

### III. INDUSTRIAL DEVELOPMENT POLICY AND BUSINESS ENVIRONMENT ASSESSMENT

#### 1. Industrial Development Policy

##### 1) An overview of Industrial Development Policy

Under the prospect of inevitable oil production declines in the future, Oman is currently making efforts to accomplish economic development with the objectives of taking off from the existing oil-dependent economy and to diversify its economy in order that the national standard of living may be raised. Major industrial sectors and targets of GDP to be realised in such sectors are shown on Table III-1. Despite the decline in petroleum, construction, and transportation/communications activities, it is contemplated under the plan that a net increase in GDP of 6.3% will be achieved during the planned period of 1976 to 1980 due to higher growth to be accomplished in other industrial sectors. Manufacturing, although it is small in scale among the growth sectors, is expected to achieve a very rapid growth of 733% during the five years. In addition, copper production of six million RO and natural gas production of five million RO are expected. Thus, a heavy emphasis is being placed on the fosteration of the secondary industries. A substantial change in investment structure is now taking place in order that such objectives may be accomplished. That is, investment emphasis has been shifting away from the development of economic infrastructure, which has come to a certain level, to income-generating secondary industries along with agriculture and fishery.

It is planned that aggressive investment will be made for the development of secondary industries, as indicated by the sectoral government and private investments presented on Table III-2. It should be noted that emphasis is placed on the types of industries which will draw upon the resources available in Oman and those which will substitute for commodities now imported from abroad. Resources to be exploited will be such minerals as copper, cement, and petroleum, as well as agricultural and fishery resources.

Emphases on import-substituting industries are typified by flour mill, while the production of consumer goods which can be accomplished rather easily in small or medium scale is being propelled, e.g. furniture, aluminium products, and soft drinks.

Table III-1 Gross Domestic Product Classified by Major Sectors

(Millions R.O.)

Year Sector	1976 Percentage		1980 Percentage		1980/1976 Rate of Growth
Crude Oil	505	66.6	461	57.2	0.913
Construction	76	10.0	49	6.1	0.645
Transport & Communication	25	3.3	19	2.4	0.760
Agriculture & Fisheries	18	2.4	30	3.7	1.667
Mining of Copper	-	-	6	0.7	-
Natural gas	-	-	5	0.6	-
Manufacturing	3	0.4	25	3.1	8.333
Electricity & Water	5	0.7	10	1.2	2.000
Internal trade	28	3.7	44	5.5	1.571
Ownership of dwellings	12	1.6	34	4.2	2.833
Total	758	100.0	806	100.0	1.063

(Source) Five-Year Development Plan

Table III-2    Total Government and Private Investments by Sector  
(at fixed 1976 prices)

(Millions R.O.)

Sector	1976	1977	1978	1979	1980	Total
1. Petroleum and Mining	45.3	77.0	88.0	65.0	45.0	320.3
2. Agriculture and Fisheries	4.6	8.9	11.5	15.5	16.5	57.0
3. Manufacturing	7.6	22.1	19.0	28.0	36.0	112.7
4. Trade and Tourism	12.7	7.2	4.0	4.0	4.0	31.9
5. Economic Infrastructure	200.2	193.6	117.6	94.8	77.5	683.7
6. Social Infrastructure	40.2	29.9	26.7	17.7	17.7	132.3
7. Financial Institutions	3.0	2.0	4.0	4.0	4.0	17.0
Total	313.0	340.7	270.8	229.0	200.7	1,354.8

(Source) Five-Year Development Plan

The first to be mentioned of the government's various measures for industrialisation is those in financial arrangement. The government plans to provide necessary tax incentives and financial assistances by the Development Bank. For large projects, grants from Saudi Arabia, Kuwait, and other neighbouring countries are contemplated. Corporate income tax will be remitted during the initial five years from the establishment of a plant.

The second area of government efforts centers around infrastructure. In addition to roads and ports and harbours, the power plant and the desalination plant which are now in operation in Al Ghubra will be expanded. Also, the government has a concept of establishing an industrial estate in Rusayl to offer factory sites for light industries, and selection of types of industries to be located on the estate are now being carried out.

It is suspected that, in the case of private projects where domestic capital, technical, and management capabilities are still considered to be less than adequate, foreign investments and business corporation will have to be introduced from developed nations in order to accomplish the desired development.

## 2) Policy of Introducing Foreign Investment

The status of foreign investments which have already been introduced can be understood from the statistical analysis done by the Central Bank of enterprises which were registered during the period of 1974 through October 1977, which is presented on Table III-3 by sector and by the capital structure, i.e. pure Omani Capital, pure foreign capital, and joint-venture. Pure foreign capital companies

Table III-3 Distribution of Companies Industry/Ownership

Industry Descrip- tion	Pure Omani		Foreign		Mixed		Total	
	No. of Comp.	Amt of Capital	No. of Comp.	Amt of Capital	No. of Comp.	Amt of Capital	No. of Comp.	Amt of Capital
Commerce	3,200	57.19	11	1.32	198	9.15	3,409	67.65
Industry	442	7.21	-	-	24	1.66	466	8.87
Big Constr.	856	18.02	15	38.86	47	7.64	918	64.52
Transport	115	3.17	1	15	3	0.21	119	18.38
Finance	2	1.01	14	11.10	3	2.50	19	14.60
Hotels	80	3.50	1	0.002	1	1.00	82	4.50
Fisheries	2	0.03	-	-	1	0.03	3	0.06
Oil	1	0.01	11	13.91	1	0.06	13	13.98
Metal & Stone	5	0.08	-	-	-	-	5	0.08
Services	524	4.59	1	0.002	7	0.13	532	4.73
Others	68	3.35	4	0.95	8	0.52	80	4.82
Total	5,295	98.15	58	81.14	293	22.90	5,646	202.19

(Source) Central Bank of Oman, Annual Report 1977

can be classified into three groups: (1) those which almost monopolise the industry in terms of both the number of company and the amount of capital, such as in the petroleum and financial sectors; (2) those a small number of which dominate the industry, such as in the construction and transportation sectors; and (3) those which are minority in the industry, as can be seen in all other sectors. On the other hand, purely Omani capital enterprises are concentrated in commerce, followed by the construction sector. This indicates that profits

from petroleum activities, the major source of fiscal revenue, profits generated in the construction and transportation sectors where emphatical public investments have been made with the oil revenue, and profits generated in the financial sector through the handling of necessary fund for these activities have been absorbed more by foreign capitals than by Omani capitals.

The manufacturing sector is observed to have been occupied in its majority by purely Omani capital companies, with some joint-venture companies and no one of purely foreign capital. Companies with 50% or more Omani capital accounted for 95.1% of the total number of companies in this sector, and the total amount of Omani investments represented 83.7% of total capital placed in this sector. Likewise, those with 50% or more foreign capital accounted for only 4.9% in number, and total foreign capital represented 16.4% of the total. Thus, foreign capital is practically non-participating in the Omani manufacturing industry (as in commercial, hotel, and service industries), in contrast to the petroleum, construction, transportation, and finance sectors where foreign capital participation has been active.

It can be asserted, as far as the statistics reviewed in the above are concerned, that foreign capital has so far flown practically only into the petroleum, financial, construction, and transportation sectors, which have been the key industries of Oman. But the fosteration of manufacturing industry in Oman has much to be expected from foreign capital, and effective incentives will have to be offered to foreign investors.

The basic policy of introducing foreign investment is provided by the Foreign Business and Investment Law of 1973, as amended in February 1977.

### 3) Business Incentives

#### (1) Taxation

Business enterprises in Oman are subject to corporate income tax. The following progressive tax rate structure is applicable to corporate income in excess of 5,001 RO per year.

Table III-4 Tax Rate

Income	Tax Rate
0 R.O. - 5,000 R.O.	0%
5,001 R.O. - 18,000 R.O.	5%
18,001 R.O. - 35,000 R.O.	10%
35,001 R.O. - 55,000 R.O.	15%
55,001 R.O. - 75,000 R.O.	20%
75,001 R.O. - 100,000 R.O.	25%
100,001 R.O. - 200,000 R.O.	35%
200,001 R.O. - 300,000 R.O.	35%
300,001 R.O. - 400,000 R.O.	40%
400,001 R.O. - 500,000 R.O.	45%
500,001 R.O. -	50%

(Source) Directorate General of Finance

Thus, the effective tax rate on a corporate income of 100,000 RO is only 16.6%. But foreign enterprises which are recognized by the government as concerned with an economic development project may enjoy a tax moratorium during the initial five years from the establishment under the Foreign Business and Investment Law. Fixed property tax and personal income tax are not levied in Oman.

Because the tariff barrier has little significance in the absence of domestic industries to be protected, tariff rates, which are applicable to the CIF value of imported goods, are held generally low at 2%, except for alcoholic beverages, which are subject to 75%; gold and silver bullion, books, agricultural materials, food, cement, and government-imported petroleum products are subject to no tariff. Nevertheless, tariff exemption on raw materials and protective tariff on certain commodities are now being considered.

## (2) Other Incentives

Foreign enterprises may acquire land ownership for personal use or for investment after obtaining permission from the Ministry of Land Affairs. Otherwise, enterprises may ordinarily obtain a long-term lease up to 49 years.

In the area of finance, when the Development Bank (which was established in August 1976 for the purpose of providing loans to private enterprises but has not commenced its operations as of March 1978) starts functioning, it will offer development fund loans to assist companies engaged in manufacturing, agricultural, fishery, mining, and petroleum activities.

## 4) Regional Industrial Development

The number of business enterprises with a capital of 5,000 RO or more is about 5,500 according to the data of the Central Bank, 70% of which are concentrated in the Metropolitan Area, 15% in the Interior (Nizwa, etc.), 14% in the Batinah coast, and less than 1% in Dhofar. Most of these 5,500 firms are engaged in a small scale retailing or distribution activity, and the number of manufacturing business is considered to be about 500 or so. Of the 500, 90% are long established small scale industries, and government and private industries established after 1970 account for only 10%, or less than 50 firms.

Because these less than 50 firms are market-oriented industries engaged in the production of goods for daily use, they are concentrated in the Metropolitan Area and the vicinity where a market is in the neighbourhood, road conditions are good in favour of product shipment, infrastructure including water and electric power supply is well developed, labourers are available, Mutrah Port is close in favour of raw materials and half-finished goods importation, and commercial activities are facilitated by the presence of city banks.

Industrial decentralization to rural areas has been supported in order to close gaps between cities and rural regions, where production activities have become stagnant due chiefly to the outflow of population. Certain light industries to serve local demands may be located in the Interior or Dhofar district up to consumption limits in such areas, and copper, cement, and other resource-oriented industries may be located in suitable parts of rural areas. But, in view of the fact that the absolute number of modern industries in Oman is still small

and that their investment effect would be low in rural areas except for few select types of industries, it is suspected that new industries will tend to be located more in the Metropolitan Area than in rural areas in the future.

#### 5) Industrial Estate Plan

Major industrial site studies have been done in Oman in two general areas: (1) medium and large scale industries and (2) light industries. In the first area, a feasibility study of locating copper, cement, oil refinery, fertiliser, gas bottling, and livestock feed industries in such proposed sites as Bustan, Rusayl, Ras Suwaidi, and Sohar was conducted in the northern region in 1977. In the second area, a study of Rusayl as an industrial development site was done also in 1977 under the first industrial estate concept in Oman.

As envisioned, the Rusayl Industrial Estate will have a land area of three square kilometres where suitable infrastructure will be developed over five to ten years for locating such import-substituting industries whose capital investment may be recovered within a short period of time as aluminium and steel frame assembly, water tanks, marble tiles, plastic processing, machine repair, leather processing, steel wires and nails, furniture and wooden crafts, paper and plastic packaging materials, electronic equipment, electric components assembly, tyre repairs, and general apparatus servicing. The Estate site is 50 kilometres from Muscat and 10 kilometres from Seeb Airport and is located on an edge of the flat highland extending toward Nizwa of the Interior. In comparison to the broad, convenient, and developable extent of land existing closer to Muscat, the Rusayl site, at present, gives an impression of being relatively remote. Besides, the Rusayl Industrial Estate concept aims only at the fosteration of light industries and has not been conceived of as a receptacle of relocated industries or as a centre of regional development; therefore, it is feared that the Estate lacks positive elements of attraction to industries. The government will have to offer substantial incentives if said light industries are to be effectively induced to locate in this Estate.



## 6) Trade Policy and Industrialisation

### (1) Current Status of Trade

Record of imports and exports is presented on Table III-5. Commodity imports increased by 4.73 times from 1973 to 1977, while exports increased by 4.76 times during the same period. Trade balance has been a surplus; 29.1 million RO in 1973 and a substantial 141.1 million RO in 1977.

The composition of taxable imports is shown by Table III-6. The rapid increase in taxable private imports can be attributed to the improvement of the standard of living which resulted in new demands for modern consumer goods and to the rise in developmental infrastructure investments which resulted in demands for capital and intermediate goods.

Table III-5 Total Imports and Exports

(Millions of R. O.)							
Year	Imports		Total	Exports		Total	Balance
	Recorded (1)	Others (2)		Oil (3)	Others		
1973	40.7	45.1	85.8	114.3	0.6	114.9	+29.1
1974	135.6	78.5	214.1	418.7	0.4	419.1	+205.0
1975	251.3 (19.9)	120.0	371.3	488.1	1.1	489.2	+117.9
1976	250.5 (20.0)	155.0	405.5	543.8	1.4	545.2	+139.7
1977	302.1 (23.7)	104.0	406.1	546.0	1.2	547.2	+141.1

(Source) Central Bank of Oman Annual Report 1977

NOTE: With regard to import statistics, it should be noted that "recorded" values pertain to imports subject to tariff and, therefore, recorded by the Customs, and that imports through Salalah Port, which are shown in parentheses, have been added starting in 1975. Also, "Others" represent non-taxable imports as estimated by IMF.

Table III-6      Classification of Record Private Imports  
By Type of Goods

(000's R.O.)								
Class of goods	1970	1971	1972	1973	1974	1975	1976	1977
Consumer Goods	3,591 (47.3)	7,341 (53.3)	9,048 (48.4)	16,325 (40.1)	43,977 (32.4)	77,197 (33.4)	93,532 (40.6)	117,928 (42.4)
Intermediate Goods	599 ( 7.9)	2,124 (15.4)	2,921 (15.5)	6,613 (16.3)	22,074 (16.3)	38,862 (16.8)	43,946 (19.1)	51,524 (18.4)
Capital Goods	3,097 (40.8)	4,921 (30.0)	6,129 (32.8)	15,636 (38.4)	58,444 (43.1)	102,707 (44.4)	83,575 (36.3)	98,869 (35.5)
Unclassified Articles	305 ( 4.0)	190 ( 1.4)	615 ( 3.3)	2,100 ( 5.2)	11,067 ( 8.2)	12,592 ( 5.2)	9,348 ( 4.0)	10,331 ( 3.7)
Total	7,592 (100.0)	13,784 (100.0)	18,713 (100.0)	40,673 (100.0)	135,562 (100.00)	231,358 (100.0)	230,501 (100.00)	278,382 (100.0)

(Source) Central Bank of Oman Annual Report 1977

In 1977 machinery and transportation equipment accounted for 40.5% of the total imports, while industrial products accounted for 16.4%, and food and animals, 12.6%. Capital goods represented 35.5% of total import and total non-consumer (that is, capital and intermediate) goods, 53.9%, which showed a decline from the previous year, reflecting the government's stringent budget in 1977. It is expected that the composition ratio of non-consumer goods importation will rise again in 1978, as the industrialisation programme is implemented.

Capital goods and other industrial products are imported mostly from developed countries, while consumer goods are chiefly imported from neighbouring countries.

## (2) Trade Administration

Under the free trade principle of Oman, there is no legislated trade control system, and no import permit is required except for military goods, alcohol,

and pharmaceuticals. Exchange transactions may be carried out freely.

(3) Tariff System

Major commodities imported are subject to no tariff, but all other commodities are subject to an ad valorem tariff rate of 2% applicable to the CIF value of the import, except for alcoholics, which are subject to 75% duty.

(4) Trade Policy and Industrial Development

The national economy of Oman, which lacks matured domestic private industries, stands basically on imports. This is illustrated by high import reliance (as a ratio of imports plus exports to GDP; about 90% in 1974) and a strong relationship between increase in imports and increase in fiscal deficit.

In the absence of legislated trade control system, the government recognises the importance of trade (particularly tariff) policy to the operation of the economy and has been flexible with regard to:

- i) the use of tariff rates as a tool of controlling price inflation,
- ii) tariff exemption on basic goods, and
- iii) tariff exemption on imports necessary for an economic development project.

It is expected, however, that tariff policy will increase its importance as import-substituting industries rise in Oman.

## 2. Business Environment Assessment

### 1) Fund Raising

The private entrepreneur may freely secure funds necessary for the establishment of a new manufacturing industry from foreign financial institutions in the absence of foreign exchange control in Oman, as pointed out in the preceding Chapter. However, the prevailing reluctance on the part of city banks about financing new industries to be established particularly with a long-term loan poses a fund procurement problem, which is further aggravated by the fact that the domestic money market currently tends to be tight under the Central Bank's policy on interests and lending limits. For this very reason, early commencement of the Development Bank operation is hoped for, and the institution of a system for joint financing by the Development Bank together with city banks will be of a special value to the fosteration of manufacturing industry.

The government should exercise its leadership in the provision of funds for starting up new manufacturing industry from the political point of view, and there have been no precedents that suggest any difficulty of generating such funds from various sources within and without the national boundary.

### 2) Labour Situation

#### (1) Labour Force

Labour force distribution in Oman has gone through a remarkable change along with the recent economic development. Previously, traditional industries such as agriculture, fishery, handicrafts, and commerce had absorbed labour force in Oman. Since 1974, aggressive national development and fosteration of modern industries have resulted in rise in the demand for labour force of the construction, transportation, petroleum, and service sectors.

Of the estimated population of 850,000, the Development Council and the Ministry of Labour size up the labour force at 162,000 Omanis and 71,000 expatriates for a total of 233,000; 110,000 Omanis are in agriculture and fishery industries, 28,000 in other private industries, and 24,000 in the public sector; 65,000 non-Omanis in other private industries, and 6,000 in the public.

The total labour force in private industries (other than primary) of 93,000 in 1975 was 2.7 times greater than the 35,000 in 1972. Increase in the number of foreign labour force, which was by 50,500 or 4.5 times, was much faster than increase in Omani labour force, which was by 7,500 or 1.4 times during the said period. Increase in Omani labour force in private industries was in main part inflow from farming and fishing villages.

Non-primary industry (that is, other than agriculture and fishery) labour force has been estimated for 1976 and 1980 on Table III-7. About 80% of the estimated 93,000 in the private sector are found in the construction sector to which they had been attracted by the construction boom under national and urban development projects. Now that the boom has been calming down, labour force in this sector will inevitably shrink unless some new demands for labour are created.

The characteristics of the current employment situation in Oman can be summarised by three subjects; future demand prospect, employment of expatriates, and Omani labour quality.

Demand Prospect: In consideration of the future implementation of development projects, it is predicted that employment will inevitably shrink in the construction sector beyond and above predicted increase in the petroleum and mining sector for an overall reduction in the private sector by 19,000 from the 93,000 in 1976 to 74,000 in 1980, as indicated by Table III-7. It is hoped that reduction in the employment of the Omani people will be prevented by reducing expatriate workers particularly in the construction sector.

Expatriate Labour: Although the indicated reduction in labour demand is to be coped with by the reduction of expatriate workers under the plan, dependence on their capabilities will continue to be high. A total of 96,974 expatriate residents (including families) lived in Oman in 1976, the majority of which were 51,329 Indians and 32,712 Pakistanis, followed by 3,571 British, 1,449 Lebanese, and 1,324 Cyprians. Of these expatriate workforce, a total of 71,424 foreigners were at work in the same year, mostly in the private construction sector and most of them were Indian and Pakistani skilled and semi-skilled workers. In addition to such workers, expatriates were employed in

Table III-7 Employment Projections for 1980

	1975			1980		
	Omani	Expat.	Total	Omani	Expat.	Total
(i) Private Sector						
Petroleum & Mining	2,982	1,787	4,679	4,500	2,000	6,500
Manufacturing	825	1,374	2,199	1,300	3,050	4,350
Construction	18,640	56,596	75,236	29,300	19,700	49,000
Wholesale & Trade	923	1,841	2,764	1,500	2,850	4,350
Transportation Services	2,286	794	3,080	2,100	250	2,350
Financial Institutions	668	454	1,122	1,250	320	1,570
Services	1,768	2,148	3,916	2,800	3,350	6,150
(i) Total	28,002	64,994	92,996	42,750	31,520	74,270
(ii) Government						
Civil Service	10,967	4,180	15,147	14,895	4,965	19,860
Armed Forces	12,750	2,250	15,000	16,745	2,955	19,700
(ii) Total	23,717	6,430	30,147	31,640	7,920	39,560
Grand Total	51,719	71,424	123,143	74,390	39,440	113,830

(Source) Employment Survey 1975: Ministry of Labour,  
National Statistical Department

professional jobs, most of whom were British, Egyptians, and Indians. Both Table III-7, which shows the condition of employment by sector, and Table III-8 which shows employment by type of job, clearly depict a high reliance on expatriate labourers in Oman.

Omani Labour Quality: The lack of capable Omani manpower is the other aspect of the currently high reliance on foreign engineers and professionals. Despite government emphasis since 1970 on the spread of education, illiteracy rate is still high among Omani people and facilities for higher education still inadequate. The number of Omanis who had studied abroad at university or

research institute counted only 509 in 1977, and expatriates are depended upon for the most of professional, technical, administrative and skilled jobs, as shown by Table III-8.

Table III-8 Number of Employees

ISCO Code	ISCO Major Groups	(Number of employees)		
		Omanis	Expat-riates	Total
0/1	Professional, Technical and Related Workers	141(1%)	1,274(4%)	1,415(3%)
2	Administrative and Managerial Workers	31(0%)	236(1%)	267(1%)
3	Clerical and Related Workers	1,015(10%)	2,910(10%)	3,925(10%)
4	Sales Workers	52(0%)	372(1%)	424(1%)
5	Service Workers	1,370(13%)	1,591(5%)	2,961(7%)
6	Agricultural, Animal Husbandry and Forestry workers, Fishermen and Hunters	19(0%)	26(0%)	45 (0%)
7/8/9/	Production and Related Workers, Transport Equipment Operators-skilled and semi-skilled	2,740(26%)	22,182(73%)	24,922(61%)
999/F	Labourers - Notelsewhere classified	5,106(48%)	1,567(5%)	6,673(16%)
x	Workers not classified by Occupation	97(1%)	265(1%)	362(1%)
Total (all groups)		10,571 (100%)	30,423 (100%)	40,994 (100%)

(Note) ( ) : Percentage

Classification is based on ISCO major groups.

(Source) Private Sector Annual Employment Survey, Dec. 1976

National Statistics Development Council

If the number of Omani workers is to be increased substantially, mere expansion of employment opportunities is insufficient but emphatic efforts must be made for the improvement of the quality of the Omani labour force through primary and higher education and the training in skills and technical, managerial, and professional capabilities.

Nevertheless, one should keep in mind that too hasty an attempt to embark upon technical and professional training without due consideration of primary education requirement can result in hindrance to the spread of primary education, which started only a several years ago in Oman. Therefore, the accomplishment of a sudden change in the Omani-expatriate ratio in technical and professional jobs should neither be attempted nor expected in the near future, but the reliance on expatriates should be accepted as inevitable for the time being despite the number of problems which accompany such reliance. The highest priority should be given to the spread of primary education, the accomplishment of which will pave the shortest road to the fosteration of Omani capabilities supported by the foundation of primary education.

## (2) Employment Condition

The Labour Laws contains precise provisions of employment contract, wages and compensations, work hours, leaves, labour disputes, and the employment of expatriates. But let it suffice to show wage statistics.

Table III-9 shows average annual earnings by industrial sector. The petroleum and mining sector show the highest average, followed by the financial sector; the number of high-salaried expatriate employees is large in these sectors, particularly of professionals in the former and of managers in the latter. In other sectors, the number of highly skilled workers is relatively small among expatriates and income gap is substantial between foreigners who possess a high level skill and those who do not, in which case annual earnings are either comparable to or less than the earnings of Omani labourers in such sectors.

Wage levels in the construction sector which has absorbed the majority of the available labour force in Oman are shown in Table III-10.



Table III-9 Estimates of Average Earnings of an Omani and  
an Expatriate Employee by Economic Activity

During 1975 and 1976

ISIC Code	Economic Activity	Average Annual Payroll per Employee in Rial Omani					
		Omanis		Expatriates		Total <sup>1)</sup>	
		1975	1976	1975	1976	1975	1976
2	Petroleum and minerals	1,539	1,757	4,435	4,945	2,296	2,553
3	Manufacturing	743	821	642	892	671	881
5	Construction	794	876	707	792	718	806
61/62	Wholesale and retail trade	1,066	1,015	1,054	854	1,057	882
63	Restaurants and hotels	309	1,070	347	818	341	932
7	Transport services	1,169	1,373	984	1,183	1,100	1,278
8	Banking and insurance	1,566	1,846	2,140	2,289	1,783	2,086
9	Personal services	809	1,391	709	618	727	796
	All industries	999	1,183	876	914	918	978

(Note) 1) Based on 434 establishments during 1975 and 855  
establishments during 1976.

(Source) Private Sector Annual Employment Survey, Dec. 1976

National Statistics Development Council

Table III-10 Structure of Wage Rates

(R. O. per day)		
Job Category	March 1975	March 1976
1. Omani labourers	1,424	1,460
2. Expatriate carpenters	1,582	1,738
3. Expatriate masons	1,550	1,683
4. Omani mechanics	2,317	2,225
5. Expatriate mechanics	2,181	2,124
6. Omani plant operators	2,212	2,554
7. Expatriate plant operators	1,920	2,171
8. Omani steel fixers	1,932	1,945
9. Expatriate steel fixers	1,925	1,945
Index of average wage (Construction workers) (Dec. 1972 = 100)	132	142

(Source) Central Bank of Oman, Annual Report 1976

### (3) Future Prospect

While reduction in the number of expatriate workers in Oman would facilitate the improvement of international balance of payment through reducing foreign exchange outflow, care should be taken so as not to cause any shortage of the most important factor of economic activities--labour. Reliance on expatriate capabilities will continue.

Be that as it may, Omanisation of labour is the most important problem in view of the foreseen damping on labour demand, as discussed above. Essential to the effective expansion in the number of profitably employed Omani labour force is the amelioration of their technical levels, and for this end the government is taking measures in two areas. One pertains to youths newly graduating from primary, preparatory (junior high), and secondary (senior high) schools, and the other pertains to those who are already in labour force. The Ministry of Education and the Ministry of Social Affairs and Labour are currently making joint efforts for the incorporation of certain "on-the-job training" elements into the ordinary curriculum for school children (whose enrollment in the 1976/1977 school year was 62,630 in 6-year primary school, 2,015 in 3-year preparatory school, and 330 in 3-year secondary school) and for the technical training of new graduates to shape them into reliable factory workers. Evening vocational training courses are available for those who are already in labour force, through which unskilled and semi-skilled labourers may be trained into skilled labourers.

The Labour Law makes it mandatory for employers of more than 50 workers to either provide an in-house vocational training centre, establish such a centre under joint investment with other employer(s), or make financial contribution to a government-established vocational and professional training centre(s). The Ministry of Social Affairs and Labour expects employers to establish in-house centres for active on-the-job training of their employees.

### 3) Raw Materials Availability

Proven deposits exist in Oman of such metallic minerals as copper, chrome, manganese, nickel, lead, zinc, and iron, as well as of such non-metallic minerals as limestone, asbestos, and marble. They were fully discussed in Chapter II.4. Here, such resources will be treated from the viewpoint of raw materials for manufacturing purposes.

Particulars of natural resources which are available for immediate utilisation in Oman are summarised on Table III-11. Major resources other than petroleum and natural gas are limited to gravel which can be used as construction

Table III-11 Particulars of Natural Resources Available in Oman

Petroleum	Crude oil grade: high, with low gravity and low sulphur content Production: 124.2 million barrels (1977), mostly exported (Imported petroleum products supply all domestic needs)
Natural Gas	Estimated reserve: 80 years production, at the rate of 140 million square feet/day at 15 C and 1 atm. (140 MM scfd). Pipeline: Constructed between gas field in Yibal to Al Ghubra for transportation of 320 MM scfd (with the use of compressor), which will be sufficient to supply the Al Ghubra Power Plant (which will start using about 20 MM scfd soon) and other industries except for highly energy-consuming industries.
Metal Resources	
Copper	A plan is carried out for the production for a period of 11 years of yearly 20,000 tons of 99.5% grade fire refined copper with 3,000-ton/day dressing of ores from Lasail, Aarja and Bayda Mines 20 Km west of Sohar. A large number of other exploitable desposits occur in various locations, future exploration efforts are expected to lead to useful discoveries.
Chrome	So far surveyed are small deposits; discovery of large deposits not likely.
Manganese/ Nickel/ Lead/Zinc/ Iron	Not yet adequately explored, future surveys may lead to commercial exploitation.
Non-Metallic Mineral Resources	
Asbestos	A fine grade deposit has been discovered, estimated to be about 8 million tons. Now import is used for domestic production of asbestos-cement and pipes.
Marble	Deposits are scattered throughout the nation, the most noteworthy is "Oman Exotics." Deposit at Ghubra is near the capital and small scale quarry is possible. Deposit at Bid Bid is of a fine quality and is estimated at 250,000 tons; worth detailed survey.
Limestone	One of the richest natural resources of Oman. A million-ton/year cement plant project is now implemented.
Aggregate	Gravel for aggregate is available almost everywhere. Limestone, marble, and dolomite may be crushed to obtain high grade aggregate.
Quartz Sand	Quartz may be obtained from vein deposits occurring near Sayh Hatat; grade is high, but the size of deposit is not believed to be large.

(Source) JICA MISSION

aggregate, and stones. Limestone and marble are available, but the condition of their occurrence should be fully investigated before anyone will begin their commercial utilisation.

Aside from copper metal and cement, which are expected to become commercially available in several years, few, if any, raw materials will become locally available even in a remote future depending on the result of exploration and development feasibility study. For the time being, many raw materials will have to be imported.

As additional information, fluctuations in the price of major construction materials are presented on Table III-12. Although the construction boom of 1973-1975 is now over, the prices of items for which demand is still strong will continue to rise.

Table III-12 Prices of Major Construction Materials

(R. O.)					
	UNIT	1974	1975	1976	1977
Ordinary Portland Cement (bagged)	Ton	40,145	37,200	35,588	46,593
Mild steel reinforcement bars	Ton	174,573	134,411	103,173	167,790
Timber: hard wood	cubic metre	113,388	100,288	91,650	110,450
Sand (crusher)	-	2,136	2,460	2,586	2,920
Aggregate (crusher)	-	2,484	2,700	3,487	3,156
Precast concrete building blocks	1,000	185,600	220,800	231,200	231,680

(Source) Directorate General of National Statistics

#### 4) Business Environmental Assessment of Infrastructure

##### (1) Transportation

Except for coastal shipping activities between Mina Qaboos and Mina Raysut and air service between Seeb Airport and Salalah Airport, land transportation by motor trucks represents the total transportation activities in Oman at present.

Trucking companies, which counted only six in 1971, now exceed 100. But only four of them are large enough to own and operate several tons of various vehicles, and the rest of them are all minute business with only one or two trucks. Transportation charge is set by the consignor and the trucking firm by negotiation, based on the prevailing demand-supply condition, type of packing, volume of cargo, road condition, and the availability of cargo on its return trip. Standard rate schedule between Muscat and other major cities posted by a large trucking company is presented on Table III-13, which shows that the rate is not necessarily in proportion to the distance. For instance, the same rate is posted for Muscat - Sohar, which is about 220 kilometres, and for Muscat - Sur, which is 350 kilometres.

Table III-13 Freight Rates of Road Transportation March, 1978

From	To	( R.O. per trip)		
		25 Ton Capacity Trailer	8 Ton Truck	50 Ton Low Loader
Muscat	Seeb	60	30	120
Muscat	Izki	120	60	260
Muscat	Ibri	150	80	300
Muscat	Sur	250	125	500
Muscat	Nizwa	150	80	300
Muscat	Ibri	250	125	500
Muscat	Bura'imi	300	150	600
Muscat	Fahud	250	120	500
Muscat	Sohar	250	125	500
Muscat	Srinag	300	150	600
Muscat	Salalah	1,000	600	2,000
Muscat	Dubai	400	150	1,500
Muscat	Sharjah	400	150	1,500
Muscat	Abu Dhabi	450	175	2,000
Detention Time per Hour		13	7	40

(Source) A Transportation Company in Oman

Roads connecting major cities have already been paved, and trucks go to practically everywhere in Oman except very remote destinations. The only exception is the desert part of the 830-kilometre road between Muscat and Salalah which is unpaved; because the average traffic on this road is only several trucks a day, they usually form a convoy of about ten trucks in avoidance of distress due to accident or mechanical breakdown. Therefore, urgent small lot cargo on this route must rely on air transportation.

Mining and water resource development will require the construction of new roads for the transportation of plants and materials to development sites and for shipping out the resources. Pavement cost (for the width of seven metres) on flat land or on moderate hills is from 80,000 to 120,000 RO (US\$230,000 to 350,000) per kilometre.

At Mina Qaboos, 150-ton and from 20-ton to 25-ton cranes are available at prescribed rates. For instance, a stevedoring charge for unloading a machine of 2.5 tons or heavier is 4.5 RO and the rental of a 25-ton crane is 15 RO per hour. A container pier is also available at this port.

## (2) Electric Power

Public power supply is available in the Metropolitan area for a flat rate (both domestic and industrial) of 20 baiza per KWH, provided that power for airconditioning purpose is subject to a higher rate of from 12 to 14 baiza per KWH depending on the cooling capacity of the unit used. Large power users, however, are usually equipped with own generation equipment for the reason that supply by the national power corporation is unstable and therefore undependable.

## (3) Water

Water supply system has been developed to cover the Metropolitan area and Salalah. Basically a flat rate is applicable to all uses with slightly higher rates for places at a greater distance from the supply source. For instance, the rate is three baiza per gallon (excluding public facilities and government employee houses) in Muscat, while it is five baiza for users five kilometres farther away from Muscat. The water is not potable, and bottled mineral water is sold for 300 baiza per 1.5-litre bottle.

Private enterprises planning to drill a well is required to report the location of the well and pumping plan and obtain permission from the Water Resource Council.

(4) Communications

Telephone, telegraph, and telex are operated by Omantel, established with a 60% investment by the Government. As of the end of 1977, a total of about 7,500 telephone circuits had been installed. Under the rapid demand increase, installation of about 7,000 circuits is now being waited for, and the prospective subscriber must wait usually for a long time before a telephone is installed. Installation charge is 56 RO per telephone, basic rate is 10 RO per month for personal use and 100 RO per month for business use, and message rate is 30 baiza per call.

A total telex circuit installation is 275, and about 250 circuits are being waited for. Telex service is generally good, but telegraph is said to be less reliable due to its frequent troubles.

(5) Housing

Due to a rapid population increase in the Metropolitan area in the first half of the 1970's, housing shortage increased and the rental charge rose. A rent of an apartment house in Ruwi district is from 500 to 550 RO per month for a 3-bedroom unit and from 600 to 700 RO per month for a 4-bedroom unit. A rent for a single detached house varies with the location and is from 800 to 1,000 RO per month for a 3-bedroom house, and an advance payment of from two to four years' rental is sometimes demanded.

It is made mandatory for business firms employing expatriates and workers from the Interior to prepare housing for them either in kind or in the form of housing allowance payment.

5) Possibility of Market Expansion

An important condition to the industrialisation of Oman is that the products of industries to be established have an adequate domestic market or have a potentially securable market in a neighbouring or other foreign countries.

## (1) Domestic Market

The Omani population is estimated at 850,000, and the market must be said small. Industrial activities in Oman have so far been limited to the small manufacturing of consumer goods. Villages have had since long ago such cottage industries as articles of ornament, household goods, pottery, clothing, dying, wooden crafts, and wood carving, and their products have been consumed locally. Recently, import-substitution oriented industries such as flour, dairy products, soft drinks, aluminum processing, baking, furniture, and printing rose and have been increasing. But many of consumer goods, not to say intermediate and capital goods, still rely on imports.

Under such a heavy import reliance, the imports are continuously increasing due to the low custom duties. Total imports increased from 18,710,000 RO in 1972 to 250,540,000 RO in 1976, as shown by Table III-14. This was a rapid swell by 13 times in four years. Top 20 import items in terms of value are shown on Table III-15. It is characteristic that the total importation values of automobiles and machinery are large.

Future market trend will largely depend on the development investments under the nation's Five-Year Plan and the personal consumptions. Much or some reductions in the development investments are in store for some sectors under the Plan. Development of roads, power plants, desalination plants, civil construction and other infrastructural facilities has now declining. Demand in these areas is expected to diminish in the future. On the other hand, the Government is placing an emphasis on investments in the private sector, particularly on investments in manufacturing industry with the initiative of the private enterprises. This is evident by the fact that the total amount of private investments to be made during the five years of 1976 to 1980 has been estimated at 420 million RO, which is nearly one-half of the 936 million RO to be invested by the Government during the same period. However, as the government investments have been shrinking year after year, it is doubtful that investments in the private sector will increase as expected and grow to replace the public investment market. Even though much is being expected of private demand, the scale of private investments is rather small and the overall national demand will not increase so much.



Table III-14-1 Recorded Imports Classified by SITC Division

	(Value in Thousand Rials Omani)					
	1972	1973	1974	1975	1976	1976/1972
0. Food and Live Animals	3,645	9,747	15,033	26,803	30,390	5.38
01. Meat and meat preparations	394	699	963	2,394	4,344	11.03
02. Dairy products and eggs	818	1,703	2,863	4,460	6,051	7.40
04. Cereals and cereal preparations	1,563	3,681	5,607	8,458	7,681	4.91
05. Fruit and vegetables	492	1,167	2,391	4,934	5,387	10.95
06. Sugar, sugar preparations and honey	239	711	690	2,089	1,923	8.05
07. Coffee, tea, cocoa, spices and manufactures thereof	814	874	1,052	2,074	2,284	2.81
09. Miscellaneous food preparations	1,251	554	384	1,192	1,693	1.35
1. Beverages and tobacco	668	814	1,585	3,087	4,827	7.25
11. Beverages	262	294	898	1,640	2,343	8.94
12. Tobacco and tobacco manufactures	404	519	688	1,447	2,484	6.15
2. Crude materials, Inedible, except fuels	293	782	2,763	5,628	5,944	20.29
24. Wood, lumber and cork	282	775	2,365	5,050	5,316	18.85
3. Mineral fuels, lubricants & related materials	910	1,759	5,073	10,797	17,130	18.83
33. Petroleum and petroleum products	910	1,672	4,946	10,618	16,615	18.26
4. Animal and vegetable oils and fats	*	179	704	869	1,171	
5. Chemicals	741	1,837	5,016	8,999	9,384	12.66
53. Dyeing, tanning and colouring materials	91	227	633	1,305	1,924	21.14
54. Medical and pharmaceutical products	269	527	1,621	1,919	2,880	10.71
55. Essential oils and perfume materials, toilet, polishing and cleaning preparations	266	532	936	2,014	2,257	8.48
59. Chemical materials and products, n. e. s.	85	38	651	3,093	1,985	23.45
6. Manufactured goods	3,630	7,988	29,567	48,519	47,739	13.15
62. Rubber manufactures, n. e. s. (excluding furniture)	196	350	1,076	2,095	2,358	12.03
65. Textile yarn, fabrics, made-up articles and related products	1,274	2,298	4,256	7,136	11,544	9.06
66. Non metallic mineral manufactures, n. e. s.	724	2,032	6,617	10,708	12,915	17.84
67. Iron and Steel	182	992	5,395	14,599	8,315	45.69
69. Manufactures of metal, n. e. s.	740	1,695	9,636	10,302	6,826	9.22

(To be Continued)

Table III-14-2 Recorded Imports Classified by SITC Division

(Value in Thousand Riials Omani)						
SITC Division	1973	1973	1974	1975	1976	1976/1972
7. Machinery and transport equipment	5,223	12,612	53,710	95,774	102,063	19.54
71. Machinery other than electric	426	3,915	20,529	36,447	31,298	73.47
72. Electrical machinery, apparatus and appliances	2,450	2,690	15,843	24,599	23,870	9.74
73. Transport equipment	2,347	6,007	17,338	34,728	46,897	19.98
8. Miscellaneous manufactured articles	990	2,856	11,060	18,292	22,536	22.76
81. Sanitary, plumbing, heating and lighting fixtures and fittings	62	449	1,046	1,772	1,360	21.94
82. Furniture	274	885	3,824	5,261	7,205	26.30
84. Clothing	139	396	1,088	2,018	2,402	17.28
85. Footwear	90	181	266	897	1,160	12.89
86. Professional, scientific and controlling instruments; photographic and optical goods, watches and clocks	300	458	1,998	3,869	4,498	14.99
89. Miscellaneous manufactured articles, n. e. s.	75	412	2,621	4,129	5,271	70.28
X. Articles not classified	615	2,100	11,067	45,545	9,348	16.20
Total Recorded Imports	18,713	40,674	135,578	264,313	250,540	13.39

(Note) Imports (more than 1 million Riials Omani)

(Source) Statistical Year Book 1977

In the area of private consumption, the following two factors of demand increase are likely: The first is the improvement of the people's income level. Disparity in wealth is substantial among the Omani consumers, and the number of those in the middle income class is small. A sampling survey of families living on a monthly salary of 250 RO indicated that the cost of food and drinks accounted for 57.3% of their household expenditures. This means that, as it is shown by Table III-15, great amounts of meats, milk, cream, rice, and other food stuff are being imported and their prices are high, so that families have little financial resources left for the purchase of consumer goods beyond necessities. Although wage levels in Oman are claimed to be high, people of the low income class are being plagued by high prices and have only a limited resources for the purchase of more expensive consumer goods. Therefore, further increases in their income, which have been increasing year after year, will have a great impact on the future market trend.

Table III-15 Main Import Items by Order (1976)

No.	S.I.T.C.	Item	R.O.
1	732.1	Passenger Motor Cars	17,886,680
2	732.3	Lorries & Trucks (Including Ambulances etc.)	11,376,760
3	719.8 & 719.9	Any orther machinery or Mechanical Appliance or Parts n.e.s.	10,647,880
4	732.8	Bodies, Chassis, Frames & Other Parts of Motor Vehicles other than Motor-cycles	9,500,151
5	899.9	Any other materials n.e.s.	9,348,155
6	821	Furniture all sorts	7,204,563
7	722.1	Generators, Transformers etc.	7,000,456
8	661.2	Cement	6,878,857
9	332.3	Diesel Oil	6,314,78
10	332.1	Motor Spirit	5,903,716
11	653.5	Textiles other than Hosiery of Synthetic Fibres viz. Nylon. Tetron etc.	5,300,418
12	718.4	Construction Machinery, Road Rollers, Excavators, Levellers, Dumpers, etc.	5,201,273
13	673	Iron or Steel Bars, Rods, Angles, etc.	3,972,987
14	719.1	Airconditioners and Airconditioning Machinery	3,493,135
15	011	Meat (Fresh/Frozen)	3,355,527
16	243	Timber all sorts	3,310,788
17	732.5	Road Tractors for Tractor Trailer Combinations	3,174,641
18	864	Watches, Clocks & Their Parts all sorts	3,149,158
19	042	Rice	2,824,397
20	022	Milk & Cream	2,539,677

(Source) Foreign Trade Statistics 1976

Royal Oman Police

The second factor of the demand increase is the modernisation of the rural life. While modern urban development and the modernisation of consumption have progressed in the Metropolitan and its peripheral areas, people still lead traditional way of life in rural areas. Electric power, water, and other infrastructure of life have not been developed in rural areas, where inhabitants persistently adhere to a frugal life in conformity with Islam, and their consumption is basically limited to food and other daily necessities. In the future, as income rises, and electric power, water, and other facilities are developed and distribution system improved, demand for perishable foods and higher consumption goods will gradually rise in the rural areas.

## (2) Overseas Markets

Currently established industries are practically all oriented toward domestic market. While projects for the development of certain international commodities drawing upon domestic resources such as copper and cement, are being implemented, there is almost no projects to establish industries with an export-orientation. But in order for an Omani industry to be able to expand the scale of its business, it will be essential to aim at overseas markets, since the domestic market is limited in size. For the existing modern industries and the projects which are now at the stage of site feasibility study, it should be necessary to review and understand foreign markets. The overseas markets which should be considered first are the Gulf countries which are connected with Oman via marine transportation (from Mutrah) and road transportation through U.A.E. Overseas market potentials for Oman should be judged from the trends of importation and industrialisation in these countries.

As indicated by Table III-16, commodity imports by Gulf countries rapidly increased each year to have reached 4.45% of the total imports by the entire countries of the world in 1976. It was commonly characteristic of these Gulf countries that their national development programmes carried out with their oil money demanded the importation of capital and intermediate goods and that the rapid increases in their national incomes and the mass influx of expatriate labourers into these countries called for increased importation of consumer goods.

Table III-16 Total Imports of the Gulf Countries

Country	(Million US\$)			
	1973	1974	1975	1976
Bahrain	526.7	1,147.2	1,221.4	1,701.2
Iraq	932.4	2,414.9	4,293.5	3,534.7
Kuwait	1,119.3	1,640.0	2,498.0	3,496.6
Qatar	200.6	275.8	417.9	848.1
Saudi Arabia	2,118.7	2,941.9	4,295.4	8,895.1
U.A.E.	845.2	1,739.9	2,725.0	3,389.5
Iran	3,165.4	5,215.0	9,940.3	12,848.8
Total	8,908.3	15,374.7	25,391.5	34,714.0

(Source) IMF Statistics

Large investments in industrial projects have been made in some of these countries and are about to be made in others. But because further rapid increase in their oil revenue may not be expected, because infrastructural development has come to a certain level in these countries, and because it is generally felt that the further active investment programmes should be reconsidered, there will be no more rapid import expansion in the future.

Basic manufactured goods, machinery, transport equipment (particularly automobiles), chemicals, food, and clothing have represented the top import items in common in these countries. West European countries, the United States, and Japan have been the major sources of their imports, and little have been imported from each other (which is clear from Table III-17).

Traditional minute agriculture, fishery, textile, handicraft, and other industries and relay trade activities represented the economic activities in these countries until when their fiscal capability was greatly expanded by the oil revenue. These Gulf countries are invariably engaged in the development of petroleum-related and other industries and intend to improve the efficiency of petroleum utilisation while taking off oil-dependent economic structure by

securing new sources of revenue to substitute for petroleum in order that they may achieve a sound and more viable economy. Toward this end, large projects have been programmed for oil refinery, fertiliser, steel mill, cement, aluminium smelting, and so forth, and some of the facilities constructed under such projects have started their operation. On the other hand, domestic productions of some of the building materials, food, and other miscellaneous goods have been carried out for an import-substitution purpose.

Table III-17 Imports of the Gulf Countries

(1976)		
Country	Major Items	Major Countries of Origin
Bahrain	1. Basic Manu. Goods 2. Machinery, Transport Equipment 3. Food	1. U.S.A. 2. U.K. 3. China 4. Australia
Iraq	1. Boiler, Engine 2. Sugar 3. Automotive Parts	1. U.S.S.R. 2. U.K. 3. France 4. Japan 5. U.S.A. 6. Czechoslovakia
Kuwait	1. Machinery, Transport 2. Basic Manu. Goods 3. Food	1. Japan 2. U.S.A. 3. W. Germany 4. U.K.
Qatar	1. Basic Manu. Goods 2. Machinery, Transport Equipment 3. Miscellaneous Manu. Articles	1. Japan 2. U.K. 3. U.S.A.
Saudi Arabia	1. Machinery, Transport Equipment 2. Food 3. Fabrics	1. Japan 2. Italy 3. The Netherlands 4. France
U.A.E.	1. Machinery 2. Garments 3. Furniture 4. Construction Material 5. Food	1. Japan 2. U.S.A. 3. U.K. 4. Iran
Iran	1. Steel Product 2. Machinery 3. Transport Equipment 4. Food 5. Fabrics	1. U.S.S.R. 2. W. Germany 3. U.S.A. 4. Japan 5. Czechoslovakia

(Source) The Middle East and North Africa 1976 - 1977  
Europe Publications

A unique direction has been considered for the future industrial development of Oman which is different from the paths these Gulf countries have been following. This is believed wise, in view that Oman is less developed than these other Gulf countries. It should be desirable for Oman, whose oil production volume is not so great, to avoid large scale industries which will have to compete with the industries of other Gulf nations but, instead, to direct efforts toward the development of industries based on the advantageous re-

sources available in Oman, such as copper products, building materials, food, and other miscellaneous goods. In order for Oman to be able to export its products to the Gulf countries in the future, government-to-government negotiation will play an extremely important role as in the case of the joint cement project with Kuwait. There is much to be expected in the government's effort to develop the overseas markets.

#### IV. RECOMMENDATIONS ON BASIC STRATEGY FOR INDUSTRIAL DEVELOPMENT

##### 1. Establishment of Basic Industrial Development Objectives

###### 1) Basic Objectives and Basic Strategy

The objectives of industrialisation in Oman, that is, the development of mining and manufacturing industries, can be summarised as follows based on the Five-Year Development Plan, 1976 - 1980, and on the views of the Development Council and the Ministry of Commerce and Industry, which were obtained by JICA Mission through interview:

- (1) Development of import-substituting industries which will minimise foreign exchange outflow and make-up for petroleum revenue reductions,
- (2) Development of industries for the maximum utilisation of Omani natural resources,
- (3) Fosteration of industries which will not only supply Omani markets but also export products, if competitive, and
- (4) Accomplishment of a well balanced industrial structure.

A number of strategies can be conceived of for the accomplishment of the above objectives (see Table IV-1).

The basic strategies presented on Table IV-1 are briefly elucidated as follows.

###### (1) Deceleration of petroleum production declines

The total petroleum deposits in Oman are variedly sized up at three billion barrels (IBRD 1977 Report) or at 5.8 billion barrels (International Petroleum Encyclopaedia, 1977). Disregarding the potentiality of discovering new deposits and the secondary and tertiary recoveries, the above quantities of deposits will support 24 years and 27 years, respectively, of petroleum



**Table IV-1 Basic Omani Industrial Development Strategies**

Strategy	Ways and Means
1. Deceleration of petroleum production declines	1) Improved incentives for prospecting 2) Increase of secondary and tertiary recoveries; technology development by PDO
2. Improvement of value added to hydrocarbon resources	1) Construction of refinery 2) Use of natural gas for fuel 3) Construction of fertiliser plant utilizing natural gas
3. Domestic production of some consumer goods	1) Development of domestic markets 2) Partial exportation to neighbouring countries 3) Processing of domestic agricultural and fishery products
4. Processing of mineral resources	1) Proving of mineral resources deposits 2) Development of domestic market--construction materials 3) Fosteration of export oriented commodities--cement, copper
5. Encouragement of investments in the mining and manufacturing sectors	1) Promotion of government-sponsored projects 2) Improvement of private investment incensitives 3) Improvement of foreign investment incensitives
6. Acceleration of technology transfer	1) Introduction of foreign technology (together with 5 - 3) ) 2) Intensified training of engineers and skilled workers
7. Development of economic infrastructure	1) Development of utilities (power, water, energy) 2) Construction of industrial estate
8. Intensification of industrial linkage	1) Intensification of domestic industrial linkage within the mining-manufacturing sector and between other industrial sectors 2) Intensification of industrial linkage with neighbouring countries

(Source) JICA MISSION

production at the rate of 340,000 barrels per day (1977 record). Efforts should be made for the discovery of additional deposits for a greater total proven deposits and for improving recovery factor by establishing technology for secondary and tertiary recoveries.

#### (2) Improvement of Value Added to Hydrocarbon Resources

Although the total volume of crude oil produced in Oman is exported and petroleum products are imported at present, a petroleum refinery project for the high value added utilisation of hydrocarbon resource may become feasible when Oman consumes increased quantities of petroleum products. Along with the use of natural gas for the power generation and sea water desalination plant in Al Ghubra as fuel which will begin soon as the pipeline between Yibal and the vicinity of Muscat is completed, a gas pipeline to serve chiefly the copper project in Sohar and the use of natural gas in Rusayl Industrial Estate are now being considered. These projects should be propelled. The natural gas has a

high (70%) methane content and is unsuitable for the production of ethylene, but the production of ammonia and urea is worth considering provided that markets can be secured.

### (3) Domestic Production of Some Consumer Goods

Because practically all consumer goods (both durables and non-durables) are being imported, efforts should be made for the domestic production of consumer goods starting with those--

- a. Which have a relatively large market,
- b. Whose transportation and storage are difficult, and
- c. For which natural resources are plentiful in Oman.

That which meets these qualifications is construction materials, some of which have already been made in Oman. It may become possible to export some domestically produced consumer goods to neighbouring countries in the future. Processed farm and fishery crops should certainly be considered in this area.

### (4) Processing of Mineral Resources

Of numerous mineral resources other than petroleum and natural gas which are considered to exist in Oman, that whose development feasibility has been deposits of such mineral resources should be proven through active exploratory efforts, market surveys should be conducted, and the exploitation of resources for which feasibility has been confirmed through such efforts and surveys should be started. While some of the processed minerals such as construction materials will supply the domestic demand, many others, for instance, copper, will have to be exported almost entirely.

### (5) Encouragement of Investments in the Mineral and Manufacturing Sectors

Of the total investments of 1,356 million RO (in 1976 prices) to be made under the current 5-Year Plan during the five planning years, a total of 185 million RO is to be invested in the mining (sans petroleum and natural gas) and manufacturing sectors. And, in order that 52% of the 185 million RO is to be invested by private parties under the Plan, the government should lead in the materialisation of mining and manufacturing projects for joint government-private implementation as a pattern of development. Also, the government should

establish various institutional systems to facilitate private investments in projects whose feasibility has been clearly proven. Particularly, attractive incentives should be offered to foreign investors in order to foster industries which will require foreign capitals.

(6) Acceleration of Technology Transfer

When, at present, expatriates are depended upon for the major parts of mining and manufacturing activities, technology transfer to Omanis has been little successful. Therefore, technical and professional training should be given to Omani workers, while production activities which draw upon foreign technology should be much activated as the tools of demonstration to Omanis and of their training in such technology.

(7) Development of Economic Infrastructure

In the absence of adequately developed utilities and other economic infrastructure essential to mining and manufacturing industry development in Oman, the party implementing each project often has no alternative but to build what is needed for the project with a resultant deterioration of project feasibility and delay in project implementation. Therefore, a comprehensive supply system for electric power, water, and other utilities should be established, while industrial estates should be constructed for a concentrated easy supply of utilities to locating industries. Also, offering of low prices industrial utilities should be considered.

(8) Intensification of Industrial Linkage

In order that a possible most efficient industrial structure may be developed in Oman, efforts should be made for the rise of mutually related, rather than isolated, groups of industries which will supply raw materials and intermediate goods to each other. This can be accomplished through the fosteration of both upstream and downstream industries within the manufacturing and mining sectors for "horizontal" linkage between upstream industries and between downstream industries with "division of work" between the two. Also, it is essential that linkage be intensified between these and other sectors, particularly the agriculture/fishery sector and that the sphere of linkage be expanded to include industries in neighbouring countries, particularly in Dubai and Ras Al Khaimah of U.A.E.

## 2) Target Framework for Development

An appropriate target framework for development is necessary in order that basic objectives may be accomplished by basic strategies. A framework for industrial development is determined through the process of estimation illustrated by Figure IV-1.

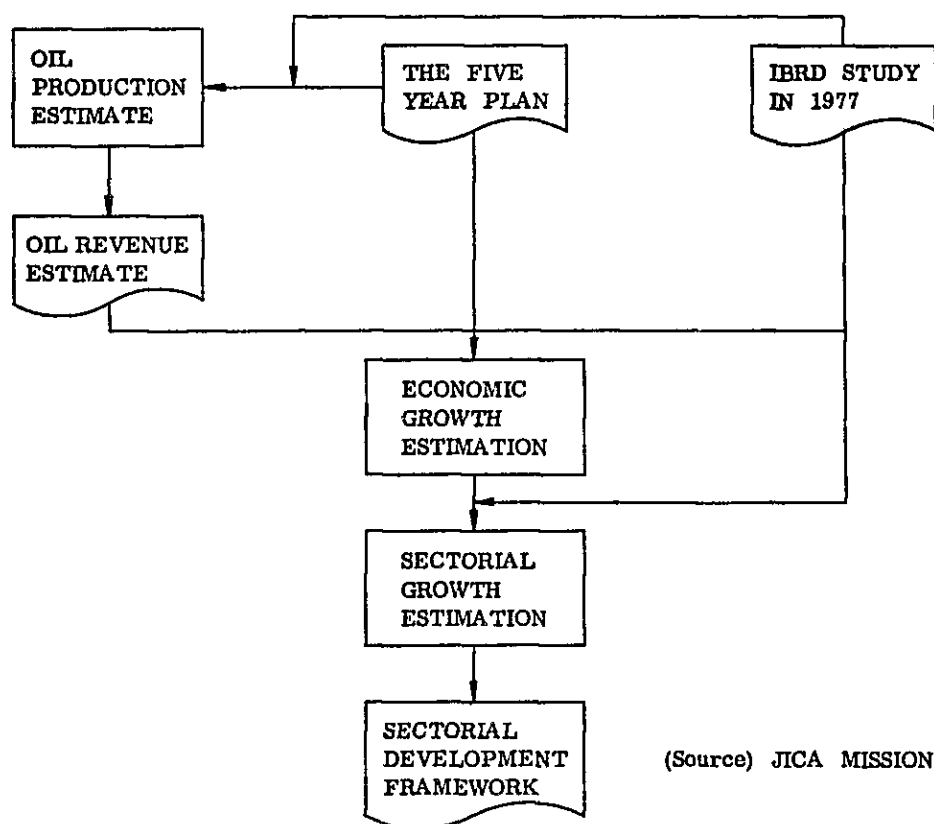


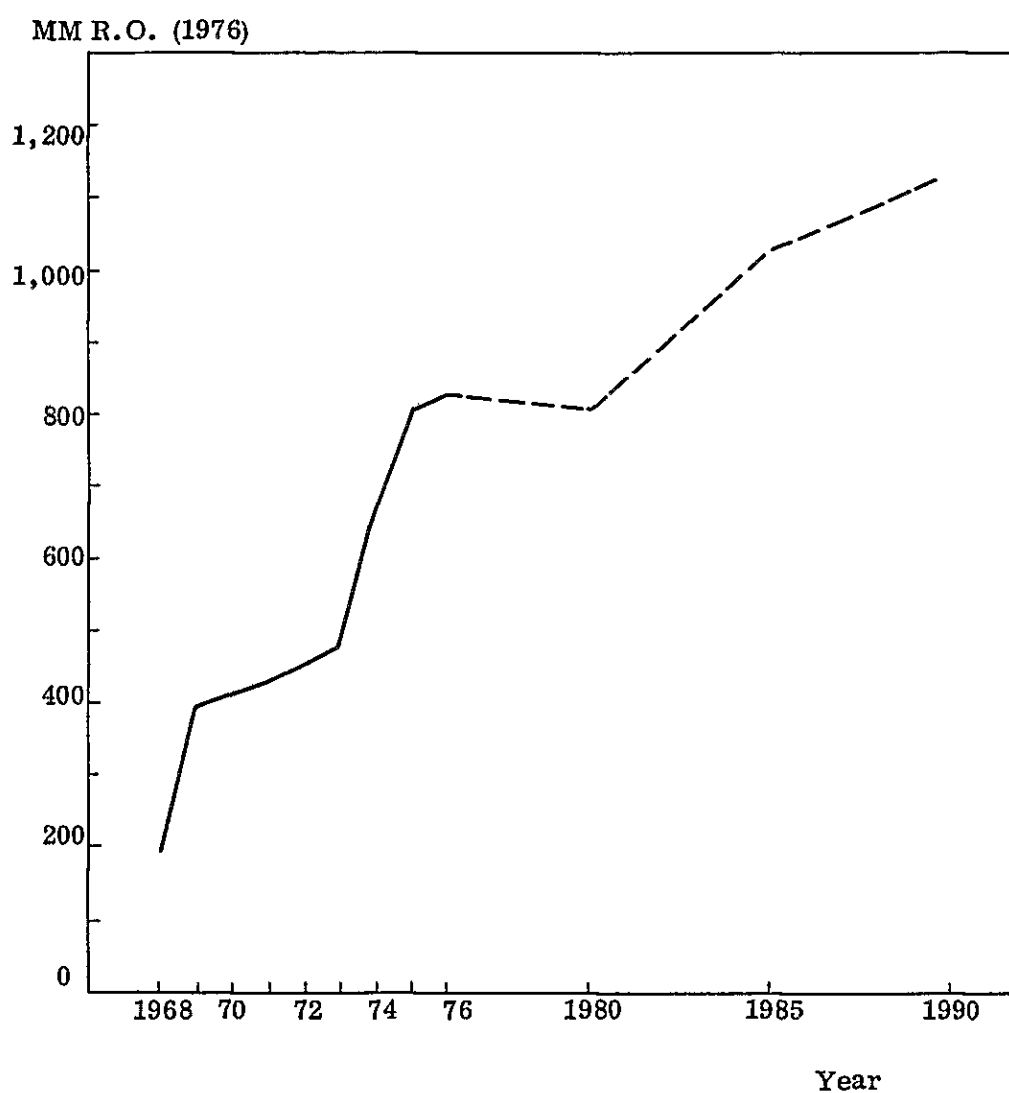
Figure IV-1      Determination of Framework for  
Industrial Development

- (1) Due to decline in the volume of petroleum production, GDP will whether remain unchanged or somewhat decrease in real terms during the span of time to 1980 (see Table IV-2).
- (2) GDP will achieve a high real growth rate of about 5% per annum after 1980 up to 1985, and enter into a period of stable growth of 2 or 3% per annum after 1985 (see Figure IV-2).

Table IV-2 Economic Growth Projections for 1980

	1976		1980			
	GDP	GNP	GDP		GNP	
	MM R.O.	MM R.O.	MM R.O.	% p.a.	MM R.O.	% p.a.
JICA MISSION	827	692	800	-0.8	698	0
FIVE YEAR PLAN	758	623	806	1.6	704	3.1
IBRD STUDY	806	634	673	-4.5	547	3.6

(Source) JICA MISSION



(Source) JICA MISSION

Figure IV-2 Growth of GDP

(3) Assuming said economic growth, sectoral contributions to GDP are estimated on Table IV-3. It is expected that mining other than petroleum and gas (that is, chiefly copper) and manufacturing productions will grow by 16 times from the four million RO in 1976 to an estimated 64 million RO in 1990. In other words, the manufacturing and mining (sans petroleum and gas) industries will achieve in 10 years the level of production comparable to the present total of agricultural, fishery, and commercial productions. These industries will have a slightly greater share in GDP than will agriculture and fishery in 1990.

Table IV-3      Projection of GDP by Industrial Origin

(Unit: MM Riials Omani, 1976)				
	1976	1980	1985	1990
Agriculture and Fisheries	21	30	42	57
Petroleum and Mining	530	456	581	580
--(Copper)	-	-	(6)	(6)
Manufacturing	4	18	38	58
Building and Construction	83	55	65	87
Transportation and Communication	26	22	30	34
Electricity and Water	5	12	15	18
Commerce	50	48	59	73
Banking	11	14	16	20
Ownership of Housing	14	26	34	39
Public Administration and Defence	71	99	110	121
Service and Other Sectors	11	20	30	40
T O T A L	827	800	1,020	1,127

(Source)      Development Council, JICA MISSION

(4) In order for the manufacturing and mining (sans petroleum and gas) sectors to be able to produce the level of value added as seen on Table IV-3, it is believed necessary that the following investments be made in the sectors:

1976 - 1980 (Five Years) : 166 million RO (in 1976 prices)

1981 - 1985 (Five Years) : 120 million RO (ditto)

1986 - 1990 (Five Years) : 143 million RO (ditto)

Thus, a total of 420 million RO or more of funds are to be invested in these sectors during the period of 12 years, and this amount approximately equals the

government's oil revenue in 1967. If the government is to bear 50% of the required investments, it will have to direct 5% of more of its oil revenue to these sectors every year.

(5) Value added and employment in the manufacturing and mining sectors including petroleum and natural gas are estimated on Table IV-4, a review of which will show that:

- o Only a moderate expansion of employment can be expected of mining activities (including petroleum) due partly to the declining petroleum production, despite that the employment by copper and other mining will expand starting in about 1985.
- o Employment in the manufacturing and mining sectors will expand from the current level of 11,000 by about 2.3 times by the middle of the 1980's (particularly, employment in the manufacturing sector alone will increase by about 4.5 times).

Table IV-4 Sectoral Value Added per Capital and Employment

		(Unit: Men, Rial Omani, 1976)			
Sector		1976*	1980	1985	1990
Petroleum and Mining	Value Added	70,242	64,800	69,780	69,780
	Employment	7,436	7,040	8,330	8,310
Manufacturing	Value Added	1,037	1,890	2,200	2,800
	Employment	3,857	9,520	11,720	20,710

(Note) \*National Statistical Department

(Source) JICA MISSION

### 3) Impacts of Development

The impacts to be brought about by the accomplishment of development objectives discussed in the above will be estimated here.

#### (1) Industrial Structure

The ultimate objective of industrialisation in Oman is to accomplish departure from the current mono-cultural economic structure with the heavy dependence upon petroleum, by fostering manufacturing industry as an income generating

sector along with agriculture and fishery.

According to the GDP compositions shown on Table IV-5, it will still be difficult to reduce dependence on petroleum for GDP down to 50% or less even with fairly rapid development of other income-generating sectors. If, however, only the income-generating sectors are considered, agricultural, fishery, and manufacturing will grow from the 4.8% in 1974 to 16.5% in 1990, with relative reduction in petroleum reliance to a fair degree.

Development of agriculture/fishery industries and manufacturing industries should be accomplished maintaining a balance between the two. Even if agricultural product processing is classified under manufacturing, manufacture sector will not exceed that of the agriculture and fishery sector before 1990.

Table IV-5 Industrial Structure of Oman

(Unit: %)						
Sector	1973	1974	1976	1980*	1985*	1990*
Agriculture and Fisheries	9.9	3.1	2.7	3.8	4.1	5.1
Petroleum and Mining	55.8	68.4	60.8	57.0	57.0	51.5
Manufacturing	0.4	0.4	0.9	2.3	3.7	5.1
Construction	14.2	10.2	9.6	6.9	6.4	7.7
Transport and Communication	2.6	2.2	3.2	2.8	2.9	3.0
Electrical and Water	0.5	0.2	0.7	1.5	1.5	1.6
Commerce	4.9	4.8	7.4	6.0	5.8	6.5
Banking	0.5	0.6	1.5	1.8	1.6	1.8
Ownership of Housing	1.7	0.8	2.1	3.3	3.3	3.5
Public Administration and Defence	7.7	8.2	9.5	12.4	10.9	10.7
Service and Other Sectors	1.8	1.1	1.6	2.5	2.9	3.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

(Note)

\* Projection

(Source) Development Council, JICA MISSION



(2) Trade Balance

Although estimation of trade balance for the future is difficult in the absence of precise prediction of petroleum productions, it has been estimated as shown on Table IV-6 under a number of assumptions. It has been estimated that the current level of trade balance will be maintained up to 1980 and be much improved after 1985, under the assumption that cement, copper, and other export-oriented projects will be implemented after 1985 with consequential industrial production expansions for import-substitution in initial years and for exportation in later years in contribution to the improvement of trade balance as shown on Table IV-7.

Table IV-6      Projection of Foreign Trade Balance

Unit: MM RO.O (1976)				
	1976	1980	1985	1990
Import	381	376	428	428
Export	456	433	545	537
Balance	75	57	117	109

(Source) JICA MISSION

Table IV-7      Contribution of Manufacturing Industry to  
Improvement of Trade Balance

Unit: MM R. O. (1976)				
	1976	1980	1985	1990
Export	1	2	11	20
Import Substitution	6	28	73	115

(Source) JICA MISSION

### (3) Employment

Assuming that each project will result in the employment of 50 workers on the average, total of 260 projects will have to be implemented if manufacturing industry employment is to increase to about 13,000 by the middle of the 1980's under the previously discussed estimation (see Table IV-4). Thus, the maximum level of employment that can possibly be achieved in 10 years with a very rapid industrialisation efforts will be about 20,000, which is insignificant in comparison with the currently estimated agricultural and fishing population of approximately 450,000.

Therefore, industrialisation in Oman should be pursued from the stand-points of trade balance, industrial structure, and technology but not of employment expansion.

### (4) Regional Development

Population concentration in the Metropolitan area is a big problem now. Because the concentration has been caused by the inflow of people from other parts of the nation and abroad seeking jobs in the area, where commercial and manufacturing activities are concentrated, these activities must be redistributed to rural areas.

Resource-based industries are often located in rural areas, as it is discussed later; therefore, further population concentration in the Metropolitan area can be prevented by developing growth poles for regional development centering around resource-based industries as nucleus. Particularly essential to the settlement of population in rural areas will be to combine agricultural and fishery crops. The concept of growth poles will be shown by Table IV-15 and IV-16 and Figure IV-4.

## 2. Selection of Strategic Industrial Project

### 1) Analysis of Existing Industries

A number of types of industry exist in Oman as pointed out in Chapter II and numerous projects are currently under plan. Some of these industries have been interviewed on their reason for locating in Oman, and the finding was shown also in Chapter II. The reason or criteria by which these existing and projected industries would locate themselves in Oman are analysed on Table IV-8.

They are observed to include a large number of domestic market-oriented or import-substituting industries, followed by those which utilise domestic resources of Oman. Particularly, a large majority of the existing industries are domestic market-oriented. This can be explained by the fact that they deal in the following kinds of merchandise:

- o Those whose shelf-life is short: daily products (milk, yogurt), bread, flour, poultry meat, egg;
- o Those whose ability to bear transportation cost is too small for importation: soft drinks, furniture, asbestos-cement pipes, PVC pipes, steel structures, aluminium window frames, concrete blocks;
- o Those manufactured from Omani resources with an international competitiveness: processed date products; and
- o Those which need to be produced in close contact with Omani market: printed matters, paint, furniture, automobile repair.

A comparison of these existing industries with proposed industries (Table IV-9) suggests a future tendency of import-substitution through the utilisation of Omani resources with concurrent efforts to expand exportation of some domestic products. It is interesting to note that a fair number of proposed industries are to export a fair portion of their products to become sources, other than petroleum, of foreign exchange income in the future.

Table IV-8 Existing and Proposed Manufacturing in Oman

Sector of Manufacturing	Project	Characteristics			Sector of Manufacturing	Project	Characteristics		
		Market Oriented	Resource-Department	Export-Oriented			Market Oriented	Resource-Department	Export-Oriented
1. Consumer Goods Food/Beverage/ Tobacco	Bakery*	o				Plastic Pipes*	o		
	Confectionary	o				Plastic Tiles	o		
	Soft Drinks*	o				Paint*	o		
	Mineral Water	o	o	(o)					
	Cigarettes	o	o		Petroleum Products	Oil Refinery	o	o	
	Sugar Refinery	o				LPG	o	o	
	Flour Mill*	o				LNG	o	o	o
	Vegetable Oil	(o)	o	o					
	Poultry*	o	o		Non-Metallic Products	Cement	o	o	o
	Dairy Products*	o	o			Marble	o	o	o
	Dates Products*	o	o	o		Asbestos-Cement Products*	(o)	(o)	
	Frozen Fish	o	o	o		Concrete Blocks*	o	o	
	Canned Fish	o	o	o		Lime Bricks	o	o	
	NONE					Earthenwares	o	(o)	
Textile						Prefabricated Concrete Units	o	(o)	
Footwear/Clothing	Footware	o				Glass Products	(o)	o	(o)
Timber/Lumber	NONE					Fibre Glass	o	o	(o)
Furniture	Furniture*	o				Asbestos Fibre	o	o	o
Printed Matter	Printing Press*	o			Basic Metal Products	Sponge Iron	o	(o)	
Leather Products	NONE					Steel Re-Rolling	o		
Miscellaneous	Match	o				Copper Ingot	(o)	o	o
	Soap	o	(o)						
	Fish Meal	o	o						
	Cattle Feed	o	o						
2. Intermediate Goods Paper/Carbon	NONE								
					3. Durable Consumer and Capital Goods				
					Metal Products	Nails and Screws	o		
						Aluminium Products*	o		
					Non-Electrical Machinery	Steel Structures*	o		
					Electrical Machinery	Batteries	o		
					Transportation Machinery	Automobile Repairing	o		
Rubber Products	Retreading of tyres	o							
Chemicals	Table Salt	o	o	(o)					
	Petrochemical Products	o	o	o					
	Fertilizers		o	o		Dry and Floating Docks	o		

(Note) \* Existing

(Source) JICA MISSION

**Table IV-9 Comparison of the Existing and Planned Industries in Oman**

Category	Existing Industries	Planned Projects
1. Import Substitution Based on Omani Resources	Dairy Products	Cigarettes, Table Salts, Petroleum Products, LPG, Lime Bricks, Ceramics, Prefabricated Concrete Units, Cattle Feed
2. Import Substitution Based on Imported Resources and/or Raw Materials	Bakery, Flour Mill, Furniture, Asbesto-Cement, Pipes, PVC Pipes, Paint, Steel Structures, Aluminium Window Frames and Doors, Concrete Blocks, (Soft Drinks), (Automotive Repairing)	Confectionary, Refined Sugar, Footwares, Matches, Retreading of Tyres, Re-Rolling of Steel Billets, Nails and Screws, Batteries
3. Import Substitution plus Export Based on Omani Resources		Mineral Water, Vegetable Oil, Frozen Fish, Cement, Glass Products
4. Export-Oriented Based on Exported Resources	(Asbesto-Cement Pipes)	
5. Export-Oriented Based on Omani Resources	Date Products	Canned Fish, Petrochemical Products, Fertilizers, LNG, Marble, Glass Fibre, Fire-Refined Copper Ingots

(Source) Ministry of Commerce and Industry  
JICA MISSION

## 2) Process and Criteria for the Selection of Industrial Projects

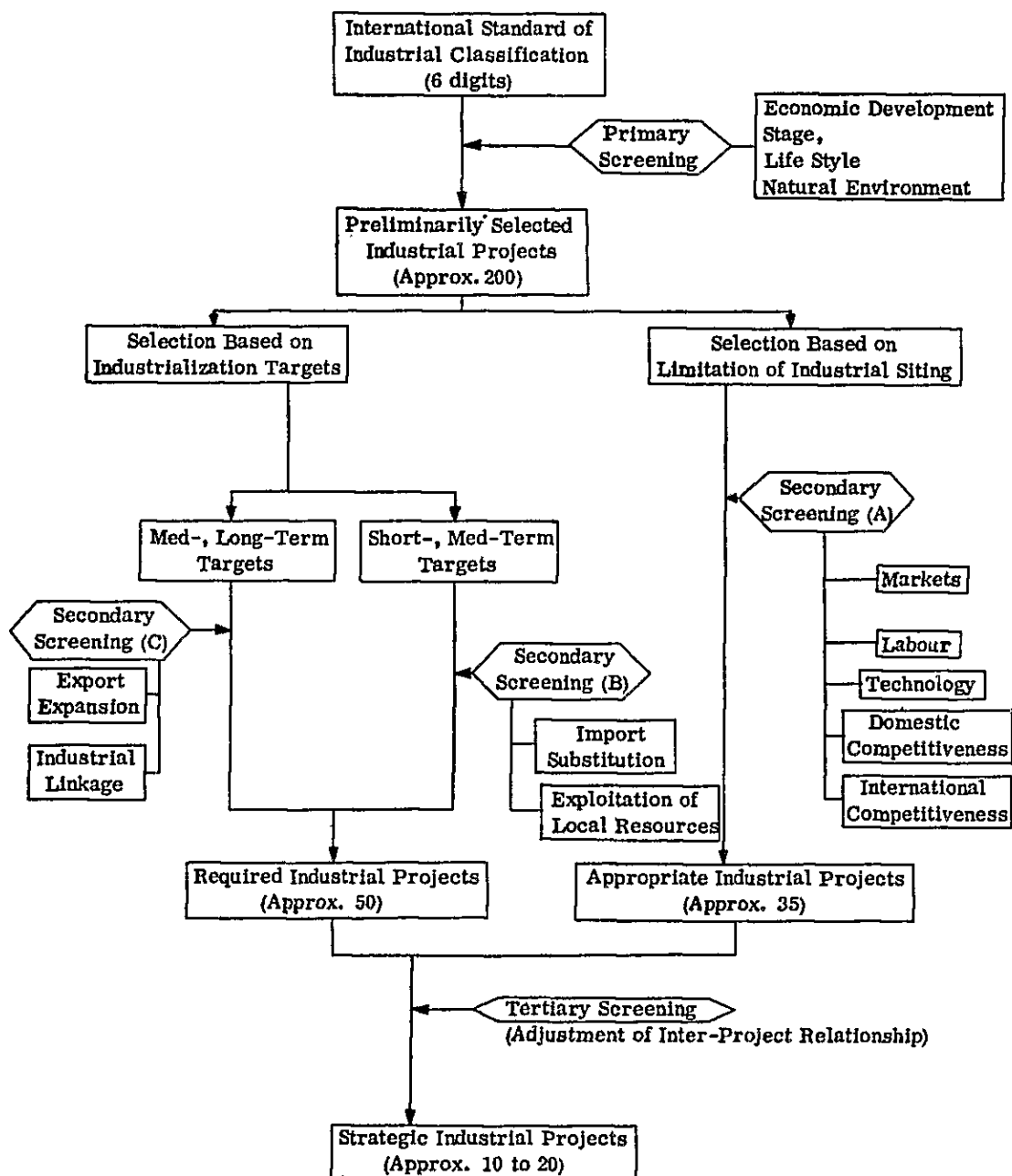
The process of selection of strategic industrial projects is shown on Figure IV-3, whereby projects are selected from the ISIC industrial classification list (6 digits) through primary, secondary, and tertiary screening.

### (1) Primary Screening

Types of industry screened out from the entire list of ISIC classification through the primary screening are those which are not believed to come into existence in Oman for the time being in consideration of the stage of economic development and the way of life and natural environment in Oman. Those screened out are among others:

- o Stage of Economic Development: Aircrafts, precision machinery
- o Way of Life: Alcoholics, heating apparatus
- o Natural Environment: Paper and pulp

About 200 types of industry including such industrial grouping as petroleum, remained after the primary screening.



(Source) JICA MISSION

Figure IV-3 Process of Selecting Strategic Industrial Projects

## (2) Secondary Screening

The approximately 200 types of industry are further screened against the following two criteria:

a. Conformity with the industrialisation objectives of Oman. Here, following objectives are used:

- o Short or Medium-term Objectives: Priority accomplishment of import-substitution and the utilisation of domestic resources
- o Medium or Long-Term Objectives: Fosteration of export industry and balanced industrial development

b. Conformity with the site conditions in Oman. Based on the result of industrial siting survey in Oman as judged by the JICA mission, the following items are reviewed: Market, labour, technology, domestic competitiveness, and international competitiveness. About 50 types of industry were selected as in conformity with the industrialisation objectives and about 35 as being promising for continued existence in Oman.

The basic concept of two kinds of screening by a. and b. is shown on Table IV-10. A maximum of 40 types of industry were selected through the secondary screening as being "promising industries to be fostered in Oman".

## (3) Tertiary Screening

From among the types of industry selected through the secondary screening, 10 to 20 types are to be selected through the tertiary screening as being "strategic projects" to be developed as quickly as possible.

## 3) Types of Industry and Sectoral Development Objectives

Types of industry which can be developed by using natural resources available in Oman are shown on Table IV-11. Based on the results of review of large import items and industrial siting requirements in Oman, about 40 types of industry are selected from said list and subjected to the tertiary screening. These types of industry are shown on Table IV-12.

Table IV-10      Criteria for the Secondary Screening  
of Industrial Projects

Criteria	Basis for Screening
a. Selection Based on Industrialization Targets	
Import Substitution	
Exploitation of Local Resources	Availability of agricultural, fisheries and mineral resources in Oman
Export Expansion	Potential of exportation with emphasis on export to the Gulf countries
Industrial Linkage	Possibility of expanding inter-industrial linkages or networks to achieve a balanced economic growth
b. Selection Based on Limitation of Industrial Siting	
Market	Large market (domestic plus possible export) size compared with minimum conceivable production unit
Labour Force	Less labour intensive industry
Technology	Ease of technology transfer to Omani people
Domestic Competition	No or few existing projects in the same industrial subsector in Oman
International Competitiveness	Higher price-competitiveness in the international market

(Source) JICA MISSION



Table IV-11 Industries Based on Natural Resources in Oman

Sector	Resources	Examples of Possible Industry		
		Short-Term ( 5 years)	Medium-Term ( 5 to 10 years)	Long-Term ( 10 years)
Agricultural Products	Wheat	Flour Mill*, Bakery*, Confectionary, Spaghetti and Similar Products	Cattle Feeds	
	Dates	Processed Dates*		
	Lime	Lime Juice, Dried Lime*		
	Tomato	Tomato Paste, Tomato Ketchup, Tomato Juice		
	Onion		Dehydrated Onion	
	Mango	Mango Juice	Preserved Mango	
	Palm	Palm Oil	Soap, Edible Oil, Margarine	
	Other Vegetables		Frozen Vegetable, Preserved Vegetables, Dehydrated Vegetables	
	Beet-Root		Beet Sugar (Sugar Refinery)	
	Tabacco		Cigarettes	
Livestock	Coconut		Coconut Oil, Charcoal	
	Cow	Meat (Fresh, Chilled or Frozen), Hides and Skins, Milk	Canned Meat, Leather Products, Foot-ware, Butter and Cheese, Powdered Milk	
	Sheep and Goat	Meat (Fresh, Chilled or Frozen), Hides and Skins, Chee, Wool	Leather Products, Wool Spinning	
	Chicken	Poultry (Fresh, Chilled or Frozen)	Chicken Soup	
	Sardine and Anchovy	Fish Meal, Fish Oil	Hydrogenated Oils, Soaps and Detergents	
Fish	Mackerel	Frozen Fish	Canned Fish	
	Yellowfin Tuna	Frozen Fish	Canned Fish	
	Petroleum and Natural Gas (Incl. Associated Gas)	Power Generation*, Desalination of Sea Water*, LPG Bottling	Petroleum Products (Refinery), Sulfur, Nitrogenous Fertilizers, Petrochemical Products, Sponge Iron (Direct Reduction of Iron Ore), LNG, Methanol	Synthetic Rubber, Synthetic Protein, Synthetic Fibre
Hydrocarbon				
Mineral - Metallic	Copper	Copper Matte, Sulfur, Sulfuric Acid	Refined Copper, Rolled Copper, Copper Wires and Cables, Copper Tubes	
	Chromium Iron	Blister Copper, Fire Refined Copper	Refractories, Ferro-Chrome	
			Sponge Iron, Ferro Alloys, Rolled Steels, Secondary Steel Products	Special Steels
	Manganese		Ferro-Manganese, Manganese Oxide	

(To be continued)

Table IV-11 (Continued)

Sector	Resources	Examples of Possible Industry		
		Short-Term ( 5 years)	Medium -Term (5 to 10 years)	Long-Term ( 10 years)
Mineral - None-Metallic	Limestone	Aggregates*, Sand Bricks, Cement, Plaster, Concrete*, Secondary Cement Products*, Lime	Calcium Carbides	
	Marble	Marble Blocks and Plates, Calcium Carbonate, Terrazzo*		
	Asbestos	Asbestos Cement Pipes*, Asbestos Board, Asbestos Slates	Friction Materials, Insulating Materials	
	Clay	Clay Bricks, Ceramic Tiles, Claywares	Porcelains, Earthenware	
	Feldspar and Kaolin		Porcelains, Earthenwares, Insulators	
	Quartz and Quartzite	Glass Bottles	Sheet Glass, Glassware, Glass Fibre	
	Phosphate Rock		Phosphatic Fertilizers	
	Brine (from Desalination Plant)	Table Salt	Chlorine, Hydrochloric Acid, Caustic Soda, Bromides, Magnesia, Magnesium	
Not Elsewhere Specified				

(Note) \* Existing  
(Source) JICA MISSION

Table IV-12 Selected Industrial Projects after the Secondary Screening

Sector of Manufacturing	ISIC Code	Description	Example
<b>1. Consumer Goods</b>			
Food/Beverage/ Tobacco	3111	Preserved Meat	Frozen beef, Frozen mutton, Frozen poultry
	3112	Dairy Products	Milk*, Butter and cheese, Powdered milk, poultry
	3113	Canning and preserving of fruits	Canned fruits, Dried fruites, Fruit juices
	3114	Canning and preserving of fish	Canned fish, Dried fish
	3115	Vegetable and animal oils and fats	Fish oils, Chee, Palm oil, Coconut oil, Groundnut oil, Lieve oil
	3116	Wheat flour	Flour*
	3117	Bakery products	Bread*
	3118	Sugar refinery	Refined sugar
	3119	Confectionery	Biscuit
	3121	Miscellaneous food preparation	Eggs*, Nuts, Honey, Fish meal
	3134	Soft drinks and carbonated water industries	Soft drinks*, Mineral water
	3140	Tobacco	Cigarettes
	3212	Made-up textile goods except wearing apparel	Bags, Finished blankets and rugs
	3220	Wearing apparel except footwear	Hats and caps, Outer garments*, Scarves
Footwear/ Clothing	3240	Footwears	Sandals
Furniture	3320	Furniture and fixtures	Furniture*
<b>2. Intermediate Goods</b>			
Paper/Carton	3419	Articles of pulp and paperboard	Tissue paper cut to size
Rubber Products	3550	Rubber products	Footware rubber-soled, Tyres and tubes
Printing	3420	Printing, publishing and allied	Newspaper*
Leather Products	3232	Tanneries and leather finishing plates	Calf leather, Leather of sheep and lamb skins
	3233	Leather products except footwear	Travel goods, Belts and braces
Chemicals	3511	Basic industrial chemical including fertilizers	Byproducts of copper project (sulfuric acid), Salt-related products (chlorine hydrochloric acid, caustic soda, bromides), Sulfur, Nitrogenous fertilizers (urea, ammonium Sulfate), Ammonia, Phosphatic fertilizers (super phosphates), Calcium carbides, Methanol, Petrochemical products (PE, PVC, PP)

(To be Continued)

Table IV-12 (Continued)

Sector of Manufacturing	ISIC Code	Description	Example
Chemicals	3521 3529	Paints, varnishes and lacquers Miscellaneous chemical products	Paints*, Lacquers Soaps, Insecticides, Disinfectants, Medicines, Candles, Matches
Petroleum products	3530 3540	Petroleum refineries Miscellaneous products and petroleum and coal	Motor spirit, Distillate fuels, Residual fuel oils, Lubricants, LPG, Pitch and tar Asphalt
Non-metallic Products	3690 3620 3610 3692 3699	Structural clay products Glass and glass products Pottery china and earthenware Cement Non-metallic mineral products not elsewhere classified	Bricks, Ceramic tiles, Ceramic pipes Sheetglass, Glass tableware, Glass containers Sanitary ware, Household ware Cement Plaster, Aggregates*, Slacked lime, Asbestos-cement products*, Articles of cement*, Glass fibre products, Friction materials, Building and monumental stones
Basic Metal Products	3710 3720	Iron and steel basic industries Non-ferrous metal basic industries	Sponge iron, Ferro-alloys, Steel billets, Bars and rods of steel, Steel sections, Iron and steel wire, Cast iron pipes, Iron and steel forgings Copper matte, Blister copper and other unrefined copper, Refined copper, Bars, rods, sections and wire of copper, Magnesium, Other non-ferrous metals
3. Durable Consumer and Capital Goods			
Metal Products	3810	Metal products except machinery and transport equipment	Pipe fittings of iron and steel, Tube and pipe fitting of copper, Steel structures, Tanks of iron and steel, Wire cables and ropes, Fencing and net of steel wire, Expanded metal of iron and steel, Nuts, bolts, screw and nails, Handtools for agricultural use, Knives and other articles of cutlery, Domestic stoves, cookers and boilers, Domestic utensils of aluminium, Locks and keys, Base metal fittings used on furniture, Articles of copper, Aluminium structure
None-Electrical Machinery	3820	Machinery except electrical machinery	Agricultural machinery and appliances, Food-processing machinery, Air-conditioning machinery (including repairing), Water pumps, Machine parts
Electrical Machinery	3830	Electrical machinery, apparatus and appliances	Insulated wire and cable, Batteries and dry cells, Flashlight apparatus

(To be Continued)

Table IV-12 (Continued)

Sector of Manufacturing	ISIC Code	Description	Example
Transport Machinery	3841 3843	Shipbuilding and repairing Motor vehicles	Construction of ships and boats, Ship repairing Repair of motor vehicles, Parts for motor vehicles
Other Manufacturers	3901 3909	Jewellery and related articles Manufacturers not elsewhere classified	Goldsmith's and silversmith's wares, Domestic utensils of precious metals Jewellery cases, trays etc. of base metals, Name plates, Sign plates of base metals, Parts and products made of plastic

(Note) \* Existing

(Source) JICA MISSION

From this Table, the following become clear:

- (1) Of consumer goods, a large number are processed agricultural or fishery crops of Oman.
- (2) Domestic production of textile products will be difficult with some exception. This is because such factors as resource, climate, market, and labour are all unfavourable to siting.
- (3) Only a limited number of other consumer goods may be manufactured in Oman, even in a long-term future,
- (4) Development of intermediate goods will be accelerated in the 1980's through the processing of Omani resources or of imported materials in some cases. But, because development in this sector tends to become big projects, result will vary depending on the degree of success in project implementation. Examples are petroleum products, processed copper products, petrochemical products, chemical fertiliser, and so forth.
- (5) Consumer durables and capital goods will not be produced for the time being, with the exception of certain metal products. This is because there are problems in technology and market. But there are rooms for the expansion of automobile repair and the manufacturing and repairing of agricultural, fishing, and mining equipment.

Based on the foregoing considerations, target values of gross industrial output for manufacturing have been estimated on Table IV-13. The industrialisation of Oman is to be accomplished through the gradual production of non-durable consumer goods while rapidly expanding the production of intermediate goods. Production of consumer durables and capital goods is predicted to be limited to certain items even in the future.

The tertiary screening has resulted in the selection of the 20 types of industry listed on Table IV-14, taking into consideration the following eight types of industry proposed by the Omani Government and taking into consideration of inter-industrial and inter-project relationships. Those which do not currently exist in Oman are purposefully selected.

Industries highly interested in by the Omani Government:

- (1) Marble and stone cutting
- (2) Ceramics and potteries
- (3) Glass products
- (4) Copper-based industries
- (5) Construction materials
- (6) Salt-based industries
- (7) Modernisation of small fishing boats

Table IV-13      Target Gross Industrial Output

(Unit: MM Rials Omani, 1976)

	1976	1980	1985	1990
Consumer Goods	(7)	20	39	51
Intermediate Goods		9	38	72
Durable Consumer and Capital Goods		1	7	12
Total	7	30	84	135

(Source) JICA MISSION

### **3. Scale and Timing of Establishment of Strategic Projects**

#### **1) Selection of Site**

Attention should be paid to the following points in selecting industrial sites:

- (1) Conformity with the national development objectives of Oman**
  - o Regional development or regional industrialisation objectives
  - o Development objectives for specific resources (particularly hydrocarbons, minerals)
  - o Industrial area or industrial estate construction plan
- (2) Ease of procuring land and infrastructure**
  - o Possibility of securing a flat piece of land of one hectare or larger
  - o Availability of subterranean water
  - o Easy access to truck road, port
  - o Availability of electric power from the national grid
  - o Ease of communications
- (3) Ease of resources procurement**
  - o Easy access to a mine
  - o Easy access to gas pipeline junction
  - o Easy access to an agricultural products distribution centre
- (4) Availability of manpower and the existence of a community**
  - o Ease of recruiting manpower, particularly skilled labour
  - o Possibility of procuring or constructing dwelling houses in a unit of at least several tens
  - o Existence in the neighbourhood of a community with adequate social infrastructure and amenity of life
- (5) Facility of commercial transactions**
  - o Easy access to a bank
  - o Existence in the neighbourhood of suppliers of raw materials and machine parts



- o Easy access to the government agency(ies) with which necessary applications are to be filed

In consideration of (2), (4), and (5) above, industrial locations in Oman are limited to Muscat and surrounding Metropolitan area and Salalah and its vicinity. Therefore, industrial decentralisation plan will have little effect, unless;

- o Active development of resource-based industries, and
- o Development of industrial estates and the control of industrial siting in overpopulated areas are put forward at the same time.

Muscat, Salalah, and about four other growth poles are conceivable (see Table IV-15 and Figure IV-4). Industrial expansion toward the northwestern region, that is, Seeb-Rusayl region and Sohar region, has been advocated as a measure of decentralisation from the over-concentrated Metropolitan area (Whitehead Consulting 1977, TTI Technology Transfer, 1977), but this should be considered only in relation to said growth poles. Industrialisation targets for these growth poles by type can be conceived of as presented on Table IV-16. Particularly, imported raw material processing industries will expand from Muscat and vicinity toward Seeb-Rusayl region and further to the northwestern region.

Industrial decentralisation can be accomplished to some extent in Oman by locating resource-based industries (agricultural crop processing, fishery product processing, mineral processing) at the place of production of the resource. Possible siting points are shown on Table IV-17 for the strategic industrial projects (of Table IV-14).

Table IV-14 Selected Industrial Development Project in Oman

Sector of Manufacturing	ISIC Code	Project Description	Remarks
<b>1. Consumer Goods</b>			
Foot/Beverage/ Tobacco	3111	Frozen meat & poultry	Cattle breeding is yet to be developed.
	3113	Canned food (fish and fruits)	Fish catch and fruit growing are yet to be developed. Can manufacturing is also to be developed.
	3114	Vegetable oils	Agricultural production of oil seeds is insufficient at present.
	3115	Confectionery (Biscuit and etc.)	Market in Oman is limited.
	3119	Footwares	Production is to start with rubber materials but eventually to utilize leather domestically produced.
Footwear/ Clothing	3240		
<b>2. Intermediate Goods</b>			
Leather products	3232	Finished leather and its products	Cattle breeding is yet to be developed.
	3511	Nitrogenous fertilizers	Market in Oman is limited.
Chemicals	3529	Soap	Market in Oman is limited.
	3530	Petroleum products	Market for heavy sides of products in Oman is small.
Non-metallic products	3690	Clay bricks and ceramics tiles	Sufficient reserve of clay, especially of high quality, is yet to be located.
	3620	Glass containers	Deposit of quartz or quartzite of good quality is yet to be located.
	3610	Pottery, chinaware and earthenware	Sufficient reserves of high-quality clay, kaolin, feldspar and quartz are yet to be locate.
	3699	Products of limestone	Effective use of these products in Oman are yet to be developed.
	3695	Secondary cement products	Use of these products in Oman is still limited.
Basic metal products	3699	Building stones	Deposits of high quality marble have been located.
	3710	Steel bars and rods	Re-rolling of steel billets can be performed with relatively small investment.
<b>3. Durable Consumer and Capital Goods</b>			
Metal Products	3710	Steel wire and its products	Wire fences and nets have an extensive market in agriculture.
	3810	(fences, nets, nails and screws)	

(To be Continued)

Table IV-14 (Continued)

Sector of Manufacturing	ISIC Code	Project Description	Remarks
Metal Products	3810	Refining and fabrication of refined copper	There exists a certain market for electric wires made of copper in Oman.
Metal products, Non-electrical machinery	3810 (3820)	Tools and machinery for agriculture use	There is a market for handtools for agriculture. In future, simple farm machinery for irrigation, harvesting and so on will possibly be manufactured in Oman.
Transport machinery	4841	Repair of fishing boats	Number of fishing boats in Oman is limited.
Other manufactures	3909	Products made of plastics	Market in Oman is limited.

(Source) JICA MISSION

Table IV-15 Possible Industrial Locations in Oman

Growth Poles	Plan of Industrial Estate	Land Availability	Water Availability	Transportation	Resources and Raw Materials	Manpower	Business Facilities	Local Market
1. Muscat Metropolitan Area	(Existing)	Difficult	Difficult	Convenient	Imported Materials	Available	Available	Large
2. Seeb-Rusayl Area	Existing	Available	Available	Convenient	Imported Materials, Lime Stone, Other Minerals	Available	Accessible	(Large)
3. Sohar Area	No	Available	Available	Convenient to Reasonable	Copper, Fish, Agricultural Products	(To be Recruited and Trained)	Remote	Small
4. Nizwa Area	No	Available	Available	Reasonable	Agricultural Products	(To be Recruited and Trained)	Remote	Small
5. Sur Area	No	Available	Available	Reasonable	Fish	(To be Recruited and Trained)	Remote	Small
6. Salalah Area	No	Available	Sufficient	Difficult (Surface Transport)	Fish, Agricultural Product, Other Minerals	Available	Available	Medium

(Source) JICA MISSION

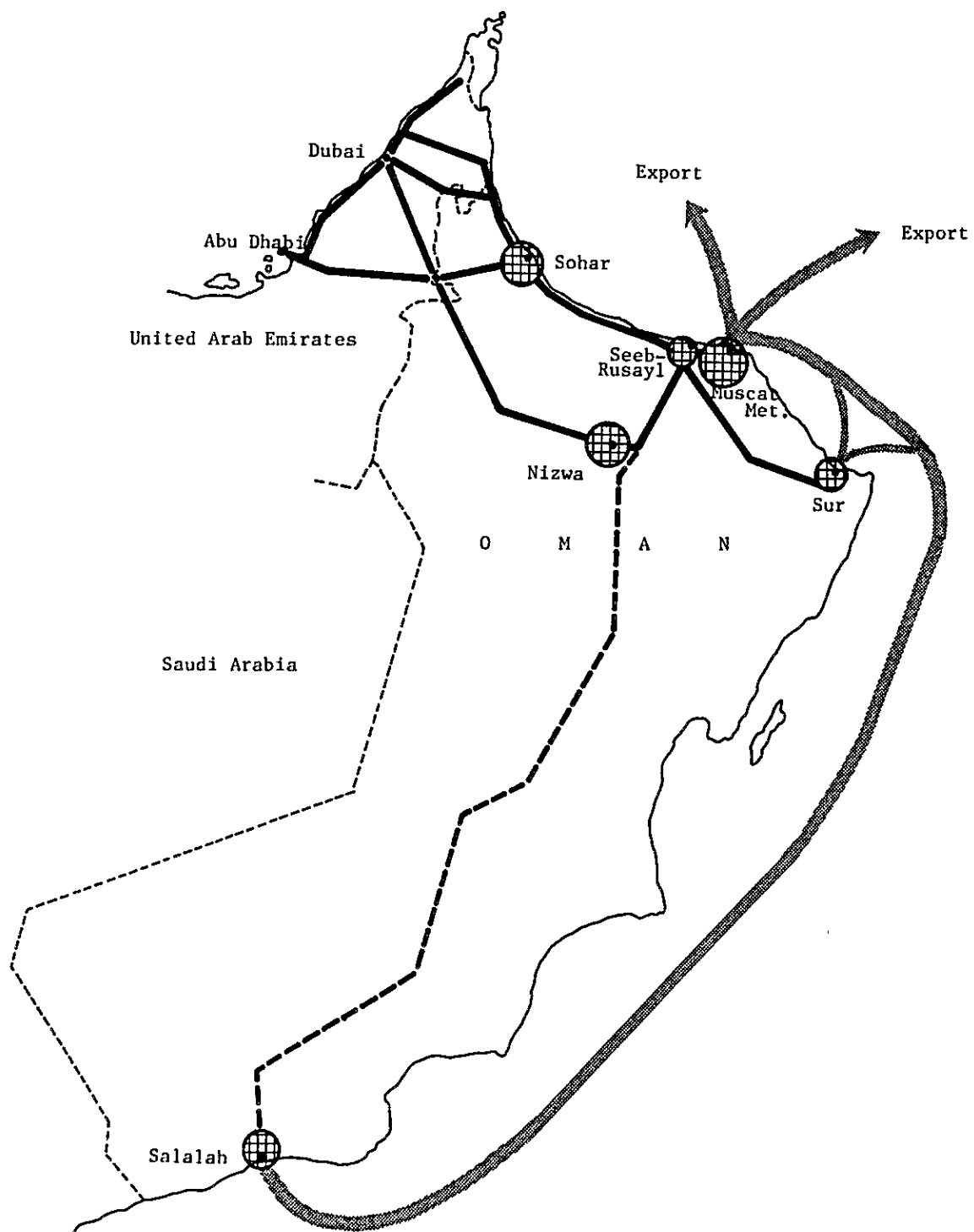


Figure IV-4 Location of Growth Poles and Their Transportation Links

Table IV-16 Characterization of the Industrial Growth Poles in Oman

Growth Poles	Processing of Imported Raw Materials	Processing of Agricultural Products	Fish Processing	Mineral Processing
1. Muscat Metropolitan	O		O	
2. Seeb-Rusayl	O	(O)		O
3. Sohar		O	(O)	O
4. Nizwa		O		(O)
5. Sur			O	(O)
6. Salalah	(O)	O	O	(O)

(Note) ( ) Possible in Future

(Source) JICA MISSION

## 2) Siting Schedule for Strategic Industrial Projects

The previously identified strategic industrial projects (and related industries) are classified into those for which both funds and technology are available and, therefore, may easily be located in Oman and those which may be located only after their specific prerequisites are satisfied. Prerequisites for each type of industry and the period of time needed for the satisfaction thereof are listed below.

(1) **Frozen Meats:** For beef, systematic cattle grazing should be done in the Dhofar Mountains and for poultry meat, a large scale poultry raising must become active. The former will require five years or more, and the latter, from three to five years.

(2) **Canned Fish:** Preconditions are the stable catching and landing of high grade fishes by deep sea trawling ships and the construction of a canning factory, which will require about three years.

(3) **Canned Fruits:** From five to seven years' time will be required from the start of development (through the selection of development area, irrigation method, and fruit trees) to the harvesting of fruits. Also, a canning factory needs to be constructed.

Table IV-17 Possible Location of the Strategic Projects

Industrial Project	1. Muscat Metropolitan	2. Seeb-Rusayl	3. Sohar	4. Nizwa	5. Sur	6. Salalah
Frozen Meat		O	O			O
Canned Fish	O		O		O	O
Canned Fruit			O	O		O
Vegetable Oil		O	O	O		O
Confectionery	O	O				
Footware	O	O				O
Leather and Its Products	O		O	O		O
Fertilizer	O	O	O			
Soap	O	O				
Petroleum Product	O					
Clay Bricks		O		O		O
Ceramics Tile		O		O		O
Glass Container	O	O				
Pottery & Chinaware		O		O		O
Limestone Product		O	O			
Cement Product		O				O
Building Stone		O	O	O		
Steel Bar and Rod		O				
Steel Wire		O				
Fences, Net and Nail	(O)	O	O			O
Copper Downstream		(O)	O			
Agricultural Tool and Machinery	O	O	(O)			(O)
Repair of Fishing Boat	(O)		(O)		O	O
Products Made of Plastics	O	O	(O)			

(Note) ( ) Possible in Future

(Source) JICA MISSION

- (4) Vegetable Oils: From three to five years will be needed before the harvesting of the crop; in the case of palm oil and coconut oil, more than five years will be necessary from the reclamation of plantation land to crop harvesting.
- (5) Confections: No preparation time is needed except for the selection of products.
- (6) Footwear: A short period of time is needed for market survey and the selection of products.
- (7) Leather and Leather Products: Five or six years will be necessary before cattle grazing becomes active and leather tanning techniques established.
- (8) Nitrogenous Fertiliser: Adequate export market needs to be secured. Five to seven years for the plant construction and operation commencement.
- (9) Soap: No preparatory time is needed for the production of soap from imported raw material. But if domestic vegetable oil is to be used, the time specified under (4) above will be necessary.
- (10) Oil Refinery: Four or five years for the plant construction and operation commencement
- (11) Bricks: One year for the finding of adequate volume of clay; a total of two or more years including factory construction.
- (12) Ceramic Tiles: Same as bricks under (11).
- (13) Glass Products: Six months to one year to prove deposits of quartz sand, clay, felspar, and quartzite; more than one year for factory construction and operation commencement.
- (14) Ceramics and Potteries: One year to prove the deposits of clay, potter's clay, felspar, and quartz; about two years for factory construction and production commencement.
- (15) Limestone Products: After market size has been confirmed, only one or two years for factory construction is needed.
- (16) Cement Products: Same as (15) above.
- (17) Stones for Construction Uses: Six months to one year for the identifi-



cation of an adequate stone deposit, plus nearly one year for the delivery of machines, development of infrastructure, and construction of a crushing plant.

(18) Steel Rolling: Nearly three years for the construction of factory for rolling imported billets and for plant operation.

(19) Steel Wire: One to two years for the wire factory construction and operation.

(20) Steel Fence, Screen, and Nails: One to 1.5 years for the construction of factory for processing imported steel and for operation start.

(21) Copper Processing: Two to three years for construction and operation of refinery and processing factory.

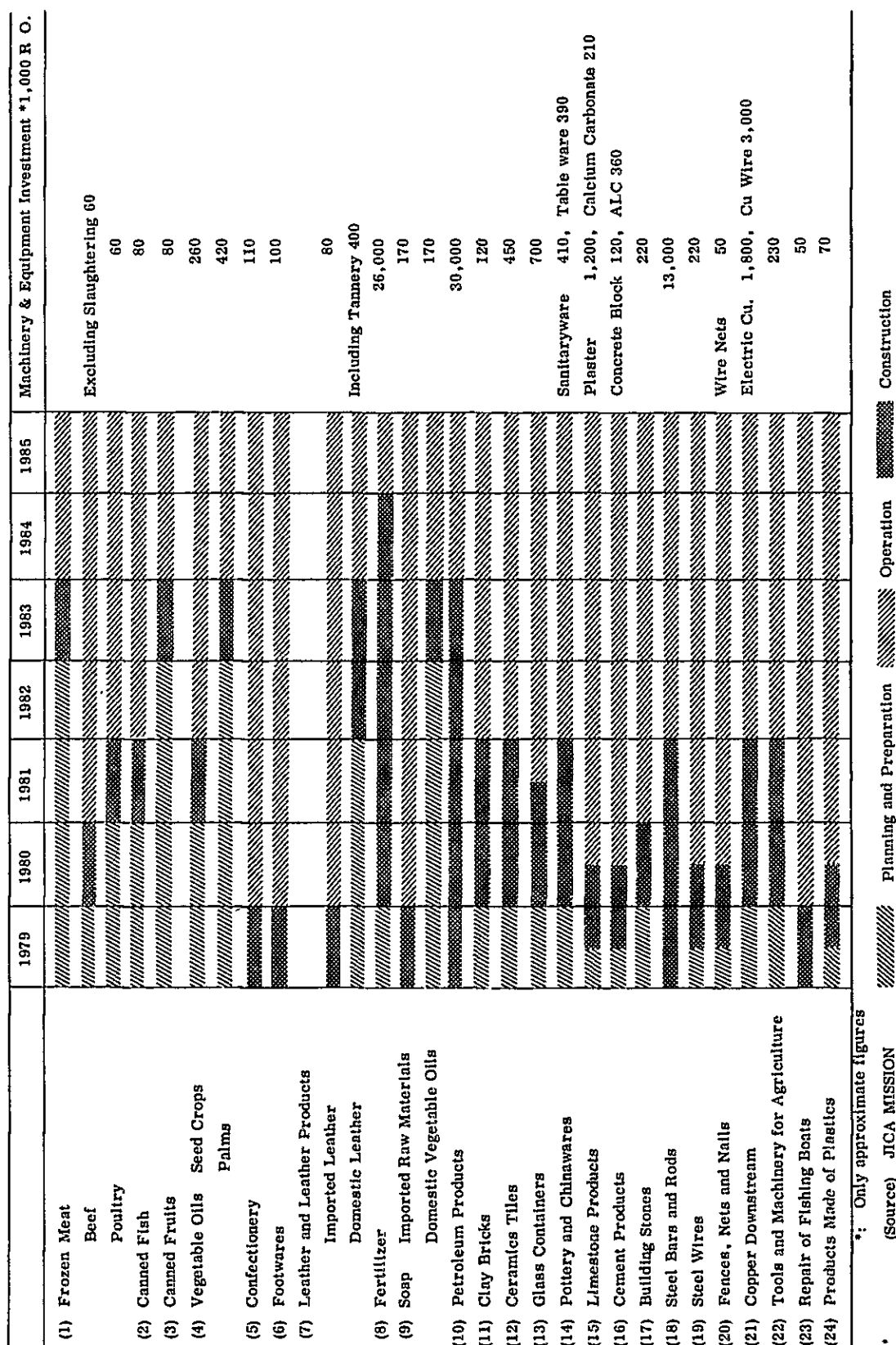
(22) Agricultural Equipment and Farm Machinery: Two or three years for product selection and factory construction.

(23) Fishing Boat Repair: One to one and a half years for the construction of workshops.

(24) Plastic Products: One to two years for market survey and factory construction.

With the above conditions in mind, a timetable for the development of strategic industrial projects has been formulated on Figure IV-5.

Figure IV-5 "Desirable" Development Schedule for Strategic Industrial Projects  
Industrial Projects in Oman



#### 4. Fosteration Programme of Strategic Industrial Projects

##### 1) Basic Philosophy of Fosteration

Omani industrialisation has just started, and effective industrial fosteration measures of the government will be essential in order that the industries will become an important income-generating economic sector, along with agriculture and fishery in the future. Basic philosophy of fosteration calls for the overcoming of obstacles which the industries are currently faced with or which will occur in the future.

The obstacles are:

- (1) Insufficient industrial development funds
- (2) Inadequate supporting institutions and organisations
- (3) Inadequate infrastructure essential to industrialisation
- (4) Small markets
- (5) Insufficient supporting or related industries
- (6) Insufficient manpower
- (7) Low technical level

These obstacles are common to developing countries but are more intense in Oman than in other countries.

Particularly, the smallness of domestic markets requires that cooperative industrial development be maintained with neighbouring countries and makes it difficult for a protectionist policy of domestic industry to be effective. These two can become particular hindrance to the industrialisation of Oman. But, in view of numerous precedents in the process of industrialisation in many developing countries that overprotection of domestic market-oriented and import-substituting industries has resulted in the fosteration of industries with feeble base which cannot compete internationally, accomplishment of industrialisation in Oman under said restrictive conditions might, after all, result in the fosteration of strong and internationally competitive industries.

Industrial (other than hydrocarbon-related) development policies of the Gulf nations can be classified into the following two by the behavior of industrial

development which depends on their population (market) and the level of oil revenue:

- o Private leadership: Kuwait, U.A.E., Saudi Arabia
- o Government leadership: Iran, Iraq

Development under complete government leadership would be difficult in Oman for the reasons stated previously. In fact highly profitable projects have already been implemented actively by private capitals. But those whose profitability is unknown and those which involve a large sum of investment funds may be worth implementing under government leadership provided that the project appears to be able to maintain a high relative competitiveness in the future because of the exploitation and utilisation of Omani resource or other reason. And, as the example of flour mill currently demonstrates, once the project is implemented, operation can be gradually taken over by the private sector. Therefore, the most important of the factors to be considered upon industrial fosteraion is the selection of industrial types to be established in Oman. It will be particularly desirable that a clear long-term prospect is established as to whether the projects be developed by private parties or be developed under the government leadership.

## 2) Financial Measures

It is a well known fact that industrial development investments are being discouraged in Oman by the fact that private financing has concentrated in short-term loans. It can easily be imagined from the national trait of Omanis and the economic history of Oman that investments will be made more actively in the commercial sector than in the manufacturing in the future. But, then, due to decline in the fund demand of the commercial and construction sectors which has been caused by the stagnation of private consumption, many loan offers have been made to promising industrial projects.

Against this background, it is desirable that the government take the following fiscal and financial measures for industrial development purposes:

### (1) Direct Government Investment in Big Projects

The government is to propel big projects by the input of own funds or foreign grants. The current examples of natural gas pipeline, copper mine development,

and cement plant construction should be followed in the future. That is, projects of this kind can be classified into (a) those which require a substantial pre - preparation time, such as mine development, (b) those which require guarantee for marketing product, such as cement project, and (c) those which are essential to national development, such as the gas pipeline.

Although the competent ministry (Ministry of Industry and Commerce, Ministry of Agriculture, Fishery, Petroleum, and Minerals) is currently making direct investments, it might be worth considering the following for the purpose of simplifying investment operation:

- o Transfer the responsibility for big projects investment operation to the Development Bank, or
- o Establish a Basic Industries Development Corporation (following the example of the Saudi Arabian Basic Industries Corporation).

## (2) Expansion of Development Bank Functions

Although the Development Bank had not commenced operation by February 1978, it had been decided that the Bank would function to finance highly feasible big projects and small or medium-scale industrial projects. In addition to the financing of low interest long-or medium-term loans to and capital participation in Omani enterprises, it is desirable that the Development Bank have the following functions:

- o Joint loan with a city bank or banks with Development Bank leadership,
- o Direct participation in joint-ventures with foreign capitals,
- o Concentrated loans for specific industrial sector which constitutes an important part of national development plan, such as low-cost house construction.

## (3) Subsidy to Industrial Projects Feasibility Studies

It is recommended that constant efforts be made for the finding out of projects worth financing in order to accelerate the development financing. For this purpose a system of subsidy or very low interest loan should be established.

### 3) Development of Institutions and Organisations for Industrialisation

Development of a system for the collection of necessary information and of organisations for promoting industrialisation activities will become necessary for the purpose.

#### (1) Statistical Information

While a fair number of private enterprises operate in Oman, it will be highly essential that the Ministry of Commerce and Industry and/or the National Statistical Department will gather, classify, and maintain business information, particularly data on capital, employees, facilities, and products. Preparation, particularly, of industrial statistics will facilitate the progress of industrialisation.

Foreign trade statistics are presently classified only by three or four digits and in exceptional cases by five digits according to the Standard International Trade Classification (SITC). In order to plan active import-substitution in the future, it will be necessary that the volume of imports be accurately defined by import item according to fine classification. And the use of five digit classification will be desirable.

#### (2) Development of Organisations for Promoting Industrialisation

Functions of promoting industrialisation have already been established within the Ministry of Commerce and Industry, but it is believed essential that the following functions be added to the Ministry or grouped under an independent agency:

- o Industrial estate development and administration
- o Industrial decentralisation to rural areas
- o Planning and development of industry-related infrastructure
- o Coordination with Gulf nations on industrialisation and establishment of cooperative regional development.

Of the above, particularly important will be gather industrialisation information from Gulf nations in order that the industrialisation plan of Oman would not compete with theirs in the least and would facilitate harmony with them. A good examples of this is the cement project.

#### 4) Amplification of Infrastructure

Infrastructure for the industrialisation of Oman cannot be said to have been fully developed. Therefore, the following measures will be essential:

##### (1) Designation of Industrial Area and the Construction of Industrial Estate

Residential and industrial quarters are to be separated in parts of the Metropolitan area and suburbs where they are now intermixed. When the Rusayl Industrial Estate is completed, a fair number of factories will be concentrated on the Estate. In Oman, water supply and drainage (contamination of underground water) are one of the biggest problems of siting industry and they should be borne in mind in designating industrial area and in constructing industrial estates.

##### (2) Securing of Power and Water Supply

Power transmission network covers only the Metropolitan areas, where many factories still use their own generation units. Electric power may not be usable for industrial purposes unless the present shortage of supply and low quality are improved. It might become necessary that the feasibility of constructing a power generation plant for industrial estate be studied.

Water supply is the greatest element of industrial site selection. Locations where underground water is available for industrial use--and hopefully having no effect on agricultural irrigation--should be selected. Drainage from factories may be put back into the ground if uncontaminated. But it should be made mandatory that effluent from electroplating plant and other chemical contaminated drainage be drained through water treatment apparatus. In view that water pollution in developed nations is often due to factory effluent, consciousness of pollution control should be developed in Oman in the early stage of industrialisation. The contamination of underground water would not only result in threatening the lives of downstream inhabitants, but also can result in killing date palms or otherwise destruct agricultural foundation. An integrated waste water treatment plant can be considered for industrial estates.

##### (3) Improvement of Government Services

Administrative services are essential "invisible" infrastructure to the accomplishment of industrialisation. It is particularly desirable that the

procedures pertaining to the establishment of industrial firms--investment permit, registration, land acquisition permit, factory construction permit--be centralised and simplified. Time consuming procedures can result in discouraging foreign capitals to invest in Oman and drive them away to other Gulf nations.

5) Market Expansion Efforts

Markets are small in Oman and exportation to neighbouring countries is difficult in view of international competitiveness. Therefore, it should be necessary that the following measures are taken:

(1) Improvement of Distribution Network

Warehouses should be built at various domestic locations and means of transportation--trucks, coastal shipping (Muscat - Salalah)--developed to connect them.

(2) Trade Arrangements with Neighbouring Countries of Intermediate Goods

Export markets can be secured if arrangements similar to one seen in the cement project are made with neighbouring countries. For instance, it should be possible that government-to-government negotiation be made for the supplying of Omani copper wire bar to electric cable factories which are now being constructed in neighbouring countries.

(3) Development of Exporting Functions

A large number of trading companies operate in Oman at present, but few of them handle exports. In the future, intermediate goods processed from Omani resources must be exported. It is necessary that the functions of the traders be utilised for this purpose.

(4) Preferential Use of Omani Products in Government Projects

When the production of cement, construction materials, electric wires and cables, and so forth has begun in the future, the government should take leadership in the preferential use of such domestic products in government projects.



## 6) Intensification of Industrial Linkage between Related Industries

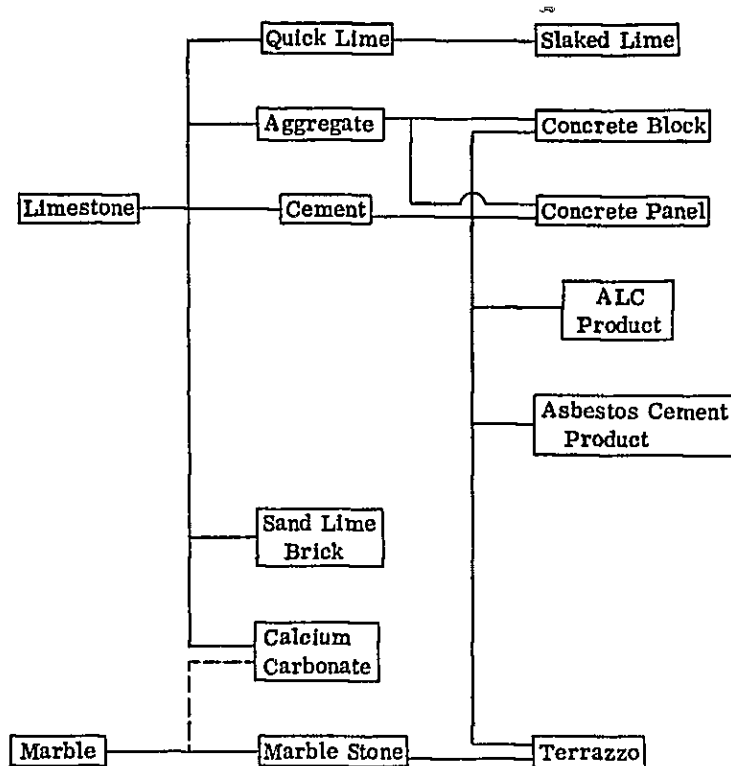
Industrial production requires various types of raw materials, parts, and machines and apparatus. Even if it is difficult to produce all of them in Oman, it is desirable that the domestic self-sufficiency of such commodities be raised to the possible maximum in order that highest value added be realised in Oman. To achieve this end, it is essential that related industries (rather than unrelated industries) be fostered and industrial linkage be strengthened and intensified among them.

### (1) Designation of Strategic/Pioneer Industries

The types or the sectors of industries that should be established in Oman with priority emphasis should be designated subjected, for instance, to the following preferential treatment:

- o Preferential site procurement in an industrial estate or preferential approval on industrial land acquisition,
- o Preferential tax treatment
- o Simplification of business establishment procedures
- o Preferential supply of electric power, water and other utilities

The priority industry may be designated based on the full utilisation of Omani natural resources, export-orientation, and so forth. Utilisation of lime-stone is shown by Figure IV-6, as an example.



(Source) JICA MISSION

Figure IV-6 Full Utilization of Limestone in Oman

## (2) Fostoration of Repair Business

Automobile repair garages, manufacturing and repairing of simple machines, and manufacturing of steel structures already exist in Oman. These are the types of business essentially needed in order to guarantee efficient operation of machines and equipment to be introduced in the process of industrialisation. They have spontaneously come into being, guided by demand at present. In future they should be invited to move into an industrial estate, and their sound growth be assisted.

## 7) Promotion of Manpower Development

Manpower essential to industrial development includes managers, engineers, artisans, and skilled labourers. While managers and engineers may have to be trained abroad for the time being, on-the-job (OJT) training should be used as an important tool of any kind of skill.

(1) Technical Training Schools and Student OJT

The establishment of technical training schools proposed for Sur, Salalah, and Sohar should be materialised. If possible, students (while in school) should be sent to factories and offices for on-the-job training, which can be offered in connection with the in-house OJT of employees, which will be discussed in the below.

(2) Employee OJT

Enterprises, particularly joint-venture companies with foreign investment, should be obligated to offer adequate on-the-job training to unskilled Omani workers. (Expatriates, who are believed to have been already skilled adequately at the time of their entry into Oman, should be excluded from this OJT programme.) In the future, employers might be obligated to assign an Omani counterpart trainee to each expatriate engineer/artisan who is staying in Oman beyond certain period of time. Also, the government might consider subsidising the programmes for the training of Omani workers.

8) Raising of Industrial Technical Level

In addition to the technical training schools, it is essential that a technical centre be established for the accumulation of technical information, training of higher class engineers, testing of raw materials and products in order to improve the technical levels of Omani industries.

(1) Mineral Survey and Processing Technology

When one considers the high potentials of mineral resources in Oman, he is convinced that technology should be established in Oman for exploration, mining, and processing of such resources. The existing organisation should be developed into a Geological Survey Office in the future for carrying out exploration for discovery of ore deposits which may be economically exploited, so that mineral development may be accomplished under the initiative of Omanis.

(2) Industrial Standards

In the absence of industrial standards in Oman, consultants from developed nations have used their own standards in designing and foreign investors have automatically introduced their standards to joint-venture companies. Although

there is presently no urgent need for the establishment of Omani industrial standards, exemplary industrial standards should be obtained from selected developed nations and examined, should it become necessary from the standpoint of maintaining and repairing imported machinery and equipment. Also, when processed Omani mineral resources (such as processed copper products) are to be exported in the future, it will be essential that they conform with international standards; prospective buyers will refuse to accept products which do not fit. Study of industrial standards will contribute to the enhancement of industrial technical level in Oman.

9) Government Assistance

Finally, the following government assistances should be offered to the importation of materials and equipment and to exportation of Omani products:

(1) Exemption from customs duties

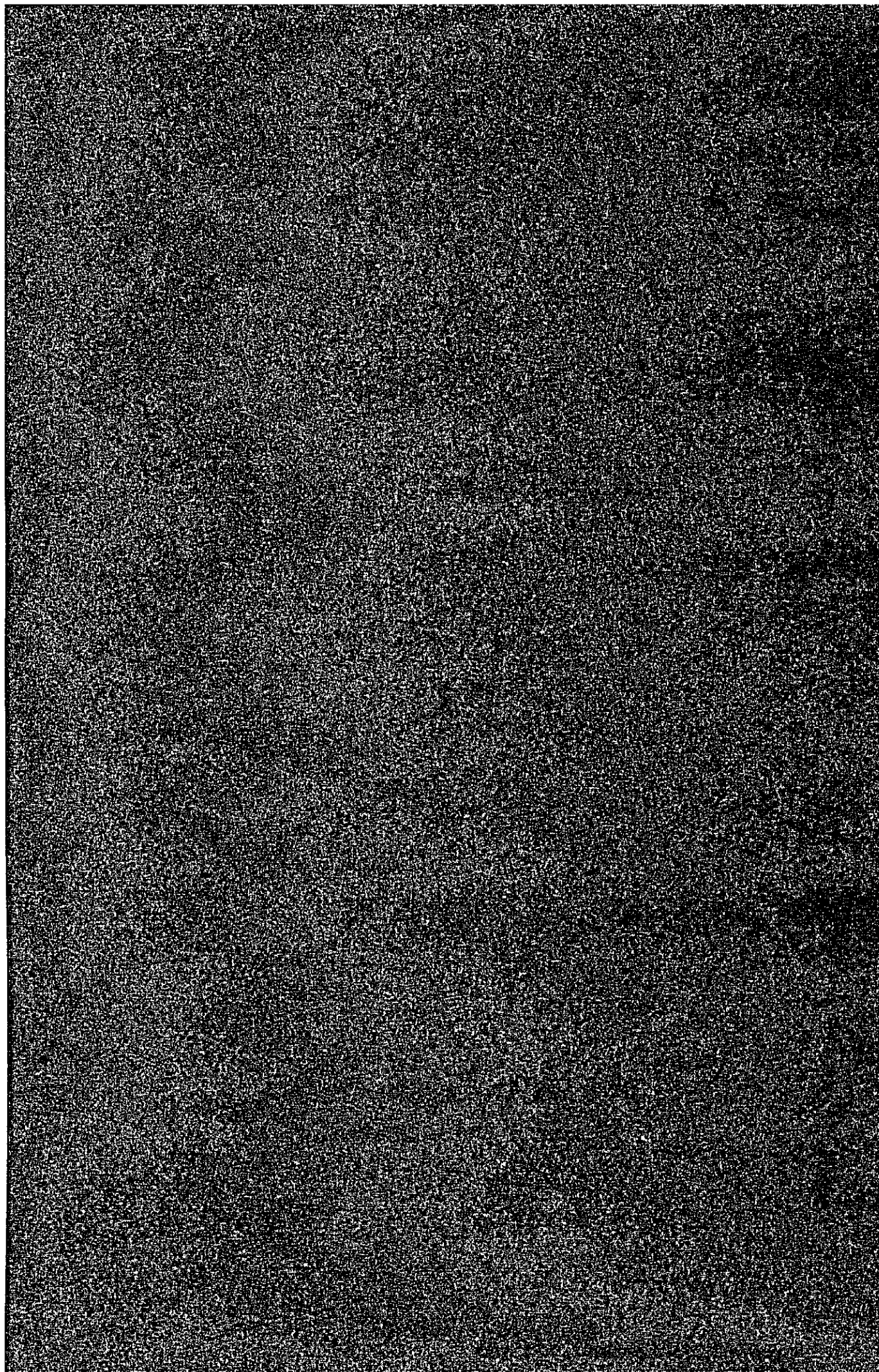
Even though the importation of raw materials, equipment, and industrial plants is subject to practically no import tax, importation for the selected strategic industrial project purposes should be made absolutely duty-free.

(2) Export Assistance

In order to promote the exportation of Omani products, systems for export income deduction and export market development expense reserve should be introduced into corporate income tax law.

## **PART TWO**

# **SELECTIVE PREFEASIBILITY STUDIES OF STRATEGIC INDUSTRIAL PROJECTS**



## I. PROJECT SELECTION AND SCOPE OF STUDY

### 1. Project Selection

For the purpose the selective prefeasibility studies to be done in this PART TWO, the 24 strategic industrial projects identified in PART ONE, Chapter IV, and the seven Government-interested projects have been screened, and the following 13 projects, for which either domestic resources or domestic demand exists, have been selected as priority projects for early implementation:

- (1) Secondary Cement Products
- (2) Marble
- (3) Limestone and Dolomite Products
- (4) Autoclaved Lightweight Concrete Products
- (5) Glass Products
- (6) Ceramics
- (7) Clay Bricks
- (8) Copper Refining and Fabrication
- (9) Plastic Products
- (10) Petroleum Products
- (11) Natural Gas Utilization
- (12) Products from Sea Water
- (13) Small Fishing Boats

## 2. Scope of Study

Prefeasibility studies of the selected projects are to be conducted with particular attention to the following items:

- (1) **Current industrial situation to which the project belongs:** While industrial activities in Oman do not cover the entire spectrum of industry, the trend of industry to which each project belongs will be analysed (for instance, in the case of building materials manufacturing project, building industry will be reviewed).
- (2) **Market Size:** The existing and future potential size of both domestic and potential export markets will be assessed.
- (3) **Resources and Raw Materials:** Available domestic resources will be reviewed for their quality and quantity as much as possible, and imported raw materials will be reviewed for the ease of their procurement.
- (4) **Production Scale:** A desirable production scale will be suggested based on the estimated market size or ordinarily recognized minimum economic scale, whichever is greater.
- (5) **Employment and Technology:** Whenever possible, the number of employees will be estimated for each project. Also, the level of required technology will be assessed and its availability in Oman discussed.
- (6) **Capital Outlay:** Required capital funds will be estimated roughly for the project.
- (7) **Necessary Government Measures and Development Impacts:** Government measures believed to be essential for the implementation and promotion of each project will be discussed and development impacts to be introduced by each project will be predicted.

Finally, project which are believed worth undertaking a feasibility study will be identified.