the early stages of planning new projects that industrial processing demands are met by a corresponding availability of raw materials both in quantity and quality terms.

In view of the crucial role of the Ministry of Industry for the country's largely public sector-driven industrial development, the Mission furthermore suggests to undertake a thorough review of its current planning capacities and capabilities. The Ministry in particular seems to suffer from a lack of economists that combine theoretical knowledge with practical industrial experience. While being able to handle individual projects, the Ministry to some degree lacks the expertise to develop a medium- to long-term perspective for the country's industrial development including related manpower requirements, financial implications, intersectoral linkages, etc. Technical assistance thus continues to be required both in terms of overall industrial planning expertise and in terms of project identification, preparation, monitoring and appraisal techniques.

### 2. Ownership Patterns

It is understood that - on the basis of collective ownership of the means of production and a centralized planning system - the public sector has been and will continue to be the backbone of the country's industrial development. At the same time, the Government has increasingly become aware of the benefits to be reaped from strengthening the private and mixed sectors' contribution to industrial development. As was pointed out above (see chapter III.2), mixed sector factories have shown to possess a significant productivity advantage over all other ownership categories, a fact that clearly deserves a thorough analysis before a satisfying explanation may be offered.

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1/ Cf. also World Bank, People's Democratic Republic of Yemen, Special Economic Report. Mid-Term Review of the Second Five-Year Plan, 1981-85, Report No. 4726-YDR, June 4, 1984.

The Ministry of Industry has a strong commitment to achieve further industrial progress without excluding any potential source of investment for reasonable projects. Hence, technical assistance is being sought to develop an appropriate framework for the channeling of private sector resources into productive purposes which is seen as a desirable complement to the public sector's lead role in industrialization.

As a first step to this end, it appears to be required to get a clearer picture of the type and range of private sector industrial activities in the PDR Yemen. As mentioned before, approximately one quarter of manufacturing production (and an even higher share of manufacturing employment) is accounted for by private small-scale units about which only very sketchy information is available. A detailed empirical stocktaking of their activities and performance thus would seem to be a priority task.

Secondly, as pointed out by Ministry of Industry officials, a thorough review needs to be carried out of the country's existing economic laws and regulations with a view to identify required/desirable revisions that could lead to an increased development contribution of the industrial sector.

Thirdly, an attempt should be made to identify the most promising target branches for further private and/or mixed sector industrial investment in the PDR Yemen which in turn would require a general in-depth assessment of the comparative (dis-)advantages of various industrial activities in the country. The domestic resource cost (DRC) methodology may be applied for that purpose keeping in mind, however, that in the country's specific development circumstances any rigid interpretation of DRC values would tend to be self-defeating. Hence, DRC values can clearly not be considered the sole criterion for investment decisions <sup>1/</sup> but they can provide a yardstick for eliminating the comparatively most disadvantaged production units and for concentrating on those which while being desirable for employment, balance of payments or other reasons exhibit only relatively small disadvantages in terms of production efficiency.

As a means to promote mixed sector investment basically by attracting the capital of Yemeni emigrants, a new Investment Law (which is currently under revision) was issued in 1981, applying to firms with a minimum capital of YD 5,000. The Law provides a number of special incentives and privileges to investors. Among these are:

- Exemption from taxes and duties on imported equipment/materials not produced locally as well as on spare parts up to 2 years after commencement of production;
- exemption or reduction of taxes and duties on raw materials up to 3 years after commencement of production;
- income tax exemption for a period of 5 years;
- the right to carry over losses to the second year;
- repatriation of profits up to the value of exports;
- transfer abroad of up to 75 per cent of the income of foreign employees (after tax);

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<sup>1/</sup> In the often applied crude sense of recommending the closing down of all industries with a DRC value above one, i.e. those which produce at higher costs than justified by world market prices.

- repatriation of capital after 5 years at a rate of 25 per cent annually.

After a very limited impact in the first years the number of joint ventures (with a majority share held by the public sector) established under the Investment Law has recently increased. The total number of projects is around 15, mostly involving the manufacture of simple consumer goods such as processed food, clothes, pottery, glassware, furniture, paint, aluminium frames, etc. Several further projects are under preparation including a large soap and detergent complex.

Notwithstanding the limited success that the Investment Law has had so far, it has clearly not lived up to expectation. The Government is anxious to increase its effectiveness. To this end, the Mission suggests to undertake an assessment of experience gained by investors so far, to identify the major shortcomings of the current Investment Law and - on the basis also of relevant experience in other developing countries - to provide recommendations on appropriate revisions to be considered. Technical assistance would be required in this regard.

### 3. Regional Dispersal of Industries

As shown above (see chapter III.3), manufacturing activities in the PDR Yemen are extremely unevenly distributed in regional terms with the capital region accounting for some 90 per cent of total production value.

The Ministry of Industry is currently considering the establishment of industrial estates as a means to achieve a better regional dispersal of industrial development. While it is obvious that any reduction in the glaring regional disparities in the country's industrial development is a desirable objective, the issue of industrial estates formation would seem to require a thorough analysis in the particular case of the PDR Yemen. An in-depth feasibility study appears to be indispensable before any scarce financial resources be channelled into the establishment of the required infrastructure.

It is strongly suggested to place the industrial estates concept into the broader framework of designing a suitable regional industrial development strategy for the whole country. When seen in this perspective the major tasks would be:

- to identify those industries that are potentially viable outside the capital region, in particular in view of the significance of transportation costs;
- to identify appropriate locations for their establishment (which might be difficult to find apart from the Hadramawt region in view of the required infrastructural facilities, energy supply, manpower availability etc.).

The elaboration of such a Regional Masterplan geared to identify the limited but existing potential for industrial deconcentration would in fact be of major benefit for future industrial planning in the PDR Yemen. As one of its elements it should also include a survey on promising areas of handicraft industries, such as pottery, silverwares, handlooms etc. on which only little information is available so far. It is only in a second stage then, after completion of the regional plan, that a decision on the desirability and economics of industrial estates can be taken in the light of the identified input availabilities, demand potentials and sectoral patterns of production.

#### 4. Utilization of Worker Remittances

With workers remittances amounting to approximately half of the country's GDP and sixteen times the level of commodity exports, the PDR Yemen economy is crucially dependent on the repatriated earnings of its migrant workers. Even though remittances have recently started to decline rapidly (by 27 per cent between 1984-86) and due to the oil price downturn can be expected to continue doing so <sup>1/</sup>, they will in the foreseeable future remain a major determinant of the country's economic position. Thus it appears surprising that this vital area has not so far been made the subject of a deliberate active policy approach. Most recently, however, a Department for Emigrant Issues was established directly under the Prime Minister which may be taken as indicating increasing Government awareness in this field.

Generally speaking, the Government is faced with two different decisions. Firstly, it has to be decided whether a continuation or even increase of the current level of net worker emigration is a desirable objective or not. There is obviously a trade-off involved between the easing of foreign exchange constraints on the one hand and emerging skill shortages in the country's labour force on the other hand. With some 20 per cent of the domestic labour force already working outside the country, further outflows of skilled labour may become a serious impediment to future industrial progress. This may warrant a policy of (selective) discouragement of further migration.

Secondly - and quite independent from the exact quantitative trend in remittances - economic policy decisions are called for concerning the utilization of remitted earnings, i.e. how can they best be channelled into productive investments with high social benefits? The available evidence suggests that so far they went basically either into direct consumption or into construction of residential buildings, a pattern confirmed by the experience of many other 'labour-sending' countries. This being so, a major portion of the transfers has no direct impact on productive investment, resp. can even exert negative influences by diverting scarce labour resources into private construction activities. In order to increase the productive utilization of remittances, a number of policy schemes have been developed and applied in various countries basically based on economic incentives (in some cases also involving mandatory remittance ratios). Such schemes include measures such as premium rates on bank accounts or duty-free imports of machinery for investment purposes. The applicability and potential impact of similar incentive schemes in the PDR Yemen deserves particular attention. Furthermore, it might be considered to involve representatives of Yemeni emigrants more strongly in industrial planning. There is some evidence that - rather than a general unwillingness to invest into productive ventures - there is often a discrepancy between the areas of investment preferred by emigrants and those singled out as priority areas of Government planning.

On the other hand, the Government may have been overly concerned in the past with avoiding the emergence of any competition between domestic industrial enterprises. It could be argued that more freedom should be given to Yemeni emigrants interested to invest in medium-sized import substitution projects. As a recent World Bank report put it: "It is this type of operation, perhaps particularly suited for private ownership, which is most obviously lacking in PDRY's current industrial structure, although forming the

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1/ Another factor behind this decline is to be seen in the narrowing of the wage differential between PDR Yemen and e.g. Saudi-Arabia (itself caused by the migration flows) which gradually tends to reduce the number of migrants.

basis for early industrialization in most countries at a similar stage in the development process. Covering a wide range of sectors, but especially clothing, footwear, simple metal products and household items, it is from the most efficient of such operations, often established in competition with another even in small economies, that larger operations subsequently grow."<sup>1/</sup>

#### 5. Production-Support Facilities

Capacity utilization rates in general and those in public sector factories in particular are very low. The reasons for this are manifold. While in some cases genuine overcapacities have been established in neglect of the limited size of the domestic market, there are also many cases in which a lack of production-support facilities (maintenance, repair, quality control, packing) has caused existing capacities to become underutilized.

It appears that so far the importance of maintenance has not received adequate attention. Given the country's scarcity of financial resources efforts to properly maintain the existing industrial capital stock should be given top priority even if requiring additional financial allocations in the short run to cover recurrent expenditures. In the long run, industrial enterprises will stand to gain from a higher efficiency and longer economic life span of their equipment as well as from reduced repair requirements.

Given the shortage of skilled technical personnel and given the high regional concentration of industry in and around Aden, there is a good case for adopting a centralized approach for at least some maintenance and repair facilities. Technical assistance is required to design and launch an overall maintenance programme which would include the following specific steps:

- to prepare an inventory of the present state of existing equipment, related maintenance requirements and already existing maintenance facilities;
- to prepare maintenance manuals providing specific guidelines for the factory-level maintenance work;
- to establish common workshop and repair facilities (with a leading role probably to be assigned to REVOMETAL);
- to build up awareness for the importance of maintenance among the industrial workforce through plant-level training programmes.

Furthermore, technical assistance is needed in the field of quality control and standardization. However, in view of the fact that manufacturing production is almost exclusively oriented towards a domestic market with relatively simple consumer preferences, the introduction of sophisticated quality control systems would not seem to be of topmost urgency. This is not to suggest to neglect essential quality requirements but to put them into the perspective of the country's development level and constraints.<sup>2/</sup>

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1/ Cf. World Bank, op. cit., p. 53.

2/ For a more detailed analysis of the technical assistance requirements in this area reference is made to the forthcoming report by a UNIDO expert (under project SI/PDY/84/801).

## VI. SUMMARY AND CONCLUSIONS

Industrial development in the PDR Yemen is seriously constrained by a number of factors the most important of which include the narrowness of the country's natural resource base, the small size of its domestic market, widespread shortages of skilled labour, a low level of productivity and the country's general scarcity of financial resources. Notwithstanding the existence of these constraints a significant industrial production base has been established in the country. The industrial sector (manufacturing, mining, electricity and water) now accounts for some 10 per cent of GDP and has in recent years recorded real growth rates of between 8 - 9 per cent.

In the Second and Third Five-Year Plan the Government has assigned top priority to the industrial sector which, accordingly, has received the largest financial allocation of all economic sectors. At the same time, the Government's industrial development strategy has been characterized by a realistic assessment of the limited potential for further industrial diversification and has been based on a rather selective approach vis-à-vis the establishment of new industries. It is the Mission's view that this overall acceptance of a limited -albeit essential - role of industrial development is an important precondition for the sector's steady progress. Rather than burdening industrial development by overly high expectations and far-reaching objectives, the sector ought to be given the time to make incremental progress within the framework of realistic plan targets. Accordingly, the Mission is in full agreement with the basic philosophy of the Third Five-Year Plan which attaches first priority to the completion of and/or efficiency improvements in already existing industries rather than to maximize new investments.

In general it is furthermore felt by the Mission that, as has been the case in the past, the establishment and promotion of industries should in the first place continue to concentrate on those areas where (i) domestic substitution for currently imported final products can be achieved, (ii) the processing of domestically available raw materials is involved and (iii) the processing of imported inputs generates relatively high value added. Any new investment in such areas should be preceded, however, by carefully prepared market demand studies in order not to repeat the establishment of overdimensioned capacities as sometimes was the case in the past.

Industrial exports of the country have so far been insignificant and will remain so in the coming years due to relatively high production costs and low product quality resulting in a general lack of competitiveness. In the medium term, a strategy of manufactured exports promotion hence can not be expected to generate substantial foreign exchange earnings. This is not to suggest that selective export opportunities should not be seized whenever they emerge. Again, a realistic view and approach is called for. PDR Yemen domestic enterprises will not in the near future become competitive in export markets and foreign firms are not likely to use the country for export-oriented assembly-type operations, given both the comparatively high labour costs and the shortage of skilled and semi-skilled workers.

In the foreseeable future, PDR Yemen will continue to be a 'remittance economy', largely dependent in its development prospects on worker remittances

as well as on bilateral and multilateral resource transfers in the form of grants and soft loans. In addition, the identification of opportunities for development cooperation on a regional basis, such as joint minerals exploration, foreign trade agreements or joint investment projects, should be pursued as a priority task.

All in all, the country's development options will remain very limited, however. With its poor natural resource base on the one hand and an extraordinarily high share of non-commodity sectors in GDP on the other, it is the industrial sector which will need to make more substantial contributions in the future. To achieve this, national efforts are to be supplemented by the provision of international technical assistance in a focussed and coordinated manner.



Table A-1: Industrial firms under the Ministry of Industry, Trade and Domestic Supply: Production value by branches (in thousand YD)

Industrial firms	Production Value			
	1980 <sup>a/</sup>	1985 <sup>b/</sup>	1985 <sup>c/</sup>	1990 <sup>d/</sup>
<b>Chemical</b>				
1. Al Gundi Plastics factory	482	512	512	885
2. Gas factory	83	198	313	365
3. Perfume & Cosmetics factory	119	610	620	550
4. Emulsion & Paint factory	1,389	2,339	2,537	3,855
5. Matches factory	536	681	489	459
6. Sponge factory (sponge line)	992	1,067	1,067	1,579
7. Batteries factory	366	385	418	984
8. Rubber Slippers factory	423	923	1,171	883
9. Middle East Plastic factory	27	326	285	320
10. Detergent Complex	-	-	-	3,235
Sub-Total	4,416	7,152	7,412	13,115
<b>Metalworking</b>				
1. Al-Thourah Spare Parts factory	209	909	909	2,032
2. Agriculture & Metal Works factory	373	1,143	1,181	1,500
3. Aluminium factory	638	710	780	1,039
4. National Nail factory	143	180	205	320
5. Aluminium Doors & Windows plant Al Mansura	-	470	470	214
6. Aluminium Doors & Windows plant Al Mukalla	-	227	227	471
7. Sponge factory (household line)	-	151	151	272
Sub-Total	1,362	3,790	3,923	5,848
<b>Construction Materials</b>				
1. Gypsum & Chalk factory	-	37	37	41
2. Welding Electrodes factory	-	-	-	226
3. Yemeni Electrical Fittings factory	-	-	-	478
Sub-Total	-	37	37	745

Table A-1 (continued)

Industrial firms	Production Value			
	1980 <sup>a/</sup>	1985 <sup>b/</sup>	1985 <sup>c/</sup>	1990 <sup>d/</sup>
<b>Textiles/Clothing</b>				
1. Weaving & Spinning factory	809	1,180	1,425	1,615
2. Mayrter's Clothing factory	122	192	218	476
3. National Clothing factory Vanzain	112	109	136	241
4. Saba Clothing factory	147	-	-	-
5. Aidros Clothing factory	197	176	208	292
6. Woollen Clothing factory	107	24	23	55
7. National Carpet factory	111	106	155	243
8. National Socks factory	-	-	-	110
9. Women Tailoring Coop. Aden	38	24	32	78
10. Women Tailoring Coop. Abyan	31	24	24	49
11. Shabwah Weaving Coop.	58	235	196	320
12. Women Tailoring Coop. Hadramawt	73	63	63	80
13. Women Tailoring Coop. Lahij	-	8	8	26
14. Samadani Embroidary factory	-	-	-	41
Sub-Total	1,805	2,162	2,488	3,626
<b>Leather</b>				
1. National Tanning factory	209	115	123	264
2. Leather Shoes factory	308	397	397	825
3. Bags and Belts factory	250	374	466	593
4. Leather Manufactures Coop.	191	307	307	684
Sub-Total	958	1,192	1,293	2,366
<b>Food Processing</b>				
1. National Bottling factory	625	1,740	2,846	3,317
2. Public Corporation for Dairy Products	620	624	867	1,914
3. Public Corp. for Flour Mill	3,728	3,328	3,328	3,851
4. Bakeries (Mukalla & Mansura)	115	402	402	968
5. Tomato Paste factory	875	1,338	1,780	3,306
6. National Brewery Corporation	-	2,722	2,792	3,380
7. Vegetable Oil factory	397	-	-	-
8. Cigarettes factory	3,663	4,297	4,678	4,667
9. Ice Making factory	24	35	55	69
10. York Ice Cream factory	26	45	45	76
11. Al-Nile Spices factory	43	127	176	217
12. Macaroni factory	58	24	40	163
13. Bakery at Shahar	-	113	113	144
14. Bakery at Mukalla	-	100	100	128
15. Bakery at Saywun	-	-	-	116
16. Biscuits and Sweets factory	-	-	-	3,413
Sub-Total	10,175	14,894	17,222	25,729

Table A-1 (continued)

Industrial firms	Production Value			
	1980 <sup>a/</sup>	1985 <sup>b/</sup>	1985 <sup>c/</sup>	1990 <sup>d/</sup>
<u>Paper and Wood</u>				
1. Public Corp. for Carpentry	328	452	452	731
2. Al-Jazzira Paper Bags factory	111	168	177	201
3. Arab Enterprise for Printing & Paper Bags	88	115	118	170
4. Mirrors and Frames plant	73	54	66	114
5. Coastal Carpentry Coop.	-	1,074	1,074	1,225
6. Carpentry Coop. at Saywun	-	471	471	568
Sub-Total	600	2,335	2,358	3,009
<u>Extraction</u>				
1. Salt	116	394	680	1,119
TOTAL	19,432	31,956	35,413	55,557

a/ In current prices.

b/ In current prices of 1980.

c/ In current prices.

d/ In prices of 1985.

Source: Data supplied to the Mission by the Ministry of Industry, Trade and Supply.

Table A-2: Industrial firms under the Ministry of Industry, Trade and Domestic Supply: Production value by ownership (in thousand YD)

Industrial firms	Production Value			
	1980 <sup>a/</sup>	1985 <sup>b/</sup>	1985 <sup>c/</sup>	1990 <sup>d/</sup>
<b>A. Public Sector</b>				
1. Al-Thoura Spare Parts factory	209	909	909	2,032
2. Agriculture & Metal Works factory	373	1,143	1,181	1,500
3. Al-Gundi Plastics factory	482	512	512	885
4. Gas factory	83	198	313	365
5. Weaving & Spinning factory	809	1,180	1,425	1,114
6. Mayrter's Clothing factory	122	192	218	476
7. National Tanning factory	209	115	123	264
8. Leather Shoes factory	308	397	397	825
9. National Bottling factory	625	1,740	2,846	3,317
10. Public Corporation for Dairy Products	621	624	867	1,914
11. Public Salt Corporation	116	394	780	1,119
12. Public Corp. for Flour Mill	3,728	3,328	3,328	3,851
13. Bakeries (Mukalla & Al Mansura)	115	402	402	968
14. Tomato Paste factory	875	1,338	1,780	3,306
15. National Brewery Corp.	-	2,722	2,792	3,380
16. Vegetable Oil factory	397	-	-	-
17. Gypsum & Chalk factory	-	37	37	41
18. Public Corp. for Carpentry	328	452	452	731
19. Biscuits and Sweets factory	-	-	-	<u>3,413</u>
Sub-Total	9,397	15,683	18,362	29,501
<b>B. Mixed Sector</b>				
1. Aluminium factory	638	710	780	1,032
2. Parfume & Cosmetics factory	119	610	620	550
3. Emulsion & Paint factory	1,389	2,449	2,539	3,855
4. Cigarettes factory	3,663	4,297	4,678	4,667
5. Matches factory	536	681	489	460
6. Batteries factory	366	385	418	984
7. Sponge factory	992	1,218	1,218	1,851
8. Rubber Slippers factory	423	923	1,171	883
9. Bakery at Mukalla	-	100	100	128
10. Bakery at Shahar	-	113	113	144
11. Bakery at Saywun	-	-	-	116
12. Detergent Complex	-	-	-	<u>3,235</u>
Sub-Total	8,126	11,485	12,126	17,905

Table A-2: (continued)

Industrial firms	Production Value			
	1980 <sup>a/</sup>	1985 <sup>b/</sup>	1985 <sup>c/</sup>	1990 <sup>d/</sup>
<b>C. Cooperative Sector</b>				
1. Leather Manufactures Coop.	191	307	307	684
2. Women Tailoring Coop. at Aden	38	24	32	78
3. Women Tailoring Coop. at Lahij	-	8	8	26
4. Women Tailoring Coop. at Abyan	31	24	24	49
5. Women Tailoring Coop. Hadramawt	73	63	63	80
6. Shabwah Weaving Cooperative	58	235	196	320
7. Coastal Carpentry Coop.	-	1,074	1,074	1,225
8. Carpentry Coop. at Saywun	-	471	471	568
Sub-Total	392	2,205	2,175	3,030
<b>D. Private Sector</b>				
1. Middle East Plastic factory	27	326	285	320
2. Aidros Clothing factory	197	176	208	292
3. Saba Clothing factory	147	-	-	-
4. National Clothing factory Van Zain	112	109	136	241
5. Bags & Belts factory	250	374	466	593
6. National Nail factory	143	180	205	320
7. Al-Jazzira Paper Bags factory	111	168	177	201
8. Arab Enterprise for Printing & Paper Bags	88	115	118	170
9. Al-Nile Spices factory	43	127	176	217
10. Mirrors & Frames plant	73	54	66	114
11. York Ice Cream factory	26	45	45	76
12. Ice Making factory	24	35	55	69
13. National Carpet factory	111	106	155	243
14. Woollen Clothing factory	107	24	23	55
15. Macaroni factory	58	24	40	163
16. National Synthetic Clothing factory	-	22	23	25
17. Aluminium Doors & Windows plant at Al Mansoura	-	470	470	214
18. Aluminium Doors & Windows plant at Al-Mukalla	-	227	227	472
19. National Socks factory	-	-	-	110
20. Welding Electrodes factory	-	-	-	226
21. Yemeni Electrical Fittings factory	-	-	-	478
22. Samadani Embroidary plant	-	-	-	41
Sub-Total	1,517	2,583	2,875	4,640
<b>TOTAL</b>	<b>19,432</b>	<b>31,956</b>	<b>35,538</b>	<b>55,076</b>

a/ In current prices.

b/ In current prices of 1980.

c/ In current prices.

d/ In prices of 1985.

Source: Data supplied to the Mission by the Ministry of Industry, Trade and Supply.

Table A-3: Industrial firms under the Ministry of Industry, Trade and Domestic Supply: Valued added by branches (in thousand YD)

Industrial firms	Value added (current prices)		
	1980	1985	1990
<b>Chemical Sub-Sector</b>			
1. Al Gundi Plastics factory	208	101	201
2. Gas factory	109	108	152
3. Perfume & Cosmetics factory	29	165	177
4. Emulsion & Paint factory	243	1,156	1,655
5. Matches factory	286	119	118
6. Sponge factory (sponge line)	379	493	693
7. Batteries factory	111	133	312
8. Rubber Slippers factory	174	721	366
9. Middle East Plastic factory	7	61	86
10. Detergent Complex	-	-	598
Sub-Total	1,546	3,057	4,358
<b>Metalworking Sub-Sector</b>			
1. Al-Thourah Spare Parts factory	138	389	961
2. Agriculture & Metal Works factory	84	367	481
3. Aluminium factory	208	326	401
4. National Nail factory	23	28	47
5. Aluminium Doors & Windows plant Al Mansura	-	108	87
6. Aluminium Doors & Windows plant Al Mukalla	-	47	105
7. Sponge factory (household line)	-	70	119
Sub-Total	453	1,335	2,201
<b>Construction Materials Sub-Sector</b>			
1. Gypsum & Chalk factory	-	16	20
2. Welding Electrodes factory	-	-	55
3. Yemeni Electrical Fittings factory	-	-	69
Sub-Total	-	16	144

Table A-3 (continued)

Industrial firms	Value added (current prices)		
	1980	1985	1990
<b>Textile Sub-Sector</b>			
1. Weaving & Spinning factory	149	608	511
2. Mayrter's Cloting factory	69	87	172
3. National Clothing factory Vanzain	18	36	52
4. Saba Clothing factory	38	-	-
5. Aidros Clothing factory	127	68	93
6. Woollen Clothing factory	37	10	20
7. National Carpet factory	23	26	36
8. National Socks factory	-	-	29
9. Women Tailoring Coop. Aden	17	11	37
10. Women Tailoring Coop. Abyan	20	18	23
11. Shabwah Weaving Coop.	33	34	40
12. Women Tailoring Coop. Hadramwt	-	-	8
13. Women Tailoring Coop. Lahij	39	70	148
14. Samadani Embroidary factory	-	-	8
Sub-Total	570	968	1,177
<b>Leather Sub-Sector</b>			
1. National Tanning factory	90	52	87
2. Leather Shoes factory	93	126	202
3. Bags and Belts factory	82	103	161
4. Leather Manufactures Coop.	81	130	235
Sub-Total	346	411	685
<b>Food Processing Sub-Sector</b>			
1. National Bottling factory	376	1,576	1,881
2. Public Corporation for Dairy Products	89	127	278
3. Public Corp. for Flour Mill	116	200	270
4. Bakeries (Mukalla & Mansura)	10	-30	207
5. Tomato Paste factory	260	690	1,257
6. National Brewery Corporation	-	1,379	1,954
7. Vegetable Oil factory	122	-	-
8. Cigarettes factory	1,279	1,959	839
9. Ice Making factory	8	14	15
10. York Ice Cream factory	-	6	12
11. Al-Nile Spices factory	6	21	34
12. Macaroni factory	10	17	41
13. Bakery at Shahar	-	42	57
14. Bakery at Mukalla	-	40	55
15. Bakery at Saywun	-	-	49
16. Biscuits and Sweets factory	-	-	590
Sub-Total	2,276	6,041	7,539

Table A-3 (continued)

Industrial firms	Value added (current prices)		
	1980	1985	1990
<u>Paper and Wood Industry Sub-Sector</u>			
1. Public Corp. for Carpentry	187	269	406
2. Al-Jazzira Paper Bags factory	9	45	48
3. Arab Enterprise for Printing & Paper Bags	18	19	27
4. Mirrors and Frames plant	18	14	28
5. Coastal Carpentry Coop.	-	481	580
6. Carpentry Coop. at Saywun	-	220	258
Sub-Total	232	1,048	1,347
<u>Extraction Industry Sub-Sector</u>			
1. Salt	59	187	235
TOTAL	5,482	13,093	17,686

Source: Data supplied to the Mission by the Ministry of Industry, Trade and Supply.



Table A-4: Industrial firms under the Ministry of Industry, Trade and Domestic Supply: Valued added by ownership (in thousand YD)

Industrial firms	Value added (current prices)		
	1980	1985	1990
<b>A. Public Sector</b>			
1. Al-Thourah Spare Parts factory	138	389	961
2. Agriculture and Metal Works factory	84	367	481
3. Al-Gundi Plastics Works factory	208	101	201
4. G.S factory	109	108	152
5. Weaving & Spinning factory	149	608	511
6. Mayrter's Clothing factory	69	87	172
7. National Tanning factory	90	52	87
8. Leather Shoes factory	93	126	202
9. National Bottling factory	376	1,576	1,881
10. Public Corp. for Dairy Products	89	127	278
11. Public Salt Corporation	59	187	235
12. Public Corporation for Flour Mill	116	200	270
13. Bakeries (Mukalla & Al Mansura)	10	-30	207
14. Tomato Paste factory	260	690	1,257
15. National Brewery Corporation	-	1,379	1,954
16. Vegetable Oil factory	122	-	-
17. Gypsum & Chalk factory	-	16	20
18. Public Corporation for Carpentry	187	269	406
19. Biscuits and Sweet factory	-	-	590
Sub-Total	2,159	6,252	9,865
<b>B. Mixed Sector</b>			
1. Aluminium factory	208	326	401
2. Perfume & Cosmetics factory	29	165	177
3. Emulsion & Paint factory	243	1,156	1,655
4. Cigarettes factory	1,279	1,959	839
5. Matches factory	286	119	118
6. Batteries factory	111	113	312
7. Sponge factory	379	563	812
8. Rubber Slippers factory	174	721	366
9. Bakery at Mukala	-	40	55
10. Bakery at Shahar	-	42	57
11. Bakery at Saywun	-	-	49
12. Detergent Complex	-	-	598
Sub-Total	2,709	5,204	5,439

Table A-4: (continued)

Industrial firms	Value added (current prices)		
	1980	1985	1990
<b>C. Cooperative Sector</b>			
1. Leather Manufactures Coop.	81	130	235
2. Women Tailoring Coop. Aden	17	11	37
3. Women Tailoring Coop. Lahij	-	-	8
4. Women Tailoring Coop. Abyan	20	18	23
5. Women Tailoring Coop. HADRAMAWT	33	34	40
6. Shabwah Weaving Cooperative	39	70	148
7. Coastal Carpentry Coop.	-	481	580
8. Carpentry Coop. - SAYWUN	-	220	258
Sub-Total	190	964	1,329
<b>D. Private Sector</b>			
1. Middle East Plastic factory	7	61	86
2. Aidros Clothing facotry	127	68	93
3. Saba Clothing factory	38	-	-
4. National Clothings factory Van Zain	18	36	52
5. Bags & Belts factory	82	103	161
6. National Nail factory	23	28	47
7. Al-JAZZIRA Paper Bags factory	9	45	48
8. Arab Enterprise for Printing & Paper Bags	18	19	27
9. Al-Nile Spices factory	6	21	34
10. Mirrors & Frames plant	18	14	28
11. York Ice Cream factory	-	6	12
12. Ice Making factory	8	14	15
13. National Carpet factory	23	26	36
14. Woolien Clothing factory	37	10	20
15. Macaroni factory	10	17	41
16. National Synthetic Clothing factory	-	7	8
17. Aluminium Doors & Windows plant at Al Mansoura	-	108	87
18. Aluminium Doors & Windows plant at Al-Mukalla	-	47	105
19. National Socks factory	-	-	29
20. Welding Electrodes factory	-	-	55
21. Yemeni Plant for Electrical Fittings factory	-	-	69
22. Samadani Embroidary plant	-	-	8
Sub-Total	424	630	1,061
<b>TOTAL</b>	<b>5,482</b>	<b>13,080</b>	<b>17,694</b>

Source: Data supplied to the Mission by the Ministry of Industry, Trade and Supply.

**Table A-5: Industrial firms under the Ministry of Industry, Trade and Domestic Supply: Number of employees by ownership**

Industrial Firms	Employment		
	1980	1985	1990
<b>A. Public Sector</b>			
1. Al-Thourah Spare Parts factory	96	220	391
2. Agriculture and Metals Works factory	90	120	144
3. Al-Gundi Plastic factory	56	101	148
4. Gas factory	37	42	49
5. Weaving & Spinning factory	1,118	825	703
6. Mayrter's Clothing factory	128	111	124
7. National Tanning factory 67	62	80	
8. Leather Shoes factory	112	127	145
9. National Bottling factory	250	360	373
10. Public Corp. for Dairy Products	142	135	188
11. Public Salt Corporation	241	179	175
12. Public Corporation for Flour Mill	130	134	151
13. Bakeries (Mukalla & Al Mansura)	61	156	152
14. Tomato paste factory	153	115	150
15. National Brewery Corp.	-	160	175
16. Vegetable Oil factory	130	-	-
17. Gypsum & Chalk factory	-	25	28
18. Public Corporation for Carpentry	300	277	304
19. Biscuits and Sweets factory	-	-	160
Sub-Total	3,106	3,167	3,560
<b>B. Mixed Sector</b>			
1. Aluminium factory	183	156	160
2. Perfume & Cosmetics factory	37	48	61
3. Emulsion & Paint factory	67	112	142
4. Cigarettes factory	350	430	440
5. Matches factory	125	134	140
6. Batteries factory	22	37	49
7. Sponge factory	60	95	109
8. Rubber Slippers factory	83	108	120
9. Bakery at Mukala	-	30	35
10. Bakery at Shahar	-	30	35
11. Bakery at Saywun	-	-	34
12. Detergent Complex	-	-	146
Sub-Total	927	1,180	1,471

Table A-5: (continued)

Industrial firms	1980	Employment 1985	1990
<b>C. Cooperative Sector</b>			
1. Leather Manufactures Coop.	108	108	126
2. Women Tailoring Coop. at Aden	35	25	38
3. Women Tailoring Coop. at Lahij	-	29	28
4. Women Tailoring Coop. at Abyan	72	23	22
5. Women Tailoring Coop. at Hadramawt	53	41	41
6. Shabwah Weaving Cooperative	95	115	152
7. Coastal Carpentry Coop.	-	355	400
8. Carpentry Coop. at Saywun	-	152	166
Sub-Total	363	848	973
<b>D. Private Sector</b>			
1. Middle East Plastic factory	28	45	49
2. Aidros Clothing factory	96	60	60
3. Saba Clothing factory	38	-	-
4. National Clothings factory Van Zain	29	21	25
5. Bags & Belts factory	48	56	68
6. National Nail factory	12	12	12
7. Al-JAZZIRA Paper Bags factory	5	13	12
8. Arab Enterprise for Printing & Paper Bags	6	7	8
9. A-Nile Spices factory	7	11	11
10. Mirrors & Frames plant	8	10	12
11. York Ice Cream factory	5	5	8
12. Ice Making factory	7	10	10
13. National Carpet factory	24	12	12
14. Woollen Clothing factory	16	7	9
15. Macaroni factory	10	10	15
16. National Synthetic Clothing factory	-	4	4
17. Aluminium Doors & Windows plant at Al Mansoura	-	67	45
18. Aluminium Doors & Windows plant at Al Mukalla	-	23	40
19. National Socks factory	-	-	9
20. Welding Electrodes	-	-	24
21. Yemeni Electrical Fitting factory	-	-	33
22. Samadani Embroidary plant	-	-	5
Sub-Total	339	361	471
TOTAL	4,735	5,556	6,475

Source: Data supplied to the Mission by the Ministry of Industry, Trade and Supply.

Table A-6. Geographical distribution of exports and re-exports,<sup>a/</sup> 1980-1985  
(in million US \$)

	1980	1981	1982	1983	1984	1985
Arab countries	8.3	8.9	9.7	12.7	9.7	10.8
- Saudi Arabia	(2.1)	(3.8)	(3.9)	(6.0)	(3.6)	(2.1)
- United Arab Emirates	(0.2)	(0.1)	(0.2)	(0.1)	(0.3)	(0.4)
- Djibouti	(0.5)	(0.2)	(0.4)	(0.5)	(0.1)	(0.6)
- Yemen Arab Republic	(5.0)	(4.6)	(5.0)	(5.9)	(5.4)	(7.6)
Centrally planned economies	4.5	1.0	0.2	0.1	0.4	2.8
- China	(3.9)	(0.1)	(-)	(0.1)	(0.2)	(-)
Developed market economies	22.4	6.1	4.8	6.6	3.1	14.8
- United States	(-)	(-)	(0.3)	(0.2)	(-)	(-)
- Germany, Fed. Rep. of	(0.5)	(0.1)	(1.7)	(3.8)	(0.1)	(0.1)
- Italy	(3.9)	(0.6)	(0.3)	(0.6)	(1.2)	(1.2)
- Japan	(17.3)	(4.9)	(2.3)	(1.8)	(1.3)	(12.0)
Asia	4.4	3.8	7.3	7.7	11.0	3.4
- India	(0.3)	(0.2)	(0.1)	(0.5)	(0.1)	(-)
- Singapore	(3.2)	(3.3)	(7.1)	(7.2)	(10.6)	(3.3)
Africa	1.0	0.8	0.6	1.0	2.1	1.2
- Ethiopia	(0.8)	(-)	(-)	(-)	(0.3)	(0.3)
- Kenya	(0.2)	(0.5)	(0.6)	(1.0)	(1.8)	(0.3)
Bunkering (ships)	1.5	1.3	1.2	1.2	1.2	0.5
<b>TOTAL</b>	<b>42.1</b>	<b>21.8</b>	<b>23.8</b>	<b>29.3</b>	<b>27.5</b>	<b>33.6</b>

Source: Central Statistical Organization

a/ Excluding re-exports of Aden refinery.

Table A-7. Geographical distribution of imports, 1980-1985  
(in million US \$)

	1980	1981	1982	1983	1984	1985
<b>Arab countries</b>	183.3	187.9	163.2	141.4	89.2	77.9
- Yemen Arab Republic	(18.0)	(20.7)	(20.1)	(21.0)	(19.1)	(10.8)
- Kuwait	(15.1)	(1.3)	(1.3)	(2.4)	(10.3)	(15.0)
- United Arab Emirates	(0.8)	(58.1)	(75.2)	(5.3)	(8.2)	(4.4)
- Libya	(124.1)	(85.5)	(39.2)	(13.2)	(-)	(-)
- Algeria	(-)	(-)	(-)	(61.9)	(9.7)	(24.6)
- Saudi Arabia	(10.7)	(13.5)	(13.2)	(25.9)	(25.8)	(10.7)
- Somalia	(1.7)	(2.7)	(3.3)	(2.7)	(3.0)	(0.3)
<b>Centrally planned economies</b>	101.9	107.4	130.9	191.1	202.5	162.3
- China	(23.0)	(30.0)	(40.6)	(35.1)	(47.4)	(33.1)
- Czechoslovakia	(3.4)	(1.3)	(4.4)	(1.8)	(4.0)	(3.7)
- German Dem. Rep.	(7.0)	(5.4)	(6.3)	(9.1)	(13.0)	(9.5)
- U.S.S.R.	(52.4)	(56.9)	(58.7)	(121.1)	(110.8)	(99.4)
<b>Developed market economies</b>	318.5	342.5	372.3	312.7	405.7	316.8
- United States	(2.8)	(1.6)	(1.3)	(1.5)	(41.9)	(1.3)
- United Kingdom	(54.2)	(59.3)	(68.5)	(60.3)	(69.7)	(49.4)
- Denmark	(14.5)	(12.5)	(19.9)	(19.5)	(16.1)	(21.8)
- France	(38.9)	(24.3)	(31.0)	(12.8)	(37.8)	(33.7)
- Germany, Fed. Rep. of	(13.5)	(15.6)	(17.2)	(13.7)	(25.3)	(22.7)
- Italy	(19.4)	(16.0)	(41.6)	(24.3)	(24.1)	(21.4)
- Netherlands	(27.7)	(55.9)	(43.7)	(31.2)	(33.1)	(38.1)
- Japan	(72.3)	(103.9)	(85.5)	(83.5)	(74.4)	(45.4)
- Australia	(51.1)	(37.4)	(37.2)	(46.3)	(58.8)	(61.3)
<b>Latin America</b>	0.2	0.6	0.9	0.6	1.6	17.3
<b>Asia</b>	70.4	54.4	77.2	97.1	100.7	100.7
- Sri Lanka	(5.8)	(3.5)	(4.4)	(8.7)	(14.8)	(9.6)
- Hong Kong	(12.5)	(10.5)	(7.6)	(9.2)	(5.3)	(3.1)
- India	(17.7)	(10.2)	(13.5)	(15.3)	(15.9)	(15.0)
- Pakistan	(0.3)	(0.7)	(0.1)	(0.2)	(0.1)	(0.1)
- Thailand	(7.8)	(13.9)	(10.1)	(5.8)	(6.2)	(16.9)
- Singapore	(9.6)	(9.1)	(17.1)	(21.9)	(28.1)	(28.9)
<b>Africa</b>	9.8	10.6	12.5	13.2	21.5	23.2
- Ethiopia	(5.9)	(3.9)	(6.9)	(3.7)	(5.0)	(16.2)
- Kenya	(3.3)	(6.3)	(5.6)	(8.1)	(12.3)	(5.4)
<b>TOTAL</b>	684.0	703.3	757.0	756.2	821.2	698.2

Source: Central Statistical Organization.

List of Persons Met

Ministry of Industry, Trade and Domestic Supply

Mr. A.M. Othman, Minister  
Mr. S. Basabrain, Deputy Minister for Industry  
Mr. T.M. Shakir, Assistant Deputy Minister for Investment  
Ms. A.S. Aboud, Director, Production Department  
Mr. A.A. Rabo, Head, Statistics Department  
Mr. H.A. Ibrahim, Engineer, Investment Department  
Mr. A. Zaiban, Director, Planning and Statistics  
Mr. H. Ali Aljabir, Head of Research  
Mr. M. Dahwa, Engineer, Research Department

Ministry of Planning

Mr. J. Hamed, Deputy Minister, Sectoral Planning  
Mr. H.M. Hubayshi, Assistant Deputy Minister for Economic and Technical Affairs  
Mr. A. Ayash, Director, Industrial Planning  
Mr. A. Alam, Assistant Deputy Minister

Ministry of Minerals, Energy and Geology

Mr. M. Tarmom, Deputy Minister  
Mr. A.S. Baabad, Geology and Exploration Department  
Mr. A. Algavery, General Manager, Oil Refinery in Aden  
Mr. Hassan  
Mr. Yamani

Ministry of Agriculture

Mr. H.M. Saeed, Acting Director, Planning and Statistics  
Mr. O.S. Khanbari, Head, Food Technology Section

Ministry of Fish Wealth

Mr. A. Albari Fakhri, Assistant Deputy Minister for Planning

Ministry of Construction

Mr. A.R. Al-Basri, Assistant Deputy Minister  
Mr. A. Jafar, Assistant Deputy Minister

Central Statistical Organization

Mr. S. Bin Haman, Deputy Chairman  
Mr. M. Ba Masoud, Assistant Deputy Chairman - National Accounting

Bank of Yemen

Mr. A.A. Basudan, Deputy Governor  
Mr. M. Bin Hamam, Director of Research

UNDP/UNIDO

- Mr. B. Wannop, Resident Representative
- Mr. T. Ben Amara, Deputy Resident Representative
- Mr. J. Mohammad, UNIDO Junior Professional Officer
- Mr. F.M. Iqbal, UNIDO Senior Industrial Development Field Adviser
- Mr. G. Rane, UNIDO Chief Technical Adviser
- Mr. Martinov, UNIDO expert