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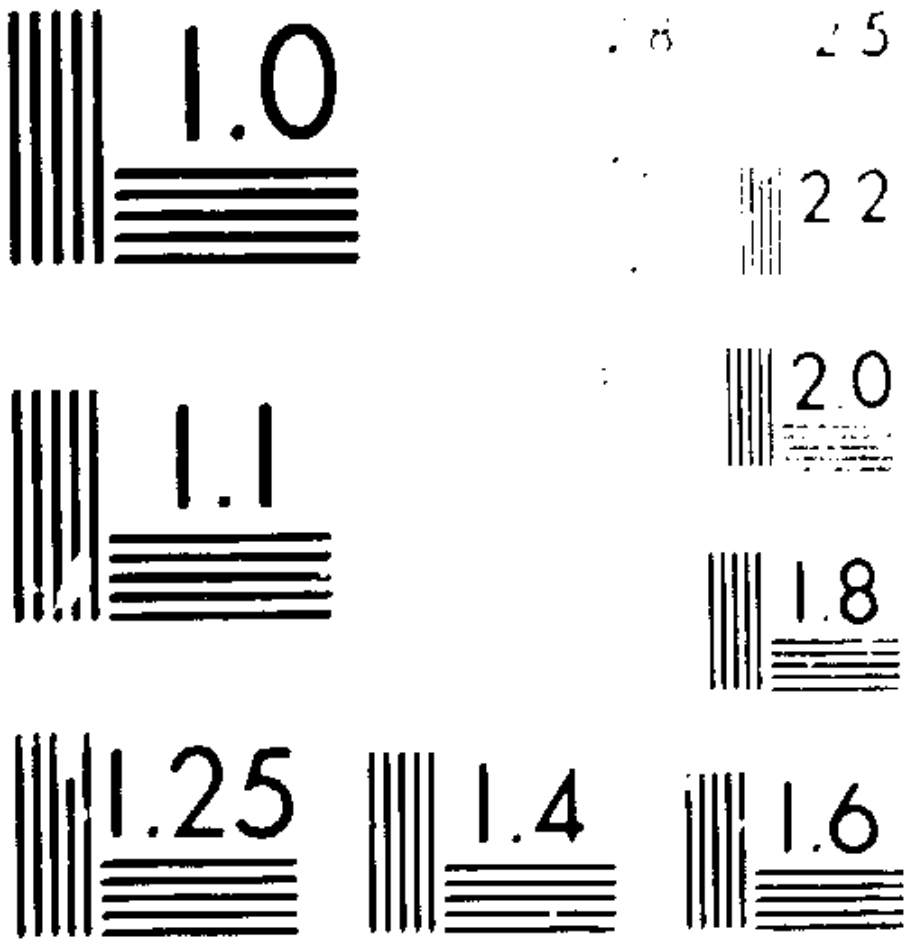
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LONG-TERM PROSPECTS OF INDUSTRIAL DEVELOPMENT IN BAHRAIN*

prepared by
the Secretariat of UNIDO

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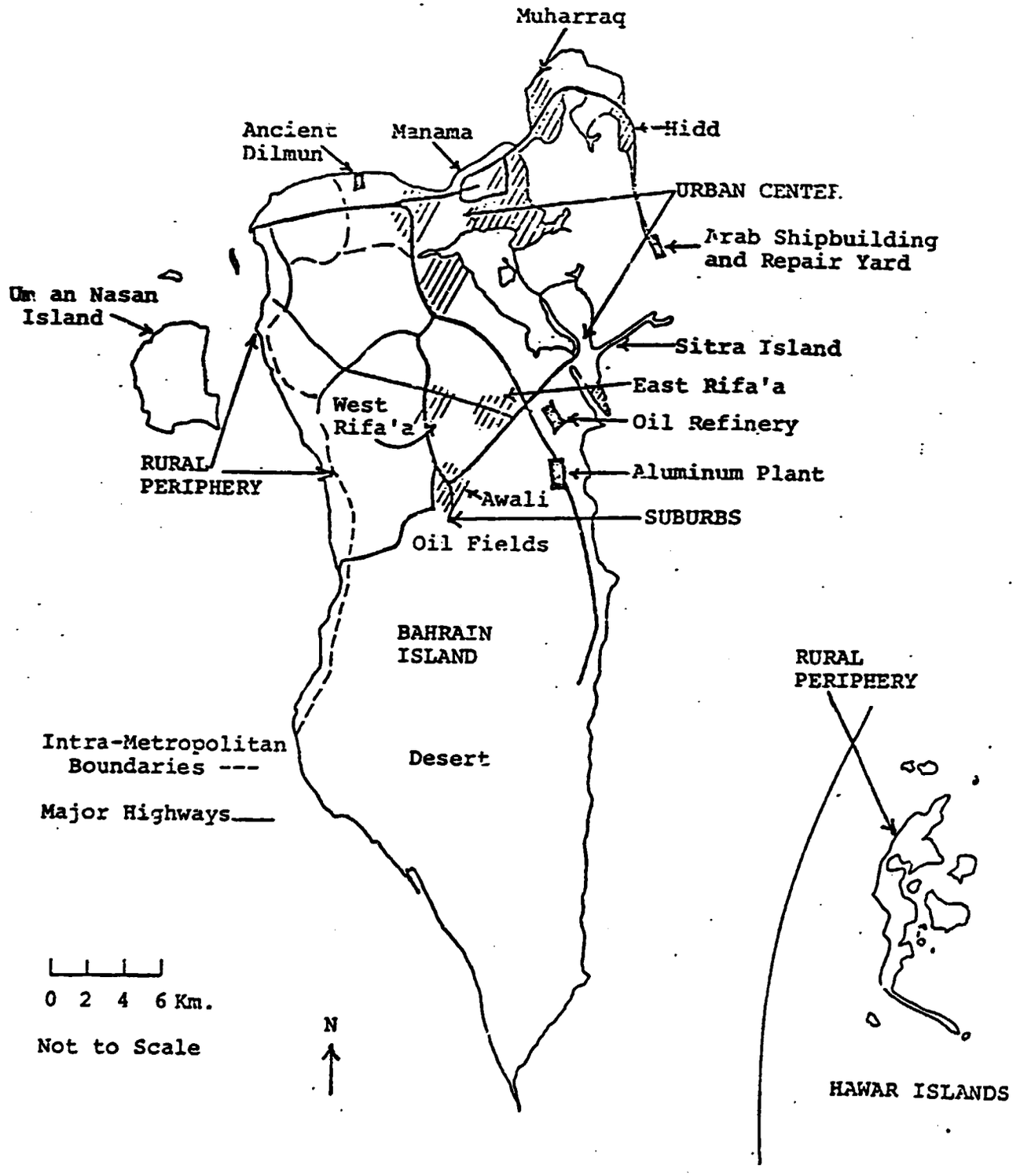
Metropolitan Bahrain



Exchange Rates of the Bahraini Dinar

as fixed by the Bahrain Monetary Agency

Year	1 BD equal to (US dollars)
1975-1977	2.5265
1978	2.6042
1999	2.6455

Source: State of Bahrain, Bahrain Monetary Agency, Quarterly Statistical Bulletin, Vol. 5, No. 4, Bahrain, December 1979; Bahrain Monetary Bulletin, Department of Economic Research and Statistics, Table No. 6.

SUMMARY OF THE STUDY

Bahrain is a very small country; it has an area of only 622 square kilometers, and its population is also very limited about 340,000 in 1978.

Its economy is characterized by rather few resources, basically oil and gas, but reserves of these resources are rapidly decreasing after several decades of systematic extraction of crude oil and active utilization of gas. Agriculture and fishing represent a small and gradually declining sector, while food importation is steadily growing, thus aggravating Bahrain's dependence on the outside world.

The country achieved substantial results in school enrolment and in education. There is a substantial labour force, but further industrial training is required. Limited resources and high consumption are the two main factors which impede the accumulation and investment on development.

Industry has been initiated by the multinational oil corporations which, in 1936, established a giant oil refinery. Quite recently, multinational aluminium corporations entered a joint-venture project together with the Bahraini Government and acquired a majority share in it. A few years later, due to price depression and other conjunctural difficulties in the aluminium business, most of these multinational corporations withdrew from the Bahraini joint-venture project; later they launched a new scheme for the re-deployment and spread of aluminium manufacturing to other bauxite-extracting countries, such as Brazil, Australia and the Philippines, where aluminium will be produced more profitably. These multinational and other corporations sold back their majority shares in the project to the Bahraini Government. Therefore, the Government had to buy the major part

of these shares, thus increasing its own equity and becoming the main shareholder. The Saudi Arabian state-owned company SABIC bought the other part, roughly one fifth of the total number of shares. Although US Kaiser Aluminium, one of the multinational corporations involved, stayed as an associate within the ALBA project, foreign partnership failed to last. The ALBA project has now developed into an almost bi-lateral (Bahraini-Saudi) one, controlled mainly by the Bahraini Government. Thus, the Aluminium Bahrain joint venture, one of the first cases of international redeployment of new industrial projects in developing countries with oil and gas resources, revealed to be only a precarious venture quickly abandoned by the multinational partners, forcing its transformation basically into a government-controlled subregional project. The logical conclusion to be drawn here is that it is regional co-ordination rather than venturing jointly with multinational corporations which is sustaining the development of manufacturing in Bahrain. This is further confirmed by the recent decision of Bahrain's new associate in aluminium processing and manufacture, namely Saudi Arabia, to cancel the Saudi project for setting up an aluminium smelter in Jubail (Saudi Arabia). However, Dubai, another neighbouring Emirate, is pursuing the establishment of a new and competitive aluminium smelter.

Bahrain's experience is not limited to aluminium manufacturing. In the oil-refining sector, the Emirate has had a similar experience. The decline in oil supplies can be related to gradual abandonment by the multi-national oil corporations which have been exploiting the Bahrain refinery since 1936. In order to run the refinery, which had been set up 25 years before Bahrain became a sovereign and independent state, the Government had always been relying on substantial crude oil supplies from Saudi Arabia, and has now to seek more Saudi crude to provide its own share of feedstock

for the refinery. The latter, after having become a joint venture, will be totally abandoned by the two oil multinationals and left to their associate, the Bahraini Government. Under the Concession Regime, constant and increasing supply of Saudi Arabian crude for Bahrain's oil refinery made the country's oil-processing industry dependent on subsidiary multinationals which supplied Saudi crude. Later, Saudi Arabia's takeover of a majority share in the crude sector in Saudi Arabia was followed by the takeover of the Bahraini Government of a majority share in its domestic refining sector. Thus, the survival of the latter is becoming even more dependent on the support provided through the Saudi-Bahraini partnership.

Bahrain has also had experience in ship repairing. This simply demonstrates the potentialities for regional multilateral co-operation in the setting up of strong and important infrastructural maintenance facilities related to oil in a small country with limited resources, as is the case in Bahrain. Yet, the country decisions taken by immediate neighbours to enter into similar and competitive ventures jointly with foreign associates demonstrates the possible risk resulting from commercial rivalry and competition which is likely to emerge whenever subregional coordination and sectoral planning are not synchronized.

The future of the industry and of the whole economy of Bahrain seems to depend increasingly, for the next decade and beyond, on the way and the rhythm of their articulation in relation to developments that will take place in the Gulf and in other Arab countries. Such an articulation will materialize through a number of new options and policies, such as:

1. Domestic options and policies

   a) institutional measures aimed at establishing a national central planning body;

b) global and sectoral planning for the adoption of long, mid-medium and short-term development strategies and plans which comprise agriculture and fishing, mining and downstream manufacturing as well as infrastructures and services. The objective of the development of manufacturing is to establish forward and backward linking industries, while improving productivity and production;

c) adaptation of consumption to domestic production through a long-term strategy and subsequent medium and short-term policies by reducing the share of non-basic consumer goods and increasing the locally produced goods;

d) intensification of the training programmes to cope with the industrial and infrastructural development plans;

e) revision of the pattern of foreign trade, both from the angle of commodity structure and of geo-economic distribution, on the previous global and sectoral strategies and policies;

f) a strategy designed to reduce the trade deficit with the main suppliers of the Emirate. In this respect, it may be appropriate to elaborate a long-term strategy and adequate measures to promote manufactures and link its own exportation to the country's main suppliers - the United Kingdom, Japan and South East Asia. This will necessarily mean a re-orientation of trade towards the Gulf and other Arab countries, resulting from the dynamic development of sectoral programming and integration of industrialization in the Arab region.

2. Regional options and policies

a) reinforcement and implementation of Gulf-wide and inter-Arab schemes for industrialization and for the development of infrastructure;

b) adoption and application of sectoral programming for the gas-based industries and hydrocarbon-related infrastructures, both at the level of the Gulf area at the Arab level;

c) adoption and implementation of trade and investment schemes designed to sustain the two previous objectives.

To conclude, it must be pointed out that such major and extremely challenging strategic objectives and action-oriented programmes are not of a solely economic nature. They bear undoubtedly tremendous implications for all Emirates facing oil depletion in the future, and above all for Bahrain.

Chapter I

GENERAL PRESENTATION AND POPULATION

Setting

1. Situation and site. The State of Bahrain comprises an archipelago of approximately 35 small low-lying islands located off the coast of the Arabian Peninsula about midway along the Gulf. The total area of the state is 622 square kilometers, of which Bahrain Island is 563 kilometers. Manama, the capital, is situated at the northeast coast of Bahrain Island, and is connected by causeways to Muharraq and Sitra Islands. Muharraq Island, in turn, is linked by causeway to the new Arab Shipbuilding and Repair Yard. Other islands include Nabih Salih, Jidda, Um an Nasan, and the Hawar group, to the southeast near Qatar.[1/]

Population Growth[2/]

2. Modern growth. Bahrain was redeveloped as an important trading and pearl-fishing center following its liberation by Al-Khalifa in 1783. Its population was estimated at 70,000 in 1863, and more than 100,000 in 1914. The 1914 estimate may be high. Nevertheless, extensive population growth probably took place prior to World War I as a consequence of Bahrain's economic development and improved living conditions. Since 1914, rapid economic and metropolitan change has been accompanied by high rates of natural increase and the immigration of large numbers of workers and their families. As a result, the total population increased 3.8 times between 1941 and 1978.

1/ State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: 'The Population of Bahrain, Trends and Prospects', p. 3.

2/ ibid., p. 6.

3. Table 1 describes the change in number and percentage of Bahrainis and foreigners in Bahrain from January 1941 to January 1978. The population enumerated in the census increased from 89,970 in January 1941 to 109,650 in March 1950, and to 143,135 in May 1959. The estimated total population (adjusted for 'underenumeration' of females and persons less than 10 years of age) was 189,400 in February 1965 and 224,100 in April 1971.

4. Growth rates experienced since the last census are the highest in Bahrain's recorded history. Mean annual rates of population growth increased from 5.1 per cent for the period 1971-1976 to 9.7 per cent in 1976-1977 and to 10.5 per cent during the last nine months of 1977. The total population was estimated at 281,600 in April 1976, 308,900 in April 1977 and 341,400 in January 1978. The state's population will double prior to January 1985, if it continues to increase at the current rate (see tables 2, 3 and 4).

Table 1

Number, Percent and Percent Change of Population
by National Origin: Enumerated 1941-1971, Estimated 1976-1978

	Jan. 1941	Mar. 1950	May 1959	Feb. 1965[a]	Apr. 1971[a]	Apr. 1976	Apr. 1977	Jan. 1978
POPULATION								
Total	89,970	109,650	143,135	189,377	224,130	281,560	308,870	341,380
Bahraini	74,040	91,179	118,734	149,929	185,397	213,180	215,180	216,230
Non-Bahraini	15,930	18,471	24,401	39,448	38,733	68,390	93,690	125,160
PERCENT								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Bahraini	82.3	83.2	83.0	79.2	82.7	75.7	69.7	63.3
Non-Bahraini	17.7	16.8	17.0	20.8	17.3	24.3	30.3	36.7

PERCENT CHANGE	Jan 1941- Mar 1950	Mar 1950- May 1959	May 1959- Feb 1965[b]	Feb 1965- Apr 1971	Apr 1971- Apr 1976	Apr 1976- Apr 1977	Apr 1977- Jan 1978
Total	21.9	30.5	32.3	18.4	25.6	9.7	10.5
Bahraini	23.1	30.2	26.3	23.7	15.0	0.9	0.5
Non-Bahraini	16.0	32.1	61.7	- 1.8	76.6	37.0	33.6

[a]Adjusted for underenumeration: See Appendix B, Section 1.

[b]Percent change may be overestimated, since unadjusted data (1959) is compared with adjusted data (1965).

Sources: 1941-1965: Government of Bahrain, Finance Department, Statistical Bureau. The Fourth Population Census of Bahrain. August 1969. Table 1. See Appendix B, Section 1 for adjustment of the 1965 population.

1971: State of Bahrain, Ministry of Finance and National Economy, Statistical Bureau. Statistics of the Population Census 1971. Table 5. See Appendix B, Section 1 for adjustment.

1976-1978: Appendix B, Section 3.

Table 2.

Estimates of the Components of Population Change: 1965 to 1978

Nationality	Population At the Beginning of the Period	Net Change	Components of Change[a] Natural Increase		Net Migration	Percent of Net Change due to Net Migration
			Births	Deaths		
		February 1965 - April 1971				
Total	189,377	34,753	52,255	12,451	-4,793	-
Bahraini	149,929	35,468	45,585	10,458	0	0
Non-Bahraini	39,448	-715	6,670	1,993	-4,793	-
		April 1971 - April 1976				
Total	224,130	57,430	43,570	9,650	23,520	41
Bahraini	185,400	27,780	37,520	8,160	-17,880	-
Non-Bahraini	38,730	29,650	6,050	1,490	25,090	85
		April 1976 - April 1977				
Total	281,560	27,310	9,080	2,340	20,570	75
Bahraini	213,180	2,000	7,620	1,750	-3,870	-
Non-Bahraini	68,390	25,310	1,460	590	24,440	97
		April 1977 - January 1978				
Total	308,870	32,510	6,750	1,920	27,680	85
Bahraini	215,180	1,050	5,700	1,320	-3,330	-
Non-Bahraini	93,690	31,460	1,050	600	31,010	99

[a]Components of change do not completely account for net change between 1965 and 1971 since they are estimated independently. See Appendix B, Section 2.

Sources: 1965-1971: Adjusted census data from Appendix B, Section 1; components of change from Appendix B, Section 2. 1971-1978: Appendix B, Section 3.

Table 3

Estimated Annual Rates of Population Change, Natural Increase, and Net Migration: 1965-1977
(Rate[a] per 1000 mid-period population)

Component	1965-1971			1971-1976			1976-1977		
	Total	Bahraini	Non-Bahraini	Total	Bahraini	Non-Bahraini	Total	Bahraini	Non-Bahraini
Rate of Population Change	27	34	-3	45	28	111	92	9	312
Crude Rate of Natural Increase	31	34	19	26	29	15	23	27	11
Crude Birth Rate	41	44	28	34	38	23	31	36	18
Crude Death Rate	10	10	8	8	8	7	8	8	7
Net Migration Rate	-4	0	-20	19	-2	94	70	-18	302

[a]Each rate rounded independently.

Table 4

Estimated Net Migrants and Net Migration Rates
by Nationality: 1971-1977

Nationality	Net Migrants Apr. 1971-Apr. 1976	Mean Annual Net Migration Rate 1971-1976[a]	Net Migrants Apr. 1976-Apr. 1977	Net Migration Rate 1976-1977
Total	23,515	2.1	20,566	7.3
Bahrain	-1,575	- 0.2	-3,872	- 1.8
Non-Bahrain	25,090	13.0	24,438	35.7
Arab	- 693	- 0.8	1,343	7.2
Gulf	-4,849	- 8.1	1,388	16.2
Qatar	- 118	-15.8	1,096	2,236.7
Oman	-5,000	- 9.1	- 785	-10.7
UAE	4	0.1	1,118	126.5
Kuwait	265	126.2	- 41	-13.1
Saudi Arabia	- 589	- 8.6	102	10.9
Other	4,745	23.6	- 147	1.6
Non-Arab	25,783	24.2	23,095	46.5
Iran	-1,538	- 5.9	-1,308	-30.5
India	9,928	29.2	8,120	46.3
Pakistan	12,675	46.1	6,399	34.0
Other Asia	1,965	213.6	4,140	190.7
Other Africa	- 2	- 0.8	60	115.4
Europe	875	5.3	5,635	124.3
USA	1,180	84.9	- 358	-24.0
Other	700	264.2	407	53.6

[a]Net migrants 1971-1976 divided by 1971 population, divided again by 5, multiplied by 100.

[b]Net migrants 1976-1977 divided by 1976 population, multiplied by 100.

ECONOMIC AND INDUSTRIAL POLICY: RECENT DEVELOPMENTS

The Economic Determinants

5. Bahrain's strategic and commercial position entitles Bahrain to a "geographical rent", the counterpart to services offered by the Emirate's economy. This is a major and permanent advantage of which many Bahrainis have always benefited, although the pattern of these services has changed due to changes in the last 50 years in the pattern of international trade and transportation. The Emirate's own resources constitute the second structural determinant of its economy. In this respect, the pattern of these resources with their impact on the state and growth of the domestic industry and economy has evolved through three successive phases.

6. In the first phase, ending in the early 1930s, the human and natural resources determining the economic structure were primarily occupied in the pearl-diving industry and export trade.

7. During the second phase, crude oil extraction and refining replaced the pearl "industry" as a source of income additional to that of trade and other services, consituting together the main determinants of domestic industrial and economic activity. It must, however, be pointed out that since oil extraction and refining were foreign-owned and controlled, revenues from newly established sector had for several decades been captured by foreign oil concession holders, which wage incomes were shared between Bahraini and foreign labour. As a result, the oil sector was less capable in mobilizing large numbers of local labour than

the pearl "industry" and diffusing revenues within the Bahraini society. This second phase lasted from the mid-1930s up to 1970.

8. In the third phase, in the early 1970s, mobilization for further industrialization of domestic natural resources took place. Thus, the oil-associated gas, more recently natural gas as well, were added to the domestic industrial and economic structure, jointly with the other but permanent determinant of the income, namely that derived from the geographical position related to services. However, the role of the extractive and refining sector in mobilizing labour has stagnated in spite of the increase in its revenues and in their further utilization in local economic activities.

9. As to the new gas processing industry implemented in the early 1970s it did increase both job opportunities and contribution of the industry to Bahrain's national product, which is due in particular to the aluminium downstream industries, since they are less capital-intensive than the main aluminium refining plant. Nevertheless, this new generation of industries has not been multiplied, while the main new projects are presently gas-gathering and highly capital-intensive.

10. A careful look at the development of the labour sector since the turning years of the early 1930s, and more particularly since the establishment of the gas-based industry, shows that the services sector continues to be predominant in the pattern of labour sharing within the Bahraini economy. Extracting industries are a secondary employer, and manufacturing employs only a moderate and almost a stagnant share of Bahraini labour. The gas-based industries, mainly the aluminium refining and manufacturing attained their level of saturation of labour a long time

ago. As a result, a new and strong move to extend and diversify the banking and other services sectors has been easily observed during the last four years in Bahrain.

Basic Economic Philosophy of Bahrain

11. Up to now Bahrain has not applied any centrally integrated planning to develop its economy. This does not, of course, mean the absence of delibrate and direct government intervention in the economic sphere. Authorities apply a general philosophy, a multi-aspect policy, and a set of basic rules, which together govern governmental intervention in the various sectors of the Bahraini economy. The decline in oil reserves and output, and the progress made in trade and educational developments in the Emirate, economic intervention by the Government has emerged earlier and has been intensified more than in the other Gulf Emirates, except for Kuwait, where historical and political factors added to the high level of oil output, income and "surpluses" and the importance of services activity, has stimulated the building-up of the state at the beginning of the early 1960s.

12. The role of the state of Bahrain is, in fact, similar to that of any of the Gulf states; it has four constitutive guidelines:

The definition of the bases and conditions for economic activity.
The granting of multiple and multiform facilities to industrial projects.
The exemption from taxes and customs duties of the industry's imports of its machinery and raw material requirements.
The encouragement of foreign investments of a joint venture nature by exempting them from income taxes and by granting them full latitude in transferring their capital funds and profits.

The State's Economic Intervention

13. The Government has not established either a specialized industrial bank or a development corporation which, inter-alia, would be useful in the management of facilities provided by the industrial estate, now in being, and the new ones planned. The existence of a development corporation may be needed for the following pruposes:

(a) To set up industrial estates and to prepare plans for such services as roads, electricity, water, sewerage, etc.

(b) To promote the setting up of industries on industrial estates, and to assist these industries in obtaining financing.

(c) To administer the estates, and

(d) To give advice on managerial and technical matters to small industries.

14. The Corporation should become self-financing, drawing income from renting or selling industrial sites, and should not engage in setting up industries itself.[1/]

15. The Government has played an active role in the industrialization process. It has acquired a large equity participation in the aluminium smelter (nearly 80 per cent), owns outright the aluminium extrusion plant, participates in the shares of the proposed NGL plant and the Dry Dock, and has set up a public corporation for producing poultry products. There does not appear to be any particular set of guidelines for Government investment except a willingness to come in when private equity capital is

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1/ WORLD BANK: Report No. 2058-BH: "Bahrain, Current Economic Position and Prospects", June 28, 1978, p. 15.

reluctant to do so.[1]

16. The non-financial role of the Government, apart from participation in the management of ALBA and other major projects, is to regulate the entry of new firms. This seems to be done with considerable despatch and freedom from onerous levies. It does reserve and sometimes exercise the right to withhold a permit to enter, if it considers the field already well covered.[1]

17. The future depletion of the hydrocarbon deposits is a threat which the governments of the Gulf Emirates foresee, thereby moving actively to assure a diversification of their sources of income, namely, transforming the economy into a diverse and a relatively self-sustained economic structure, which is unilateral and extractive, with hypertrophic mining production, fully integrated in international export markets and inseparable from the other agricultural and manufacturing sectors.[2]

18. Crude oil was discovered in Bahrain as early as 1934. It has been extracted very early, and the two US-multinational oil corporations associated within Bapco established a giant oil refinery in 1936. It was, therefore, not accidental that the first Gulf Emirate where oil was discovered sought to create industrial plans in order to substitute for

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[1] WORLD BANK: "Bahrain, Current Economic Position and Prospects", Washington, 28 June, 1978, World Bank, Report No. 2058-BH, p. 15.

[2] EL-ZAIM, Issam: "Arab Industrialization Policies and the Aspired International Economic Order" in "The New International Economic Order in the Arab World", Kuwaiti Fund for ARab Economic Development, Kuwait, March 1976, sponsored by the Kuwaiti Fund for Arab Economic Development, the Kuwaiti Economic Society, the Arab Institute for Planning, and Kuwait University, pp. 129-150, text in Arabic.

the depleting oil-extracting industry. However, due to the modest volume of production and its short-term depletion prospects, and the heavy expenditures on administration and infrastructure, the rent received from oil could not easily and sufficiently allow for the necessary accumulation which would allow Bahrain to lay down the basis for industrialization. This was particularly true in 1974, the year recently following the rise in the price of crude petroleum and the significant decline of consumption in the developed capitalist countries; during that year, Bahrain's exports were valued at 1056,8 million dollars, and its imports amounted to 1126,2 million dollars, which constituted a notable trade deficit.[1/] This was not an exceptional event, but rather an illustration of the new situation which confronted Bahrain, resulting from the decline in oil-production particularly and the inelasticity of public and private espenditures, particularly, capital requirements for development projects. It can be said that the depletion of the oil reserves, the absence of any "capital surpluses", and the major difficulty confronting Bahrain in the accumulation of resources for industrial development were strong factors for the adoption of policies encouraging the establishment of alternative joint-venture-based industries.

19. In fact, industrialization in Bahrain, and in almost all the other Gulf Emirates, are carried out by both foreigners and nationals. While the Bahraini Government and the private sector seek to diversify sources of income and to prepare for the post-oil era, they face the constraint of capital financing. Multinationals and other private interests from the developed countries with market economies seek partnerships in the Gulf area to upgrade crude oil and to take advantage of the very cheaply priced

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1/ "Gulf Basic Data" in "The Middle East", No. 17, London, March 1976, p. 41.

natural gas generally associated with oil, bringing in counterpart technological know-how and management resources. At a later stage, as demostrated by the Bahraini aluminium industry, some neighbouring Gulf countries with better mines and financial means, may enter into these partnerships, substituting, though partly, for foreign partners whose interests are likely to diminish and who may, therefore, seek to retreat.

Project Expenditure of the Ministry of Industry and Development, 1979-1981

20. In addition to the main expenditures for new and on-going projects implemented essentially through joint-venture operations, the Ministry of Industry and Development has scheduled its own capital expenditures for new and on-going projects.

21. Projects amounting to 2,427 thousand Bahrain dinars have been projected over the years 1979-1982. According to available data, shown in table 5, some 1,450 thousand dinars were scheduled for new projects in 1979, 774 thousand in 1980 and 200 thousand in 1981. No capital expenditure were scheduled for the years beyond 1981.

Evolution of Sectors' Shares in the Gross National Product between 1973 and 1977 at Constant 1977 Prices[1/]

22. Agriculture and fishing. Over the years, 1973-1977 the combined gross product of agriculture and fishing, at constant 1977 prices, decreased, though slightly, by 0.8 million Bahraini Dinars. However, the share of this primary sector in total gross national product fell from 4,715 per cent in 1973 to 1,713 per cent in 1977.

1/ Analysis presented here is made by using figure estimates of the World Bank; namely, WORLD BANK: "Bahrain Economic Position and Prospects". Washington, 28 June 1978, Report No. 2058 - BH, Annex, Table 2.2.

Table 5

PROJECTED CAPITAL EXPENDITURES FOR NEW AND ON-GOING PROJECTS OF THE MINISTRY OF INDUSTRY AND DEVELOPMENT, 1979-1982 (in thousand Bahrain Dinars at Current Prices)[1/]

Projects Total Cost	1979		1980		1981		1982	
	Projects		Projects		Projects		Projects	
	In Progress	New	In Progress	New	In Progress	New	In Progress	New
4,424	12	1,450	-	774	-	200	-	-

1/ Bahrain, Ministry of Finance and National Economy.

23. Mining. Oil and other extracting activities continued to weigh heavily in the gross national product, but its share has declined. In real terms, the oil and mining sector's gross product decreased, very slightly, by 14.9 million Bahraini Dinars between 1973 and 1977. However, the sector's share in the country's gross national product decreased substantially from 50.42 per cent in the base year (1973) to more than 35.39 per cent in 1977.

24. The decline in the two primary components of the primary sector, i.e., agriculture and fishing and oil extracting, was balanced by an increase in the gross product of both manufacturing and services, mainly trade and services, banking, insurance and real estate and public administration and defense.

25. The domestic product of manufacturing, valued at constant 1977 prices, was multiplied by almost 2.5 times, increasing by 66.5 million Bahraini Dinars between 1973 and 1977, an annual average of B.D. 16,625 million, or at 34.2 per cent per annum. During the same period, the share of this sector in GNP, rose from almost 11.78 per cent to almost 21 per cent. A reading of developments in the different branches within this sector, namely, oil refining, aluminium smelting and processing and other manufacturing, as shown in table 6 shows that different branches of manufacturing, flour milling excepted, have all contributed to its achievement. Manufacturing has, therefore, achieved an unusual rate of growth (34.2 per cent per annum) and strongly consolidated its weight in GNP. This can be explained mainly by the boost in construction, the successive increases in oil prices and the commercial of the aluminium industries together with other manufacturing developments.

26. Construction. Gross income in the construction sector, valued at constant 1977 prices has almost doubled, from BD 34.9 million in 1973 to BD 61.9 million in 1977, the rise having accelerated in 1975-1977. Therefore, the construction gross product increased over this four-year-period at an annual average of BD 6.675 million or slightly above 19 per cent. In addition, the sector's share in GNP rose from nearly 8.45 per cent in the base year (1973) to almost 11.3 per cent in 1977.

27. The progress in this sector was due to two factors: a) structural, namely, population growth andurbanization and b) conjunctual, namely, the substantial increases in the oil prices since 1973.

28. Trade and Services. This sector also achieved important growth with its gross product almost doubling from BD 56.7 million in 1973 to BD 106.7 million in 1977. Over the period this sector grew rapidly at an annual average of BD 12.5 million, or at a rate exceeding 22.04 per cent per annum. As to the sector's share in GNP it did also increase, using from more than 13.74 per cent in 1973 to nearly 1[illegible].46 per cent in 1974.

29. Real Estate. Gross product in this branch increased from BD 23.9 million in 1973 to BD 31.8 million in 1977, or an average rate of growth of 11.8 per cent per annum.

30. Banking and Insurance. This branch of activities was the most stimulated and boosted sector, with the value of its gross product jumping from BD 4.1 million in 1973 to BD 49.2 million in 1977, at constant 1977 prices. The annual average growth of BD 11.275 million represents an average rate of exactly 275 per cent per annum. This reflects tremendous expansion in banking and insurance in Bahrain during this period, and achieves the Emirate's objection of specializing in banking and

insurance. The effect of this growth on the economic structure appears in the sharp rise in the share of banking and insurance in GNP, from about 1 per cent in 1973 to almost 9 per cent in 1977.

Transport, storage and communications

31. Gross product in this sector increased from BD 22.9 million to BD 38.8 million between 1973-1977, or at an average rate of above 16 per cent per annum. The sector's share in GNP, moved from roughly 5.54 per cent in 1973 to more than 7.07 per cent in 1977. Therefore, while this sector grew at an important rate during the period under consideration, its share in global economic activity improved only slightly.

Public administration and defense

32. This sector also grew notably, with its share in GNP increasing more than two-folds between 1973 and 1977 from BD 18.9 million to BD 44.9 million, or at an exceptional rate of about 35.4 per cent per annum. The share of this sector in GDP almost doubled from about 4.58 per cent in 1973 to 8.19 per cent in 1977. This is shown in the tables 6 aand 7.

Table 6 Gross National Product by Industrial Origin at Constant 1977 Market Prices (1)
(In Millions of Bahrain Dinars)

	1973	1974	1975	1976	1977 1/
Agriculture and Fishing	10.2	9.7	9.4	9.0	9.4
Agriculture	7.8	7.3	7.3	7.0	7.1
Fishing	2.4	2.4	2.1	2.0	2.3
Mining	209.0	221.5	155.3	191.4	194.1
Oil	208.6	221.3	154.9	190.4	193.0
Other	0.4	0.2	0.4	1.0	1.1
Manufacturing	48.6	64.7	81.1	100.7	115.1
Oil Refining	19.1	25.5	24.6	21.4	32.2
Aluminium	16.0	19.9	21.4	23.0	22.6
Flour Mill	0.3	0.3	0.4	0.6	0.4
Other	13.2	19.0	34.7	55.7	59.9
Electricity and Water	4.5	4.6	2.9	3.9	3.7
Electricity	4.4	4.5	2.8	3.8	3.6
Water	0.1	0.1	0.1	0.1	0.1
Construction	34.9	40.2	42.3	55.8	61.9
Transport, Storage and Communications	22.9	26.8	30.4	37.9	38.8
Trade and Services	56.7	68.7	80.7	103.6	106.7
Banking and Insurance	4.1	6.8	11.8	30.0	49.2
Real Estate	23.9	26.1	24.2	28.4	31.8
Public Administration and Defence	18.9	29.9	35.1	41.3	44.9
GDP at m.p.	433.7	499.0	473.2	602.0	655.3
Net Factor Income	-21.0	-29.0	-36.6	-59.3	-106.9
GNP at m.p.	412.7	470.0	436.6	542.7	548.4

Source: Mission Estimates

1/ Preliminary estimates

(1) World Bank: "Bahrain Current Economic Position and Prospects", World Bank, 28 June 1978, Report No. 2058 - BH. Annex, Table 2.2.

Table 7 Gross National Product by Industrial Origin at Current Market Prices (2)
(In Millions of Bahrain Dinars)

	1973	1974	1975	1976	1977 1/
Agriculture and Fishing	3.9	5.0	5.5	6.8	9.4
Agriculture	2.5	3.3	4.4	5.2	7.1
Fishing	1.4	1.7	1.1	1.6	2.3
Mining	43.9	143.0	129.7	167.2	194.1
Oil	43.7	142.8	129.7	166.2	193.0
Other	0.2	0.2	0.5	1.0	1.1
Manufacturing	25.0	51.1	63.7	95.5	115.1
Oil Refining	13.4	14.3	21.1	25.8	32.2
Aluminium	4.3	24.3	13.7	18.6	22.6
Flour Mill	0.4	0.2	0.2	0.2	0.4
Other	6.9	12.3	28.7	50.9	59.9
Electricity and Water	2.9	2.9	2.0	3.8	3.7
Electricity	2.7	2.7	1.9	3.7	3.6
Water	0.2	0.2	0.1	0.1	0.1
Construction	11.2	19.9	29.5	54.2	61.9
Transport, Storage and Communications	12.0	16.0	22.8	31.5	38.5
Trade and Services	26.9	40.4	53.3	82.3	106.7
Banking and Insurance	7.1	9.9	10.9	33.9	49.2
Real Estate	4.9	7.7	22.5	31.2	31.8
Public Administration and Defence	9.3	17.1	24.2	31.6	44.9
GDP at m.p.	147.1	313.0	364.1	538.0	655.3
Net Factor Income	-14.1	-21.6	-33.2	-54.1	-106.9
GNP at m.p.	133.0	291.4	330.9	483.9	548.4

Source: Mission Estimates

1/ Preliminary estimates

(2) Previous reference annex, table 2.1

The Impact of Recent Developments in Industry on Labour, 1973-1977

33. The development of extracting oil and/or minerals processing industries determines the pattern, extent and share of persons employed in the various branches. Thus the setting up of such first processing and non-agricultural up-stream industrial sequences, which are basically capital-intensive and export oriented does not produce substantial industrial employment.[1/] To the contrary, the development of down-stream operations and an extension of the industrial lines of production to include the latter are essentially labour-intensive sequences which lead to a higher level of industrial employment, while reinforcing the share of labour in manufacturing.

34. In the case of Bahrain, labour-sharing within industry has reflected the latter's structural characteristics, while highlighting the specialization of the economy as a whole. Considering the distribution of labour among the different branches of industry in Bahrain over the period 1973-1977, as shown in table 8, we can easily see that two first-processing non-agricultural industries and one oil-related infrastructural maintenance industry, mainly ship-repairing, have mobilized the major part of industrial labour in Bahrain. First, oil-refining and allied undertakings, classified under chemical industry, which are in fact the first-processing oil industry, have been the main labour-intensive industry in the Emirate, though labour in this industry has stagnated and, consequently, its weight dropped in relative terms; although it maintained

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1/ The concept of first or two-sequenced processing industries applies to non-integrated industries which consist of one or two of the first, i.e., upstream processing of agricultural or non-agricultural first-processing industries. The last category is subdivided into oil and gas and into minerals. See in this respect: EL-ZAIM, Issam and ALSHAIKH-ALI, Abdel-Bari: "The Industrial Patters of Islamic Countries and Possibilities for Industrial Cooperation", Vienna, 1978, UNIDO, ICIS.

its leading position in the industrial employment pattern. Second, first-processing non-agricultural industry, classified under basic metals production and working, but not fabrication, boosted its number of employees and, consequently, ranked second among the labour-employing industries in the country. Added together, the two non-agricultural first-processing industries, namely, oil and aluminium refining, together with other first-processing activities, employed some 5,062 workers or 58.96 per cent of the total labour (8,585) employed in the industrial sector in 1973. In 1977, these enterprises employed 7,227 workers, or nearly 55.59 per cent of total industrial labour. This means that specialization of Bahrain's industry in the first-processing of oil and in imported minerals has slightly declined over the period 1973-1977, although it remains to be largely predominant in terms of employment.

35. On the other hand, the number of employees in the transport, mainly ship-repairing sector increased strongly. In 1973, 1,929 manual and clerical workers were employed in this branch, almost 22.46 per cent of the total industrial labour in that year, compared with 2,380 persons or nealy 18.31 per cent in 1977. As a consequence, ship repairing and transport became the second-largest industrial employer in Bahrain. Futhermore, since the basic metals processing industry is fundamentally based on gas, and as ship-repairing is basically an oil-related infra-structural maintenance industry, the two first-processing branches, namely, oil and metals, together with these gas and oil-related industries are either based on or related to hydrocarbons.

36. As a group, these three industries had employed 6,990 workers, or 81.42 per cent of the total industrial labour employed in Bahrain in 1973, compared to 9,607 workers, or 73.89 per cent in 1977. This illustrates an increase of 2,617 in the number of workers employed in those three first-processing and infra-structural maintenance undertakings, although the relative share of these branches declined by 7.5 per cent.

37. Almost all the other industrial establishments have realized only a limited increase of employment; only the paper and paper products industry (including printing) did not achieve any increase. In fact, only the mechanical industries achieved a very striking rise in employment - the highest in all industries - between 1973 and 1977. These branches multiplied the number of their employees from 172 or 2.0 per cent of the total in 1973, to 1,013 or 7.9 per cent, in 1977. Therefore, the share of this industrial branch in the total employment had multiplied.

38. Since mechanical industries are stimulated by developments in ship-repairing and in the down-stream branches, i.e., aluminium and hydrocarbon processing, it may be justified to add this last branch to the first three already examined branches of first-processing and oil-related infrastructural maintenance. Should this be the case, the number of workers employed in the four branches will be 7,162, or 83.42 per cent of the total of workers employed in industry in 1973, and 10,620, or almost 81.17 per cent, in 1977. This changes the trend reflected in the three combined branches, and, at the same time, highlights a small decline in the four main hydrocarbon-based or related industrial branches, namely, oil refining, metal processing, ship repairing and related mechanical industries.

Table 8 INDUSTRIAL ESTABLISHMENTS BY TYPE OF ACTIVITY AND PERSONS EMPLOYED

INDUSTRY	1973						1977					
	No. of Establish-ments	No. of Employees	Establishments with Employees Numbers				No. of Establish-ments	No. of Employees	Establishments with Employees Numbers			
			10	11-50	51-200	+200			10	11-50	51-200	+200
1. Agricultural, Food & Beverage Industries	21	448	10	8	3	-	28	587	16	9	3	-
2. Wood and Derived Industries (including Joiners' Shops)	64	221	60	4	-	-	80	370	72	8	-	-
3. Paper and Derived Products (including printers)	6	194	1	4	1	-	10	194 1/	5	4	1	-
4. Chemical Industries (including oil refining)	9	4,056	3	3	2	1	10	4,085	5	3	1	1
5. Building Materials (excluding building contractors)	20	364	6	13	1	-	54	538	35	16	3	-
6. Glass Industries	2	15	2	-	-	-	4	46	1	3	-	-
7. Plastics Industries	2	41	1	1	-	-	4	69	1	3		-
8. Basic Metals (Production and working; not fabrication)	2	1,006	-	1	-	1	4	3,142	-	2	1	1
9. Mechanical Industries	29	172	23	6	-	-	59	1,013	36	21	1	1
10. Electrical Industries	4	136	1	2	1	-	40	483	31	7	2	-
11. Transport (including ship repairing)	3	1,928	-	-	-	3	20	2,300	4	11	1	4
12. Miscellaneous	1	4	1	-	-	-	7	94	2	5	-	-
Total	163	8,585	108	42	8	5	320	13,001	208	92	13	7

Source: 1973: Industrial Planning Study by ACTIM, August 1973
(Employee numbers adjusted in 5 companies where employee numbers seemed incompatible with turnover).
1977: Bahrain Official Industrial Directory - Ministry of Development and Industry
(Plus 50 small carpenters' shops).

Bahrain: Current Economic Position and Prospects, World Bank, Washington, 28 June 1978, Report No. 2058-BH.

1/ This appears low compared with the 1973 figure.

Chapter II

LABOUR CONDITIONS, POLICIES AND REGULATIONS

Historical Background

39. As a result to the fatal decline in the pearl-diving industry and its world trade during the 1930's there was thousands of unemployed workers in Bahrain.[1] At the time several legal reforms related to labour conditions and wages in the pearl-diving industry were introduced. These two combined factors made cheap labour available to BAPCO, the Bahrain Petroleum Corporation, which was still searching for oil. Indeed, these reforms brought about new opportunities for jobs in BAPCO's installations and offered labcur the potential for regular and relatively high wages. BAPCO found abundant and cheap labour available. For jobs which required some skill, BAPCO imported foreign labour.[2] Consequently, Bahraini workers were concentrated in subaltern jobs, while foreigners occupied top and intermediate positions.

40. During the first ten years which followed the establishment of the Bahrain Petroleum Company (BAPCO), foreigners were increasingly employed, especially when accepting lower wages than Bahrainis.[3] Indeed, the number of Bahraini workers directly employed by BAPCO declined between 1948 and

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1/ "The Administrative Report for the Years 1926 - 1937": "The number of workers in pearl-diving decreased gradually from 1,900 workers in the year 1935; the biggest decline took place between 1933 and 1935, and was estimated at more than 6,000 workers or 39 per cent of the total labour force in this profession." See AL-RUMAIHY and also AL-UBEIDY IBRAHIM-KHALAF: "The National Movement in Bahrain 1914-1971."

2/ AL-RUMAIHY, Mohamed. Gh.: "Problems of Political and Social Change in Bahrain, 1920-1970", Kuwait 1976, Al-Wahdah, Editing and Distribution House, p. 131, in Arabic; SHAWADRAN, B.: "The Middle East and the Great Powers", New York, 1955.

3/ NAKHLE, Bahrain, p. 77.

1952. While the total number of BAPCO staff increased during that period from 6,708 to 8,716 persons, the percentage of Bahrainis in this total fell from 76.5 per cent in 1948 to 63.9 per cent in 1952.[1/] According to BELING and PORTER, around 40 per cent of the labour force in Bahrain were employed at BAPCO during the mid-fifties.

41. In addition to a small population, employment was limited to Bahrain's enterprises existing at that time. This was due to the Emirate's underdeveloped economy and its major dependence on the oil and services sectors. According to a census made in 1956, there were no more than 687 enterprises, or 93 per cent of the total, being micro-enterprises, each employing not more than five persons.[2/]

42. Furthermore, during the same period, employment was concentrated in seven foreign enterprises. Apart from BAPCO, which is a joint subsidiary of two US multinational corporations, but largely registered in Canada, there were six other major employers in the Emirate. These were the seven major employers:

ACME Company - for building and construction

BAPCO - for the oil sector

Grey Makenzie - for sea trnsportation

The East African Near Eastern Corporation (EANE) - dealing with consumer goods.

1/ BELING, W.A.: "Recent Developments in Labour Relations in Bahrain", in: Middle East Journal, Vol. XIII, No.2, Spring 1959;
PORTER, R.S.: "The Third Population Census of Bahrain, 1959", Beirut, 1961;
SHAWADRAN, B.: "The Middle East and the Great Powers", New York, 1955.

2/ PORTER, R.S.: "The Third Population Census of Bahrain, 1959", Beirut, 1961, p. 42.

The Cable and Wire Corporation (CNW)

The British Overseas Airways Corporation (BOAC)

The British Military Base in Al-Muharraq and Al-Gefeir

43. Many Bahraini workers who had emigrated to Saudi Arabia to work in the newly developing oil industry had, following strikes in that country's oil industry in 1953, to return to Bahrain. The unemployment problem became very serious in the Emirate. Consequently, a special labour board was established to supervise the labour market and to organise industrial relations. The number of unemployed was increasing in the mid-fifties, and the opening of the Emirate to immigrants made things more difficult. Under these conditions the labour board was only partly succesful in finding jobs for the unemployed. This is shown in the following table 9.

Table 9: Unemployed Registered at the Labour Board

	BAHRAINI		FOREIGNERS	
	Registered Unemployed	Employed	Registered Unemployed	Employed
1955[1]	2586	586	no employment authorized	
1956[2]	1448	1189	" "	"
1957	2843	1043	828	241
1958	1866	1247	993	421
1959	1122	977	639	324

1/ AL-RUMAIHY, p. 156

2/ LITTLEFIELD, p. 77

Source: KHALID, Abdallah: "On the Conditions of the Establishment of the first Trade Union in the Gulf (Bahraini Federation of Labour)", in: AL-Tariq (monthly), No. 6, Beirut, December 1979.

Education

44. Regular education in Bahrain started in 1919 with the opening of first boys' primary school. In 1928 the first girls' primary school was opened, and in that same year a group of Bahraini students was sent to the American University in Beirut. A year later education was put under direct Government control. In 1936 the first boys' secondary school was opened. In 1951 the first girls' secondary school was opened. Previously the education system was made up of only two stages, namely, primary and secondary, but in 1961 the intermediate stage was introduced. The male and female teacher training colleges were opened in 1966 and 1967 respectively. Available data[1/] indicates that the number of students in both Government and private schools has been increasing, except for a slight decline in 1967/1977. The teaching staff in these schools was also increasing annually except during 1967/1977.

45. Higher levels of literacy has usually been associated with increasing industrialization, higher productivity and incomes, and improved living conditions. The manpower needs of rapidly developing societies have been met by increased educational opportunities. Increasing literacy has accompanied Bahrain's development. The percentage of the population aged 15 and older that is illiterate dropped from 75 per cent in 1959 to 60 per cent in 1971. All sex and nationality groups have participated in this decline, with the exception of non-Bahriani males between 1959 and 1965. Patterns by age also provide insight into historical trends in illiteracy. In the older population, illiteracy reflects the limited educational opportunities which were available more than 40 years ago.

1/ State of Bahrain, Ministry of State for Cabinet Affairs, "Satistical Abstract 1977", Bahrain, October 1978, Directorate of Statistics, Section 4, Education Statistics, p. 57.

The younger population has taken advantage of recent educational expansion. The literate population increased considerably between 1950 and 1971. However, despite the progress that has been made, and despite that the rates of illiteracy in Bahrain were lower in 1970 than in other Arab States, illiteracy rates in the Emirate have exceeded the world rates since 1950 (Population Reference Bureau, 1975).

46. Improvements in literacy among Bahrianis reflect the expansion of the educational system during the 20th century. However, more than one half of the Bahrainis were illiterate in 1971. Although the literate population grew from 12,594 in 1959 to 35,779 in 1971, the illiterate population grew by 11 per cent, which was due to the increase of illiterate women, from 28,710 to 34,500.

Educational Attainment

47. Increasing proportions of the population have been taking advantage of the educational opportunities, a indicated by the educational attainment of the population of 20 years and over[1/]. The population that had completed intermediate or higher-level education more than doubled between 1965 and 1971. The percentage of the population completing more than primary education increased from 10.2 per cent in 1965 to 17.5 per cent in 1971, as shown in table 10.

48. Bahraini females remain the least educated category, yet they achieved the greatest increase in educational attainment between 1965 and 1971. The number of women who had completed more than primary education increased more than six times. Although schools for girls were not

1/ Unless a specific age category is mentioned, the following discussion refers to the population of 20 years of age and older.

available until years after comparable schools for boys has been started, it is evident that cultural restrictions on women prevented them from taking advantage of available schools and programmes. Only recently have women gone to school beyond the primary level. For 1971, 25 per cent of women aged 20-24, compared with only 5 per cent of women aged 25-34, had more than primary education. Bahraini men are far ahead of their female counterparts, since 60 per ccent of men aged 20-24 have more than a primary education.

School Enrolment

49. Table 11 presents enrolment rates, the percentage of the population that is attending school by age, sex and nationality. The 1965 and 1971 census provide the basic information. Enrolment rates in 1976 are estimated for Bahrainis only by relating school enrolment in the 1975-1976 academic year (Bahrain, Ministry of Education, 1976) to the estimated population in 1976. Current enrolment rates imply a substantial improvement in both literacy and educational attainment in the future.

50. Over 60 per cent of Bahraini population in the age group of 5-19 was enrolled in school in 1976. The age category of 10-14 years had the highest enrolment rates. Since 1965, enrolment rates for boys in the age group of 5-9 have been increasing, while rates for boys of 10-14 have stabilized at over 90 per cent. Enrolment rates for the age group 15-19 showed some decline. Rates for Bahraini girls have increased in all age groups, but most noticeably among those 15-19 years of age. Girls now consitute 45 per cent of the school population in all three age groups. Since 1971, Bahraini girls have constituted 43 per cent of primary school enrolment, 45 per cent of students at the intermediate level, 54 per cent of general secondary students, and 38 per cent of commercial secondary

Table 10: Percent of the Population in Ages 20 and Older Who Have More Than Primary Education by Sex and Nationality: 1965[a] and 1971

Nationality	Total	Males	Females
	1965		
Total	10.2	12.6	6.9
Bahraini	4.7	8.2	1.0
Non-Bahraini	23.9	19.6	38.3
	1971		
Total	17.5	21.8	11.6
Bahraini	13.4	20.8	5.8
Non-Bahraini	28.7	23.6	45.0

[a] Ages 21 and older in 1965.

Sources: Bahrain, Finance Department, Fourth Census of Population: 1965, Tables 37-45; Bahrain, Ministry of Finance and National Economy, Statistical Bureau, Statistics of the Population Census: 1971, Tables 16-18.

Table 11: Bahraini Students in Higher Education Abroad by Country and Specialization, 1976/77

Specialization	Egypt	Kuwait	Iraq	Saudi Arabia	UK	India	USSR	Qatar	Lebanon	Others	Total
Medicine	126	-	-	-	-	-	22	-	5	43	196
Pharmacy	11	-	5	1	-	-	-	-	-	-	17
Engineering	57	10	32	48	1	-	18	-	28	20	214
Sciences	66	86	41	42	-	-	5	16	14	11	281
Mathematics	35	2	8	4	-	-	-	17	4	-	70
Commercial	132	146	4	18	-	-	-	-	1	6	307
Administration and Economics	7	13	42	3	-	-	-	-	-	-	65
Economic and Political Science	19	10	6	-	-	-	1	-	1	3	40
Law	26	34	4	-	-	-	-	-	-	1	65
Law and Sharia	8	1	-	7	-	-	14	-	-	2	32
Fine Arts	33	-	4	-	-	-	1	-	-	2	40
Arabic Language	66	37	2	10	-	-	-	12	-	-	127
English	40	33	2	18	2	2	-	14	3	5	121
History	11	30	2	5	-	2	7	1	-	4	62
Geography	14	46	1	15	-	-	-	5	-	4	84
Philosophy	-	35	-	-	-	-	-	-	-	9	44
Psychology and Sociology	35	85	3	17	-	-	-	1	2	3	146
Arts	60	65	55	17	-	-	1	2	5	-	205
Agriculture	4	-	6	-	-	-	3	-	-	-	13
Physical Education	14	-	4	-	-	-	-	-	-	-	18
Music and Theatre	27	-	-	-	-	-	-	-	-	-	27
Graduate Course	10	-	-	1	3	2	2	-	-	7	25
Others	41	-	13	6	159	90	3	16	1	16	345
Total	842	636	248	212	165	96	77	84	64	136	2,544

enrolment. In addition, Bahraini girls demostrated that they are less likely to repeat a grade than boys.

51. To summarize, information on school enrolement, educational attainment, and literacy, show a consistent improvement in the educational status of the population, although the rural population, women and some age groups have yet to participate fully in the educational system. Such progress is both a determinant and consequence of economic development in Bahrain. Higher levels of educational attainment among women have already led to delayed marriage and lower fertility, particularly among non-Bahrainis. Although the quality of education cannot be assessed with available data from census and surveys, the demand for higher education is growing, the labour force participation of women is increasing, and the general educational attainment of the labour force is increasing.

Post-Secondary Education

52. Post-secondary education in Bahrain[1/] is confined to two teacher training colleges, and to the Gulf Technical College, an institution established in 1968 through the cooperation of Bahrain, Abu Dhabi, and the British Ministry of Overseas Development (BMOD). The College is presently financed by Bahrain, Abu Dhabi and Qatar. BMOD provides the cost of British staff, and this contribution was to end in 1979. The College is open to all the Gulf countries. The courses cover a wide spectrum, ranging from three years for commercial and business administration to four years of technical and engineering courses. In December 1977 UNESCO recommended upgrading the College's curricula and improving its financial planning.

1/ World Bank: "Bahrain Current Economic Position and Prospects", Washington, 28 June, 1978, World Bank, Report No. 2058-BH, pp. 9-11.

53. As expansion of economic activities in Bahrain and neighbouring countries slows down, graduates of the general secondary schools may find it more difficult to find employment in the future. Consequently, the authorities are considering ways of limiting entry to general secondary schools, and diverting more students to technical secondary schools. This shift in educational policy also stems from the Government's desire to reduce the need for foreign labour.

54. To identify the needed skills and to suggest the means of training, a High Council for Vocational Training was established in December 1975. The Council is chaired by the Minister of Labour and Social Affairs. Responsibilities of the Council include the formulation of a vocational training policy.

55. Current development efforts to introduce modern industries to Bahrain and to make it a financial and business center will be strengthened by the rise in literacy. Therefore, the Government may wish to consider introducing compulsory primary education.

56. In 1972/1973 the Government began to make serious efforts aimed at eradicating illiteracy among the adult population. For that purpose, it established 14 literacy centers scattered throughout Bahrain. Enrolment in these centers was 5,000 in 1976/1977. In addition, the Government has been making considerable efforts for increasing the number of skilled Bahrainis, and for this purpose, a number of vocational centers have been established. The facilities of the Gulf Technical College and the other technical schools have been made available for night classes. As a result, training centers exist now for the Dry Dock (ASRY), the Electricity Department, Cable and Wireless, BAPCO, ALBA, the Gulf Air, and hotel and catering.

Table 12: Graduates at Gulf Technical College (1972/73 - 1976/77)

Year	Bahraini		Omani		Total		Grand Total
	Male	Female	Male	Female	Male	Female	
1972/73	8	10	2	3	10	13	23
1973/74	19	16	4	-	23	16	39
1974/75	48	21	8	2	56	23	79
1975/76	33	24	7	5	40	29	69
1976/77	22	24	-	3	22	27	49

Source: Ministry of Education.

Table 13:

Enrol ment Rates[a] by Age, Sex, and Nationality: 1965, 1971 and 1976 (Bahrainis Only), and Mean Annual Percent Change

Sex / Age	Bahrainis				Non-Bahrainis		
	1965	1971	1976	Mean Annual % Change 1965-1976	1965	1971	Mean Annual % Change 1965-1971
Total							
5-9	48.4	47.8	58.4	1.8	60.4	62.5	0.6
10-14	74.8	79.8	84.0	1.1	78.3	82.7	0.9
15-19	48.3	51.1	49.7	0.3	25.5	26.5	0.6
Males							
5-9	56.0	52.4	63.6	1.2	61.4	64.3	0.8
10-14	92.1	91.5	92.0	-0.0	79.1	81.8	0.6
15-19	68.2	60.6	54.9	-1.7	22.0	20.9	-0.8
Females							
5-9	40.9	43.2	53.1	2.7	59.2	60.5	0.4
10-14	55.9	67.8	75.8	3.2	77.3	83.8	1.4
15-19	28.1	41.6	44.4	5.2	35.2	38.8	1.7

[a] Percent of the population enrolled in school.

Sources: Bahrain, Finance Department, Fourth Census of Population: 1965, Tables 33-34; Bahrain, Ministry of Finance and National Economy, Statistical Bureau, Statistics of the Population Census: 1971, Tables 5, 17; Bahrain, Ministry of Education, Planning Directorate, Educational Statistics for the Academic Year 1975-1976, pp. 48-129; Table C.3.

Changes in BAPCO's Employment and Recruitment Policy 1970-1977

57. The number of employees of the Bahrain Petroleum Company (BAPCO) almost quadrupled between 1970 and 1977, jumping from 1,000 to 3,878 employees. The composition of the different national categories among BAPCO's employees have changed during the years 1970-1977. See table 14.1/

58. On the basis of the pattern and changes of nationalities shown in this table, it may be possible to assess a recruitment policy giving:

first priority to Bahrainis with a tendency for reducing their share in the total number of employees;

second priority to increase the number of British and Commonwealth employees;

third priority to increase the number and percentage shares of American nationals and those of the category Others; and

fourth priority to stabilize the number of Gulf Arabs.

59. While the recruitment policy of Bahraini naitonals, United Kingdom and United States nationals respond to various economic, political and strategic considerations for the company, the policy related to Commonwealth nationals respond to cost and control considerations, with that affecting Gulf Arabs could be explained in terms of political and strategic considerations for the company and of economic conditions in the neighbouring Gulf states.

60. Should the Bahraini Government decide to take-over BAPCO, the recruitment policy as well as the composition of employment may undergo progressive changes.

1/ State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: "Statistical Abstract 1977", Bahrain, October 1978, Table 58, p. 92.

Table 14 : BAPCO Employees by Nationality, 1970-77

Nationality	1970		1971		1972		1973		1974		1975		1876		1977	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Bahrainis	3,900	89.1	3,460	89.1	3,330	89.2	3,313	89.3	3,385	89.0	3,335	88.6	3,205	87.4	3,300	83.6
Gulf Arabs	53	1.2	47	1.2	44	1.2	36	0.9	30	0.8	24	0.6	20	0.5		
British	249	5.7	225	5.8	210	5.6	209	5.6	222	5.8	220	5.8	235	6.4	290	7.3
Commonwealth	114	2.6	101	2.6	88	2.3	89	2.4	15	0.3	116	3.1	138	3.7	300	7.6
American	13	0.3	12	0.3	12	0.3	21	0.5	36	0.9	39	1.0	34	0.9	58	1.5
Other Nationalities	48	1.1	38	1.0	47	1.2	41	1.1	113	2.9	30	0.8	35	0.9		
Total	4,377	100.0	3,883	100.0	3,731	100.0	3,708	100.0	3,801	100.0	3,764	100.0	3,667	100.0	3,948	100.0

Source: Bahrain Petroleum Company, Limited, Bahrain.

Table 15

Employed Population by Major Industry Group: 1959 to 1971

Industry	Number			Percent Distribution			Mean Annual Percent Change	
	1959	1965	1971	1959	1965	1971	1959-1965	1965-1971
Total	46,955	53,274	59,590	100.0	100.0	100.0	2.3	1.9
Agriculture and fishing	4,464	4,654	3,990	9.5	8.7	6.7	0.7	-2.3
Mining and manufacturing	10,405	7,518	8,464	22.2	13.9	14.2	-4.8	2.0
Gas and water	--	--	1,705	--	--	2.9	--	--
Construction	4,739	8,328	10,404	10.1	15.6	17.5	13.2	4.0
Wholesale and retail trade; restaurants and hotels	4,766	7,386	7,706	10.2	13.9	12.9	9.6	0.7
Transport, storage and communication	1,631	5,494	7,743	3.5	10.3	13.0	41.2	6.6
Financing, insurance, real estate, and business services	273	354	1,084	0.6	0.7	1.8	5.2	33.4
Community, social, and personal services	20,137	19,540	18,388	42.7	36.9	30.8	-0.5	-1.0
Activities not classified	540	--	106	1.2	--	0.2	--	--

Sources: Bahrain, Population Census 1959, pp. 19-21; Bahrain, Finance Department, Fourth Census of Population: 1965, Table 7; Bahrain, Ministry of Finance and National Economy, Statistical Bureau, Statistics of the Population Census: 1971, Table 10.

Table 16

Percent Distribution of the Employed Population by Major Industry Group and Sex; Percent Non-Bahraini in each Major Industry Group by Sex: 1971

(Percent)

Industry	Total		Non-Bahraini	
	Male	Female	Male	Female
Total	100.0	100.0	36.9	43.5
Agriculture and fishing	7.1	0.1	24.9	25.0
Mining and manufacturing	14.9	2.7	33.5	48.3
Gas and water	3.0	0.1	13.1	75.0
Construction	18.4	1.2	45.7	80.0
Wholesale and retail trade; restaurants and hotels	13.4	4.5	36.8	51.7
Transport, storage and communication	13.5	3.7	34.2	58.8
Financing, insurance, real estate, and business services	1.8	2.3	31.5	34.7
Community, social and personal services	27.7	85.3	40.3	41.9
Activities not classified	0.2	0.1	39.8	100.0

Source: Bahrain, Ministry of Finance and National Economy, Statistic: Bureau, Statistics of the Population Census: 1971, Table 10.

Share in Labour Force in Various Sectors

57. According to 1977 estimations the labour force in the different economic sectors added up to 63,315 workers of whom 39,848 were Bahrainis. As regards the sectoral distribution of labour, 92 per cent of the total working force were concentrated in three sectors, see table 17.

Table 17: Sectoral Distribution of Labour, 1977

Sector	Share in Total Labour Force
Services	57.9
Building and Construction	17.3
Industry	16.8
Other Sectors	8.0
Total	100.0

58. Table 18 shows in detail the distribution of labour among the different economic sectors.[1/]

1/ IDCAS: "A Country Report on the State of Bahrain", IDCAS, 1979, pp.8-9 (Arabic)

Table 18: Estimate of the Sectoral Distribution of the Labour Force (Number; Per Cent)

Sector	Size of the Labour Force		Share of the Sector
	Partial	Total	
SERVICES		36,666	57.9
1. Commerce and cooperatives	8,091	-	
2. Communications and storage	8,130	-	
3. Finance	1,138	-	
4. Social and private services	19,307	-	
INDUSTRY		10,678	16.8
1. Oil extraction	4,526		
2. Electricity, gas and water	1,790		
3. Manufacturing and others	4,362		
BUILDING AND CONSTRUCTION		10,924	17.3
AGRICULTURE AND FISHING		4,190	6.6
OTHER SECTORS		857	1.4
TOTAL		63,315	100
Bahraini Labour Force		39,848	63
Non-Bahraini Labour Force		23,467	37

59. Bahraini nationals represent 63 per cent, or a little less than two thirds of the Emirate's labour force. This labour pattern contrasts with the corresponding labour force structure in the neighbouring Gulf States (Kuwait, United Arab Emirates or Qatar), where immigrant labour is largely predominant in many sectors of the national economy. The predominance of Bahrainis within the Emirate's labour force is as much on the scale of the global economy as in each of its sectors. In the case of the mining and manufacturing industries, Bahraini labour is strongly predominant, compared to immigrant labour, and this shows the capabilities and positive prospects for the Emirate's economy.

60. Women are very marginally employed in the Bahraini economy. In 1977 Bahraini women workers totalled 1,941 or 3 per cent of the Bahraini labour force; non-Bahraini women workers totalled 1,470, or 2 per cent of the total immigrant labour. Therefore, the employment of women - both Bahraini and non-Bahraini - in various economic undertakings are very limited, with the exception of services, which includes teaching and nursing.

61. The sectoral share of national and immigrant labour by sex is shown in Table 19.

62. Electricity, gas and water has the highest percentage of Bahraini male labour (86 per cent), followed by agriculture and fishing (74 per cent), and other non-defined undertakings (73 per cent) and mining and manufacturing sector (66 per cent). The lowest percentage (54 per cent) of male Bahraini workers was found to be in the building and construction sector, followed by services with 57 per cent. Male immigrant workers have the highest share in services (34 per cent), mining and manufacturing (33 per cent), and lowest in electricity, gas and water (13 per cent).

Table 19: LABOUR SHARE AMONG THE VARIOUS ECONOMIC SECTORS (1977 ESTIMATIONS) 1/

Sector	Total	Bahraini				Non - Bahraini			
		males		females		males		females	
		number	%age share	number	%age share	number	%age share	number	%age share
Services	36,666	20,825	57	1,843	5	12,618	34	1,380	4
Building and Construction	10,924	5,912	54	8	x	4,970	45	34	x
Mining and Manufacturing	8,888	5,848	66	47	x	2,949	33	44	x
Agriculture and Fishing	4,190	3,142	74	3	x	1,044	25	1	x
Electricity, Gas and Water	10,124	5,912	54	8	x	4,970	45	34	x
Other undertakings	857	627	73	39	5	183	21	8	1
Total	63,315	37,907	60	1,941	3	21,997	35	1,470	2

1/ MINISTRY OF DEVELOPMENT OF BAHRAIN, Al-Manama, 1977, an unpublished report, cited in IDCAS: "A Country Report on the State of Bahrain", p. 11

63. According to the 1971 census, immigrant labour effectively employed in the different sectors amounted to 22,351; it increased to an estimate of 23,467 workers in 1977, or by 4.9 per cent. Drawing parallel, the national labour force increased from 37,950 workers in 1971 to 39,848 according to the 1977 estimations, thus reflecting an increase of 5 per cent. Consequently, the ratio of national to foreign labour has not been altered during the period 1971-1977.

64. Both Bahraini and expatriate workers are required to obtain a work permit and register at the Ministry of Labour and Social Affairs. Work permits of expatriates may be cancelled if Bahraini workers become available or if they become unemployed for a period of one month or more. Expatriate workers may also lose their permit if they undertake work for other employers within the two-year period for which they are contractually engaged and brougnt into Bahrain.

65. The Labour Law has quite elaborate provisions for mediation, conciliation and arbitration of labour disputes, but they are not often used. If the workers present grievances against their employer the matter is handled informally by the Ministry. The employer may be requested to raise his wages to the level of similar plants.1/

The Main Labour Policy Orientations

66. Due to the rapid development and diversification of industry in Bahrain in recent years, the need for effectively meeting the Nation's requirements in trained manpower has been of much concern to the Government. In 1976 the total work force numbered approximately 80,000, about one-half of whom were Bahraini citizens, the remainder being

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1/ WORLD BANK: "Bahrain : Current Economic Position and Prospects", Washington, 28 June, 1978, Report No. 2058-BH, p. 13.

expatriate workers.

67. To help meet the demand for trained manpower, it was estimated in 1976 that during the next 10 years, approximately 34,000 Bahraini school-leavers would enter the work force and that permanent job opportunities would be available in three main areas as follows:[1/] 1. Replacement of Bahraini workers retiring, etc. (8,000), 2. New jobs being created in the economy (10,000), 3. Replacement of non-Bahraini workers (16,000).

68. Of the three and a half thousand school-leavers who could be entering the work force on an average each year, approximately one-third would have successfully completed secondary school and many training and higher educational facilities for persons of that level of education are already avialable. However, in the past, a number have followed courses which were not as appropriate to individual and national needs as they might have been, resulting in individual disappointment and loss to the nation as a whole. With regards to the remainder, it is estimated that over two thousand will enter the work-force annually, without having completed secondary school and very few training opportunities are available for such persons at the present time. Furthermore, in the past, a very high number of school-leavers at that educational level have entered the work force untrained and with little prospect of ever being able to follow an organised training programme.

69. Consequently, apart from the need for training opportunities for future school-leavers, there is also the major task of up-grading the skills of existing workers, wherever this is appropriate and practicable. Naturally there are, and will be the foreseeable future, jobs that require

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1/ Source: State of Bahrain, The High Council for Vocational Training, Information Booklet, July 1976, pp.1 + 2.

very little or virtually no training at all. Nevertheless, large numbers of existing workers do require training in order to improve their skills, promotion and overall development.

70. It became increasingly apparent that if these problems were to be overcome and individual and national training needs effectively met, then training would have to be co-ordinated at a national level and the necessary training policy and plans developed. This would be the first step towards ensuring as far as possible that all Bahraini citizens are given the opportunity of realising their full potential which in the final analysis will be essential for the nation's overall continued economic and social advancement.

The Labour Law

71. In 1976 the Government passed a comprehensive labour law regulating the conditions of work for local and foreign employees. This law concerns such matters as work permits for Bahraini and expatriate workers, and priority of employment. It also stipulates vocational rehabilitation for injured employees, vocational training and protective provisions relating to juvenile and female employees in hazardous employment and hours of labour. It applies to all private and para-statal employees. Indemnity is provided in the case of premature termination or employment without fault by the employee. However, the latter appears to involve rather lengthy administrative and possibly legal procedures. No form of collective bargaining is mentioned in the Labour Law, though it refers to collective action by employees in labour disputes.

72. The provisions of the law which apply to Bahraini workers also generally apply to expatriates, with the exception that the latter cannot be employed for a task for which qualified Bahrainis are available, and their de-facto pension rights are limited by the frequently short period of their employment. Of course, the importance of priority of employment for Bahrainis has been reduced by the tight labour market that heretofore has prevailed.[1/]

Social Insurance Law

73. This law was enacted together with the Labour Law and applies to all non-Government workers regardless of nationality. But because work for 20 years is required to qualify for old-age pension (unless the worker has reached age 60 for males or 55 for females), most beneficiaries are Bahrainis. The coverage for old-age pension is now about 35,000 workers, which is probably about 70 per cent of the Bahraini work force. The pension is funded with 11 per cent of the wage to be paid by the employer and 7 per cent by the employee. These charges tend to raise the cost of bahraini labour considerably above that of non-Bahrainis, though the health charges for expatriates may be somewhat higher.

74. In addition to the old-age pension, insurance is provided against job-related injuries, disability, death and unemployment (after qualifying for a pension). Three per cent of the monthly wage are contributed to workers' compensation type insurance, and other charges are set by the Minister of Labour and Social Affairs following recommendations by the Directors of the General Organisation for Social Insurance. The system operates independent of the budget and is therefore assumed to be actuarially self-sufficient.

1/ WORLD BANK: "Bahrain: Current Economic Position and Prospects", Washington, 28 June 1978, Report No. 2058-BH, p. 14.

Wages

75. Little information is available on wage rates in the private or parastatal sector. However, wages - whether for Bahrainis or expatriates - are high. Expatriates may cost up to twice as much per head as Bahrainis for unskilled or semi-skilled construction labour, include the costs of securing them and bringing them into the country.

Chapter III

AGRICULTURE AND FISHING

Agriculture

76. Agriculture is one of the oldest occupations among Bahraini nationals specially on the three major islands Muharraq, Um an Nasan and Hawar. The total area under cultivation has been increased by 665 dunums, or 19.7 per cent compared to 1976.[1/] Bahrain production of vegetables in 1977 increased by 4,174 tons, or by 23 per cent compared to 1976. The area under vegetable cultivation totalled 4,045 dunums in the seven municipalities of Bahrain during the year 1976/1977. The most common agricultural activities are vegetables and date production.

77. According to official statistics, some 3,397 persons were employed in the agricultural sector in 1977. The main category of the employments in the sector was the medium 20 to 49 dunums areas (1,281 employments out of a total of 3,397), followed by the 50 to 99 dunums areas (749), 10 to 14 and 15 to 19 (623), as is shown in the following table 20.

Table 20: Estimated Employment in the Agricultural Sector, 1977

Areas in Dunums	Employments
1 - 4	160
5 - 9	296
10 - 14)	623
15 - 19)	
20 - 49	1,281
50 - 99	479
100 - 199	349
200 - 499	196
more than 500	49
TOTAL	3,397

Source: Bahrain, Agricultural Directorate.

1/ One dunum = 1,000 square meters

Table 21: Land Utilization in Bahrain, 1975

Land Under:	Area (in dunums)[1/]
Vegetables	2,815
Alfalfa	3,046
Date Palms and Fruit Trees	10,631
Not in use	
- with scattered trees	10,725
- bare	9,262
Unclassified	542
Total Arable Land[2/]	37,021

Source: FAO and Ministry of Commerce and Agriculture

1/ 1 dunum = 1,000 square meters

2/ This constitutes about 46 per cent of the potentially cultivable agricultural land.

78. Bahrain's agriculture has continued to be of minor importance in the economy, although it is still a source of employment for abour 4-5 per cent of the economically active population. After deducting subsidies, its contribution to the country's GDP is negligible, accounting for only one per cent. With the increase in groundwater slainity the future of the sector is not bright. Some date plams are dying for lack of suitable water. Out of 890,000 date palms only 417,000 are producing, and dates are imported.

79. Arable land is confined to the north and northwest of Bahrain, and to north Sitra. It is estimated at 15,000 acres, of which only 8,800, or

59 per cent are cultivated. The total number of holdings under cultivation is about 855, giving an average holding of 10.4 acres.

80. About two thirds of the agricultural land in Bahrain is planted to date palms, and the remainder to about 40 types of fodder and vegetable crops. There are also a few types of fruit trees. Alfalfa is a major cash crop, followed by tomatoes which is the leading vegetable crop in terms of total acreage. Alfalfa and other fodders are in keen demand.

81. Bahrain's agriculture is facing a dwindling labour force caused by higher incomes in other activities, and the declining social status of farming. The land tenure system is complex. Sixty-two per cent of the land is leased for a short period averaging 3 years. Agricultural practices are primitive; there is lack of agricultural credit. Marketing arrangements are inadequate, and urban development is making some encroachment on agricultural land.

82. The Agricultural Department maintains four experimental farms. It has been making serious efforts to encourage agricultural production through extensive subsidy programmes such as free services for pest control, veterinary treatment, and medicine for all animals except poultry, which receive a 50 per cent discount on the cost of medicine. It also provides discounts on items acquired from the department, such as shrubs, seeds, fertilizers, and spray for pest control. Discount for the latter two items reaches 50 per cent. In addition, subsidies are provided for mechanisation and reclamation. Over the past two years, the department initiated a programme for increasing onion production. Farmers participating in the programme were provided with seeds, fertilizers, spraying and tractor services free of charge. Those farmers also received price support for their output.

Livestock

83. Statistics on livestock are not adequate. The last estimate made by FAO was for 1975. It reported about 6,000 heads of cattle, 4,900 sheep, 14,500 goats and 850 camels. The number of chickens was estimated about 176,000, but this number has increased substantially. In 1974, the Agricultural Department began a programme for improving the quality of local sheep through the importation of the Awasi type (Kenyan) and selling the males to farmers. The department also imported about 100 Australian Freisian cattle for producing milk for the local market. Losses among calves are considerable due to the heat. There are now about ten commercial farms in Bahrain selling meat and dairy products, but live animals and frozen meat have to be imported from New Zealand and Australia. The Bahrain Government and New Zealand recently formed a company "Bahrain and New Zealand Trading and Storage Company" for the importation of meat to meet Bahrain's demand as well as that of neighbouring countries. The company will construct a $20 million warehouse and cold storage with a capacity of 8,100 tons at the free zone of the Mina Sulman port.

89. Despite adverse climatic conditions, the volume of poultry production and eggs is rising rapidly. This is due to the considerable Government backing in form of participation in projects as well as in subsidies and import protection given to the private sector. In order to encourage local egg production, the Government first began to import feed to sell to egg producers at reasonable prices, which occasionally resulted in loss to the Government. Later the Government constructed its own feed mill and is now selling the feed at cost. As a result, there has been a sharp increase in privately owned chicken farms, which now number about 20. A private company for producing chicken has been established.

90. Production of eggs is hampered by the adverse climatic conditions and consequently is being avoided by private investors. However, the Government established its own poultry farm in 1975. The farm, which is run by the General Poultry Company, was equipped by West Germany at a cost of $1.8 million. It is to produce about 66,000 eggs a day at full capacity. Current production is about 22,000 eggs a day. Since Bahrain's annual consumption of eggs is estimated at about 45 million, the Government is considering expanding the facilities of the General Poultry Company, and has approached the Abu Dhabi Fund for financing. Another project, jointly owned by the Government and the private sector, is also under construction for producing 15 million eggs a year at full capacity.

91. The quantity of imported poultry has increased in relation to local production. This might be the result of disease in local poultry. In fact deficit has been soaring, multiplying almost by 400 per cent between 1970 and 1977, as shown in table 22.

Table 22: Quantity of Poultry Import, Domestic Products and Consumption (1970-1977)

Year	Consumption	Production	Imports
1970	1,492	476	1,016
1971	1,735	649	1,086
1972	2,050	700	1,350
1973	2,711	763	1,948
1974	2,684	822	1,862
1975	2,837	822	2,015
1976	3,235	850	2,385
1977	4,461	524	3,937

Source: Bahrain, Agricultural Directorate.

92. Bahrain is planning a study to determine what categories of agriculture are feasible without heavy subsidy and to advise the authorities on the level of resources needed, and on the most efficient way of deploying them. The authorities are aware of the importance of this study, and the Ministry of Commerce and Agriculture has approached the Kuwait Fund for financing it. Based on this study, the Government plans to formulate a long-term development strategy for the agricultural sector.1/

Fishing

93. Fishing was Bahrain's major economic activity prior to the discovery of oil in the 1930s. Currently, fishing boats of the Gulf countries, and those of others are fishing in Bahrain's waters. However, with the exception of shrimp fishing, fishing has diminished substantially in recent years. As a result, the share of the fishing sector in the GDP dropped from 0.6 per cent in 1973 to 0.4 per cent in 1977.

94. A combination of factors has led to the decline of local non-shrimp commercial fishing. Uncertainty of income, and the rise of incomes from other economic activities since the discovery of oil have led fishermen to seek other jobs. Other factors include the lack of interest by the young people who can easily earn high incomes in other relatively easier and more prestigious jobs. The last strong blow received by the local fishing activity came from the land reclamation programme that was begun along the coast of Bahrain in the early 1970s. Land reclamation has substantially reduced the areas for traditional fishing.

95. The remnant of the Bahrain fishing industry today constitutes a small number of fishermen using traditional fishing methods. Total output is far below domestic consumption. Also, marketing methods are rudimentary

1/ ibid. pp. 18-19

leading to large price fluctuations of the catch in the local markets.

96. In order to provide an adequate supply of fish, the Government established its own fishing operation in April 1975. The Fishing Project uses modern fishing and processing methods and is now supplying 40-50 per cent of the local market. The present fleet of the Project consists of five boats with a capacity of about 1.5 tons each. The catch is sold directly to the consumer through the project's eight shops scattered throughout the country, with three more shops to be opened soon.

97. This fishing operation is heavily subsidized (see table 23) since fish is sold at about 50 per cent below the market price. The project's

Table 23: Fishing Project Operations

Year	Catch (tons)	Revenues (BD)	Budgeted Cost (BD)	Budgeted Subsidy (BD)
1975	115	n.a.	n.a.	n.a.
1976	247	59,806	450,000	390,194
1977	388	150,488	400,000	249,512

management argues that the subsidy will decline gradually, since the low prices are temporary and designed to enable the project to enter the market, and because the surplus fish are being increasingly sold to restaurants, hotels, BAPCO and other companies. The project employs 50 people.

98. As was mentioned above, Bahrain has been successful in using modern methods in exploiting her shrimp resources. Since 1967 the Bahrain Fishing Company has been exploiting the country's shrimp resources using modern methods in fishing and processing. The company operates 15 trawlers with an average length of 70 feet. It operates in Bahrain and Saudi waters, and is well managed and fully integrated in its operations. No figures are

available on the company's catch, but it is believed to be 600 tons annually from Bahrain. In 1977, the company's gross sales amounted to BD 2.9 million. The shrimp catch is exported, largely to the United States, Europe and Japan, making shrimp the largest non-oil export item after aluminium. See table 24.

99. It is believed that the sustainable potential of shrimp is about 1,000 tons, which is not fully exploited, although there are about 1,000 dhows from Bahrain and neighbouring countries exploiting shrimp is addition to the Bahrain Fishing Company. The dhows' operations should be regulated in order to allow orderly exploitation of shrimp resources without ecological harm. The UNDP/FAO are carrying out a study to determine, among others, the fish potential in the Gulf area and in the Gulf of Oman. The study is expected to be completed by 1979.1/

1/ ibid., pp. 19-21

Table 24: Gross Sales and Capital of Bahrain Fishing Company[1/]

(Bahraini Dinars)

Year Ended June 30		Total capital employed
1970	1,865,084	681,486
1971	1,406,720	682,860
1972	1,292,728	755,051
1973	1,827,150	966,186
1974	2,108,709	1,203,129
1975	1,850,115	1,211,602
1976	1,991,980	1,349,223
1977	2,929,656	1,513,722

Source: Annual Report of the Bahrain Fishing Company, various issues.

1/ Sales Value of shrimps caught and other incomes, mainly the processing of shrimps for other countries.

Chapter IV

THE HYDROCARBON SECTOR

I: EXTRACTION OF CRUDE OIL

Historical Background and Present State

100. The Bahrain Petroleum Company Limited (BAPCO) was formed in 1929 as a subsidiary of the Standard Oil Company of California (SOCAL). BAPCO played a crucial role both in the discovery of oil in Bahrain and in the later discovery of the vast oil reserves of Arabia.

101. The origins of BAPCO can be traced to December 1925, when Bahrain's first oil concession was granted to a British group named Eastern and General Syndicate. In 1927, an American corporation, Eastern Gulf Oil Company, secured an option from the British Syndicate and promptly began exploring and mapping the island of Bahrain. In 1928, these rights were transferred to the Standard Oil Company of California (SOCAL), and in the following month BAPCO was formed. In August 1930, the concession was formally assigned to BAPCO and this transfer became fully effective when a mining lease was granted to BAPCO on 29 December, 1934.

102. This lease covered an area of approximately 100,000 acres of Bahrain's main island. Later negotiations resulted in the lease being varied, so that at one time it covered all of Bahrain's land and off shore area.

103. In 1930-1931, SOCAL surveyed the island and decided that the oil prospects were good. Bahrain's first oil well was sunk at Jebel ad-Dukhan, virtually in the Centre of the Island in October 1931. On 1 June, 1932, oil started flowing at the rate of 9,600 barrels per day.

104. The discovery, in an area previously thought to be unpromising to some oil geologists, eventually led directly to the discovery of the world's largest deposits of petroleum in Saudi Arabia and the Gulf States.

105. On 30 June, 1936, California Texas Oil Company Limited (CALTEX) came into being, with the Bahrain Petroleum Company as the principal operating company of the Caltex group. BAPCO[1/] is now a wholly owned subsidiary of CALTEX Petroleum Corporation, which is jointly woned by two United States oil multinational corporations: SOCAL and TEXACO Inc.

106. When Caltex was formed in 1936, oil production from the Bahrain field stood 12,700 barrels per day. By 1970, field production had reached a peak of 76,000 barrels per day. The drilling over the years of more than 300 wells for oil and gas and the investment of hundreds of millions of dollars, resulted in a total crude production of over 650 million barrels of oil by the end of 1978. Production from the fields now averages 55,000 barrels of crude and 359 million cubic feet of natural gas per day. A new proposal of offshore exploration was submitted to the Government by BAPCO on behalf of its associated companies.

107. Discussions between the Ministry of Development and Industry and BAPCO on 100 per cent participation by the Bahraini Government in oilfield production and development and local marketing have continued along the year 1978.

1/ BAPCO is one of more than 80 companies in the CLATEX Group which is manufacturing and marketing petroleum products in more than 60 countries in Asia, Africa and Australasia.

Production Figures for the Period 1966-1977

108. Since 1966 Bahrain has been receiving revenues from the Abu Saafa field located off-shore between Bahrain and Saudi Arabia. By an informal understanding between the two countries Bahrain receives half the net income from this field. This source of revenue has been growing rapidly and has largely compensated the decline in production from the Bahrain field.

109. In the production of petroleum, efforts have been made in the last years to insure that the oil is extracted completely. To this purpose, the most advanced methods available are increasingly utilized.[1/] As surveys indicate that oil is being gradually depleted, serious explorations are under way to find new reserves in the country and its off-shore area.

Table 25: Production of Crude Oil, 1966-1977[1/] (1,000 American Barrels/Year)

	1966	1968	1970	1974	1976	1977	Average annual rate of change
Bahrain	22,521	27,598	27,973	24,597	21.288	20.475	- 9.85
Abu Saafa	11,488	22,733	27,310	45,000	39,000	45,000	+ 29.17

Gradual and Differential Take-Over of the Hydrocarbons Industries

110. The Government of Bahrain has applied a strategy for the gradual take-over of the Emirate's oil-extracting, gas gathering, oil refining, distribution and marketing branches. Crude oil now represents 60 per cent of the State's income. The principal field is at the centre of the main island. The second field, Abu-Sa'afa, is exploited jointly with Saudi Arabia.

1/ National Paper submitted by Bahrain, United Nations Conference on Science and Technology for Development, (UNCTAD), Vienna, Austria, August 1979, Document A/CON.81/N.P.107, 10 may 1979 (Arabic and English) p. 7.

111. In September 1974, the Bahrain Government announced the purchase of 60 per cent of BAPCO's shares, and on 30 June 1975, an agreement was concluded between the State of Bahrain and BAPCO restituting to the State a 60 per cent share of BAPCO's rights in production and exploration oil concession in Bahrain. The State also acquired 100 per cent of future gas discoveries. The decision took effect starting 1 January, 1974. A corporation called the Bahrain National Petroleum Company (BANOCO) was consequently established and entrusted with the responsibility of handling all matters related to petroleum and gas.

112. A new step in the process of take-over of the oil products marketing and distribution was made in December 1976, following the transfer of property and rights of marketing and distribution of oil products to the State-owned Bahrain National Oil Company. These rights, which were transferred from BAPCO, gave the Bahrain Government control over 60 per cent, against 40 for the joint venture California - Texaco (CALTEX). In practice, according to Bahrain Minister of Development and Industry, the process of transfer will take place following different transitional stages of co-operation between the two public and private companies.[1/]

Bahrain National Oil Company (BANOCO):

A New and Growing Role

113. The Company was founded by an Emirate Decree in February 1976. It began operating on the 1st of July of the same year. Its major responsibility is to protect the interests of the Government of Bahrain in the fields of oil and gas. According to the Government's policy, the Company acts in co-operation with BAPCO, to assure the maximum possible revenue for the Emirate. Concretely, BANOCO was entrusted with the distribution and marketing in the

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1/ "Bahrain, La Banoco chargée de la distribution des produits pétroliers", in: Le Pétrole et le Gaz Arabes, Vol.IX, No. 187, 1er Janvier 1977.

domestic market of oil products, namely car petrol, kerosene and diesel fuels. BANOCO became the only products distributor except for jet fuels storage and aircraft supplies.

114. One of the objectives of the Company is that of infilitrating the various facets of the oil industry from pumping to distributing oil to local and foreign consumers. Another objective is to supply the principal consumers with natural gas.

115. But it is BAPCO which operates Bahrain's oil refinery with a capacity estimated at 280,000 barrels per day of crude oil and manufactures all sorts of petroleum products. This Company also undertakes essential oil and gas field operations on behalf of the National Oil Company of Bahrain. It owns the power generators which are used in its various operations.

Government Control of Extraction and Domestic Product Marketing

116. The Bahraini Government has gradually taken over the country's oil and gas exploration and production, as well as the domestic marketing and distribution of oil products. On the other hand, oil refining and the export and marketing of oil products remained to be in the hands of CALTEX's subsidiary in Bahrain until very recently. In 1975, the Government began by taking 60 per cent of BAPCO, CALTEX's operating subsidiary in Bahrain, and in 1978, it took over the domestic marketing and distribution of oil products. CALTEX continues to own its 250,000 barrel-per-day refinery and to market the plant's output abroad. On 15 December 1979, an agreement giving the Bahraini Government full control of the country's oil and gas exploration and production was signed by the Minister of Development and Industry and the President of CALTEX. The Company was to be compensated for its 40 per cent share in BAPCO on the basis of the book value as on 31 December 1978.[1/]

1/ "Bahrain Government Takes Over Full Control of Oil and Gas Exploration and Production", Vol. IX, No. 199. Arab Oil and Gas, Paris, 1 January 1980, p. 15.

117. In addition, Caltex holds a 12.5 per cent stake in the Bahrain National Gas Company (BANAGAS), which has operated a gas-gathering and treatment complex for associated gas from Bahrain's oil fields since the end of 1979. The remaining part is owned by the Bahrain National Oil Company (BANOCO) (75 per cent) and by the OPEC-sponsored Arab Petroleum Corporation (APICORP) (12.5 per cent).

Table 26: Crude Oil Production, Abu Saafa Field
(In thousands of United States barrels)

Year	Production
1972	34,178
1973	39,411
1974	45,754
1975	21,327
1976	39,160
1977	40,377

Source: Ministry of Finance and National Economy

118. Furthermore, the Bahraini Government was to open negotiations in May 1980 on the purchase of a share in the Caltex-owned refinery. The Government is seeking a 60 to 70 per cent participation in the plant which processes all of Bahrain's crude output of around 50,000 barrel per day as well as 200,000 barrel per day of Saudi crude.[1/]

119. Onshore production in Bahrain was 20.19 million barrels in 1978 and output from the recently developed joint Saudi-Bahrain Abu Saafa offshore

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1/ Arab Oil and Gas, Vol. 9, No. 208, 16 May 1980, p. 16.

field reached 25.5 million barrels.[1] This put Bahrain's total 1978 production at 45.6 million barrels, equivalent to 125.000 barrels a day, the smallest production in the Gulf.[2]

120. The value of petroleum exports, including refined oil products, rose by 2.2 per cent in 1978 to 585.5 million Bahraini Dinars (about 1.47 billion dollars), according to the report released on 29 July 1979 by the Bahrain Monetary Agency.

Domestic Consumption of Oil Products

121. In 1977, Bahrain's consumption of oil products amounted to 3,146 barrels per day, some 20 per cent higher than in 1976. In 1979, Bahrain consumed 132.1 million liters of gasoline; 75 per cent of which was of the 90 category and 25 per cent was of the gasoline 98 category. In 1978, Bahrain consumed 117.5 million liters of gasoline. In the middle of the latter year, the price of the entire category of gasoline 95 had been changed; the 75 per cent gasoline 90 was sold at 40 fils/liter and the 25 per cent gasoline 98 at 60 fil/liter.[3] The decline in the dredging activities led to a reduction in the diesel consumption from 146.3 million liters in 1978 to 114.5 million liters in 1979. The diesel price remained at 22.5 fils per liter.

122. While asphalt consumption slightly dropped from 23.4 million liters in 1978 to 21.6 million liters in 1979, the LPG consumption rose from 18.1 18.1 million liters in 1978 to 21.2 million liters in 1979. The price of LPG remained stable at 70 fils per kilogram.[3]

1/ The Bahrain Monetary Agency, annual report, 1978, Bahrain, 1979.

2/ Emirate's News, Abu Dhabi, Ramadan 6, 1399, 30 July, 1979.

3/ "Consumtion and Prices of Petroleum Products in Bahrain", in: OAPEC Bulletin, Vol. 6, No. 5, Kuwait, OAPEC, May 1980, p. 31.

Table 27: PRODUCTION OF CRUDE OIL AND NATURAL GAS IN B A H R A I N, 1968 - 1975

C A T E G O R Y	1968	1969	1970	1971	1972	1973	1974	1975
Crude Oil (in thousand metric tons)	3,792	3,820	3,847	3,761	3,508	3,411	3,360	3,060
Rate of annual change (percent)	-	-	-	- 2.0	- 6.0	- 3.0	- 1.0	- 9.0
Natural Gas (in million cubic feet)	226,617	33,440	43,307	37,080	64,888	82,716	100,059	101,546
Rate of annual change (percent)	-	25.5	29.5	- 14.0	75.0	27.0	21.0	1.0

Source: "Statistical Set of the Arab World 1968 - 1975, Vol. 1, April 1979 (in Arabic)

Table 28: Crude Oil Production and Refining

(In thousands of U.S. barrels)

Year	Production: Bahrain Field	Runs to Refinery			Stocks Processed	Total Processed
		Bahrain	Arabian	Total Crude Run		
1972	25,508	25,566	60,309	85,875	1,363	87,238
1973	24,948	24,882	64,744	89,626	1,127	90,753
1974	24,597	24,586	64,834	89,420	1,975	91,395
1975	22,309	22,113	49,901	72,014	1,119	73,133
1976	21,258	21,212	58,795	80,007	786	80,793
1977	21,236	21,237	73,233	94,470	763	95,233

Source: Ministry of Finance and National Economy.

NATURAL GAS

123. Bahrain possesses a significant supply of natural gas, which is considered as one of the major sources of energy. Reserves are estimated at between 8,000 and 11,000 billion cubic feet. Production of natural gas in 1977 reached 121.2 million cubic feet.

124. Contrary to what is happening in Arab neighbouring countries in the Gulf, gas is nct flared in Bahrain. During the period 1972-1975, the gas produced in the Emirate was re-injected in its oilwells. This may be related to the fact that the country is the first Arab and Middle Eastern oil exporter to face the run-off of its domestic hydrocarbon reserves in the short term. By re-injecting all the gas locally produced in the oilwells between 1972 and 1977 the country has been implementing a policy designed to extend the duration of domestic oil-reserves and save the associated gas. However, in 1976 and 1977, one fourth to one third of the produced gas was re-injected in the oilfields.[1/] In this respect, the following considerations may be kept in mind: a) that constant and relatively subtantial amounts of gas have been re-injected over several years in the oilwells, while the latter's output was declining regularly; b) that the development of gas-consuming industries created an increasing demand for gas; and c) that the economic value and marketing opportunities of gas were increasingly recognized.

1/ See Table 29

Table 29: Production and Utilization of Natural Gas in Bahrain, 1979

(in million cubic feet)

Produced	Utilized	Flared	Percentage of Flared to Produced
176,569	142,467	34,102	19.3

Source: Vol. 7, No. 3, OAPEC Bulletin, Kuwait, March 1981, p. 12, Statistics (Production and Utilization of Natural Gas in OAPEC Countries, 1979)

Table 30: Natural Gas Production, 1974-1977

(in million cubic feet)

Period	Arab	Khuff	Total
1974	20,803	79,256	100,059
1975	20,251	81,295	101,546
1976	20,362	87,102	107,464
1977	18,930	102,298	121,228

Source: State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: "Statistical Abstract 1977", Bahrain, October 1978, Table 68, p. 102.

Table 31: Natural Gas Distribution in Bahrain, 1974-1977[1/]

(in million cubic feet)

Period	Electricity	Alba	Refinery	Re-injected	Awali	Total
1974	7,464	40,880	21,332	30,307	76	100,059
1975	10,292	40,870	22,181	28,136	67	101,546
1976	12,616	41,833	22,408	30,533	74	107,464
1977	16,167	42,096	25,129	37,765	71	121,228

Table 32: Natural Gas Production and Distribution[2/]

(in millions of cubic feet)

	1972	1973	1974	1975	1976	1977
Production						
Arab zone	20,855	21,170	20,803	20,251	20,360	18,930
Khuff zone	44,033	61,685	79,256	81,295	87,100	102,298
Total	64,888	82,855	100,059	101,546	107,460	121,228
Distribution[a/]						
Power stations	6,043	6,570	7,464	10,292	12,610	16,167
ALBA	26,969	37,960	40,880	40,870	41,830	42,096
Refinery[b/]	7,920	12,045	21,332	22,181	22,400	25,129
Re-injected	23,929	26,280	30,307	28,136	30,530	37,765
Awali domestic	—	—	76	67	70	71
Total	64,861	82,855	100,059	101,546	107,440	121,228

Source: Ministry of Industry and Development

a/ Excludes small amounts of flared gas and total distribution may not equal total production.

b/ Includes the low sulfur fuel oil facility beginning 1973.

1/ State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: Statistical Abstract, 1977, Bahrain, October 1978, Table 69, p.103.

2/ WORLD BANK: Report No. 2058-BH, "Bahrain, Current Economic Position and Prospects", 28 June, 1978

125. According to another source,[1] about 26 per cent of the gas produced in 1977 was re-injected. ALBA's aluminium smelting plant consumed 35 per cent of the total gas production, the Bahrain Petroleum Company (BAPCO) used 21 per cent of the gas in its refinery operations, and the rest, 18 per cent, was used for the generation of electricity and for local consumption.

Fall in Oil Versus Rise of Gas

126. In 1979, production of crude oil decreased in Bahrain while production of natural gas increased. According to the last report published by the Bahrain Petroleum Company, crude oil output amounted to 51,345 barrels per day in 1979, against 55,370 barrels per day in 1978, thereby decreasing by 7.2 per cent. On the other hand, production of natural gas increased by 8 per cent in 1979, from 388 million cubic feet per day to 359 million cubic feet in 1978.

Table 33 : Gas Utilization in Bahrain in 1979

Utilization	Quantity (in million ft.^{3})
used to feed ALBA complex with energy	118
CALTEX refinery	78
for electricity power generators	79
re-injected in oil wells	113
Total	389

Source: Bahrain Petroleum Company, Annual Report 1979

[1] National Paper submitted by Bahrain, United Nations Conference on Science and Technology for Development (UNCSTAD), Vienna, Austria, August 1979, in Arabic and English. P. 7.

Associated Gas

127. Efforts are being executed by the National Petroleum Company of Bahrain for the full exploitation of the hydrocarbon resources of the country. The National Petroleum Company has been encouraged to continue its project for recovering gas from the oil fields, which has been allowed since the beginning of exploration, to be flared. The implementation of this project is expected to take almost two years, at the end of which Bahrain will be able to export LPG and naphtha. Furthermore, residual gases are to be added to natural gas in the generation of power or in the enrichment of petrochemicals. In this way, stored energy will be conserved.

128. The project for gathering and processing gas envisages the use of 100 million cubic feet per day of gas to produce annually 80,000 tons of propane, 75,000 tons of butane and 215,000 tons of natural gasoline. The work should be completed in the course of 1980.1/

Gas Gathering and Processing Facility

129. Bahrain's gas gathering and processing facility involving an investment of more than $80 million is to be constructed. This is the Emirate's first sizeable industrial venture since its participation in the aluminium smelter in 1968. The gas gathering project, will collect the associated gas from Bahrain's onshore oil fields and produce propane, butane and naphtha for export is the first major project to be undertaken by the 18-month-old Bahrain National Oil Company (BANOCO). Banoco is the youngest state oil company in the Gulf, though Bahrain ranks as one of the oldest oil producers.

1/ AOG, 1 March and 16 April 1978.

At present the associated gas is either flared or vented at an estimated rate of around 100 - 110 million cubic feet a day.

130. A subsidiary company is to be set up by Banoco to manage the project. The proposed capital of the new company is $20 million, with minority stakes of 12.5 per cent held by each of the Arab Petroleum Investment Corporation (Apicorp) and Caltex, whose subsidiary, the Bahrain Petroleum Company, manages the island's oil fields. Apicorp is the $300 million capital investment company of the Arab Petroleum Exporting Countries. The total project including land reclamation and other construction work is expected to cost around $90 million. Construction was expected to start in the autumn and the plant to come on stream in 1980.

131. This gas gathering and processing facility is seen as a move by Bahrain to conserve its hydrocarbon resources as well as a further step towards diversifying its sources of foreign exchange income. The project is considered to be highly viable and is likely to repay its initial borrowings within five years.

ENERGY CONSERVATION

132. When the National Petroleum Company of Bahrain was established, one of its main objectives was the conservation of the underground energy resources that have been exploited since the 1930s and that, consequently, are being gradually depleted.

133. Bahrain's limited crude oil reserves and declining production are proportional to the giant size of its export-oriented refinery. However, Saudi Arabia handed over 50 per cent of the ownership of Abu Saafa oil field. This has, consequently, compensated for the decline in crude reserves and partly covered the feedstock deficit in the giant refinery. Operating companies had recourse to Saudi and foreign supplies. While the oil and gas extractive sector appeals for moderate cautious extraction policies, the size of the oil refinery pushes for a systematic and extended oil supply and, subsequently, gas production in order to insure a high degree of utilization of the existing capacity.

134. The gas which is presently used in aluminium smelting, electricity production and other local forms of consumption represent a little more than 75 per cent of the gas produced in Bahrain. When the gas to be produced is not sufficient to satisfy totally the technical requirements of pressure-maintenance and secondary recovery in the crude oil fields the Emirate may find that it is confronting a real dilemma. With the recent development of techniques of "tertiary recovery", the question could eventually be put as to whether the present pattern and scale of gas utilization does not already reflect a grave challenge to Bahrain's economic structure and policy. In any case, dependence of the aluminium smelter, electricity generators and other domestic consumption on oil-related gas indicate the limited diversifying effect of gas in the largely

Table 34: Bahrain Oil Wells, 1970-1977

Well Condition	Year							
	1970	1971	1972	1973	1974	1975	1976	1977
Completed	256	263	270	276	286	294	302	305
Producing Oil	203	215	211	203	207	212	225	229
Producing Gas	8	8	10	13	11	15	14	17
Gas Injections	7	7	7	6	5	5	8	8
Closed Under Repair	16	10	16	26	26	26	26	26
Abandoned	22	23	26	28	28	28	28	28

Source: State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: "Statistical Abstract 1977", Bahrain, October 1978, Table 60, p. 93.

Table 35 : FORECAST OF TOTAL NATURAL GAS CONSUMPTION

(In million ft^3 of Khuff gas equivalent)

Year	Power Generation BSED	ALBA	Refinery	BAPCO (Gas Injection)	Awali Domestic	Total Gas Consumption	Cumulative Gas Consumption	
							billion ft.^{3}	% of actual reserves
1978	19,110	42,010	34,740	33,980	130	129,970	254	2.5
1979	21,960	42,010	36,570	35,060	130	135,730	390	3.9
1980	24,600	42,010	38,390	35,800	130	140,930	531	5.3
1981	27,520	42,010	38,740	36,880	110	145,260	676	6.8
1982	30,800	42,010	38,740	37,620	110	149,280	825	8.3
1983	34,510	42,010	38,740	38,700	110	154,070	979	9.8
1984	38,640	42,010	38,740	39,440	110	158,940	1,138	11.4
1985	43,280	42,010	38,740	40,190	90	164,310	1,303	13.0
1986	47,630	42,010	38,740	40,890	90	169,360	1,472	14.7
1987	52,330	42,010	38,740	41,640	90	174,810	1,647	16.5
1988	57,610	42,010	38,740	42,010	90	180,460	1,827	18.3
1989	63,380	42,010	38,740	42,710	90	186,930	2,014	20.1
1990	69,730	42,010	38,740	43,090	70	193,640	2,208	22.1
1991	75,290	42,010	38,740	43,090	70	199,200	2,407	24.1
1992	81,280	42,010	38,740	-	70	162,100	2,569	25.7

Source: Moto Columbus: BSED Thermal Power Plant Study

oil-dominated economy of Bahrain. Finally, the steady increase in the price of crude to which the price of gas is increasingly aligned, opens up new prospects for the economic relationships existing between both local refining and crude availabilities and between gas utilization and availablities.

Table 36: Total Commercial Energy Consumption Forecast for Bahrain Most likely Outcome of Three Scenarios (10^6 metric tons)

1975	1985	1990	2000
2.10	4.23	5.02	7.47

Source: UN World Energy Supplies, 1972-1976, United Nations, Series J, No. 2.

Oil Revenues: Recent Trend

135. In 1978 oil production was estimated at 7.8 per cent below 1977, and for longer-term projection purposes a decrease of 6.5 per cent a year is being used. If this decline continues up to 1995, production in that year would be about 6 8 million barrels. This would approximately equal the crude required for domestic needs. At that stage, Bahrain's reserves would still be about 50 million barrels. Thus Bahrain may remain self-sufficient in crude oil beyond the year 2000.1/

136. In 1977 oil exports increased in value by 23.5 per cent to BD572.5 million, or to $1,465.5 million, while oil imports increased by 31.5 per cent to BD357.8 million, or to $922 million. In the same year, oil revenues rose to BD 180.7 million, including revenues derived from

1/ According to the Financial Times, London, 20 february 1978, the island's natural gas reserves have been placed at between 6,000 and 10,000 billion cubic feet league.

Abu Saafa production, or to $455.7 million. According to the Financial Times, Bahrain's oil, together with the oil derived from the offshore field of Abu Saafa, which is shared with Saudi Arabia, is expected to provide in 1978 an income of $404.5 million out of total revenues estimated at $700 million. However, as a result of price increases decided by OPEC and adopted by Bahrain, the country's oil revenues are expected to rise in the same year to BD205 million ($530 million), thus raising its oil revenues at a time when production continues to decline. In the first quarter of 1979, Bahrain's crude oil production amounted to BD51,000 as against BD55,317 for the whole of 1978 (AOG, 15 April 1979). A production record of BD76,639 was attained in 1970.1/

Exploitation of Wasted Energy

137. It has been already pointed out that the use of gas in the generation of electric power in several ways such as the production of aluminium, using gas turbines with a low output thermal capacity, leaves sizeable quantities of energy unused. Accordingly, it is possible to recover the dissipated thermal energy with the help of equipment designed especially for this purpose. Likewise, it is possible to make use of wasted thermal energy in areas such as the generation of local electric power. It is also possible to utilize this energy in the following ways: (a) By putting it to work in the form of high/low steam pressure, hot air, etc.; (b) Electric power generation or drinking water. The extent to which this energy can be supplied to the second purpose in a country with Bahrain's climatic and natural conditions should be obvious at once.

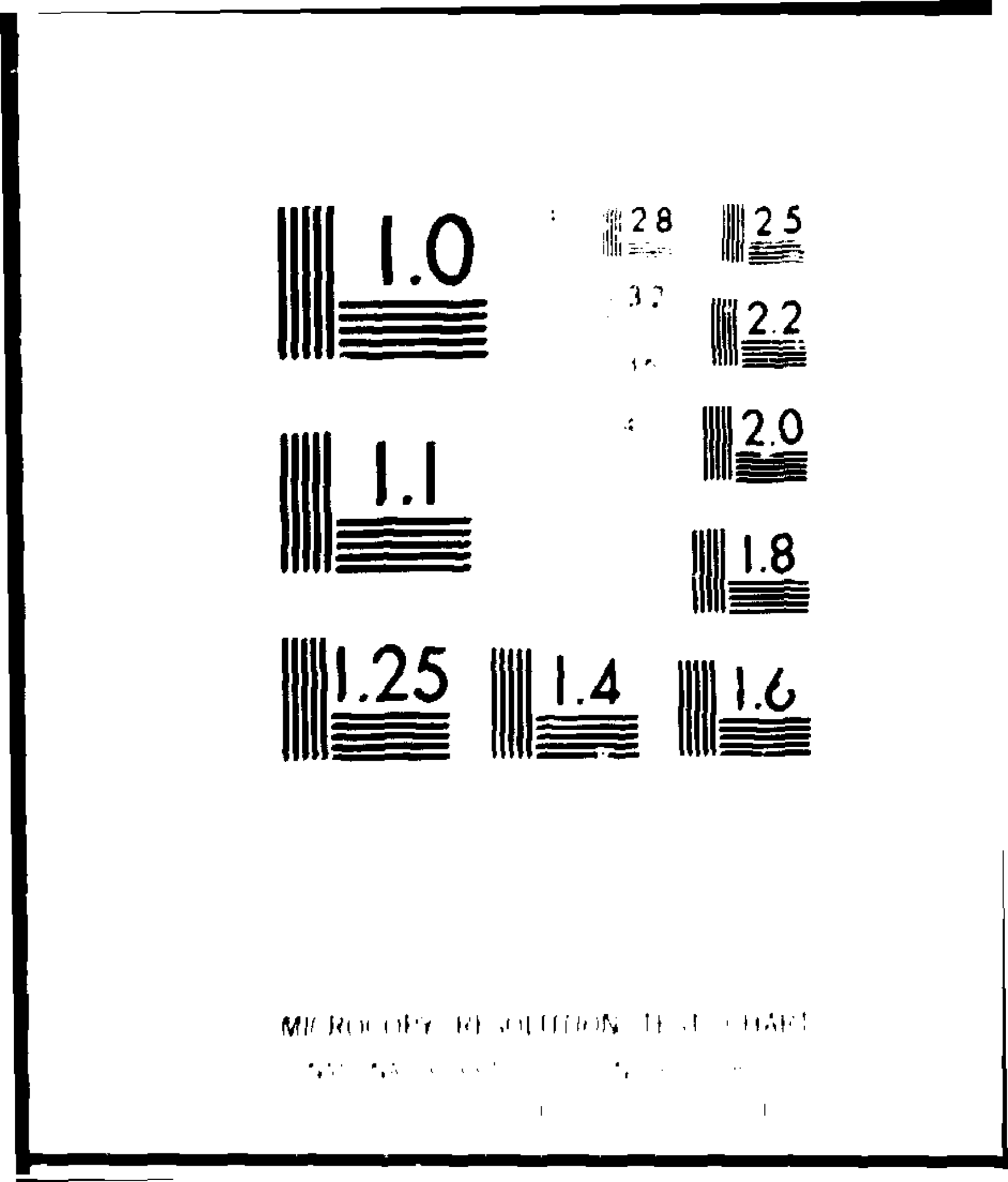
1/ "Bahrain - Oil Revenues May Increase by 28 per cent in 1979", Vol. VIII, No. 189, Arab Oil and Gas, Paris, 1 August, 1979, pp. 16-17.

Table 37: Value of Oil Exports and Imports

In U.S. Dollars 1977 1/

Bahrain Crude Exports	Saudi Arabian Crude Exports	Value Total 1977 Exports	Saudi Arabian Crude Imports	Other Crude Imports	Value Total 1977 Imports	Net Crude Balance Value in U.S. Dollars 1977
256,478,894	962,210,301	1,218,689,195	891,673,352	14,899,823	906,573,175	+ 310,116,020

1/ The Bahrain Petroleum Company (BAPCO), in State of Bahrain. Ministry of State for Cabinet Affairs, Directorate of Statistics, Statistical Abstract 1977, Bahrain, October 1978 (compiled from tables 70 and 71, pp. 104 and 105).


1.0
2.8
2.5
3.2
2.2
2.0
1.1
1.8
1.25
1.4
1.6

138. A study undertaken for measuring thermal capacity arrived at the following figures:

Present fuel consumption	108 million cubic feet per day
Volume of wasted gas	207 million cubic feet per day
Present thermal capacity	21.4 per cent

The study concluded that by using the proper equipment, the gas can be cooled to 257°F, thereby, recovering most of the wasted energy and bringing capacity up to 89.8 per cent.[1/]

1/ The study was undertaken by a UNIDO/World Bank mission.

II: OIL REFINING

Historical Background

139. In 1936, four years after oil had been discovered in Bahrain, a small refinery was under construction to process the oil from the new field.[1/]

140. At the outset of their operations CALTEX subsidiaries comprised the Bahrain Petroleum Company Limited and six marketing companies based in Australia, New Zealand, China, the Philippines, India and Africa. They produced 16,400 barrels of crude oil per day from the Bahrain field and owned a 10,000 barrels per day refinery, which was under construction and three chartered tankers. CALTEX has later grown to a group of more than 80 affiliated companies. Successive expansions have developed the Bahrain refinery to the point where it became the largest in the CALTEX system, with a rated capacity of 205,000 barrels per day. The entire output from Bahrain's oilfield is processed at this huge plant, together with sizeable quantities of crude oil available to CALTEX from other sources, via tanker shipments from Bahrain's Sitra Island wharves. The refinery serves customers throughout CALTEX operating areas.

141. The refinery processes not only Bahrain crude, but also crude, approximated at 200,000 barrels per day brought in from Saudi Arabia via a 34-mile Arabia-Bahrain pipeline. When the first 12-inch pipe was laid in 1945, with 17 miles of the line under water, it was the world's largest commercial submarine pipeline.

1/ CALTEX, a panorama of petroleum, New York, 1969. CALTEX PETROLEUM CORPORATION, pp. 11 and 13.

Table 38: Crude Oil Runs to Refinery, 1970-1977

(in thousand U.S. barrels)

Source	1970	1971	1972	1973	1974	1975	1976	1977
Bahraini	27,941	27,392	25,567	24,882	24,586	22,113	21,212	21,237
Arabian	63,518	65,943	60,309	64,744	64,521	49,901	58,795	73,233
Total Crude run	91,459	93,335	85,876	89,626	89,107	72,014	80,007	94,470
Other Stocks	1,266	754	1,363	1,127	1,975	1,119	785	763
Total	92,725	94,089	87,239	90,753	91,082	73,133	80,792	95,233

Source: State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: "Statistical Abstract 1977", Bahrain, October 1978, Table 59, p. 92.

142. BAPCO's refinery has become the largest of the CALTEX processing plants, manufacturing a wide range of finished petroleum products including LPG, gasoline, naphthas, jet fuels, kerosenes, gas oils, fuel oils, marine bunkers and asphalt. The wide range of products manufactured by the refinery are shipped abroad to CALTEX, SOCAL and TEXACO customers, through BAPCO's Sitra terminal which loaded its first cargo (crude oil) on the "El Segundo" in June 1934. Many major investments and modifications have since been introduced to the terminal and wharves which enable them to berth an average of 100 vessels a month of up to 110,000 DWT in size.

143. The refinery continued to operate at a high level throughout 1978. A total of 89,952,745 United States barrels of crude oil and other stocks were processed during the year, representing a daily average of 246,446 barrels. See table 39.1/

Table 39: Crude Oil Runs to Refinery

Category of Crude Processed	U.S. Barrels
Bahraini	20.237,013
Arabian	68.969,496
Total crude	89.206,509
Other stocks processed	746,236
Grand total for 1978	89.952,745
Daily average	246.446
Products Manufactured	
Naphtha	9.631,267
Gasoline	11.099,416
Kerosene	911,682
Aviation turbine fuel	11.756,193
Diesel oil	23.875,962
Fuel oil	29.373,382
Asphalt	1.306,654
Heavy lube distillate	379,304
Total	88.333,860

1/ BAPCO Annual Report 1978, p. 3.

143. Much progress has been achieved on the two interdependent projects, referred to collectively as the Project for the Centralized Power and Steam Generation, to replace existing power facilities and to modernise the electrical distribution system in the Refinery. Seventy-five per cent of the overall project was completed by the end of 1978.

LPG Storage and Pumping Facilities

144. With the installation of a new manifold LPG storage and pumping facilities have been significantly upgraded. Design work was completed on a $2.5 million asphalt converter. When commissioned in mid-1979, the new unit was to have a capacity of 17,000 long tons per month. The project will eventually increase the total asphalt production capability to 29,000 long tons per month. The final phase of the project to increase bulk asphalt shipping facilities was to be completed during the first quarter of 1979. The project in total has involved the purchase of additional road tankers and the installation of new pumps, a heater, piping and loading facilities. The total cost of the project is $2 million. Bulk shipments of asphalt from the BAPCO plant, primarily to the Gulf region, increased by 20 per cent during the previous year and averaged 13,829 long tons per month.[1/]

1/ BAPCO Annual Report 1978, p. 5.

Table 40: Crude Oil Produced and Processed, 1967-1977
(In thousand U.S. barrels)

Year	Produced	Processed
1967	25,370	89,166
1968	27,598	84,545
1969	27,774	85,987
1970	27,973	92,725
1971	27,346	94,089
1972	25,508	87,239
1973	24,948	90,753
1974	24,507	91,082
1975	22,309	73,133
1976	21,288	80,792
1977	21,237	95,233

Source: State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: "Statistical Abstract 197'", Bahrain, October 1978, Table 61, p. 93.

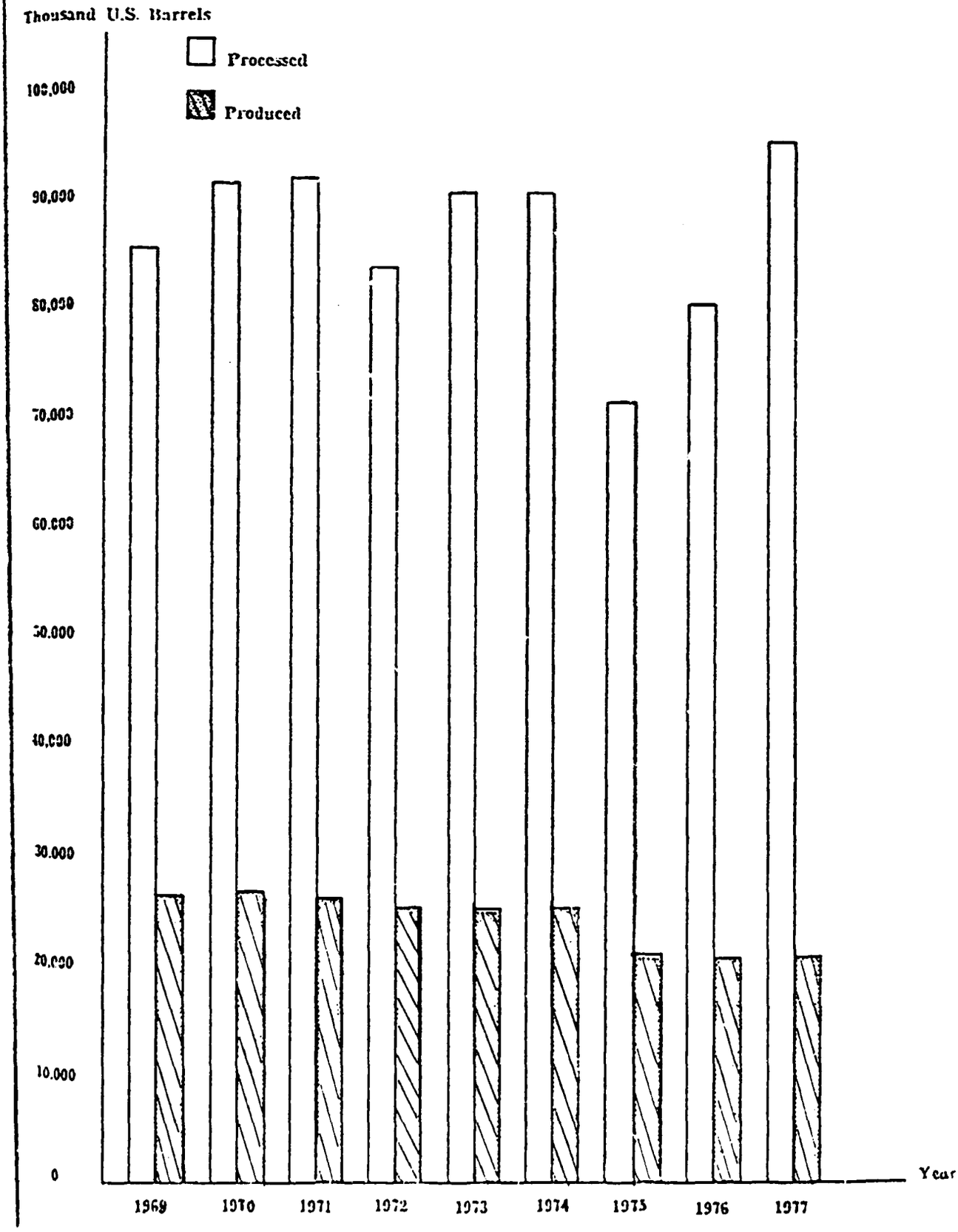
Table 41: Refined Oil Products

(In thousands of U.S. barrels)

Period	Naphtha	Motor Spirit	Jet Fuel	Kerosene	Gas Oil	Diesel Oil	Heavy Lub. Dist.	Fuel Oil	Asphalt	L.P.G.	Others	Total
1967	8425	—	13407	2264	--	13326	638	37844	18	--	8431	84352
1968	6042	--	15227	1895	--	13682	1084	35076	41	--	6946	79993
1969	7640	—	13752	1102	--	16147	954	35551	19	--	8037	83202
1970	7462	--	13892	1075	--	16993	1098	39347	136	--	8225	88228
1971	5559	--	15634	1139	--	19265	1165	38739	186	--	8268	89956
1972	6070	--	15033	950	--	20400	--	35453	320	--	7335	85561
1973	7652	8598	11839	1528	14227	5477	706	35872	356	--	--	86253
1974	10070	9733	7310	3681	11684	6600	666	37877	261	--	--	87882
1975	5488	9617	8515	3265	16264	3487	526	28074	548	190	--	76364
1976	7919	9520	7833	5361	16017	3458	71	26476	839	255	--	77750
1977	9062	9829	11743	3265	20346	3226	344	33687	1084	377	--	92962

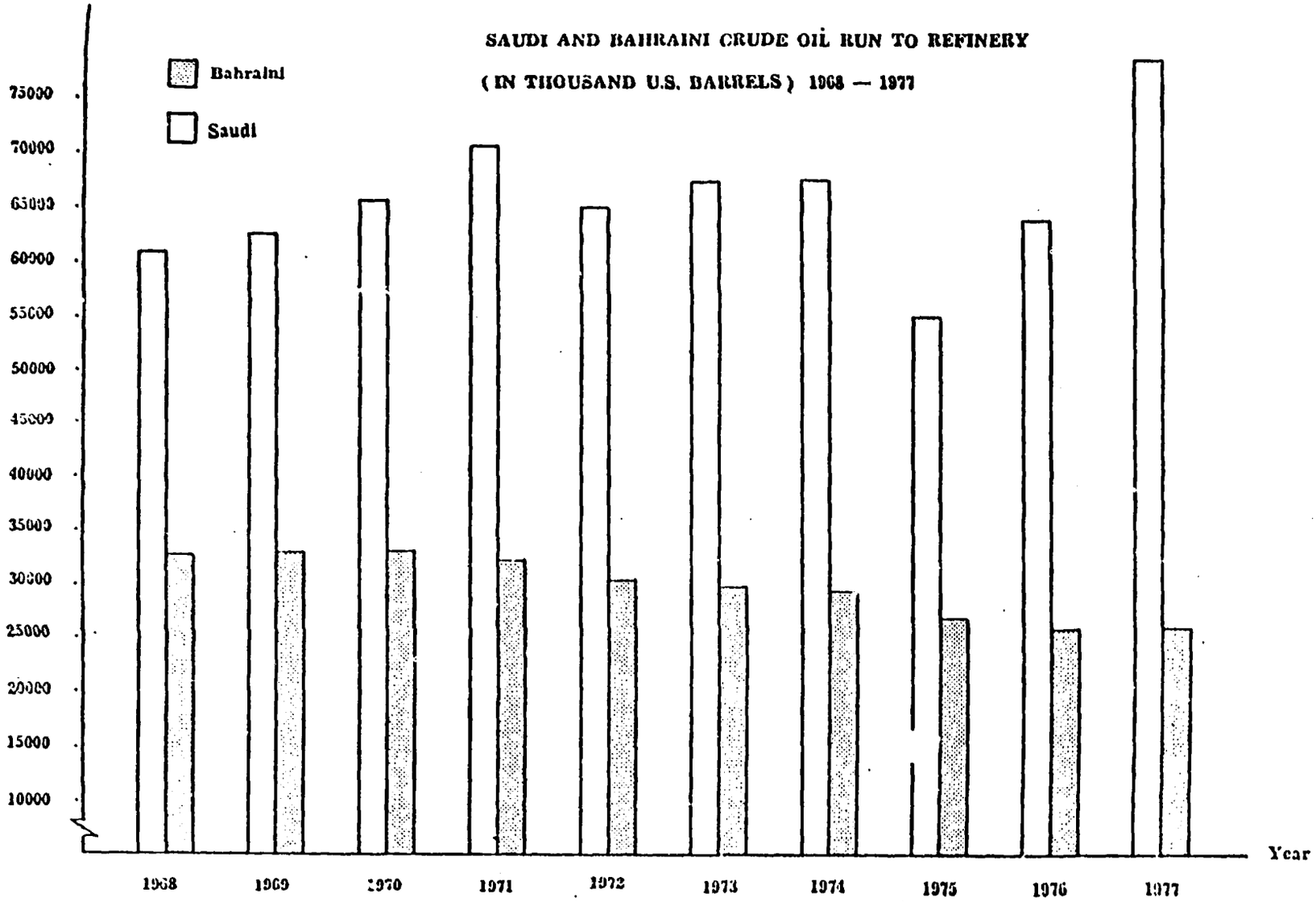
Source: State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: "Statistical Abstract 1977", Bahrain, October 1978, Table 65, p. 99.

CRUDE OIL PRODUCED AND PROCESSED (1969 — 1977)



Source: State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: "Statistical Abstract 1977", Bahrain, October 1978, p. 94.

Table 43



Source: State of Bahrain, Ministry of State for Cabinet Affairs, Directorate of Statistics: "Statistical Abstract 1977", Bahrain, October 1978, p. 97.

Production of Crude and Refined Products

145. According to the 1977 annual report of the Bahrain Monetary Agency, the production of crude oil in 1977 was almost equal to that of 1976, i.e., 21.2 million barrels. The entire production fed the Emirate's refinery, which in 1977 processed 95.2 million barrels of crude (17.8 per cent more than in 1976) and produced 92.6 million barrels of refined products. The production of aviation fuel increased by 49.7 per cent, lube oil by 37 per cent, asphalt by 29 per cent, fuel oil by 27 per cent, naphtha by 14.4 per cent and gasoline by 3 per cent. On the other hand, the refinery's kerosene production dropped by 39 per cent.[1/]

146. In 1979, the production of petroleum products in Bahrain added up to 244.2 thousand barrels per day, compared with 242.0 thousand barrels per day in 1978. The production of gas oil decreased from 57.7 thousand barrels per day in 1978 (23.8 per cent of the 1978 total refined production) to 55.4 thousand barrels per day in 1979 (22.7 per cent of 1979 total); gasoline production also decreased to 25.3 thousand barrels per day in 1979 or 10.4 per cent of the total) against 30.4 thousand barrels per day - or 12.6 per cent in 1978. On the other hand, the naphtha production increased to 29.4 thousand barrels per day or 12.0 per cent in 1979, compared with 25.2 thousand barrels per day or 10.4 per cent of the total in 1978.[2/] Production of asphalt increased slightly from 3.6 thousand barrels per day, or 1.5 per cent, in 1978 to 3.8 thousand barrels per day, or 1.6 per cent in 1979. Kerosene production decreased slightly in 1978 but maintained its share of 1.0 per cent of the total refienery production.[2/]

[1/] Arab Oil and Gas, Vol. VII, No. 167, Paris, 1 Sept. 1967, p. 13.

[2/] OAPEC: "Production of Petroleum Products in Bahrain, 1979", in OAPEC Bulletin, Vol. 6, No. 5, Kuwait, May 1980, Statistics, p. 31.

Table 44: Production of Petroleum Products in Bahrain, 1979

(In thousand BD)

Products	1979		1978		Percentage of Change
	Quantity	Percentage	Quantity	Percentage	
LPG	1.3	0.5	1.2	0.5	8.3
Naphtha	29.4	12.0	25.2	10.4	16.7
Gasoline	25.3	10.4	30.4	12.6	(16.8)
Jet Fuel	32.3	13.2	32.2	13.3	0.3
Kerosene	2.4	1.0	2.5	1.0	(4.0)
Gas Oil	55.4	22.7	57.7	23.8	(4.0)
Diesel Oil	9.5	3.9	7.7	3.2	23.4
Heavy Lube Distillate	0.4	0.2	1.0	0.4	(60.0)
Fuel Oil	84.4	34.5	80.5	33.3	4.8
Asphalt	3.8	1.6	3.6	1.5	5.6
Total	244.2	100.0	242.0	100.0	1.0

Table 45: Refined Products Consumption in Bahrain, 1973 - 1977[1/]

(Aggregate Consumption in BD1,000, per capita consumption in barrels per annum, and population in thousands)

Year	Aggregate Consumption	Average Annual Growth Rate	Population	Per Capita Consumption
1973	2.0	27.5	236.0	3.1
1977	5.3		17.9	1.7

1/ Al Wattari, Abdelaziz, "Oil Downstream: Opportunities, Limitations, Policies", Kuwait, 1980, Organisation of Arab Petroleum Exporting Countries, Table 2b, p. 68.

Table 46: Consumption and Prices of Petroleum Products in Bahrain

Products	1979		1978	
	Consumption (million liters)	Price	Consumption (million liters)	Price
Gasoline[1]	132.1		117.5	30/40 fils/liter
Diesel	114.5[2]	22.5 fils/liter	146.3	22.5 fils/liter
Asphalt	21.6	8 BD/LT	23.4	8 BD/LT[3]
LPG	21.2	70 fils/kg.	18.1	70 fils/kg.

Source: OAPEC Bulletin, Vol. 6, No. 5, Kuwait, May 1980, p. 31

1/ In 1978 all gasoline 95 with price change mid year. In 1979, 75 per cent Gasoline 90 at 40 fils/liter, 25 per cent Gasoline 98 at 60 fils/liter.

2/ Reduction caused by decline in dredging activities.

3/ Domestic market price

Source: Official Information.

Table 47: Value of Refined Oil Exports

(In millions of U.S. dollars)

Year	Total Value	Attributable to Bahrain Crude
1972	240.11	63.11
1973	305.89	87.39
1974	988.71	264.46
1975	892.73	252.20
1976	1.002.53	247.14
1977	1,010.14	212.23

Source: Ministry of Development and Industry

WITHDRAWAL OF UNITED STATES MULTINATIONAL CORPORATIONS AND FURTHER SAUDI INVOLVEMENT

Saudi Crude Supplies permit Bahrain to provide 60 per cent of BAPCO Refinery Feeds

145. Bahrain has been providing 50,000 barrels per day of its domestic production for the running of the Bahrain Petroleum Refinery. This amount represented 20 per cent only of the crude processed by BAPCO refinery. Saudi Arabia, which had already considered sharing the Abu Saafa oil revenue with Bahrain and which had purchased a notable share in the Aluminium Bahrain Company, has committed itself to providing the Bahraini Government with BD 100,000 of Saudi crude oil at official sale prices.[1/] This amount will partially meet the BD 250,000 capacity of the BAPCO Refinery.

146. This Saudi-Bahraini arrangement will permit the Bahraini Government to secure 60 per cent of the crude supplies required by BAPCO. It is a measure which must be related to the Bahraini Government's objective to take over a similar share in the Refinery's total equity. Standard of California and Texaco have been supplying BD 200,000 of the Refinery's total capacity of BD 250,000. The Government's takeover of the 60 per cent share will reduce these two companies' share of feedstock to BD 100,000, a quantity which they will provide from their respective shares in the group of the Arab-American company (ARAMCO).

1/ "Bahrain: Grâce à 100,000 b/j de pétrole séoudien, le gouvernement pourra fournir 60% du brut traité par la raffinerie de la BAPCO" in: Vol. XII, No. 270, Le Pétrole et le Gaz Arabes, Paris, 16 juin 1980. pp. 13, 14 (referring to a declaration of Mr. Youssef Shirawi, Bahrain Minister of Industry and Development).

147. Thus, co-operation in the crude oil sector between Bahrain and Saudi Arabia will permit the Emirate to hold an equity majority in the oil-refining sector, thereby enlarging its role in this sector, both in the supply of crude oil to the refinery, in ownership and in the exportation of petroleum products. This arrangement will become effective on 1 July, 1980 according to the Bahrain Minister of Industry and Development. The Government will pay Texaco and Standard of California a compensation which will be calculated on the basis of the net accounting value of BAPCO's assets. Further developments in the oil sector in the future will progressively depend on Saudi-Bahraini co-operation and on sectoral integration.

Chapter V

THE ALUMINIUM INDUSTRY

Growth of Production and Consumption, 1935-1977

148. World aluminium consumption has grown at an exceedingly steep rate within the last 40 years, being well ahead of that of traditional structural materials throughout this time. Its growth was especially marked over the 1960-1970 period. Although after the price explosion this trend has slightly declined, in comparison to other structural materials, aluminium remains to account for the highest consumption growth rate. This unprecedented steady growth is based on a high standard of systematic research and development work throughout the world, relying, in turn, on effective co-operation between producers and consumers, irrespective of the economic system or the extent of industrialization in a given country.

Table 48: World Consumption and Growth Indices of Aluminium, 1935-1977

World Consumption (million metric tons)		Growth Indices	
1935	0.3	1977/1935	50.0
1950	1.5	1970/1960	2.2
1960	4.5	1977/1960	3.3
1965	6.5	1977/1970	1.5
1970	10.2		
1975	11.3		
1976	13.1		
1977(estimate)	15.0		

Production and Consumption Forecasts for Aluminium and other Structural Materials until the Year 2000

149. The future aluminium trends indicate that the dramatic rise of aluminium world consumption over the 1960-1970 period, corresponding to an annual growth rate of 8-10 per cent, may drop in the coming years to about one-half. Moreover, it seems highly probable that in the years ahead the share of developing countries in aluminium operations and consumption will grow considerably. Over the 1975-1985 period, aluminium production of industrial countries is expected to grow from 9.1 million tons to 19 million tons. During the same time, aluminium smelting capacity in the developing countries may rise by five-fold, expanding from 800,000 tons to 4 million tons.1/

150. It will be observed from the above that by 1985 the share of developing countries in world smelting capacities may reach 17 per cent of the total installed world capacities. Under these circumstances, the target, suggested at the 1975 UNIDO General Conference in Lima that by the turn of the century developing countries should account for 25 per cent of total world industrial production, appears to be consistent in so far as to share of the developing countries in world aluminium smelting is concerned.

151. In the industrial countries, where energy has become a crucial issue, an upswing in the use of aluminium may be anticipated in the manufacture of vehicles, electrical engineering, heat-exchangers, containers and components for the mechanical engineering industry, as well as in camping and sports items. Growth in the usage of aluminium in the building and packaging industries may, on the other hand take a downturn trend.

1/ Papers presented at UNIDO Seminars and workshops held in 1977 and 1978 in Vienna and Budapest, respectively. See also UNIDO's document ID/WG.250/18 dated 26 August 1977.

152. In the developing countries, at first electrical engineering may make a headway in aluminium usage, together with the packaging industry, particularly in such areas as new fisheries, dairies and food canning facilities. Household appliances, too, may be a rapidly expanding outlet. At some later time, other end uses will enter into the picture depending on the economic pattern, geographic situation and other circumstances prevailing in each country. Modern agriculture will call for up-to-date cold-storage rooms. irrigation systems, submarine desalinating facilities and building structures. All of these activities will require the utilization of aluminium. In the manufacture of transport vehicles and mechanical engineering, operations will be at first confined to assembly work followed at some later time by the manufacture of special components and products, i.e. high-standard castings. It is, therefore, desirable that upon the installation of new manufacturing capacities effective arrangements are made for the collection and recycling of scrap materials, which are usually in the order of 21-26 per cent of aluminium input.

The Pricing of Structural Materials and Forecasts as to Future Pricing Trends:

153. The world market prices of the principal structural materials and their pricing in relation to aluminium over the 1960 - 1977 period are summed up in the following table 49.

154. An analysis of the pricing trends in this table will clearly demostrate that a marked shift in favour of aluminium has taken place to the detriment of copper and steel. The 1973 rise in oil prices did not significantly affect the relative pricing of metals. Fluctuations in aluminium and copper prices were largely due to market speculation. (See tables 49, 50 and 51).

Table 42: Mean World Prices of Some Selected Structural Materials, Based on Annual Average Quotations in Current Prices
(In U.S. dollars per ton)

Material	1960	1965	1970	1975	1976	1977
Aluminium[1]	577	545	614	860	969	1.108
Copper[2]	712	780	1.393	1.205	1.381	1.293
Lead	265	260	304	412	446	617
Zinc	287	320	296	745	711	589
Tin	n.a.	3.428	3.673	6.870	7.583	10.798
Steel billets	n.a.	n.a.	kb.93	173	168	154
Plastics (PVC)[3]	350	351	359	642	566	619
Cement	7	8	10	20	n.a.	25

1/ Mean price, ex-smelter

2/ Cathode copper

3/ Mean price in Federal Republic of Germany

Table 50: Relative Pricing of Some Structural Materials

(Aluminium mean price taken as 100)

Material	1960	1965	1970	1975	1976	1977
Aluminium	100	100	100	100	100	100
Copper	123	143	227	140	142	117
Lead	45	48	50	48	46	56
Zinc	50	59	48	86	73	53
Tin	-	629	598	799	782	975
Steel billet	-	-	15	20	17	14
Plastics	61	64	57	76	58	54
Cement	1.2	1.5	1.6	2.3	-	2.2

Table 51: Aluminium Prices

(US cents per pound)*

1973	25.33
1974	34.06
1975	39.79
1976	44.34
1977	51.34

* Virgin unalloyed lingot at New York

155. Forecasts published in the world press unanimously agree that the 1970 level of relative pricing of structural materials will persist in the long-term, though in absolute terms they predict rising prices throughout the coming years.[1/] Such price hikes are considered to be necessary to ensure the economical operation of new capacities coming on stream, although the magnitude of the rise may be less than that of oil.[2/]

Suitability of Aluminium from a Technological and Financial Point of View For New Applications and for Replacing other Structural Materials

156. Any effort for replaing a structural material by another is aimed at taking the utmost advantage of the latter's most useful properties. In assessing such prospective benefits in respect of a given country or area - next to the availablility of raw material and power on site - the following circumstances would have to be taken into account:

1/ Revue d'Aluminium, Paris, No. 471:3:112. 1978

2/ Dowding, M.F. The World of Metals, Metals and Materials, London, 1978.

- The economic structure and the distribution pattern of capital; prevalence of independent small and medium-sized enterprises and of industry and agriculture that are controlled by large concerns or public corporations;

- The volume of experience of local manpower;

- The pattern of the domestic market, and the extent to which the latter may be influenced by intervention on the part of government agencies.

157. Applying these considerations to aluminium, a combination of favourable and detrimental factors emerge, which may be dealt with in detail in the case of Bahrain in the following pages.

Difficulties

158. The two basic considerations in installing an aluminium smelter are abundance of cheap power and availability of large capital, the latter far exceeding that required for setting up other raw material production facilities. Bauxite and alumina operations on site or in the region are not an absolute prerequisite, since, alumina can be easily transported over larger distances.

159. Until 1960's only developed countries and the centrally planned economies could generally afford to erect aluminium smelters. This is the reason why the bulk of such facilities are located in Europe, North America and the Soviet Union, where large amounts of hydroelectric and thermal power are available. In earlier days, the proximity of the consuming markets, too had been a consideration of some importance.

160. The location of new smelting projects is nowadays almost exculsively governed by the high demand for power. The power resources of the developed countries are no longer free to supply abundant amounts of cheap energy. Hence, in locating a new smelter, only such areas where sufficiently large potential of cheap power exists may be considered. The tapping of new power resources, however, invariably calls for further capital investment in implementing such projects. It should be remembered in this connection that electric energy is at present the largest and most significant cost factor in the electrolytic extraction of aluminium.

161. The magnitude of power involved in aluminium production is demostrated in table 52, where a comparison of power consumed at each successive step of production from the raw material up to the semi-fabricating stage is presented in respect of steel, copper and aluminium.[1/]

162. Table 52 shows that the huge energy demand for aluminium production stands out most strikingly. The difference will remain even after allowance has been made both for the lower specific weight of aluminium and the fact that by adding suitable alloys a composition may be brought about, whose mechanical properties approximate those of mild steel. In calculating this, the power demand of aluminium will be no longer eight times, but only 2.7 - 3 times that of steel. By the same reasoning, power involved in the manufacture of copper and aluminium conductors will be practically identical after allowance has been made for the difference in specific weights.

1/ Osztrovszky. G. Raw material situation of the Hungarian national economy with special regard to the and aluminium industry. Paper presented at the Hungarian Academy of Science, Magyar Aluminium, Budapest, 15:10:289-299, 1978.

Table 52: Energy Consumption in Steel, Copper and Aluminium Production
(GJ per ton)

	Steel rounds 30 mm. dia.	Rolled copper wire	Aluminium sheet
Mining, quarrying	?	51.9	4.2
Coking	20.1	-	-
Concentration	5.9	-	-
Crushing	-	20.9	5.9
Flotation	-	7.5	-
Alumina manufacture	-	-	41.9
Smelting	0.3	14.2	218.6
Steel manufacture	6.6	-	-
Electrolyitic refining	-	12.6	-
Rolling	5.4	18.4	28.1
Total GJ/ton	37.7	125.5	298.1
Total GJ/metre^3	293.1	1,130.0	795.6

Source: Alexander, W.O.,Economics of Energy and Materials. Material Science Engineering. London, 29:195-203, 1978.

Higher Standards of Engineering Techniques

163. The chemical, physical and mechanical properties of aluminium differ in many ways from those of other metals. In view of this, the handling and processing of aluminium calls for technologies which may often be regarded as a departure from conventional methods of metallurgy. Even the transport and storage of aluminium require particular care. In case of defective packaging, rough handling en route or poor storage, the vapour repeatedly precipitating and evaporating on its surface may leave behind ugly stains or give rise to corrosion.

Capital Requirements

164. The investment costs necessary to achieve an annual ton of production capacity are shown in table 53 below.

Table 53: Investment Costs Necessary for Achieving An Annual Ton of Production

(In US dollars)

	Iron	Aluminium
Mining and raw materials Preparation	50	700
Power generation	-	400
Smelting	250	2,000
Fabrication	200	400
Total	500	3,500

Source: Fischer, P.U.: "The role of the Gulf in the future development of the world aluminium industry", Bahrain Society of Engineers, London 1977, Graham and Trotman Ltd., (a seminar on engineering and development in the Gulf, Bahrain Society of Engineers).

165. In most cases, power consumption accounts for 20 - 30 per cent.of direct costs in smelting. When the plant was put on stream in Bahrain in 1971, the energy costs were estimated at only 4 per cent of the total production cost. In comparison, the energy costs in Great Britain were 54 per cent of the total production costs at that time. This can be explained by the underpricing of the Bahraini gas used for the smelter. To run a smelter, Bahrain had to provide it with 100 million cubic feet of natural gas per day.

166. The development of cheap hydropower in the past had helped the world aluminium industry to grow in importance to the point it has reached today. With the depletion of favourable development potential for

hydropower in Europe and the United States, other energy sources have come into use. The aluminium industry will always have to use power at the lower end of the price range, which means that it will be in areas where additional hydropower resources and thermal power are being developed. It follows that countries in South East Asia, Africa and South America with potential hydropower, as well as the Gulf States are attractive sites for aluminium smelting from the standpoint of thermal energy.

Local Conditions in the Gulf

167. An evaluation which aims at spelling out the various steps in the aluminium industry, based on the following criteria, appears to be appropriate.

Criteria and Local Conditions of the Aluminium Industry*/

	1	2	3
Raw materials		X	X
Energy	X		
Labour	X	X	X
Capital	X		
Services	X	X	
Information			X
Market			X

*/ 1, 2 and 3 imply availability, uncertainty and non-availability, respectively.

168. One can see that for the Gulf States only two criteria are distinctly absent, i.e., information and market. All other elements are either distinctly or conditionally present.

169. A look at the world aluminium industry shows that in very few cases alumina plants and smelters are close to markets. In the majority of cases, the alumina as well as the metal have to be transported. For the only other distinctly absent element, namely, information, there seems to be not real problem, as this can be acquired. By weighing the criteria against the specific requirements of each manufacturing step in the aluminium industry, it is possible to set up the following priorities of operations, which local conditions favour: a) Smelting, b) Preparation of raw materials and c) Fabrication (primarily for local use).

Raw Materials

170. The presence of mineral deposits yielding alumina are very uncertain in Bahrain. Bauxites, which are not of a particularly attractive composition are known to exist in Iran. It is conceivable that clays may be found which can be extracted in the future, when alternative processes to the Bayer process become feasible.[1/] It appears to be uncertain that in the foreseeable future the Gulf area will be come a producer of aluminous raw materials. However, the question arises as to whether all or at least some steps of the refining process (from bauxite to alumina) could not be carried out in the Gulf, and whether it would not pay to bring bauxite into the Gulf in large bulk carriers or bulk-oil carriers (OBOs) to be processed in Bahrain. This would require, however, two conditions to be met: a) there must be ample water supply available for processing and washing purposes; and b) the bauxite-producing countries all tend to install their own refineries in order to upgrade their exports; therefore, a stable supply of bauxite on a long-term basis myst be assured.

1/ The United States Bureau of Mines is running a pilot plant operation using a nitric process, sponsored by a group of primary producers.

171. In the Bayer process, also approximately 320 kg of caustic soda are required to produce 2 tons of alumina or 1 ton of metal. Actual consumption varies with the type of bauxite being treated. Caustic soda is produced by electrolysis of sodium chloride (salt), in the course of which an equivalent amount of chlorine is also produced. Salt is plentiful, power is potentially plentiful and chlorine as a by-product can be used in the petrochemical industry.

The Bahrain Aluminium Industry

172. Bahrain has several assets which made the establishment of an aluminium industry attractive. The establishment of the aluminium smelter in the Emirates was undertaken because of the cheaply-priced gas, and because Bahrain was a good alternative at the beginning of the 1970's for several multinational aluminium corporations[1/], compared with areas of undeveloped hydropower potential. Furthermore, the rise in crude oil prices has gradually stimultated a similar rise in the price of gas and which, in recent years, has accelerated in connection with the emergence of new world-scale networks of gas liquefaction, transportation and marketing. Consecuently, the economic advantage of establishing an aluminium industry in Bahrain and in other associated-gas-producing countries has grown increasingly. This is an area where one can observe and explain the new trend involving the transfers of projects from the industrialized countries to selected developing countries because of the relative change in the cost structure in the two groups of countries.

1/ Those corporations were: 1) General Cable Corporation (US), 2) Britain Investment (US), 3) British Metal Corporation (UK), 4) Western Metals Corporation (UK), and 5) Electro coppa Corporation (Sweden).
See: EL-ZAIM, Issam: "The Equity Structure in the Aluminium Bahrain Corporation", p. 15.

173. Another important factor in the selection of Bahrain for the establishment of one of the new aluminium smelters in the oil and gas producing countries seems to have been the labour costs, which are low compared with those in the developed countries, and the presence of favourable legislation.

174. Aluminium Bahrain (Alba) produced 122,820 tons of finished metal products in 1978, compared with 121,356 tons in 1977 (MEED 27:1:78). Alba indicated that future development would be slower. The workforce was reduced by 450 in 1978, and 250 more jobs might be lost this year.1/

175. There has been a certain criticism of the working conditions in the Alba smelter, particularly during the first years after the plant had been put on stream. The number of labour accidents was extimated to be higher than the corresponding rates in the European and American aluminium industries. Between October 1972 and November 1973 there have been few mortal accidents andmore than 100 injuries. These led to a labour strike. At the time, workers complained that "All the furnaces as well as the smelter lack security equipment. None of the workers and engineers had been trained nor had they followed occasional courses; they had only some knowledge of the various tasks and the handling of instruments and machines."2/

176. Aluminium Bahrain started production by employing semi-skilled immigrants as metal workers through foreign contractors. Later the government, following requests from local workers pushed the Bahrainization of the Alba staff. In 1978, according to government sources, workers from the Far East were still employed , while Bahrainis were being laid off.3/

1/ MEED - Middle East Economic Digest, Vol. 23, No. 5. Feb.1979, p. 18.

2/ AL-DOWADI, Ahmed: "Multinational Corporations in the Arab Gulf", in: Al-Taliah, monthly, Cairo, p. 95, reproducing the Bahraini weekly Sada Al-Usbooh.

3/ Declaration made by the Bahraini Director of Labour, Mr. Khalifah Khalfah, to the Bahraini-based Gulf Weekly Mirror, in: MEED - Middle East Economic Digest, Vol. 22, No. 23, London, 9 June, 1978.

Consequently, contractors hiring semi-skilled immigrants were asked to repetriate them.

177. The geographic position is a third advantage for the aluminium industry in Bahrain, particularly in the Gulf area. On the one hand, industry in the Gulf can be supplied with alumina from the Australian mines. But since Bahrain represents a small market, its aluminium industry has to be export-oriented. As transportation costs are very low, the aluminium products can be directed either to Japan or to Western Europe. This is typically an industry founded on exploitation of local energy resources and attractive investment conditions.

178. Aluminium industry is a particularly energy-intensive industry. Total energy consumption for the preparation of one ton of metal out of ore is 16,000 kilowatts for aluminium, compared with 3,500 kilowatts for steel.[1/] While Bahrain disposes of associate and natural gas, its oil sector does not generate a surplus; this explains the small stake (19 percent) taken by the Bahraini government in the Aluminium-Bahrain joint venture (Alba). Therefore, foreign partners made the major financial contributions.

1/ This is due to the higher activity of the aluminium as compared to other metals, i.e., its resistance to the separation of its oxide. One has to turn to electrolysis and use electric energy to extract the metal from its solution. But in addition to the equipment required for the process in the smelter, the industry is capital intensive, because it has a substantial problem of handling materials.

Table 54: Alba's Equity Shares

Equity held by		Percentage
2 US corporations:		
General Cable Corp.		17
Britain Investment		9.5
	subtotal	26.5
2 UK corporations:		
British Metal Corp.		17
Western Metals Corp.		8.5
	subtotal	25.5
KAISER Aluminium		17
a Swedish corporation:		
Electro-Coppa		12
Total Foreign Interests		81
Local Interests (Bahrain Gvt.)		19

179. The smelter was inaugurated in May 1971. The cost of the project was 73 million pounds. In 1972 it produced 120,000 tons of pure aluminium, but it was planned to raise this annual capacity to 400,000 tons per year within five years. However, the world aluminium market and some start-up difficulties have not permitted this goal to be achieved.

The Aluminium Extrusion Industry

180. Bahrain Aluminium Extrusion Company (BAEC) is a 100 per cent Bahrain Government owned company formed by Amiri Decree in 1977. It is operating an aluminium extrusion plant with an annual output of approximately 4,000 tons. It employs approximately 200 workers and has the reputation of being one of the highest quality extruders in the Middle East. The plant has a 2,000 ton Schloemann press and a 33,000 Amp anodising line. The company is currently expanding its anodising capacity by a further 11,000 Amps. The plant produces a full range of both mill finish and anodised sections including gold, black and bronze to the Alusuisse Colinal^{R} process. Products include brushed and matt finishes. Its markets cover the Gulf States, including Kuwait, Saudi Arabia, Qatar, the United Arab Emirates, Oman and Bahrain. The Company is currently expanding its outlets to include the United Kingdom, Syria and Jordan.[1/]

181. Both aluminium production and export have been growing over the years 1971-1977. The volume of production had been boosted between 1971 and 1974. Later, from 1974 to 1977, production slightly fluctuated within the plant's normative capacity. Production and export values also rose between 1971 and 1974, stabilized in the following year, and increased again in 1976 and 1977. The volume of exports increased between 1971 and 1973, almost stagnated in 1973 and 1974, and declined in 1975 before attaining the plant's normative level in 1976. As a result, aluminium exports multiplied by 30 times in value between 1971 and 1977. This resulted primarily from the setting-up and full utilization of the new aluminium capacity as well as from the rise in the unit value per ton of

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1/ D. PEDEN (General Manager), Bahrain Aluminium Extrusion Company, May 1980.

aluminium, as shown in table 55.

Table 55: Aluminium Production and Exports

(Volume in metric tons and value in millions of Bahrain dinars)

	Production			Exports		
	Volume	Value	Unit value per ton	Volume	Value	Unit value per ton
1971[1/]	8,133	2.04	250.8	6,619	1.66	250.8
1972	70,103	15.97	227.8	57,899	13.13	226.8
1973	102,630	28.75	280.1	96,959	26.56	273.9
1974	117,961	38.85	329.3	97,849	31.47	321.6
1975	116,500	38.87	333.6	90,088	31.10	345.2
1976	122,058	44.86	367.5	120,457	44.28	367.6
1977	121,356	48.54	400.0	122,894	49.16	400.0

Source: Ministry of Industry and Development

1/ The smelter began production in April 1971.

182. Additional financing for the planned expansion of Alba is to be raised by offering shareholders a further 1 million shares, at the market value of BD6 ($15.8) each.[1/] The company needs $120 million, of which $70 million have been raised from banks.

183. Twenty per cent of Alba's original 3 million shares had been acquired by Saudi Basic Industries Corporation (SABIC).[2/] The shareholding is now as follows: Bahrain, 57.9 per cent; SABIC, 20 per cent; Kaiser Aluminium Bahrain, 17 percent; and Beton Investments of West Germany, 5.1 per cent.

1/ The nominal price of Alba's shares is BD1 (or $2.6) per share.

2/ MEED, London, 18 May 1979.

184. The entry of the Saudi state-controlled company SABIC in Alba's joint venture has been of help to the Bahraini Government in its substitution of multinationals withdrawing. Furthermore, this regionalization of the enterprise has recently led Saudi Arabia to abandon its own project of setting up an aluminium smelter in Jubail.

185. At the end of May 1980, The Minister of Industry and Electricity in Saudi Arabia announced that his country had abandoned its project for the construction of an aluminium smelter in Jubail because the smelters in Bahrain and Dubai are being expanded. This would prevent the duplication of projects and streamline and co-ordinate industrialization in the Gulf Arab Countries.1/ Kuwait had already abandoned the idea of setting up an aluminium smelter.

1/ "Gulf Petrochemicals Plants", in: Saudi Economic Survey, Jeddah, Vol. XIV, No. 668, page 6.

Chapter VI

THE SHIPYARD FACILITIES

186. There are three important repairing facilities in Bahrain.[1/] The oldest is the Bahrain Shipway Company, which operated coastal shipping traffic in the Gulf. Its business has been very bouyant and in 1975 its employment peaked at 500 persons. Bahrain Shipway has been forbidden by the Government to expand or to accept ships of more than 11 feet 9 inches draft until the Bahrain Ship Repairing and Engineering Company (BASREC) is 20 years old.

187. BASREC was established in 1970 near the port of Mina sulman. It has the advantage of deep water jetties. Both companies have equivalent facilities and will take ships on the shipway up to approximately 1,000 tons displacement and 250 feet length. Employment, sales and capital employed are shown in table 56.

188. The two companies have serviced ships from all over the Southern Gulf, but recently they have felt increasing competition. For instance, there is now a shipway in Ajman (the United Arab Emirates) so that few ships now come to Bahrain from the United Arab Emirates. Employment totalled about 800, and it has been sustained at this level by sending crews to work at dry dock at the Arab Shipping and Repair Yard (ASRY). Once ASRY has trained its own labour force this work will fade away.

1/ World Bank: Bahrain Current Economic Position and Prospects, Washington, 28 June 1978. World Bank, Report No. 2058-BH, Annex A, p.3, Table 1.

Table 56: Gross Sales, and Capital Employed in the Bahrain Ship Repairing and Engineering Company

Year	Employees	Gross sales	Total capital employed
		(Bahrain dinars)	
1972	345	1,287,419	1,429,283
1973	347	1,787,577	1,746,901
1974	344	2,073,740	2,128,861
1975	425	2,878,485	2,790,279
1976	481	3,805,730	3,635,337
1977	400	4,000,000	4,963,313

Source: Bahrain Ship Repairing and Engineering Company, Bahrain.

The Arab Shipbuilding and Repair Yard (ASRY)

189. The starting configuration of the shipyard is a drydock able to accommodate tankers up to 500,00 dwt. It is designed to be a modern and a large shipyard, based on solid technical and economical analysis. Every care has been taken in order to allow it to expand harmonically, should the opportunity arise. Its main purpose is to promote the social, technical and economical development of the region although it must be emphasized that the comapny was established as a commercial venture.

190. Bahrain has long been an essential ship repair centre, providing facilities for offshore supply vessels operating in the Gulf, and acting as a shore base for repairs afloat on larger cargo ships and tankers.

191. Experts believe that the specialized marine repair services already offered by existing companies like BASREC and Bahrain shipway will provide back-up to ASRY services, and that the State of Bahrain will soon be in a position to supply comprehensive repair services to a wide cross-section of shipping. Moreover, the continuing growth of new repair facilities within the Gulf should result in pricing competitively with that of Europe and the Far East.

192. The rapid development of Bahrain's infrastructure, combined with the country's industrial and commercial expansion, has given ASRY and added advantage. Bahrain's international airport, which is central to five continents, is situated just ten minutes from the shipyard. According to an article published in Oil Progress, the magazine of the Caltex Petroleum Corporation[1/], "this was particularly advantageous to ASRY for the import of both specialist personnel and spare parts". This could be plausible in the short run, but in the long run commercial and social profitability of ASRY will depend on the availability within the Gulf area of both qualified personnel and regional local self-supporting machine tool industries to produce spare parts for the several dry docks in the area. It is these factories which will make the formation of ASRY a giant stride towards further industrialization in the Arab States which joined in the project, namely, Bahrain, Saudi Arabia, the United Arab Emirates, Qatar, Kuwait, Iran and Libya.

193. For Bahrain particularly, it augures an even brighter and more prosperous future. In the 1930s, Bahrain's future was in the development of its newly discouvered but limited oil fields. In the coming decade, ASRY's propspects may prove to be as promising.

1/ "ASRY: A New Haven for Tankers". In: Lifestream of OIL PROGRESS, Vol.28, No.2. CALTEX Petroleum Corporation, Bahrain, 1978, pp.2-9.

194. The Arab Shipbuilding and Repair Yard (ASRY), provides export repair and cleaning services for a growing number of very large crude carriers (VLCCs) that regularly visit Gulf waters. ASRY was formally incorporated in Bahrain in 1974. It is under the joint sponsorship of the Organisation of Arab Oil Exporting Countries (OAPEC), and is the first pan-Arab industry-related infrastructural venture that was brought to fruition. Agreement to start construction of the super tanker dry dock was reached by OAPEC in 1974, but the history of ASRY goes back to 1968 when the three founding members of OAPEC - Saudi Arabia, Libya and Kuwait - first envisioned a major marine repair and service facility in the centre of the international oil trade.

195. A comprehensive preliminary study undertaken then confirmed the need for such a major facility in the Gulf area and helped to establish Bahrain as a feasible site. The closure of the Suez Canal in 1967 stimulated the building of new and countless VLCCs. The Organisation of Arab Petroleum Exporting Countries (OAPEC) realized shortly after its establishment (9 January 1968) that there was a shortage of dry docks for VLCCs, as the existing repairing and maintenance dry docks were located in the oil deloading ports. A feasibility study was drawn for the construction of a dry dock for the repair and maintenance of VLCCs in the Arab Gulf area. The study showed that the dry docks prevailing in the world were located in the Far East, far from the tanker lines going from the Arab Gulf to the West. Consecuently, the Council for OAPEC took the decision in June 1970 to implement another study in order to determine the most appropriate site for a dry dock in the Arab Gulf.

196. In the light of that decision the ports of several Arab Gulf states were surveyed in order to identify and weigh the required specifications regarding location, labour availability, water depth and the load ports for VLCCs. Finally, agreement was reached to implement the dry dock in Bahrain because it was found to be economically the most suitable site. The study was approved in March 1972 by OAPEC's COuncil of Ministers. A further detailed study came to the conclusion that the dry dock should be destined to service tankers up to 500,000 dwts.

197. When the Suez Canal closed in 1967, the only alternative ship route for transporting Arabian Gulf oil to markets in the West was by way of the Cape of Good Hope, requiring the use of VLCCs of minimum 175,000 dwt capacity. These ships were so large that few existing dry docks could accommodate them. On the main oil routes between Europe and the Gulf, the nearest dry dock was in Lisbon; for tankers on the run to Japan, the nearest was at Singapore. The Gulf was at the centre of VLCC trading routes. With a fleet of 800 such ships afloat, it is estimated that anually between four and five thousand voyages should have been made to the Gulf by VLCCs - the highest incidence of specific traffic for any class of vessels in the world. Further, since most VLCCs would be arriving in the area on return voyages empty and virtually "clean", they would be in a condition to enter a ship repair yard much more quickly than if they had just finished discharging their cargo. A further factor was that a major ship repair yard in the area was considered essential for meeting the increasing demands of the Arab tanker fleet which was expected to reach a total capacity of around ten million dwt in 1977.

198. Although the shipping picture has changed since OAPEC chose Bahrain as the site of its dock - VLCCs passing through the Gulf now, for example, have several facilities en route from which to choose, ASRY's General Manager asserted that the Bahrain yard occupies the best position of all.

Its equipment is among the best available in the world, and the location of ASRY roughly half way down the Gulf, is superb." In concept, design, construction and equipment, ASRY is indeed a giant industrial operation; an artificial island was constructed in deep water and connected to the mainland by a causeway 7 kilometers in length. The company has certain particular characteristics, having been created by means of an inter-Arab regional agreement among seven OAPEC members. A number of public administration procedures are, therefore, to be followed in its management. However, private enterprise flexibility and quick reaction to any environment or market change are simultaneously requested. ASRY is thus a rare combination of seven states share-holding with a free enterprise management. The concept has been working well till now and it will hopefully continue to be so in the future.

199. The total cost of the project has been financed by equity capital and amounts to US$340 million, of which $290 million are for fixed costs and $50 million are for working capital and for financing the first year's losses. Shareholders are the Governments of:

	Percent
Bahrain	18.84
Saudi Arabia	18.84
Kuwait	18.84
United Arab Emirates	18.84
Qatar	18.84
Iraq	4.70
Libya	1.10

200. ASRY construction started in late summer 1974 when the first dredger started to reclaim land south of the village of Hidd, off Muharraq Island. It was flooded for the first time in May 1977 and received its first vessel in September of the same year.

201. ASRYs first chairman predicted that in the following three years ASRY will dry-dock 60 large vessels per year. It is also expected that a large number of ships will come to the yard for in-water repairs. "Within a year," he declared, "ASRY will be prepared to undertake all the repair work expected from any first class shipyard, excluding major damage repairs and conversions. This capability will be achieved in the following stages: a) Dry-docking, hull cleaning and painting; b) Minor repairs, increased mechanical and hull repairs and annual survey work; and c) Major mechanical and hull repairs".

202. ASRY is a truly regional multi-lateral company in respect of its share-holding. It is also an international company in every area of its activity, since it sells services, buys materials, engages people and maintains financial relations all over the world. The world projection of the Gulf nations will, therefore, be widened and reinforced through the international image of ASRY as a large, modern and efficient industrial plant, open to the world. However,in order that ASRY becomes a success, it is of the utmost importance that its yard performs as well in ship repairing as in resource marketing.[1/]

203. For Bahrain in particular, the ASRY project contributes to the extension of its industrial base and the diversification of its sources of income, thus promoting its economic and social development. The construction of this project which is expected to induce downstream labour-intensive projects, will increasingly involve various activities, such as: a) training and creation of job opportunities for nationals of other Arab countries,

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1/ CAETANO-Carriera: "The significance of ASRY to the Future Industrial Development of Bahrain".

b) development of Arab cadres in new specializations, c) international co-operation and economic integration in the form of joint projects, d) development of related industrial and trading undertakings in Bahrain, and e) development of the other socio-economic sectors.

204. This facility was designed in such a way that the first dock would be flexible, permitting its extension and the later addition of other docks. It also included the possibility of expanding the workshop and implementing projects for the production of spare parts for the dock's machinery. This would be done at reasonable costs and without hindering the operations of the dry dock.

205. The marketing of the dry dock's services is not limited to the repairing of vessels and giant tankers. It also has the potential for creating numerous complementary and auxiliary projects which utilize the facilities of the dock. In fact, a number of companies have been contracted and requested to study the feasibility of several such projects.

206. According to OAPEC's February I980 Bulletin[I/], ASRY operated at 94 per cent of its full capacity in 1978 and 1979. In the two years following its official inauguration (I5 December 1977), the dry dock handled some 720 vessels, most of them VLCCs. With this performance, tankers and especially super tankers require two to three months advance registration in order to be serviced in the dock. Three factors have been recognized for explaining the soaring demand and the lengthy list of tanker reservations: a) the low level of repairing tariffs in comparison with other dry docks of the Middle East and and c) the high quality of technology used for tankers' repair and maintenance. The quality of repairs and other services of ASRY has been improving considerably.[2/]

I/ "The Dry Dock in Bahrain, a Strategic Project on the Road to Arab Economic Complementarity", in Oil and Development, Vol. 5, No.6, Baghdad, March I980, pp. 138-141, (in Arabic).

2/ "Bahrain Dry Docks Operated at 94 percent of Capacity in 1979", in Arab Oil and Gas, Vol. IX, No. 202, February I6, I980, p. I3.

207. A collective agreement was signed on 27 March in Kuwait between the national companies of the Permanent Conference of Arab Companies for the Maritime Transport of hydrcarbons and the Bahrain dry dock's owners, ASRY.[I/] The agreement is similar to those concluded recently by the Permanent Conference members with other dry docks; it aims at "reducing the operational costs of Arab tanker fleets". In fact, the agreement calls for stable dry dock costs throughout the two-year contract period.

208. The ASRY project must be looked at as an achievement of Arab development and co-operation, as well as an asset for Bahrain as an oil producing state. Indeed, ASRY is one of the giant Arab projects which has largely succeeded within the frame of Joint Arab co-operation. The project aims at setting up an industrial specialized base and at forming and training advanced Arab cadres in the field of ship repairs and maintenance. Furthermore, it aims at achieving a specific form of Arab joint co-operation and economic complementarity through efficient investment of oil revenues. The project also embodies co-operation between Arab oil exporting countries and industrial nations through the servicing, repair and maintenance of their tankers in the Arab Gulf area.

The significance of ASRY to the future industrial development of Bahrain

209. It is difficult to anticipate the impact of the new great shipyard in the State of Bahrain on the economy of the region. It is, however, necessary to make an effort to foresee this impact in order to provide a basis for planning the development of the yard and its enviroment. At the outset, it should be emphasized that the adequate quantitative model can be established to assess the relationship between the shipyard and its enviroment in future years. Any attempt to use an input-output matrix for that purpose is impossible, at the present moment, as the conversion factors are not known and, even if they

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I/ OAPEC Bulletin (monthly), Vol. I3, No. 2, Kuwait, OAPEC, February 1980, and OAPEC Bulletin Vo. I3, No. 4, Kuwait, OAPEC, April I980.

were known, the simultaneous development of some other large projects in the area would alter them deeply in few years' time. For this reason, any attempt made to quantify some of the provisions will remain essentially a qualitative analysis.I/

2I0. That fact that ASRY has been formed and the yard has been built created expectations of good business, more employment opportunities, higher wages and salaries, large fringe benefits, better welfare schemes and a higher standard of living. These expectations may be considered as an aspect of ASRY's im impact on the enviroment. Its feed-back is already strongly felt by the yard managers.

2II. It is, however, unrealistic to assume that all these expectations can be satisfied in a few weeks or months. Few years will be required for the project to bear fruits.

2I2. Recourse to the financial market will not be required much by ASRY itself, as the company gets its share capital and investment loans through special arrangements, defined in its basic constitution. The yard's spin-off is expected to mobilize a certain amount of financial resources, both for fixed investments and working capital. In any case, the ship repairing industry does not require a very high level of operating capital because services are paid back within a few months. In such a situation, the industry will be able to aviod the need for short term loans.

2I3. With regard to capital costs, the yard is already conceived in two phases. For the first dock, a total of about one hundred and eighty million

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I/ CAETANO-CARRIERA, A.M., "The significance of ASRY to the Future Industrial Development of Bahrain" in Engineering and Development In the Gulf, Seminar of Bahrain Society of Engineers, London, -977, Graham and Trotman Limited, pp. 7I-84.

US dollars is likely to cover the final cost of the investment and the running capital. In this respect a number of facts have much influence over the ultimate costs. Obviously, one is in the area of training which would require the expenditure of considerable sums of money for the building of a fine training school.

2I4. The yard is conceived as an institution and a power whose aim is to produce social and economic development. Of course, the distinction between share capital and loans is of no significance, because the financing of this project is made by special agreement reached between seven member states of OAPEC. As far as the spin-off is concerned, if we allow for about 20 per cent, I5 to 20 per cent could be a reasonable figure of employment created by the spin-off when the yard is implemented. Assuming the correct relationship of investment capital, perhaps 40-50 million dollars will be needed. The outright capital in 1978 was seventy ~~million US dollars and this gives the relationship of capital to loan.~~

2I5. The second phase is being studies, so no final figures can be given in relation to the capital costs of the second dock. If a second dock is built, it would not, of course, cost as much as the first dock, but the spin-off could very well double.

2I6. By contract arrangement, management of the company so far has been principally undertaken by Lisnave of Portugal, the largest and most experienced repairer of VLCCs in Europe. A technical management service is provided by Navlink, which maintains liaison between ASRY in Bahrain and Lisnave in Portugal.

217. The figures mentioned above are roughly equivalent to the maintenance of the management for 8 to 10 years after the process starts. This is a minimal period needed to develop the required information and know-how and to ensure that it is properly transmitted and assimiliated by the new managers. The know-how market will be indirectly exploited by ASRY, in as much as the yard will buy materials and services, either produced in the region or imported from other supplying markets, through the network of agencies already established in Bahrain. This will require a specific technical and commercial know-how in order to ensure that those materials and services fully comply with the required standards, both in terms of quality and delivery. Although no specific plans have been outlined for that, it should be pointed out that ASRY will eventually develop the necessary skills in some areas, such as shipbuilding, sophisticated repairs, manufactures of secondary semi-products, etc. where these will be required, and, consequently the impact of the yard in the know-how market will be amplified.

The Labour Force and Labour Training

218. An independent marketing organization, ASRY Marketing Services (ASRYMAR) operating from London, has been established by OAPEC to inform tanker owners all over the world about the advantages of using ASRY's facilities in the ASRYMAR has now agents in 14 major tanker-owning countries that control 97 per cent of the world's VLCC tonnage. The thrust for its sales efforts is based on its competitive ability in every respect - in time, price and quality.

219. The shipyard in Bahrain is a very large and complex machine, which will require many skills. It would have been unreasonable to assume that the local labour market can immediately supply all the required manpower, both in quantity and quality. Ship repairing is strenuous, difficult and

dangerous. The manpower engaged in it has to be competent and responsible. The quality of the workers and their behaviour is of vital importance, especially during the first years of operation, when a good reputation in shiprepairing is to be acquired by the yard.

220. Looking at the locally available labour force, it becomes evident that it will take some years of hard work in education and training before some thousands of skilled workers of various trades can be formed in Bahrain and its neighbourhood. Labour requirements in the Arab countries, particularly in the Gulf area, are increasing rapidly because of the high rate of development that include large-scale housing, health, education, infrastructures, agriculture, commerce and industry, and particularly the enlargement and modernization of every branch of public administration.

221. To construct the dry dock the Hyundai Construction Company of South Korea used 2,000 Korean workers. ASRY's labour force numbered 900 in 1977 and was to reach I,I00 in 1978. Eventually, the yard is expected to employ 3,000. One aspiration of ASRY's board is that the yard - the first major pan-Arab industrial venture - will provide training for young Arabs seeking experience in heavy industry.

222. The shipyard's training centre offers courses in a wide range of skills required in the labour-intensive ship repairing industry. ASRY's training and development programme is aimed at complete Arabization of shipyard trades and assumption of 80 per cent of management functions within I0 years. ASRY believes that this programme should not be pushed through in a way that would hinder the efficient management of the company. A large training centre has been built at the yard and courses have been introduced in many skills required in the labour intensive ship repair industry. At the end of November 1979, 52 per cent of the Company's I,32I employees and 50 per cent of its senior staff were Arab nationals. ASRY aims at raising the proportion of

Arab nationals on its payroll to 90 per cent by I987. In I979 some 686 employees have been given a training for certain jobs, and 28 Arab employees were sent abroad for further training in the ship industry.

223. Special attention is paid to training within the Ship Repairing and Maintenance Yard.[I/] Two main programmes were set for training: a) a programme aimed at training technicians, and b) a programme for the training of middle and senior staff posts.

224. The programme of training technicians was launched in Bahrain at the beginning of I975 when a training centre related to ASRY was established in the dock site. This centre includes theoretical training which can absorb 450 trainees, an English language laboratory equipped with the most recent training equipment.[2/] In I976, the centre had I30 trainees receiving training in such fields as operation of machines, painting and assembly of electrical and mechanical equipment. It is worth mentioning that the company had in fact accepted a larger number of trainees, but that some of them were encouraged to leave shortly after their training started because of the labour shortage in Bahrain.[3/] In I976, there were 28 trainers and employees working in the centre, out of which 20 were Bahraini nationals.

225. In April I976 ASRY's board adopted a programme aiming at the Arabization of intermediate and high administrative jobs. According to that programme, ASRY was to integrate 27 graduates of universities and equivalent institutes for training in foreign dry docks both in the company and abroad.

I/ "Training in the Arab Ship Building and Maintenance Company", in: OAPEC Bulletin, Vol. 3, No. 7, Kuwait, OAPEC, July I977, p. IO.

2/ ASRY, Annual Report of ASYR's Council of Administration for the Second Year of the Project, I977. Bahrain, ASRY, I977.

3/ "Training in the Arab Ship Building and Repairing", in: OAPEC Bulletin, Vol. 3, No. 7, Kuwait, OAPEC, July I977, pp. IO-1I, (in Arabic).

226. Draft courses at ASRY are structured on the basis of the training system used at Lisnave. A basic school for welders, pipe and mechanical fitters was established in Muharraq two years before the opening of the shipyard, and about I50 craftsmen (the majority of whom are Bahrainis) passed through its programmes before training was transferred to the new yard. The project was oriented towards industry development in Arab countries of the Gulf area, namely, nationals of ASRY member countries. Thus, the dock constitutes a practical step for the transfer of know-how and technical expertise. At its first stage the dock will be engaged in ship repairing; at a later date the project will develop into industrial manufacturing, including vessels construction.

227. It can be clearly seen that the project was not designed as a merely commercial profit making enterprise. Rather, it was conceived as one of the long-term projects focusing on industrial development as well as on technical and professional training.

228. Though the dock will provide services to different vessels which would require maintenance. The development of Arab transport fleets, particularly, those belonging to any or to a group of the OAPEC member states, like that of the Arab Tankers Company, will guarantee a certain degree of operation for ASRY's dry dock whose servicing capabilities are synchronized with with the increase in the number of vessels in Arab fleets. The ASRY dry dock satisfies the essential preoccupation of vessels without being forced to change their journey lines. It is for this reason that the ASRY site in Bahrain provides it with a substantial advantage in relation to vessels which visit the different Gulf harbours.

I/ "The Arab Ship Building and Repairing" in: OAPEC Bulletin, Vol. I, No. 2, Kuwait, OAPEC, November I975, pp. 8-I0. Text in Arabic.

The Prospects for a Second Dock

229. The dry-dock was conceived by OAPEC around 1974-1975 at the time when the demand for VLCCs was very high. Later the demand for the VLCCs has gone down and the crisis struck the trade of oil. While this has not deeply affected this year, ASRY is paying close attention to this situation and studying the second dock. The study prepared in connection with the second dock has proved that it is much more difficult to determine its right size. However, there are already more than eight hundred of the VLCCs, existing or to be delivered, and this involves such a huge investment that it would difficult to think that the VLCCs are likely to be scrapped. They must continue the trade and to be repaired. Moreover, ASRY has the advantage of being located in a part of the world which attracts tankers for repair, particularly since most tankers arrive empty and in a condition which require repair. But future prospects are slightly different because it is necessary to anticipate the size of the vessels which for the next ten years will call on the Gulf for servicing. Therefore, the construction of the right size of the docks is necessary in order to aviod expensive investment.

230. As far as shipyards in other areas of the world are concerned, many of these are not competing with ASRY because they are serving a different market, i.e., providing shiprepairing facilities for all carriers. It is a completely different market, and ASRY does not consider them in relation to the tanker market. As for the competitors outside the Gulf area, these are to be found in the Mediterranean area, now that the Suez Canal has been opened, and perhaps other shipyards may develop in Africa. Even in this case, ASRY has the advantage of being ideally located in Bahrain.

231. It should be emphasized that the project aims at developing industry in the Arab Gulf area and at providing professional and technical training for nationals of ASRY member countries in the fields of ship repairing, maintenance and building. Thus, the dock constitutes a practical step for the transfer of know-how and technical expertise. At its first stage the dock will confine itself to ship repairing; later the project will go into industrial manufacturing, including the construction of vessels.

Chapter VII

CONSTRUCTION AND HOUSING, ELECTRICITY, WATER AND SEWAGE

Introduction

232. The country's principal natural resource - oil - is running out, and the drive is on to diversify quickly into becoming a service centre for the Gulf. To attract the offshore banking units, offshore companies and international air and sea traffic (which Bahrain has successfully done), the country's infrastructure was greatly improved. However, with this success and its attendant rise in the economic standard of the indigenous population, the demands on the country's infrastructure have grown proportionately. The proposed construction in the middle of the next decade of an US$800 million causeway to Saudi Arabia (by which Bahrain hopes to become a major gateway to its big neighbour's Eastern Province) will impose even greater strains.

233. The strength of this new demand is strikingly reflected in Bahrain's current budget. Out of the US$362.5 million allocated for projects, nearly US$92 million has been set aside for housing and US$87 million for electricity, which together make up almost 50 per cent of the total.[1/] This policy aims at consolidating the infrastructure so as to become compatible with economic growth in various fields.

1/ Some structural Bahrain problems: The Financial Times, London, Monday, 3 April 1978. Special Report on Bahrain.

Sea Transport

234. Bahrain's main port in Mina Sulman, which was built in 1961. The port provided berth facilities for six ocean going vessels up to 30 feet draught, with modern tugs, cargo handling and bunkering facilities. There are two small specialized ports, namely the Sitra jetty, which is the oil terminal for the oil refinery, and the Alba jetty, which serves the aluminium smelter. The Sitra jetty can accommodate six small tankers (35,000 tons) for refined products; and the Alba jetty can berth three ships of 35,000 tons each.

235. Ships calling at Mina Sulman increased from about 600 in 1971 to about 900 in 1977, and cargo handled increased by two and a half times during the same period. This increase, particularly of the large ships, led the GOvernment in 1972 to decide to expand the port. This decision was reinforced by the economic boom following 1973. During the boom years, the sharp rise in traffic resulted in considerable pressure on the port facilities, leading to severe traffic and cargo congestion. The waiting time for ships during 1976 varied from 55 to 60 days. The Government took a number of temporary measures to reduce the congestion and at the same time proceeded with its expansion project for the addition of six more berths.

236. The temporary measures included hiring a Korean firm capable of unloading merchandise at twice the previous speed, constructing four temporary berths, increasing storage fees, and limiting the storage time. As a result, by 1977 there was no waiting time, and the port surcharge was eliminated.

237. Expansion of the port by sixe more berths and dredging it to a depth of 36 feet is estimated to cost BD60 million. Also, the port will have a container terminal capable of handling first and second generation containers.

Completion of all the six berths is expected by early 1979. Two berths have already been completed.

238. Although full cost recovery of the six new berths may not be achieved for some time, authorities believe that the new berths will eventually be fully utilized. Port authorities contend that, despite the rapid expansion of port facilities in the neighbouring ports, particularly in Saudi Arabia where the neighbouring Dammam port is five times larger, ships still prefer to discharge their Saudi cargo in Bahrain. They also believe that the competitiveness of Mina Sulman with the Saudi ports will increase when the causeway is completed, since it will be more convenient and faster to transship goods destined for Saudi Arabia via the causeway. Finally, the establishment of a joint venture between Bahrain and New Zealand for warehouse and cold storage for meat and agricultural products in the free zone of Mina Sulman is expected to add substantial demand for container facilities at the port. The cold storage will have a capacity of 8,100 tons and may lead to cargo of 200,000 tons a year. The bulk of the stored products will be transported by trucks across the causeway and sold in the Saudi markets.[1/]

The Saudi Causeway

239. The proposed Saudi causeway will be about 22 kilometers long, linking Bahrain island to the Saudi mainland. Tenders for the construction of the causeway were called in November 1978. Its estimated cost is about $800 million, which will be financed by Saudi Arabia. This causeway will have 4 lanes and a number of navigational openings to allow the passage of ships. The construction period is estimated at 4-5 years. Technical and economic feasibility studies for this project began early in 1975 with some

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1/ WORLD BANK: Report No. 2058-BH? Bahrain Current Economic Position and Prospects, pp. 26-27.

World Bank assistance.

240. The causeway includes adequate approach road system at each end, which were coordinated with road development plans.[1/] It is also expected to induce the development of road transport between Bahrain and the neighbouring Gulf countries, and will link Bahrain with the rest of the Arab world and Europe. This is expected to give a boost to the entrepot and transit trade, Bahrain's main traditional activities.

241. The construction of the causeway to Saudi Arabia will also help in the integration of Bahrain manufacturing with the development of the Saudi east coast. Products should range from welding electrodes to traffic signs, concentration on those items where the demand is not large enough to interest large-scale enterprise. Consumer goods such as food products, paper goods, medicinal products and car accessories should find a market both at home and in the Gulf area. Service facilities for the repair and renovation of durable goods such as air-conditioning equipment, typewriters and electric motors should be feasible.[1/]

Construction and Housing

242. The economic boom in Bahrain and neighbouring OPEC countries which followed the 1974 increase in oil prices, was led by the construction industry. Foreign enterprises has avidly sought business in the area which resulted in a sharp rise in demand for office space and accommodation for employees. This was accentuated by the easy access to construction money from the governments and banks. Between 1973 and 1977 the cost of construction more then tripled. As a result, during 1973-1977 the construction sector recorded

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1/ WORLD BANK: Report No. 2058-BH, Bahrain Current Economic Position and Prospects, pp. 16 + 25.

an annual growth rate of about 55 per cent in current prices compared to an annual growth rate of only 15 per cent in real terms recorded during the same period.[1/]

243. No reliable statistics are available on the number and type of construction permits issued during the boom years. However, it is estimated that about 2,000 houses were constructed during 1975 and 4,000 annually during 1976-1977.

244. One of the consequences of the construction boom was the emergence of a number of local construction industries, and local contractors. There was also an increase in the sophistication of private investors who instead of investing individually began to pool their capital and form investment companies capable of obtaining larger loans and undertaking larger construction projects. However, the construction boom added to inflationary pressures and posed a serious threat to urban enviroment raising serious questions about the adequacy of existing zoning regulations, construction codes, and the capabilities of municipalities. The desire of Bahrain to become an attractive centre for international business and finance, and its massive investment in infrastructure projects for this purpose calls for a clear urbanization policy and physical and city planning to preserve the country's beautiful natural enviroment and ensure a healthy urban surrounding.[1/]

Housing Policy and Planning

245. The Government provides low-cost houses at prices which can be afforded by the lower-income groups. For the sake of reducing crowded conditions in Manama, the Government has been dispersing its public

1/ WORLD BANK REPORT No. 2058-BH, Bahrain Current Economic Position and Prospects, pp. 16-17.

housing and construction projects over the islands, and adopting modern planning for the newly emerging communities. The best example of these modern public housing schemes is Isa Town, about 4.5 miles outside Manama. The first stage of the town with about 1,700 houses, together with the needed social services, was completed in 1968. Since then the town has expanded in all directions.

246. The boom of 1973 and its consequent sharp demand for houses by foreign companies has led to a rapid rise in rent and construction costs. It is reported that the cost of construction per square foot increased from BD6 in 1973 to BD20 in 1977, and for the same years the monthly rent for an average sized apartment increased from BD50 to BD500, and for an average house (villa) from BD80 to BD800. This made it impossible for the lower-income groups to obtain decent housing.

247. In July 1974, a national housing study was commissioned, and in July 1975 was submitted to the Government. The study concluded that Bahrain would be facing a serious shortage of houses over the coming decade, and needs 2,500 houses a year to tackle the housing problem. The study also suggested the establishment of a public body for that purpose. As a result, the Ministry of Housing was established in August 1975 to carry out the Government policy of providing low-cost housing for the low-income group.

248. Motivated by the considerable profit opportunities, the private sector has responded well to the sharpyly rising demand for more expensive housing. A large number of these types of houses have been constructed. In fact, when economic activities in 1977 slowed down, the supply of houses was greater than demand, resulting in a drop in rent.

248. The public housing programme consists of two parts: construction and loan programmes. The construction programme involves the construction by the Ministry of Housing of 2,000 housing units a year. These houses, which are constructed largely by local contractors, are then sold by the Ministry of Housing to low-income people at prices calculated on the basis of the individual's ability to pay. This usually means 50 to 75 per cent of the cost. The beneficiary pays by instalment over 20 years. Houses constructed in 1976 and 1977 numbered 2,291 and 1,478, respectively.

249. The loan programme involves the provision of construction loans up to BD20,000. These loans are given to citizens who can afford to construct a house on their own property. Land is usually provided free by the State. The loan is for 25 years, and it is interest-free. About 80-90 per cent of the loans have been for home construction, and the remainder for home improvement and extension. In 1977, the Ministry approved 1,000 applications for housing loans, of which 57 per cent were provided to government employees and the rest to private citizens.

250. The current target of the Ministry of Housing is to construct 2,000 units a year by 1982. The estimated cost per unit for 1978 was BD13,500, and the capital expenditure estimated by the Ministry is BD47.3 million for 1978 and 1979, and BD30 million a year for 1980-1982. The Ministry's long-term plan is the completion of its housing construction programme by 1985. Occupancy per room is to be reduced from 2.67 to 1.5. This is to be followed by a large renovation programme in the old sectors of the city to preserve the traditional old houses and buildings.

The Three-Year-Plan for Housing

251. The Government is to invest BD75 million ($195.4 million) in a three-year plan for housing. Investment will be BD15 million ($39.1 million) in 1979, increasing to BD30 million ($78.1 million) in both 1980 and 1981. The Government hopes pension funds and commercial banks will also invest in the plan.[1/] A housing bank, under consideration for some time, was to be set up to provide low interest loans on long terms to Bahraini house buyers. The interest rates may be 5-6 per cent, for 25 years. Sources in the Ministry of Housing indicated that although the aim is to build homes, the programme is also designed to help local contractors and to boost the economy.

252. The housing allocation is part of a programme for the construction of 2,000 low-income and middle-income homes per annum between 1977 and 1986. Prefabricated units are the basic ingredient of the programme, and system building of various sorts is its keytone. Speed is of uppermost importance. The Bahraini population is growing by 3-4 per cent a year, and it is the Government's desire to spread the country's new prosperity as quickly as possible.

Electricity

253. Electricity was introduced in Bahrain in 1929 when the diesel generators in Ras Rumman power station were inaugurated. Electric power in Bahrain today is generated by stations owned by three separate organizations: the Government, BAPCO, and ALBA, with installed capacity of 290 MW, 60 MW and 300 MW, respectively. It is, therefore, clear that ALBA's capacity is a little more than that available for the domestic use of the whole country.

1/ "Bahrain Government to Invest $195.4 million on Homes", in: Middle East Economic Digest (MEED), Vol. 23, No. 5, London, February 1979, p. 18.

Access to electricity in Bahrain is very high amounting to about 98 per cent of the total population. The rising standard of living and the consequent rise in the use of air-conditioning coupled with the increase in the number of industries have resulted in a rapidly rising demand. For example, between 1970 and 1977, units consumed increased at 25 per cent annually. This had led to severe pressure on the air-conditioning requirements. During the years 1973-1977 the demand for electricity was so high that the Electricity Directorate had to resort to borrowing electricity from ALBA. In the past four years, demand had grown by 30 per cent per year.

254. Peak demand last summer (at the height of air-conditioner use to cope with Bahrain's sweltering temperatures and humidity) was 223 MW, which in theory was comfortably covered by production capacity of 280 MW. However, the threat of power cuts due to mechanical failures or to shut-down for unforseen maintenance work was always there. If, as expected, demand grew by another 30 per cent in 1978, the existing capacity would have failed to be adequate.

255. To meet this rapidly rising demand, the Government has accelerated its expansion of the power generation capacity. Between 1965 and 1975 installed capacity of Manama power more than tripled rising from 41 MW to 133 MW. Also, in 1972 work began on the construction of a new large steam turbine power station at Sitra with a capacity of 120 MW at a cost of BD30 million. This station also included a water desalination plant for 5 million gallons of water a day. Initial schedule was for the completion of the project in four stages by 1985, but implementation was accelerated rapidly, and the project was completed in 1977. In addition, a second gas turbine power station in Muharraq with installed capacity of 40 MW was completed in 1977, bringing the total installed capacity in that year to 290 MW.

256. Moreover, to ensure the availability of adequate power supply in the future, the Government is now constructing a fourth power station at Rifa with a capacity of 200 MW. The first phase of 100 MW is due for completion in August 1978, and the second stage in 1979. The cost of this project is estimated at BD30 million. Total investment in electricity (including water desalination) amounted to BD127 million over the past five years (1974-1978) and is projected at BD117 million over the next five years (1979-1983). The Arab Funds have been the main source of financing for these projects. The Government recently appointed consultants to assess future power needs, and is also contemplating importing power from Saudi Arabia across the causeway during 1985-1990. Bahrain has, therefore, embarked on an ambitious 10 year programme, the first part of which is the construction of a fourth generating station at Rifaa at a cost of $75 million. The first 100 MW stage of the Rifaa plant will be completed in July or August and the second 100 MW stage is to be finished next year.[1/]

257. In addition to ensuring the availability of power, the Directorate of Electricity is making serious efforts to economize in its use. Power in Bahrain is heavily subsidized. The rates are too low which is encouraging waste. As a first step, the Directorate changed the rate structure from a flat rate of 5 fils per KWh to 5 fils per KWh for the first 1,000 KWhs, and 12 fils per KWh for each additional unit consumed. The next step will be to differentiate rates between commercial and home users. The Directorate is also intending to base its rate structure on the real cost of electricity by shadow costing the gas used instead of the present practice of assuming zero cost.

1/ "Some structural Bahrain problems in The Financial Times, London, Monday, 3 April 1978. Special Report on Bahrain.

258. Implementation of these objectives would be made easier, if the Electrical Directorate is granted autonomy. This will also enable the Directorate to recruit the needed qualified technical staff which hithero has not been able to do so, because it could not recruit at a higher than the Government scale, which resulted in the loss of many of its qualified staff to the higher paying private enterprises and to neighbouring countries. Finally, to enable the Directorate to function more effectively, there should be planning and co-ordination between it and other Government agencies who undertake projects that require electricity. This will avoid the present situation of having projects completed without the prior knowledge of the Directorate which is blamed for not being able to provide electricity on time.[1/]

Table 57: Electricity Production and Consumption

Year	Installed Capacity (Megawatts)	Peak Load (Megawatts)	Units Produced[a/] (KWH)	Number of Consumers
1970	79.8	60.8	243.3	42,000
1971	79.8	67.8	257.5	44,000
1972	92.0	73.0	283.2[b/]	46,000
1973	92.0[c/]	93.0[c/]	331.0	48,000
1974	92.0[c/]	108.0[c/]	395.0	50,000
1975	161.0	143.0	505.0	52,500
1976	230.0	171.0	682.3	54,000
1977	290.0	223.0	896.0	59,500

Source: Statistical Bureau, Ministry of Works, Electricity and Water.

a/ Excluding losses in transmission.

b/ 7.2 million is the contribution of ALBA to the domestic consumption.

c/ Difference in installed and peak is made up by ALBA power station.

1/ WORLD BANK: Report No. 2058-BH; "Bahrain Current Economic Position and prospects", Washington, 28 June, 1978, pp. 28+29.

Table 58: Monthly Electrical Generation, Maximum and Minimum Loads, 1976

Months	Electricity Generated MW	Maximum Load MW	Minimum Load MW
January	30.4	65.4	28.0
February	28.6	64.5	67.5
March	29.5	64.8	22.1
April	33.7	76.0	27.6
May	58.2	127.1	48.1
June	76.1	152.6	69.2
July	85.0	158.0	64.0
August	91.6	171.0	88.0
September	94.0	171.0	92.6
October	79.6	158.0	70.0
November	41.2	89.5	37.0
December	34.4	68.3	35.0
All year	682.3	171.0	22.1

Water

259. The demand for water is also growing apace, and the situation is made worse by the increasing salinity of the country's ground water supply. The causes and possible extent of the problem are not fully understood, but a strict monitoring programme has been established. As more and more ground water is extracted, sea water increasingly enters the aquifer, from the east to the west.

Table 59: Water Consumption
(In millions of imperial gallons)

Months	1973	1974	1975	1976	1977
January	389	402	422	464	574
February	385	377	396	435	564
March	418	424	446	4[illegible]0	596
April	424	434	456	501	601
May	458	465	489	53[illegible]	619
June	461	473	497	547	639
July	482	510	535	589	669
August	597	505	541	595	678
September	495	499	523	575	664
Ocotber	487	512	538	591	674
November	444	468	491	541	620
December	427	448	470	517	571
Total	5,467	5,517	5,804	6,382	7,469

Source: The Water Supply Directorate.

260. While studies continue to determine the extent of Bahrain's aquifer and any possible links with aquifers in Saudi Arabia, Bahrain is pressing ahead with its programme to meet growing domestic need with more desalination capacity. Domestic demand is currently running at 12 million gallons per day and is expected to rise to 20 million gallons per day in 1983. The Sitra power station now has two desalination units each producing 2.5 million gallons per day, and expansion plans envisaged a rise in output to 20 million gallons per day in order to produce 30 million gallons after blending the ground water to meet the domestic requirement by 1985. Tenders are expected to be invited later this year for three desalination units each producing 5 million gallons per day. The country's overall water supply programme which also comprises extensive pipelaying, pump installation, new control

facilities and the construction of elevated and ground-level storage tanks, began in 1974 and is scheduled for completion in 1980, with the extension of the minor networks to follow. The cost of the programme is estimated at $125 million.

261. Like the electricity and water programme, Bahrain's US$162.5 million sewage project is also moving ahead briskly. Feasibility studies began in late 1974 and the project is fast approaching completion with the main trunk line expected to be in place by mid-1979. It involves the installation of a complete system to serve all of Bahrain's metropolitan areas, including 30 pumping stations and a treatment plant to recycle sewage into water for agriculture.[1/]

1/ Some structural Bahrain problems in: The Financial Times, London, Monday 3 April, 1978. Special Report on Bahrain.

Chapter VIII

FOREIGN TRADE

Introduction

262. While Bahrain's economy is strongly integrated in the international market economy, its foreign trade reflects a differential and an imbalanced geo-economic spread. This is due to under-development of the economy, lack of correspondence between its supplies and exports, specialization in oil refining and exportation and dependence on manufactured goods, intermediate commodities, consumer goods and foodstuffs. The country's geographic location and its role in regional and international trade are other important determinants of the geo-economic spread of its foreign trade.

263. Bahrain's foreign trade suffers from a structural deficit which fluctuated between 1970 and 1978 and, at the end of this period, multiplied by more than four times. Considering the non-oil sector, the value of its imports (CIF) and its balance of trade deficit have both multiplied by five times over the period 1970 - 1978, inspite of an increase of more than six times in the value of export (FOB). Bahrain has boosted its non-oil imports, especially since 1973, as well as its non-oil exports. As a result, the deficit in non-oil balance followed a similar trend between 1973 and 1978.

264. The Bahrain trade balance showed a deficit of BD72.6 or US$187 million, in 1977; exports amounted to BD730.1 million and imports to BD802.7 million.

The Commodity Structure of Exports

265. Integration in international markets appears also in Bahrain's exports. Oil extraction and refining continue to dominate Bahraini total exports. Price increases had reinforced the value of oil exports in total exports. This could be observed over the period 1976-1978 where mineral fuels, lubricants

and related minerals, including refined oil and Abu-Saafa exports, represented more than 75 per cent of total exports in 1976 and almost 80 per cent in 1979.

266. Manufactured goods, including aluminium exports, represent a second but far less important item in Bahraini exports. In 1976, manufactured exports represented 14 per cent of total exports, compared with less than 12 per cent in 1978. This indicates that the growth of manufactured exports in value has not coped with the growth in the value of oil and oil products.

267. Machinery and transport equipment represent a third but very simple item in the commodity exports. In 1976 they represented almost 5.8 per cent of total exports, and only 4.1 per cent in 1978. Regarding exports valued at slightly more than 3 per cent of total exports in 1976, and at about 2.2 per cent in 1978, will probably be more affected in future years by the general development of the ports and trade infrastructures in the various neighbouring Gulf States.

268. Food and livestock represent a minor item in commodity exports; even if we add beverages and tobacco exports, they represent only 1.8 per cent of the 1976 exports, and only slightly more than 1.2 per cent in 1978. While beverages and tobacco have marginally increased, food and livestock exports declined because of the increased consumption of food due to the population growth of Bahrain.

Oil Exports

269. Oil exports amounted to BD572.2 million, or to US$1,475.5 million in 1977, while oil imports increased to BD357.8 million, or to US$922 million. Consequently, the 1977 oil revenue of Bahrain rose to BD180.7 million (US$455.7 million), including revenues from ABU Saafa production.

270. Trade deficit in 1977 was related to the non-oil trade deficit of BD287 million due to the important public investments that had been undertaken, chiefly in housing and electricity. The deficit in the balance on current accounts amounted to BD49.2 million or US$126.8 million.

271. The oil sector has positively and constantly contributed to the country's foreign trade by reducing its global trade deficit. In fact, Bahrain has to import crude oil in order to fully utilize its refining capacity. Yet the almost tenfold increase in crude imports between 1970 and 1978 has been compensated, though not entirely, in value of oil exports including Abu-Saafa oil. In 1978, the last year of the period considered, the ratio of oil exports to oil imports became roughly 1.7 as compared with more than 2 per cent in 1970. In fact, the rise in the price of crude has affected and will continue to affect the value of the country's crude imports, while, at the same time, raising that of its oil exports. This is not the case in the other oil-exporting countries in the Gulf, whose domestic consumption and total refining capacity are below the quantity of their extracted and exported oil. Since Bahrain's oil production will continue to decline, one may expect a narrowing of the gap between the value of crude oil exports and imports. In the year 1979, crude oil imports totalled 476 million and exports 772.5 million. The ratio was already 1.6 in 1979. Such a decline in the ratio of exports to imports will consequently reduce the positive role played by exports of refined oil in total foreign trade. This is shown in table 60.

Table 60: Summary of Foreign Trade
(In million Bahraini Dinars)

End of Period	NON – OIL[1]			OIL[2]		TOTAL		OVERALL TRADE BALANCE
	Import (C.I.F.)	Export (F.O.B.)	Balance	Import (Crude)	Export[3]	Import	Export	
1970	80.1	25.2	- 59.9	37.6	78.5	117.7	103.7	-14.0
1971	109.1	30.1	- 79.0	39.0	97.4	148.1	127.5	-20.6
1972	106.8	45.9	- 60.9	58.3	106.5	165.1	152.4	-12.7
1973	128.0	59.1	- 68.9	76.3	132.4	204.3	191.5	-12.8
1974	176.0	71.7	-104.3	269.0	430.3	445.0	502.0	-57.0
1975	232.9	84.0	-148.9	240.9	391.8	473.8	475.8	- 2.0
1976	387.6	136.6	-251.0	272.2	463.7	659.8	600.3	-59.5
1977	444.9	157.6	-287.3	357.8	572.7	802.7	730.1	-72.6
1978	453.4	147.5	-305.9	338.8	585.5	792.2	733.0	-59.2

Source: State of Bahrain, Bahrain Monetary Agency, Statistical Bulletin; Vol. 5, No. 4 Bahrain, December 1979, Bahrain Monetary Bulletin, Department of Economic Research and Statistics, Table No.

1/ Statistics DIrectorate - Cabinet Affairs

2/ Oil Directorate - Ministry of Development and Industry

3/ Including Abu-Saafa

Oil Revenues

272. The second largest oil refinery in the Middle East is located in Bahrain. It is owned by Caltex. About 22.3 per cent of the input of the refinery comes from the Bahrain field, and the rest from Saudi Arabia via an underwater pipeline. The Bahrain field's input to the refinery has been declining slowly but steadily, by a total of about 17 per cent between 1972 and 1977. Meanwhile the Saudi input has risen by over 21.4 per cent over the same period. The input from Bahrain field is expected to continue to decline, perhaps at a somewhat accelerated rate, but input of crude from Saudi Arabia will probably increase proportionately. Because of the blending of Bahrain and Saudi crude in the refining, it may be convenient for balance of payments purposes to consider the refinery as a non-resident activity, and the Bahrain oil as exported when it reaches the refinery. Thus the various types of government oil revenue and expenditures by Clatex as export receipts.[1/]

273. Oil revenue accruing to the economy consists of six different categories. These are:[2/]

1. Abu Saafa field which is now the largest source of oil revenue, and whose proceeds are shared equally between Saudi Arabia and Bahrain;
2. revenues from the 60 per cent share in Bahrain field. The Government sells this crude to BAPCO at 93 per cent of the posted price;
3. royalties from the remaining 40 per cent of the Bahrain field which is owned by Caltex, amounting to 20 per cent of the posted

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1/ More recently Saudi Arabia committed itself to provide a further amount of Saudi crude oil for the running of the refinery. This has already been mentioned in a previous chapter on the oil refining industry.

2/ WORLD BANK: "Bahrain Current Economic Position and Prospects", 28 June, 1978, Washington, Report No. 2058-BH, pp. 43-45.

price on crude used to produce products for export, and 12.5 per cent on the crude used to manufacture products for the domestic market;

4. revenues from income tax on the 40 per cent owned by Caltex;
5. revenues amounting to 55 per cent of the net profit of the refinery imposed on products for both the export and the domestic markets;
6. the local expenditures of BAPCO.

274. Bahrain's major source of oil revenues is the Abu Saafa field. This source is estimated to have provided Bahrain in 1977 about BD91.6 million ($237 million), or about 45 per cent of total income from the oil sector. This source has been growing rapidly and has more than compensated for the decline in production from the Bahrain field. According to the 1978 and 1979 budget projections, Abu Saafa revenues are expected to be lower in these two years than in 1977, but this may simply reflect conservative budgeting. Crude production in that field has fluctuated during the last five years. The second most important source of revenue is the sale of crude from the 60 per cent portion of the Bahrain field owned by the Government. After crude production costs, this source is expected to yield about $124 million in 1978, or about 24 per cent of total oil revenues. The third important source is the 85 per cent tax imposed on the net profit from the 40 per cent of the Bahrain field stilled owned by Caltex. This is likely to be about 16 per cent of Bahrain's 1978 oil receipts. The remaining oil revenues accrue from the 55 per cent tax on the refinery's net profit and on the domestic sales of petroleum product.

275. The Government thinks about acquiring the remaining 40 per cent of the Bahrain field, but since the present government receipts on this portion is only about 60 US cents per barrel less than that from Bahrain's own share of the Bahrain field, the complete takeover of the field is not likely to have much effect on oil revenues.

276. There are obviously many imponderables in trying to forecast Bahrain's oil revenues. The most uncertain factors are the performance of the Abu Saafa field and changes, if any, in the posted price. The decline in Bahrain production, now estimated at about 6.5 per cent a year, seems fairly certain despite the continuing re-injection of natural gas. Future discoveries are not regarded as likely, although one source suggested that more exploration off the east coast would be warranted.

Other Exports

277. With diminishing oil receipts, the ability of Bahrain to generate other exports, or to substitute domestic production for imports, is a matter of great importance. Unfortunately, available statistics do not distinguish between exports and re-exports originating in Bahrain, nor give any indication of the value added in Bahrain which is exported. Port authorities estimate re-exports at 25 per cent of the volume of imports. Since foreign trade in alumina and aluminium is handled outside of the jurisdiction of the port authorities, it may be necessary to subtract 40 per cent of imports from Australia,[1/] the source of alumina for Bahrain, from total imports, and also exports of aluminium from total exports when calculating the volume of exports of goods of Bahraini origin. It would be very hazardous to draw any conclusions from such a rough exercise as far as the yearly data are concerned. It, nevertheless, appears that re-exports are declining as a percentage of

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1/ Middle East Economic Digest, March 1978, p. 29 of supplement on Bahrain.

total exports. Another source estimates that about half of exports (other than oil and aluminium) consist of re-exports. On this basis exports of goods of Bahraini origin (other than oil and aluminium) seem to have increased in real terms by over 13 per cent a year since 1972. The recent evolution of the export of commodities is shown in tables 61 and 62.

Commodity Exports and Re-exports to Arab Countries

278. Saudi Arabia, the United Arab Emirates, Kuwait and Qatar are the main importers from Bahrain. Textiles and clothings, mainly exported to Saudi Arabia, constitute the first commodity in the exports and re-exports from Bahrain. Cereals and cereal products, tobacco and cigarettes are second in importance and electric machinery constitutes the third important category, followed by intermediate and semi-finished products, namely, iron and steel.

279. While Bahrain is strongly intergrated into the West European, Japanese and US markets, with its trade with the Far East soaring, its foreign trade with the Arab countries is very limited. Arab countries range far behind other partners in Bahraini imports (Saudi Arabia and Lebanon ranged 16th and 17th in the list of exporters to Bahrain in 1974). On the other hand, due to the value of their exports and re-exports to Bahrain, its neighbouring Arab Gulf countries were among the first nine importers from Bahrain (Saudi Arabia was second, Dubai third, Kuwait fifth, Qatar eighth, Abu Dhabi ninth in 1974).

Table 61: Composition of Non-Oil Exports (f.o.b.)[1/]

(In millions of Bahraini dinars)

	1972	1973	1974	1975	1976	1977
Food and live animals	6.5	7.6	7.9	4.9	8.2	8.4
Beverages and tobacco	0.9	1.3	1.5	1.9	2.6	2.4
Manufactures, classified chiefly by material	22.2	34.3	39.7	47.0	64.0	66.4
Machinery and transport equipment	6.0	4.3	8.7	13.1	35.1	44.2
Miscellaneous manufactured articles	9.0	9.5	11.7	15.1	22.9	32.1
Other	1.3	1.6	2.2	2.0	3.3	4.1
Total	45.9	59.1	71.7	84.0	136.6	157.6

Sources: Ministry of Finance and National Economy, and Statistical Bureau.

1/ Export and re-exports, f.o.b.; exclude gold and silver.

Table 62: Exports by Commodities Classified According to SITC

(In millions of Bahraini dinars)

SITC Classification	1976	1977	1978
0 - Food and Livestock	8.2	8.5	6.1
1 - Beverages and Tobacco	2.6	2.4	2.8
2 - Crude and Inedible Materials Exc. Fuels	1.6	0.7	2.0
3 - Mineral Fuels, Lubricants and Related Minerals[1/]	464.4	572.0	585.9
4 - Animal and Vegetable Oils and Fats	0.1	-	0.1
5 - Chemicals	1.3	2.7	3.2
6 - Manufactured Goods Classified by Material[2/]	64.0	66.4	85.4
7 - Machinery and Transport Equipment	35.1	44.2	30.2
8 - Miscellaneous Manufactured Articles	22.9	32.1	17.3
9 - Unclassified Groups and Actions	0.1	0.2	-

Source: Directorate of Statistics; Oil Directorate; Ministry of Development and Industry; Bahrain Monetary Agency. Quaterly Statistical Bulletin: Vol. 5, No. 4, Bahrain Dec. 1979; Bahrain Monetary Bulletin, Dept. of Economic Research and Statistics, Table No. 21.

1/ Includes Refined Oil Exports and Abu Saafa.

2/ Includes Aluminium Exports.

The Commodity Structure of Imports

280. Bahrain's economy is strongly dependent on foreign market for its supply. Its oil refinery is more a relay for the processing and exportation of oil rather than a fully and locally fed plant. Consequently, the refining sector is responsible for the imports of mineral fuels, lubricants and related minerals including mainly crude oil, which constitute the main item in the country's commodity imports. In 1979 this item represented almost 40 per cent of total imports. Machinery and transport equipment constitute a second major item in imports, with the value amounting to almost half of the first category of imports. Bahrain's imports of manufactured goods which include mainly alumina represent the third important import item, and is valued at a little more than one eighth of total imports. Other manufactured articles, grouped under Miscellaneous, accounted for a little less than one twelfth of total imports. Food and Livestock represent a small but significant item of the commodity imports to which Beverages and Tobacco could be added, amounting together to another twelfth of total imports.

281. Food imports rose considerably during the period 1970-1977. According to the US Department of Agriculture the value of these imports grew by more than 194 per cent, rising from US$30.6 million in 1970 to US$90 million in 1977 or at an average rate of 64.70 per cent per year during the period considered (see tables 63, 64 and 65). The reasons for the increase in demand are population growth and rising standards of living. Since agriculture has limited potentialities, it seems to be certain that Bahrain's dependence on food imports will continue to increase.

282. Referring again to the imports of food and livestock during the years 1976 to 1978, forwarded by the Bahraini statistical authorities (according to SITC), there has been a general growth in imports. Assuming that this trend is structural and will, therefore, be constant, it could be concluded that

Table 63: Bahrain's Agricultural Imports, 1970-1977

(Million US Dollars; per cent)

1970	1975	1976	1977	Total percentage change, 1970-1977	annual average change
30.6	64.3	74.0	90.0	+ 194.0	+ 64.7

Source: Department of Agriculture, Washington; Middle East Economic Digest, Vol. 22, No. 30, 28 July, 1978.

the import of crude oil, transport equipment, intermediate products and goods will continue to stimulate imports, relatedly with a constant deficit in food and livestock. The movement of imports between 1976 and 1978 is shown in the following table 65.

Table 64: Compostion of Non-Oil Imports (c.i.f.)[1/]

(In millions of Bahrain dinars)

	1972	1973	1974	1975	1976	1977
Food and live animals	14.9	19.6	24.9	24.5	39.1	42.8
Beverages and tobacco	2.9	4.0	4.6	6.0	8.6	10.2
Chemicals	13.1	16.0	14.8	18.5	22.0	30.9
Manufactured goods classified chiefly by material	26.7	29.2	48.1	57.0	96.1	106.3
Machinery and transport equipment	30.5	36.1	52.5	86.0	155.6	161.0
Miscellaneous manufactured articles	15.7	18.4	23.5	33.0	49.6	76.3
Other categories	3.0	4.7	7.6	7.8	16.6	17.4
Total	106.8	128.0	176.0	232.9	387.6	444.9

Source: Ministry of Finance and National Economy and Statistical Bureau.

1/ Excludes gold and silver.

Table 65: Imports by Commodity According to SITC, 1976-1978

(In millions of Bahrain dinars)

Code Number	1976	1977	1978
0 - Food and Livestock	39.4	42.9	51.2
1 - Beverages and Tobacco	8.6	10.2	10.9
2 - Crude and Inedible Materials Exc. Fuels	8.7	9.1	9.1
3 - Mineral Fuels, Lubricants and Related Minerals 1/	279.6	365.4	345.7
4 - Animal and Vegetable Oils and Fats	0.6	0.6	1.1
5 - Chemicals	21.5	30.9	39.0
6 - Manufactured Goods Classified by Material 2/	96.2	106.2	101.7
7 - Machinery and Transport Equipment	155.6	161.1	171.4
8 - Miscellaneous Manufactured Articles	49.6	76.3	61.8
9 - Unclassified Groups and Actions	-	-	0.3
Total	659.8	802.7	792.2

Source: Directorate of Statistics; Oil Directorate; Ministry of Development and Industry; State of Bahrain, Bahrain Monetary Agency; Quaterly Statistical Bulletin, Vol. 5, No. 4 Bahrain, December 1979; Bahrain Monetary Bulletin, Department of Economic Research and Statistics, Table No. 20.

1/ Includes Crude Oil Imports

2/ Includes Alumina Imports

Geographic Distribution of Foreign Trade

283. The Arab countries, mainly Saudi Arabia, followed to a much lesser extent by the United Arab Emirates, Kuwait and Qatar, are the main importers of non-oil products from Bahrain. In 1976 Bahrain's exports to Arab countries represented some 62 per cent of total exports. However, the share of Arab countries in total exports fell to around 42 per cent in 1978. Since Bahrain has been mainly a re-exporting center, it is difficult to separate re-exports from total exports. As Saudi Arabia has developed its own ports and increased its direct imports, Bahrain's export to Saudi Arabia fell by more than

200 per cent between 1976 and 1978 as shown in table 66. Although Bahrain will continue to be a regional exporting centre, the development of ports and other import infrastructures, mainly in Saudi Arabia and the United Arab Emirates, could reduce the relative weight of re-exporting activity in Bahrain's foreign trade. The lack of commodity classification of the Bahraini exports to Arab countries makes it difficult to project this category of exports over the next decade, notwithstanding future changes in the economic and import policies of these different countries.

284. Asian countries rank second in Bahrain's exports and have almost doubled between 1976 and 1978, with their share in total Bahraini exports rising from 20.9 to 53.4 per cent. Within the Asian group, Japan predominates, followed by Iran and Taiwan. The new gas deals and increased crude sales is likely to stimulate a stronger rise in Bahraini exports to Asia.

285. The European countries rank third in Bahraini exports. Already small, the value of these exports fell dramatically from 6.34 per cent to less than 0.15 per cent. Considering the predominance of European exports to Bahrain, the small and falling share of these countries in Bahraini exports shows that the geographical spread of Bahraini imports does not cope with that of its exports. Although this phenomenon applies also to Arab countries and, to a lesser extent, to Asian countries, the gap is too wide and striking in the case of Bahrain's trade with European countries. This could be explained in terms of the strucutre of the Bahraini economy. The Emirate imports substantial and increasing amounts of manufactured goods, transportation equipment, consumer goods and foodstuffs, but can export only limited aluminium and oil products to these countries. Since the prospects for significant increases in oil output are not very bright, and as the new gas exports are mostly destinated to Japan, Bahrain is not likely to improve its dramatic trade deficit with Western Europe unless it suddenly decides to shift its sources of supply to other groups of countries.

Table 66: Exports Of Non-Oil Products According to Country of Destination

(In millions of Bahraini Dinars)

Country	1976	1977	1978
Arab Countries	82,236	99,476	62,338
Kuwait	3,164	5,256	3,127
Saudi Arabia	68,219	80,511	31,931
Lebanon	34	83	5
United Arab Emirates	6,111	5,598	17,518
Qatar	2,885	3,559	1,572
Oman	138	144	189
Other	1,685	4,325	2,996
Asian Countries	40,688	48,141	78,874
Japan	25,685	23,513	51,778
Thailand	109	368	-
Taiwan	2,044	3,159	5,036
China	7,246	6,073	4
Singapore	83	126	818
Pakistan	198	410	238
India	109	658	2,345
Iran	5,157	14,020	13,672
Indonesia	35	49	157
Hong Kong	18	68	9
Other	3	15	4,449
European Countries	8,658	2,840	218
Belgium	-	11	6
Denmark	-	-	4
West Germany	54	69	4
France	178	135	1
Sweden	-	-	-
Netherlands	2,227	602	69
United Kingdom	4,241	262	114
Other	1,958	1,762	20

(continued)

Table 66: Exports Of Non-Oil Products According to Country of Destination (cont.)

(In millions of Bahraini Dinars)

Country	1976	1977	1978
American Countries	2,464	3,644	613
United Sates of America	2,022	3,644	612
Canada	-	-	1
Other	440	-	-
Ships Supplies	2,529	3,436	4,755
Aircrafts Supplies	-	43	745
Total	136,604	157,602	147,545

Source: Directorate of Statistics; State of Bahrain; Bahrain Monetary Agency, Quarterly Statistical Bulletin, Vol. 5, No. 4, Bahrain, December 1979, Bahrain Monetary Bulletin, Department of economic Research and Statistics, Table No. 23.

Table 67: Bahrain's Trade With Major Partners (1976)

(In millions of each country's Currency)

Country		Exports	Imports	Balance
United Kingdom	(£)	89.6	30.1	59.5
France	(FF)	139.1	8.0	131.1
West Germany	(DM)	156.0	29.8	126.2
Belgium-Luxembourg	(francs)	331.0	91.8	239.2
India	(rupees)	166,651.8	144,987.5	21,664.3
Pakistan	(rupees)	173.0	137.0	36.0
Japan	(yen)	32,212.3	67,777.0	-35,564.7
South Korea	($)	40.8	0.2	40.6
Singapore	($ Singapore)	70.6	240.4	-169.8
Thailand	(baht)	31.6	223.8	-192.2

Source: MEED? Annual Review, 31 December 1977.

Geographical Distribution of Imports

286. Western Europe has strongly reinforced its predominant position in Bahraini imports between 1974 and 1978. The share of the main West European countries (EEC and Scandinavian countries) jumped from 28.1 per cent of total imports in 1974 to 40.4 per cent in 1978. The United Kingdom and West Germany were the main suppliers of these imports. The position of the USA has substantially declined from 18.1 per cent of Bahrain's total imports in 1974 to 11.8 per cent in 1978. However, due to the commodity structure of these imports it may be assumed that this trend is unlikely to continue. In the meantime, Japan has strengthened its position by raising its share of Bahraini imports from 13.2 per cent in 1974 to 14.4 per cent in 1978. The growth of Bahraini imports from other Asian countries seems to have lagged behind the moderate increase in Japanese supplies to Bahrain (see table 68).

287. Australia has almost maintained its position by providing 5.7 per cent of Bahraini imports in 1974 and 5.6 per cent in 1978. Unless Bahrain moves to another supplier for the feeding of its aluminium smelter, it is unlikely that a significant shift in Australian-Bahraini trade will occur in future years. Among Arab countries, the main suppliers of goods and services to Bahrain were Saudi Arabia and Lebanon, and the shares of these two countries which are already etremely limited fell from 1.5 per cent for Saudi Arabia and 1.4 per cent for Lebanon in 1974, to 1.0 per cent for the former and 0.3 per cent for the latter in 1978.

Table 68: Imports of Non-Oil Products According to Country of Origin

(In thousand Baharaini Dinars)

Country	1976	1977	1978
Arab Countries	20,064	17,682	25,302
Kuwait	3,641	2,343	4,097
Saudi Arabia	5,483	3,344	4,286
Lebanon	1,220	1,010	1,561
United Arab Emirates	7,445	8,586	10,120
Qatar	1,525	1,003	1,574
Asian Countries	137,666	163,776	146,412
Japan	53,737	68,944	65,260
China	15,205	24,591	8,138
Singapore	9,296	11,166	9,560
India	13,350	13,837	12,397
Hong Kong	7,278	10,231	9,036
South Korea	18,999	12,281	19,297
European Countries	148,637	180,844	197,914
West Germany	24,845	26,179	36,754
France	9,460	11,312	10,828
Italy	8,808	14,611	17,590
Netherlands	10,590	9,969	9,383
United Kingdom	68,369	87,036	90,182
Other	15,063	16,650	17,930
American Contries	59,500	56,489	55,766
United States of America	57,396	53,269	53,651
Oceanic Countries	20,726	24,503	26,907
Australia	19,911	22,989	25,592
Total	387,644	444,974	453,344

Source: Directorate of Statistics; State of Bahrain, Banrain Monetary Agency, Quarterly Statistical Bulletin; Vol. 5 No. 4, Bahrain, December 1979, Bahrain Monetary Bulletin, Department of Economic Research and Statistics, Table No. 22.

Chapter IX

PROSPECTS FOR THE BAHRAINI INDUSTRY

GLOBAL ILLUSTRATIVE PROJECTIONS

Projections of Total Population

288. According to Government sources, Bahrain population added up to 308,900 inhabitants in April 1978 and was expected to double prior to January 1985. Thus, by 1985 the number of population will exceed 616,000 inhabitants reflecting an average compound rate of growth of 7 per cent during this period.[1/]

289. If the population is to pursue its increase at the same rate over the period 1985-1990, its total number will increase again by 35 per cent, to 831,600 inhabitants by the year 1990. A further projection at the same rate of population growth over the period 1990-2000 will produce an additional 70 per cent increase, bringing the total population of the country to some 1,413,000 inhabitants by the end of the century.

Prospects of Gross National Product for 1980, 1990 and 2000

290. Bahrain's Gross National Product at current market prices was BD133.0 million in 1973 and rose to 548.4 million in 1977. Taken at constant 1977 market prices, the Bahraini GNP was valued at BD412.7 million in 1973 and BD548.4 million in 1977. This represents an increase of BD135.7 million over the period 1973-1977, or an average rate of growth of 8.22 per cent per year.

1/ This rate combines both the domestic growth rate and the rate pertaining to immigration.

291. If the assumption that Bahrain's GNP continued to grow over the period 1977-1980 at the same rate that was achieved during the years 1973-1977, GNP would then be likely to increase by almost BD180 million, or to almost BD728 million in 1980. Pursuing the same trend, GNP may increase by about 82 per cent over the 1980s, or to almost BD1,327 million in the year 1990. Assuming the same rate during 1990s, GNP is likely to be in the neighbourhood of BD2,419 million in the year 2000.

Projections of Per Capita Product

292. According to Bahrain statistics Bahrain had a total population of 308,900 inhabitants in 1977. At that time, according to the World Bank estimates Bahrain's Gross National Product was BD548.4 million at constant 1977 market prices. This means that per capita product was about BD1,77.3, or some $2,965 for the year 1977.

293. If it could be assumed that the Emirate's GNP continued to rise at its previous 1973-1977 rate of 8.22 per cent per year during the period 1977-1985, GNP will add up to almost BD909 million in 1985, and on the basis of the projected total population of 616,000, per capita income will amount to nearly BD1,475. If the Bahraini economy and total population continued to grow between 1985 and 2000 at the rates assumed above, per capita income is likely to fall to almost BD938.5 by the year 2000 because the growth in total population is assumed to be higher than that of GNP.

Three alternative scenarios

294. Several alternative scenarios are, however, envisageable, based on different hypotheses for the growth of population and GNP:

The first scenario is based on a reverse trend based on two hypotheses; a) growth of population between 1985-2000 resulting from a government decision to dramatically stop immigration or from a dramatic fall in the growth of the local population. From a realistic point of view, a reduction in the local

rate of population growth due to smaller families and higher consumption may occur at the beginning of the mid-eighties and stretch to the end of the century, and b) GNP will pursue its growth at the same rate assumed above, namely, 8.22 per cent per year.

295. The second scenario could be played by adopting the hypothesis that, parallel to continuity in population growth, acceleration of growth in GNP will take place, leading to a higher and more systematic upgrading of resources, consolidation and further diversification of manufacturing and increased profitable services during the period 1985-2000. As a result, growth in GNP will sustain the population growth by preserving and probably boosting up the per capita income in the early 2000s. For this scenario to be seriously considered, a strong move by Bahrain to reinforce manufacturing and to promote systematically schemes of sectoral planning and other forms of economic co-ordination at the Gulf sub-regional level is required.

296. The third scenario combines the hypotheses of the two previous scenarios, thus simultaneously implying moderation in the rate of growth of population and multiplication of the GNP during the period 1985-2000. Population growth is likely to slow down and probably to stagnate later under the combined efforts of individualisation of social life, continuing organization, increasing consumption and the development of capital-intensive industries in the Emirate. On the other hand, the extension of first-processing industries and of oil-related infrastructural maintenance activities, as well as financial offshore banking, may all permit a consolidation and even an acceleration of the rate of growth in GNP during the years 1985-2000. As a result, per capita income may achieve an optimal performance and remain even above its level projected for 1985.

297. This scenario would be an optimal one for Bahrain's economic development. Precisely, it calls for a global and systematic regionalization of Bahrain's industry and total economy. This may develop to be the country's economic and political challenge in the next twenty years.

SECTORAL PROSPECTS FOR THE FUTURE

Agriculture and Fishing, 1980 and 1990

298. Increased efforts are made to consolidate agriculture and fishing through specific capital spending, tax policy, training and other policy measures. However, in spite of these efforts, the sector's gross product declined from BD10.2 million in 1973 to BD9.4 million in 1977, or at an annual average fall of 4.90 per cent, at constant 1977 market prices.[1] This devolution is due to limited agricultural potentialities and steady population growth; therefore, it is not unrealistic to assume constancy of this trend and to project the value of the agricultural and fishing gross product over the current period 1977-1980. On the basis of this assumption, the sector's gross product may fall by 14.7 per cent during the three-year period, 1977-1980, or to slightly more than BD8.0 million in 1980. Assuming that the sector will develop by following the same trend over the present decade, its gross product will fall by 4.9 per cent per year, or by 49.0 per cent between 1980 and 1990. In this case, gross product in this sector may fall to slightly more than BD3.9 million in 1990.

299. The conclusion which has to be drawn here is that unless Bahrain succeeds in dramatically increasing its agricultural productivity and output, it would have to face an even more grave agricultural and fishing deficit. However, a slowdown of demographic growth may limit the dimension of the

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[1] World Bank estimations.

agricultural problem which will confront the Emirate and, consequently, constitute a first alternative to those prospects. Another, more positive alternative could well be a boosting of the gross fishing products, which will probably be less problematic than the development of agricultural activity.

Oil Extraction and Mining, 1980 and 1990

300. During the 1970s Bahrain faced the very serious problem of a steady decline in the production of oil and depletion of its available reserves. Since the Emirate has been a small producer, the important price increases which took place failed even to maintain the real value of its oil gross product. Thus, the gross product of oil fell from BD209.0 million in 1973 to BD194.1 million in 1977, or at an average decline of more than 1.78 per cent per year.[1/]

301. Assuming that this trend continued over the present period, 1977-1980, the gross product of the oil and mining sector would have fallen by nearly 5.35 per cent, from BD194.1 million in 1977 to nearly 191.2 million in 1980. In fact, with the active current establishment of an associated-gas industry, it is expected that the gross product of the oil and mining sector will increase through an extension of its base into an all-hydrocarbons, crude oil and mining sector. But it is not yet possible to build plausible data on the new and growing product from associated gas. The accelerating alignment of the gas price to that of crude oil reinforces the potential for the new gas projects to sustain the sector's future product.

302. Looking at the ten years 1980-1990, two different hypotheses could be adopted for the assessment of the prospects of this primary sector for the 1980s.

1/ Because inflation was soaring in the 1970s, gross product of current market prices had actually risen considerably between 1973 and 1977. At constant 1970 prices it actually fell as shown above.

303. A first hypothesis would imply continuation of the trend observed in the period 1973-1977 and the extension of this trend over the most recent years 1977-1980 and over the next decade. In this case, the product generated in the oil and mining sector is likely to fall again at the same annual rate of 1.78 per cent, or by more than BD34.0 million over the next ten years to a new level of almost BD157.2 million in 1990. This fall represents some 17.8 per cent below the assumed 1980 level, 23.1 per cent below that of 1977 and 30.3 per cent below the initial base year of 1973. This would mean that unless some qualitative and positive changes take place in this sector, its gross product might likely fall by nearly one third between 1973 and 1990.

304. But another and not less plausible hypothesis would imply a significant change in the secotr's gross product, due to the newly established and rapidly growing associated gas industry. With the accelerating rise in the production of gas and the alignment of its price to crude oil, it may be justifiable to project stability in output in the short run in the early 1980s, and an increase in the gross product of gas for the mid 1980s.

Redeployment of Oil and Gas in the 1980s

305. In recent years the Emirate's domestic oil and mining sector has been gradually achieving redeployment within the hydrocarbons sector. While oil supplies have been decreasing constantly, gas supplies have been increasing. This is a continuing move which has important structural significance for the near and distant future.

306. As gas production is quickly approaching that of crude oil, one may expect two successive phases of development within the oil and mining sector:

Phase 1: Domestic crude oil reserves and output will continue to decline, but further oil price increases will tend to compensate, totally or to partially for the negative effects of the decline in oil supplies. At the same time, natural gas supplies will increase also, compensating partly for the decline in oil income. This phase may last from 1983 to 1985.

Phase 2: Domestic crude oil output will further decline, but oil prices may not cope with the resulting fall in revenue. Gas prices, however, are expected to compensate entirely for the losses in the crude oil branch, and even bring about the rise in total revenues derived from the sector which would allow total revenues to exceed all previously attained levels. This may take place between the middle and the end of the 1980s. At that time, Bahrain's oil and mining sector will become largely based on gas and mining.

It must be kept in mind that gas, like crude oil, is depletable. Furthermore, since it is being systematically used in large quantities to satisfy the country's own industrial and current non-productive consumption, this raw material will be consumed and depleted systematically and intensively.

Manufacturing, 1980 and 1990

307. Manufacturing is a sector which had witnessed a sharp rise during the years 1973-1977. This came as a combined result of simultaneous increases in the gross product of oil refining, aluminium smelting and processing, flour milling and other manufacturing activities. Taken as a whole, manufacturing gross product had risen from BD48.6 million in 1973, at constant 1977 market

prices, to BD115.1 million in 1977, or by 136.83 per cent. This represents an average growth of nearly 34.21 per cent per year. When looking at different branches of the sector, it will be noticed that oil refining, aluminium and other non-identified manufacturing undertakings were the main contributors to the sharp rise in the sector's global gross product. While the increase achieved by oil refining is mainly attributed to oil prices, the other increases, mainly those of aluminium reflected a combined effect of aluminium price improvements and a further upgrading of aluminium products.

308. If it could be assumed that the manufacturing sector's main branches will achieve the same combined performance between 1977 and 1980 as that which had been achieved in 1973-1977, the sector's gross product will rise by 72.6 per cent, or by nearly BD83.60 million, from BD115.1 million in 1977 to about BD198.7 million in 1980. The manner in which the price trend of both the oil and aluminium products have developed during the last three years seems to justify to a large extent the hypothesis of continuity in performance by manufacturing in Bahrain.

309. Furthermore, looking ahead over the years 1980-1990, and applying the same growth trend, one can forsee a total growth of 342.1 per cent over the decade 1980-1990. This represents a use in manufacturing gross product from BD198.7 million in 1980 to more than BD679.7 million in 1990.

310. Assuming that GNP, at constant 1977 market prices, will increase over the period 1980-1990 at an average of 8.22 per cent per year, it would be expected that Bahrain will achieve by 1990 a GNP whose value, at constant 1977 prices, will be 82.2 per cent higher than its projected level of 1980, or some 115 per cent higher than in 1977. This will add up to nearly BD728.7 million in 1980 and to almost BD1,327.7 million in 1990. Consequently, the share of manufacturing in GNP will represent more than 51 per cent. In qualitative terms, this will mean that by that time the Bahrain economy would

have been transformed into a largely manufacturing economy.

Bahrain's Apprehension of Local Industrialization

311. In spite of the abundant energy and feedstock made cheaply available for the hydrocarbon-based industries and in spite of the funds locally available, or provided by the various Gulf governments, industrializaion has not turned out to be a sufficiently convincing and encouraging experience. This is the real reason behind the relative turnaway from the income diversification strategy based on industrialization, a phenomenon which has been observed during the last three or four years, not only in Bahrain but also in the rest of the Gulf states. Severe climate, unilateral resources, shortage and inadequacy of local labour and the high costs of labour explain generally this discouraging decline of industrialization and its role in preparing the post-oil era. Although Bahrain is more and better equipped with its own important labour force than other Gulf states, the Emirates's oil sector yields no significant profits, while production and reserves continue to decline. Furthermore, Western interests are reluctant to bring in significant financial funds and to ensure marketing. These two factors were particularly emphasized in May 1978 by the Bahraini Minister of Development and Industry at a conference held in London.[1/] In a published report, the Minister said that, "It is no wonder that the industries along the Gulf have met and are meeting great difficulties. The only two advantages - cheap energy and the availability of financial funds - are eroded by the severe climate and the high cost of labour based on low productivity. Plans were initiated either by bankers with little idea of engineering, or by engineering firms with little idea of marketing."[2/]

[1/] "SHIRAWI Criticizes GUlf Industry Plans", int Middle East Economic Digest (MEED), Vol. 22, No. 21, London, 26 May, 1978.

[2/] A report published by the Bahrain-based GUlf Weekly Mirror, cited in MEED, 26 May, 1930.

Prospects for Industrial Branches

312. Three key variables are likely to influence the development of the different branches of industry in Bahrain during the current decade; these variables are:

a) expansion and growth of the industries of gathering and exporting associated gas.[1/]

b) The expansion and growth of the aluminium and petrochemicals downstream manufactures.

c) The multiplication and diversification of industrial undertakings, downstream to ship repairing.

313. Variables b and c will sustain a gradual and increasing move downstream of the industrial processing industries, thereby, embracing new and more upgrading processing sequences and slightly extending the degree of integration of the whole industrial sector. This will inevitably increase the share of these industries in total industrial labour employed.

314. Due to the failure to obtain information from ALUMINIUM BAHRAIN about its expansion programme for the forthcoming years, and because of the difficulties involved in assessing the various investments it would be difficult to percieve soundly the prospects of these industrial undertakings, particularly in the case of Bahrain, for the coming years in the current decade.

315. Projection of the recent rate of global growth in industrial output, particularly in manufacturing, assumes a certain constancy and ignores differential and changing increases in the various branches. Such a method reveals to be inconsistent and misleading, though often used in similar

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1/ While this variable will sustain the share of the primary hydrocarbons industries is the Gross National Product, its capital intensity will not allow a corresponding growth of their share in industrial employment.

country studies. Only detailed data on investment in the various branches and prospects over the future periods, as explicitely expressed by decision-makers, may allow consistent and, therefore, relevant assessment of the prospects. The author of a Ph.D. dissertation attempted to analyse industrialization and economic development in Bahrain by using an input-output method through which a parallel between growth in industry and in import trade was highlighted.[1/] The main conclusion drawn is that the industrial sector, composed mainly of large units of production, has extremely limited forward and backward linkages with the other sectors of Bahrain's economy. Therefore, he suggested that the country gives strategic priority to the establishment and development of new backward and forward-linking industries. The other components of a strategy for industrialization included the following:

1) To set up a specialized industrial body.
2) To elaborate, implement and follow-up on an integrated industrial programme aimed at providing the industrial sector with the basic forward and backward projects.
3) To provide, through the State, promotional and protective facilities to sustain private industry.
4) To adopt a Gulf-wide scheme of co-ordination as a determining framework and a dynamic point of entry to industrialization.
5) To adopt a sub-regional scheme of sectoral planning for such industries as the aluminium and steel. Such a scheme needs participation of the Gulf States in joint ventures and the sharing of the different and integrated sequences of these industries.

[1/] AL-MANA'I, Jassem: "Industrial Development in Bahrain", a doctorate dissertation, Paris 1979, La Sorbonne University; DEBBAS, G.: "Input-Output Table: Industrial Planning", Bahrain, March 1973, Ministry of Finance and National Economy (report prepared and submitted in 1971 to Bahraini authorities).

316. Contrary to its oil-rich neighbours, Bahrain does not allow for surplus revenues, and this could be looked at as a constraint to industrialization. In fact, this contraint has increasingly turned out to become a stimulus and an argument for entering into bilateral joint ventures or for promoting regional multilateral industrial projects. Simultaneously, the other Gulf states are attracted by the financial exemptions and other advantages granted for investments in Bahrain. Those states also appreciate the high level of skilled labour available in Bahrain and of Bahrain's statisfactorily developed infrastructure. Industrialization undertaken at the country level is handicapped by the Emirate's structural constraints, namely, limited skilled and skilled labour, problems with immigrant labour, difficult accumulation of oil and gas, narrow market. Meanwhile, region-wide industrialization located in Bahrain is increasing, and the Emirate's neighbours, who possess larger quantities of oil and gas and, therefore, have the capacity to create capital surpluses, are indeed anxious to benefit from Bahrain's privileging financial regulations and from its underpriced gas through participation in joint ventures and through the co-financing of different projects. For example, Kuwait had provided Bahrain's aluminium project with the necessary funds for the construction of its factories and facilities. At present, Kuwait is establishing a petrochemical venture jointly with Bahrain, and has recently offered a credit of 6.2 million Kuwaiti dinars through its Kuwait Fund for Arab Economic Development (KFAED) for the purpose of establishing a new industrial zone in Bahrain. This Kuwaiti credit covers 49 per cent of the project's total cost, and it is granted for a period of 17 years. The interest rate is only 3.5 per cent.[1/]

[1/] AL-IQTISADI Al-Kuwaiti (Kuwaiti Economist, No. 196, April 1980, Kuwait Chamber of Commerce and Industry.)

Prospects of the Aluminium Industry for the Present Decade

317. By starting the first aluminium smelting and manufacturing in the Gulf area, Bahrain definitely seized a time advantage, of which it is already and increasingly benefiting. At the same time, the Bahrain aluminium industry which was launched as a foreign-dominated multinational venture has turned into a locally-dominated regional industry. Rather than setting its own aluminium smelter and competing with the young but already operating Bahraini industry, Saudi Arabia preferred to substitute for the foreign interests which withdrew from the ALBA joint venture, thereby changing it into a mainly bilateral company with regional features and prospects. Recently, a decision was made to increase the present production capacity of the ALBA smelter of 125,000 tons per year by 45,000 tons per year; at the same time Saudi Arabia (an equity holder in ALBA capital) suspended its initial project of establishing an aluminium plant in Saudi Arabia.[1/]

318. Behind the US producers' foreign expansion plans there is concern about the rapidly rising energy costs and the future availability of electric power in the United States. Smelting of aluminium, as is well known requires more electricity than any other industrial process. Producers must control these costs in order to remain competitive with steel, plastics and other possible aluminium substitutes. The average cost of energy required to make a pound of aluminium jumped by 56 per cent since 1978, to 13.4 cents,[2/] compared with 4 to 7 cents per pound in Brazil and Australia, respectively. The same source said that costs in the United States could reach 20 cents per pound by 1983. This illustrates the economic advantage

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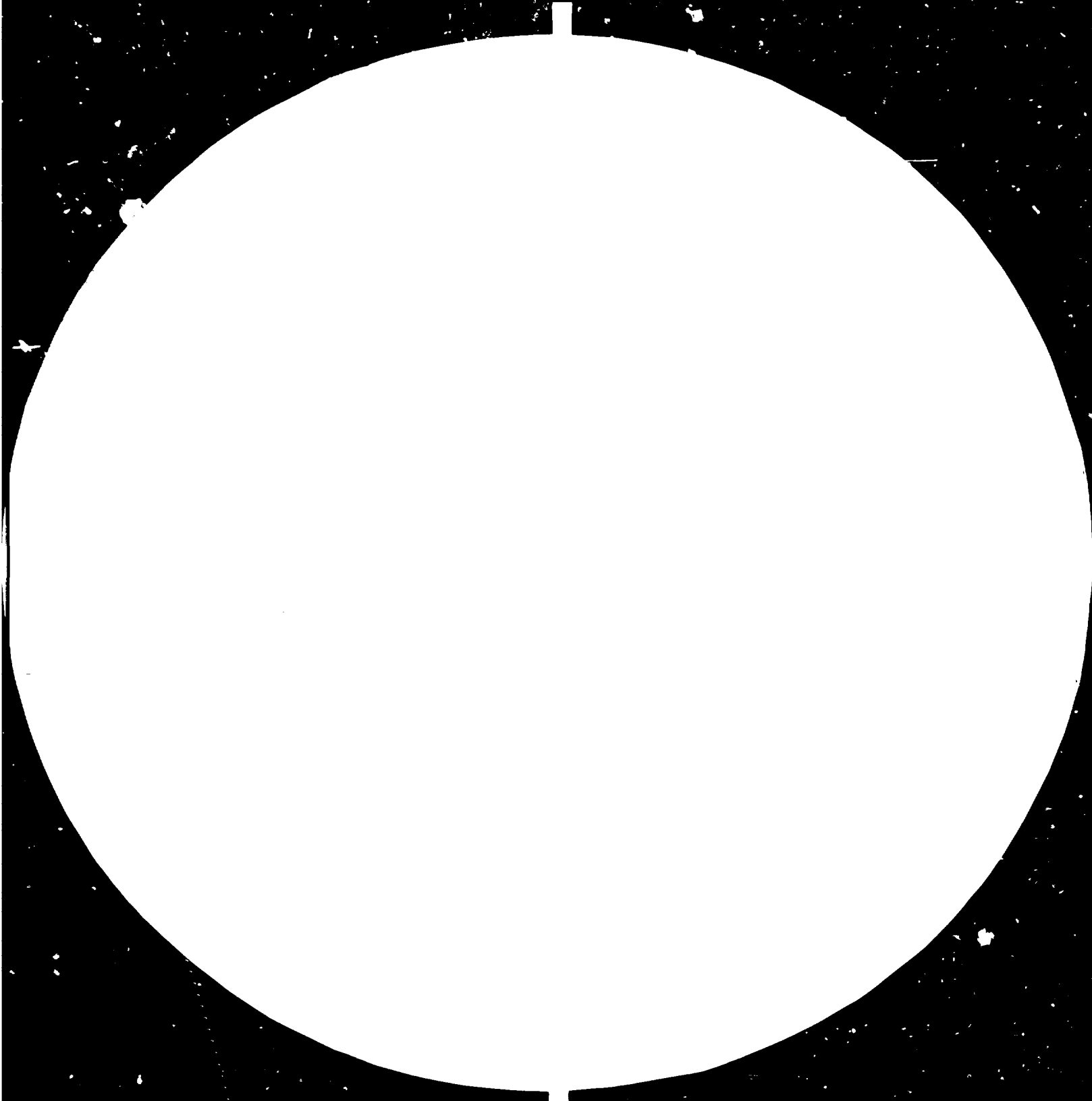
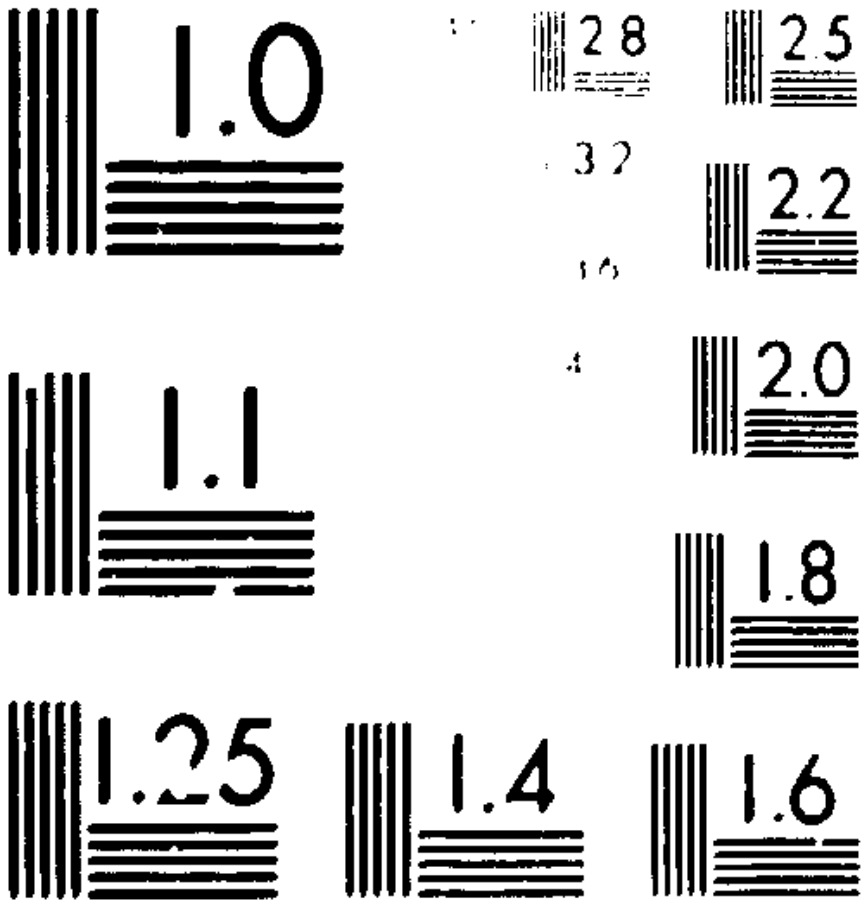
1/ "Aluminium: Bahrein Augmentra sa capaciteé de production", in: Journal Les Echos, Paris, 4 juin 1980.

2/ "In Planning for a Decade of Expansion, US Aluminium Producers Turn Abroad", The International Herald Tribune, 11 June, 1980.

which is expected to strengthen in the case of Aluminium Bahrain. Taking into account the export-orientation of the Bahrain aluminium industry, its prospects for the future will be largely determined by the emerging strategy of the world aluminium producers and by the level of growth in demand throughout the decade.

319. In the 1970s the international aluminium industry refrained from increasing production capacity on account of the depressed price of the metal. In the case of Bahrain, the US and other multinational corporations which entered ALBA's joint venture reacted to the price depression by withdrawing from their Bahraini venture. However, in the past year or so, aluminium prices have risen sharply, as already indicated, particularly in Europe and the Far East. As a result, ALBA's position has sensitively improved to the advantage of Bahrain and its new partner, Saudi Arabia. Withdrawal of the multinationals from Bahrain could be part of their new strategy which aims at spreading their manufacturing activities to other, better selected and more profitable countries of continental scale and abundance of bauxite and coal reserves, like Australia and to other countries which possess abundant and cheap energy and an immense domestic market, like Brazil. In fact, one US company is considering the establishment of joint venture facility involving US$600 million in Australia because of that country's abundant supplies of inexpensive coal, natural gas and aluminium ore, and because of political stability. Another US company recently announced plans for a large smelter in the Amazon river valley in northern Brazil, and a third company is planning to establish a joint venture with the Philippine Government involving the building of a 154,000 tons-a-year smelter. A substantial share of the new aluminium-making capacity planned by US aluminium producers will be built outside the United States. It is obvious that a spread of smelters in Australia could cause serious concern for the Aluminium Bahrain (ALBA) associates. A further marketing research is needed in order to test the validity and extent of such fears.





320. The international aluminium industry sees bright prospects for its products. US demand for aluminium is expected to rise by 4 to 6 per cent annually through most of this decade, which is mainly due to increased use in lighter cars and in packaging and construction. This applies also to West Europe and Japan. This strong growing trend opens good business horizons for the aluminium industry in Bahrain and justifies the latter's very recent decision to increase its plant production capacity by 45,000 tons a year.

321. The US and other aluminium producers have announced only slight expansions in their domestic facilities and may even close some plants. The slow pace of domestic expansion means that producers in the US, West Europe and Japan may have to import the metal from their foreign smelters. It was estimated that by 1990 about one fourth of US consumption may have to be met by imports.[1/]

333. To the extent that Bahrain has no aluminium ore but is relatively rich in gas, Bahrain appears to be in a less advantageous position than Australia, a country with abundant supplies of inexpensive coal, iron ore and natural gas. It follows that the low pricing of domestic gas is the very condition for Aluminium Bahrain to make profits. This goes against an economic upgrading and use of local supplies of gas which, in the final analysis, are limited and depletable. However, the accelerating rectification of the gas price and its alignment to that of crude oil will increasingly re-establish the economic justification and commercial profitability of the aluminium industry in Bahrain over the coming years of this decade.

1/ This estimate was made by Robin ADAMS, a metals and minerals economist at Chase Econometrics in The International Herald Tribune, 11 June, 1980.

Arguments for and against Bahrain's Aluminium Industry

334. In order to weigh the advantages limitations of the aluminium industry already set up in Bahrain, and to appraise its relationships to both the Emirate's oil-substituting long-term strategy and to the regional and sub-regional prospects for industrial complementarity and economic integration, the following criteria should be referred to:

a) The degree of vertical, or self-integration;

b) The pattern of geo-economic distribution and integration.

335. Vertical or self-integration implies the co-existence of all the subsequent and technologically interrelated stages of the aluminium-based production, distribution, consumption and reproduction. Looking at Bahrain's aluminium industry, it can see that it presents a fragmentary pattern of manufacturing, since it is limited to the second-stage processing (refining of imported aluminium) and to extrusion, powder and cable manufacturing.

336. The first upstream sequences of the bauxite extraction and primary transformation (into alumina) are absent, since the two stages are located in Australia. As to the two last downstream sequences, i.e., distribution and marketing, these are also absent and located in Japan and West Europe. This fragmentary production pattern implies that the pricing system of the bauxite ore, the alumina, as well as the pricing of end products are not controllable by Bahrain. Consequently, this uncertainty in the supply of feedstock and their prices and in the sale and pricing of the products does not insure Bahrain's legitimate expectations regarding the upgrading of its gas resources and the generation of new sources of income. An adequate solution to the problem of maximizing profits derived from manufacturing undertakings must, therefore, be found. But the Bahraini economy is faced with structural

constraints whose solution should rather be closely examined, possibly through an alternative combination of revised and complete vertical integration and a pattern of regional integration. An apparently sound opportunity which would reinforce the aluminium industry in the Gulf States is likely to materialize in the near future. The Gulf Organization whose objection is to promote industrial co-operation and integration among the states of the area, is lobbying for a Gulf joint-venture for the transformation of aluminium. Its capital is evaluated at BD34 million, and its capacity at roughly 40,000 tons of aluminium products.[1/]

337. Geo-economic integration refers to the manufacture, distribution and spread of the different subsequent components of the whole aluminium-based products. From this angle, the aluminium industry in Bahrain is stretched upstream to its supply source in Australia, and is integrated downstream with markets in both Japan and West Europe. This is a classical case of North-South vertical relationship which excludes intra-regional or inter-regional ties within an alternative frame South- South complementarity and integration. Concretely, the aluminium industry of Bahrain could gain by seeking simultaneously an alternative and larger vertical integration as well as an alternative supply of raw materials and products and economic integration within the frame of the Arab region and by extension of this integration to the African and Asian regions.

338. Provided that an adequate strategy which aims at achieving these goals is set with subsequent financial, investing and marketing policies and measures, the two objectives, namely, a higher level of vertical integration and closer integration at the regional and/or inter-regional levels are indeed reconciliable, if not necessarily inter-related and inter-

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1/ Al-Iqtissadi Al-Kuwaiti, vol. 1980, No. 198, Kuwait, June 1980, Kuwait Chamber for Trade and Industry, p. 72, in Arabic.

actioned. Such a new perspective, could be of benefit as much to Bahrain's economic future as to the further promotion of sectoral planning and to large-scale consumption of manufacturing in the Arab world as well as to financial, industrial and commercial co-operation and complementarity with the African and Asian countries.

Prospects for the Petrochemicals Industry

339. Due to the limitations in energy resources and to construction of large energy consuming plants in the region, the Government does not intend to establish very large petrochemical or energy-based industries on the island. However, there is considerable potential for expansion of medium and small-scale manufacturing. The out-put of the extrusion plant, for example, could be used for high quality production of doors, windows and the like, and for buildings throughout the Gulf. Truck bodies are another important use for aluminium. The causeway to Saudi Arabia will link Bahrain with all the Gulf countries as well as with Europe. Truck chassis could be imported and equipped with Bahrain-built bodies. The United Arab Emirates now has this work done in Lebanon. Electrical fittings are other categories which should be investigated.[1/]

Joint Petrochemicals Venture with Kuwait

340. A joint Kuwaiti-Bahraini petrochemicals company was established in Bahrain in 1979. Its capital amounted to BD140 million, or some US$372 million.

341. Saudi Arabia, Bahrain and Kuwait have agreed to establish a company for the production of methanol and ammonia with a capital of BD60 million.

1/ WORLD BANK: "Bahrain Current Economic Position and Prospects", 28 June, 1978, Washington, Report No. 2058-EM, p. 16.

This petrochemicals complex is expected to require an investment of $400 million and will have a capacity of 1,000 ton each of ammonia and methanol per day when it goes on stream by the end of 1983. The agreement for the venture was signed in Manama, Bahrain, early in June 1980 by the Saudi Minister of Industry and Electricity, the Bahrain Minister of Development and Industry and the Kuwaiti Oil Minister. The three countries will own the venture equally.[1/]

Subregional Multilateral Co-operation

342. Due to the limited and declining supplies of crude oil and associated gas, the limited domestic market and other existing bottlenecks and problems, Bahrain has been reluctant to develop its own petrochemical industry. Saudi Arabia and Kuwait, two neighbouring countries with "oil surpluses" and established and new petrochemicals projects, have chosen to participate with Bahrain in a trilateral joint venture to manufacture ammonia and methanol, two basic petrochemicals. Thus, at the end of May 1980, Saudi Arabia, Kuwait and Bahrain signed an accord by which they created the Gulf Petrochemical Industries, a joint complex designed to produce ammonia and methanol in Bahrain. The capital of this complex was fixed at BD60 million, or some US$160 million, to be equally shared by the Bahrain National Oil Company (BANOCO), the Kuwaiti Petrochemicals Industries Company (PIC), and the Saudi Basic Industries Corporations (SABIC). This complex is to have a capacity of 1,000 tons per day of ammonia and 1,000 tons per day of methanol. The global cost of the project is estimated at US$400 million, and the putting on stream of the project is scheduled for 1983.[2/]

1/ Saudi Economic Survey, Jeddah, 4 June 1980, Vol. XIV, No. 668, p. 6.

2/ "L'Arabie Séoudite, le Koweit et Bahrein créent une société commune pour le construction d'un complex pétrochimique à Bahrein", Vol. XII, No. 270, in: Le Pétrole et le Gaz Arabes, Paris, 16 juin 1980, p. 14.

343. From the point of view of the international division of labour and industrial specialization, Bahrain will thus extend its first-processing hydrocarbon industries; this will mean a consolidation of the growth in manufacturing, and the consequent reduction in the relative weight of the oil and mining sector in the national economy. However, ammonia and methanol are only basic petrochemicals, and their future manufacture in Bahrain will not neither imply depth in the development of the manufacturing sector nor an optimal upgrading of the hydrocarbon raw material. On the other hand, this new multilateral petrochemical venture illustrates reinforcement of a new trend in industrial co-ordination and, to some extent, of sectoral planning at the level of the Gulf area, in a rather pragmatic and gradual way. However, such a development can only become possible if such multilateral projects within the gulf area are competitive in their production capacities and the range of these products exceed those of similar projects in individual countries.

345. Around the mid 1980s, several petrochemicals projects which are being almost simultaneously developed will be accomplished and put on stream in different Arab states in the Gulf. These projects will produce mainly ethylene and ethylene derivatives, as well as methanol. Almost all these projects are country projects, aimed at manufacturing similar and, therefore, potentially competitive products, and will be export-oriented (except in the case of Iraq) with their products destined to the same export-markets of Asia, Europe and, to a lesser extent, the United States of America.

346. Unless the Arab states involved in the new petrochemical construction adopt a common strategy to co-ordinate their marketing plans and programmes, their respective national projects may face difficulties at their very beginnings. This applies also to the new trilateral joint ammonia and methanol venture planned by Saudi Arabia, Kuwait and Bahrain.

It would, therefore, be advisable if Bahrain endeavours to work jointly with other states in the Gulf for the adoption of a scheme for sectoral planning in order to co-ordinate both production and marketing of petrochemical output produced in the Gulf in the future.

Joint Steel Venture in Bahrain

347. The Arab Ship Repairing Yard (ASRY) turned out to become a stimulus for increasing joint projects in the Gulf. Thus, Saudi Arabia entered into the Aluminium Bahrain joint venture following the withdrawal of some multinational interests from the aluminium complex. More recently, a number of public authorities and private enterprises involved in iron and steel making and in industrial investment, in general, examined at a meeting in Al-Manama, Bahrain's capital, a pre-feasibility study for a giant steel project for iron-ore refining and steel making in Bahrain. The project is supported by the Bahrain Government, which selected a special site for the project, and agreed to promote it by supplying it with natural gas at low prices. According to the study, the project will have a capacity of four tons per year.[1/] Since aluminium refining is already established in Bahrain and since the feasibility and profitability of gas-based steel making are good, it is believed that the materialization of this steel project in Bahrain is predictable.

348. Another important factor which may favour the erection of this project is that Long Distance Crude Carriers (LDCCs) arrive empty in Bahrain, and, more genrally, in the Gulf area, go then to ASRY for servicing (repair and maintenance), and are afterwards loaded with crude oil. These LDCCs would gain by bringing iron scrap and ore into Bahrain.

1/ Al-Iqtissadi Al-Kuwaiti (The Kuwaiti Economist), No. 196, Kuwait, April 1980, Kuwait Chamber of Commerce and Industry, in Arabic.

349. The Bahraini Government had in the early autumn of 1978 approved the establishment of a private steel factory. With a capital of BD1.5 to 2.0 million and a plant capacity of 25,000 tons per year. This plant will use scrap. Bahrain imports some 35,000 tons of steel per year (1978 estimations). The locally produced steel is expected to undercut the price of imported steel by 20 per cent.[1/]

Immediate Challenges and Prospects for the Repairing Shipyard

350. Decision makers in various Arab States in the Gulf do not always displa- policies leading to higher levels of co-ordination and integration as a means of countering the risk of competition inherent in the similarities in natural resources and economic structures in their countries.

351. In the case of ship repairing, the Organisation of Arab Petroleum Exporting Countries (OAPEC) entered - together with Bahrain - into multilateral venture for tanker maintenance and ship repairing, namely, the Arab Ship Repairing Yard (ASRY). However, the neighbouring Emirate of Dubai and member of the Federation of United Arab Emirates decided to establish its own ship repairing facilities (jointly with foreign partners), and is presently establishing a three-dock installation at Port Rashid, Dubai. This shipyard, which is almost completed, has space for a one-million-ton VLCC and two 500,000-ton VLCCs in its three docks.

352. Since there may not be enough linkages between both shipyards, a strong competition may arise between them which is bound to adversely affect the short-term profitability of both.

353. Bahrain did not succeed in delivering a co-ordinated plan for a joint-venture shipyard to include also Dubai, its immediate neighbour and

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1/ Middle East Economic Digest (MEED), Vol. 22, No. 40, London, 6 October 1978.

competitor. Nonetheless, some co-ordination and joint scheduling of the two shipyards will clearly be necessary in the future. This may serve as an example, that although it may be difficult to start a regional joint enterprise, the emergence of competitive country-scale enterprises should become a stimulus for their joint management and dynamic integration.

Proposals for a Trade Strategy for the Year 2000

354. Arab governments in the Gulf area have displayed increasing interest in setting up and extending Gulf-wide schemes of co-operation in the commercial, agricultural, industrial and banking fields.

355. Both Iraq and Saudi Arabia have much larger and diversifie economies than Bahrain and other Gulf States. These two countries are in a position to extend their local marketing potentialities for the newly implemented industries in Bahrain and its small neighbouring Gulf Emirates. Since Saudi Arabia is already an associate of Bahrain in The Aluminium Bahrain Company (ALBA), the Emirate will, expectedly, encounter no difficulty in selling increasing amounts of its products in a well-absorbed market like that of Saudi Arabia.

356. On the other hand, at the beginning of June 1980, the Joint Iraqi-Bahraini Committee adopted recommendations for a total exemption from customs duties for the two countries' products and for the utilization by Iraq of part of the deloading and storing overcapacity of Mina Salman Port and the Storage Zone in Setra Island in Bahrain.[1/] Furthermore, Iraq expressed its will to raise the level of its imports of aluminium from Bahrain. Due to the boom that is taking place in Iraq in construction and Industry, Bahrain aluminium products is likely to find a new and expanding outlet in that neighbouring country provided that Iraq continues to pursue

1/ "Conclusion of the Joint Committee for Economic Co-operation with Bahrain", in: Al-Thawrah Daily, Baghdad, 4 June 1980, in Arabic.

its present Gulf-oriented strategy.

357. It is believed that it would be advantageous for Bahrain to adopt and carry out over the next ten years, 1980-1990, a trade strategy that is indispensibly sustained by and related to industrialization and to further downstream involvement in the industrial field. The aims of such a strategy include:

a) Achievement of a significant qualitative shift in the commodity structure both of exports and imports. This shift should be achieved by the year 1990 and pursued until 2000, comprising equipment and food imports, hydrocarbons, aluminium and petrochemicals exports, as well as services.

b) Reduction in the trade deficit of Bahrain. The Emirate's trade deficit with its main partners, namely, the United Kingdom, the other EEC countries and Japan is to be simultaneously reduced.

c) Realization of a net increase in Bahrain's export trade. The added value of Bahraini exports of oil and other commodities should be increased. This would mean a major increase in the Emirate's exports to its major partner, the United Kingdom, and to its other main suppliers.

d) Increase in the future share of Arab countries in both Bahrain's exports and imports. An appreciable increase in trade with the Arab countries should be achieved by the year 1990 in order to strengthen integration of Bahrain's industry and economy with those of other Arab countries and that this trend should be pursued until the year 2000.