

PN-ACB-027
94652

APPROVED PROGRAM STRATEGY
FOR
THE OMANI-AMERICAN JOINT COMMISSION
1992 - 1997

A

OAJC STRATEGY

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I. EXECUTIVE SUMMARY

Situated on the Straits of Hormuz, through which much of the world's oil passes, Oman is a strategically important country to the U.S. Further, oil has provided much of the revenue for its rapid economic growth. As a result of this strategic interest and the desire to assist the Sultanate in achieving sustainable economic growth, the U.S. and Oman agreed to the creation of an Omani-American Joint Commission for Economic and Technical Cooperation (OAJC) to manage the economic assistance provided by the U.S. Government. The original agreements establishing the Commission and economic assistance program were concluded in 1980. These Agreements were renewed in 1990 for another decade. The Commission is unique in terms of AID. management. Comprised of both U.S. and Omani Government professionals, an AID program of approximately \$15.0 million yearly is implemented under the supervision of the U.S. Representative and an Omani Managing Director. The administrative support costs of the OAJC are shared equally between the Government of Oman and the U.S. Government. While program financing does not entail the commingling of funds, the Omani Government normally contributes an equal amount or more of the funding for the projects supported by the OAJC.

The OAJC's program goal is to increase the productivity of the Omani economy through diversification of the economy and the development of its human capital. In light of this goal, the OAJC then undertook a thorough review of the macroeconomic situation to identify key sectors for AID involvement. The OAJC reviewed the productive sectors to determine which had the greatest long-term potential to generate revenue and growth, what were the major constraints in developing existing potential and how AID funding and technical expertise most appropriately supported these sectors. While no one sector was capable of replacing the current level of oil receipts, selected activities in business/industry and fisheries could provide important alternative sources of income and employment. Secondly, productivity and efficiency can also be achieved in the public sector by improving job related skills and reducing the country's reliance on expatriate manpower. In these efforts two cross cutting issues will influence the rate and degree of success in achieving the goal set for the Joint Commission. First, the continued availability of renewable natural resources poses definite constraints to future growth and expansion of the non-oil economy. Water resources are of critical importance in this respect. Secondly, Oman's rapid population growth is putting additional pressures on the economy's ability to provide (a) the level of services which it has provided in the past (health and education, for example); (b) jobs and income to meet the aspirations of Oman's young population; and (c) the natural resources base (particularly water).

Accordingly, the Joint Commission has established three Strategic Objectives which together will have a substantial impact on the achievement of the stated OAJC program goal.

Strategic Objective I: Increase the productivity, skills, and prevalence of Omani workers in the labor force.

A principal underlying constraint to expansion of the economy is the lack of an indigenous trained, productive human resource base. Trained Omani professionals are in extremely short supply in education and health care. Oman has made impressive gains in improving health status, and must now make efforts to sustain these gains in the health care system. The same holds true for the remarkable progress in the education sector. The country depends on expatriate physicians, nurses, laboratory technicians etc., for approximately 65 percent of its public sector health care professionals. Nearly 70 percent of the teaching staff of the public education system are expatriate employees. The existing shortfall in Omani manpower in the health and education sectors could grow as health and education services expand with Oman's growing population.

Strategic Objective II. Promote the growth of investment, employment and business activities to better meet future needs of a more diversified national economy.

Economic diversification derives from the need to supplement the petroleum sector as an engine of growth. Diversification would provide a steady source of foreign exchange during oil price fluctuations. A major constraint to greater economic diversification is the lack of a trained and technically skilled private sector workforce. While the private sector seems to be adequately capitalized and Government of Oman policies encourage investment, Omanis with the necessary training and skills for the emerging business/industrial sector are in short supply. The problem is demonstrated clearly by the predominance of expatriates in these areas. With each expansion of industrial, commercial, or governmental activity in Oman, the importation of technical and professional manpower grows. The OAJC will therefore undertake training and technical assistance to the Omani Chamber of Commerce and other institutions which provide support to the private sector so that Omanis might meet the emerging skills requirements of the business/ industrial community.

Strategic Objective III. Improve the management and conservation of renewable natural resources, particularly the Sultanate's water and marine resources.

In the longer term, Oman must prudently manage and conserve the renewable natural resources of the Sultanate. Toward this objective, the OAJC has already made substantial investments in the development and management of fisheries and water resources. As with the other sectors of activity, the lack of trained and experienced Omanis to deal with natural resource management activities is a major immediate constraint. Skilled manpower shortages are evident across the broad spectrum of functions related to resource management ranging from policy development, monitoring the use of natural resources or managing environment related activities such as water and wastewater systems. The

Commission expects to maintain a substantial investment in training Omanis in fields of natural resources management and conservation from both its ongoing projects as well as in its proposed program. The investment in training should be linked to concrete activities such as improving water and wastewater systems as in the ongoing Water Resources Development Project which provide tangible evidence of our cooperation while serving to protect existing natural resources from further degradation. The construction of ports and harbors is a second example of capital-type projects which merit further consideration. Such ports would facilitate economic growth and diversification, and ideally could explore greater private sector linkages between U.S. and Omani firms in terms of facilitating technology transfer and the creation of joint ventures.

The specific activities which the Joint Commission would expect to co-finance with the Government of Oman are described in Part V of the strategy. In structuring the OAJC's program, we have taken into account both the need to link OAJC investments with projects approved by the Omani Government within the current Five Year Development Plan and the A.I.D. project development and approval requirements. Each of the major activities herein proposed is contained in Oman's Fourth Five Year Development Plan. Part V of the strategy also reviews the OAJC workforce level in relationship to the proposed strategy.

II. ECONOMIC ASSESSMENT

A. PROFILE AND OVERVIEW

Since 1970, petroleum-led investment and growth has transformed the country's economy. Remarkable changes have taken place during that period: GNP per capita rose from a mere \$360 to \$6,200; exports, primarily based on oil, increased from \$360 million to \$5.3 billion; and Government expenditures increased from Rials Omani (RO) 21 million to RO 1.9 billion.

As striking as these economic indicators are, the transformation in various social indicators is at least as striking. Since 1970, Oman's population has nearly doubled; electricity production increased from eight million KWH to 4500 million KWH; 10 miles of paved roads have become nearly 5,000; over 90 percent of the children eligible for primary school are enrolled (up from three percent in 1970); and improvements in health care have resulted in life expectancy increasing from 45 years to 65 years.

B. ECONOMIC OUTPUT

Oman entered the ranks of world petroleum producers just in time to catch the wave of high prices in the 1970's. In 1967, Oman produced a minuscule 57,000 barrels of crude petroleum per day at a price of \$1.82 per barrel. By late 1973, when world petroleum prices quadrupled, Oman was pumping nearly 300,000 barrels a day. The second jump in world oil prices in the early 1980's, to the \$30 per barrel range, spurred both Oman's exploration and production. By 1989, the country was producing 650,000 barrels/day. From August 1990 through February 1991, Oman produced more than 700,000 b/d and exported an average of 652,000 barrels daily in conjunction with other producers attempting to offset the effects of the removal of Kuwaiti and Iraqi oil from the inter-national market. Presently oil accounts for about 50 percent of GDP.

The heavy reliance on oil has not been without costs, however. Recognizing Government finances were vulnerable to sharp drops in oil revenues, in 1980, the Omani Government established the State General Reserve Fund (SGRF) to be used to cover short-term drops in oil revenues and to establish a source of alternative funding as petroleum reserves waned in the long term. In 1982, withdrawals started much sooner than expected when oil revenue growth slowed. Later, in 1986 when oil prices declined 50 percent, oil and gas revenues plummeted by 38 percent, forcing the Government to take strong measures to control deficit spending. The overall deficit shot up from RO 152 million to RO 666 million in only one year and between 1985 and 1988, 967 million Rials were withdrawn from the Fund. While revenues

recovered somewhat in 1987, 1988 saw another drop, and 1989/90 saw some resumption of contributions to the SGRF.

Overall, real GDP grew at an average annual rate of 8.2 percent from 1981-90. In that decade, the petroleum/gas sector grew at a rate of 9.1 percent, compared to 7.6 percent for "non-oil" GDP. For the period, agriculture grew at more than 9 percent annually. The fisheries sub-sector grew at only 4.7 percent for the decade, but showed a stronger growth of 7 percent, in the latter half of the 1980's. Mining and quarrying showed the opposite pattern, with strong performance early in the 1980's, but becoming negative in the later years. Starting from a small base, the manufacturing sector grew at a strong 18.5 percent for the decade, though slowed to only 4 percent in the last four years. Not surprisingly, in light of the structural changes noted earlier, the utilities sector was among the strongest performers of the decade, increasing by nearly 27 percent annually, with the transportation sector following at about half that rate. The construction performance over the past decade was highly variable. While construction activity grew in real terms by over 20 percent annually in the first half of the 1980's, the sector showed declines each year from 1986-89, and only a modest growth of 4.7 percent in 1990. Private services generally grew at rapid rates through the 1980's, though from a small base representing a negligible share of GDP.

The rapid growth was made possible by high savings and investment rates. Gross domestic savings exceeded 40 percent of GDP from the mid-70's until the mid-1980's. These savings, combined with healthy external trade surpluses, financed total investment ranging from 20 percent to 30 percent of GDP during that period. However, one important economic concern, particularly since 1986, has been the sizeable transfers and worker remittances abroad. Savings and the trade surplus have been inadequate to finance even the substantially reduced rates of investment of recent years. If both remain low, future growth rates are certain to suffer. If investment rebounds, there is the possibility of a "savings gap" or a "foreign exchange gap" emerging, depending on the relative changes in domestic savings vis a vis foreign exchange earnings.

A savings gap did occur in 1986 when the oil price collapse brought savings down below investment. In 1986 gross domestic savings were RO 851.4 million as compared with gross domestic capital formation of RO 898.4 million, which implies a trade deficit equal to the difference, i.d. RO 47 million. However 1986 was an extraordinary year because of the unexpected steep fall in oil prices. In 1987 after policy adjustments, reenforced by the fall in the dollar, gross domestic capital formation and imports were reduced, savings increased and the balance of trade became positive. In practice private investment is a relatively low but stable share of GDP, whereas government government's share

of investment is much larger and more volatile. In a crisis, such as in 1986, government can adjust public spending to avoid a foreign exchange crisis, but it has less influence over private investment and gross saving. For a variety of very sound reasons, the Omani Government is encouraging greater private sector investment in the Omani economy.

C. BALANCE OF PAYMENTS

Not surprisingly, Oman's balance of payments is dominated by oil. The close link between petroleum exports prices and the trade account is apparent from even a cursory examination of the External Trade Balance. During the period 1985 to 1989, oil represented 97 percent of Oman's export earnings. Previously noted volatility in oil prices in the 1980's generated fluctuations in exports and in GDP.

As a proportion of oil exports, non-oil exports rose from 0.4 percent in 1980 to 3.6 percent in 1990. Though still tiny relative to oil, these exports grew steadily throughout the decade. The largest category of non-oil domestic exports was fish and other ocean products. The value of these was RO 17.3 (\$45) million in 1990, or about 25 percent of non-oil exports up from RO 9.7 (\$25) million in 1986. The second major category is copper cathodes, which amounted to RO 12.7 million in 1990, followed by live animals valued at RO 6.7 million. In 1989, Oman began exporting textiles. There has, in addition, been a small, but rather active, re-export trade composed mainly of machinery and transportation equipment being transshipped to the UAE and other GCC member countries. Thanks to the performance of the petroleum sector, Oman has managed to achieve a positive commodity trade balance every year for the past decade, though it virtually evaporated in the economic downturn in 1986. This feat was achieved in part by Government of Oman policies which compressed imports from 1985-87, followed by reduced import growth between 1987 and 1990. This compression was particularly strong in the areas of machinery and manufactured goods, reflecting the Government's cutback in capital expenditures. While this adjustment was necessary to cope with the oil price crisis of the mid-1980's, compression of this type of imports is not sustainable if renewed investment is to spur future economic growth.

The services account, in contrast to the commodity trade account, has been in continuous, and generally rising, deficit throughout the last decade. This largely reflects the performance of two categories: profit remittances and worker remittances. One of the consequences of relying heavily on an expatriate work force has been a net outward remittance flow that averaged over RO 303 (nearly \$800) million annually between 1985 and 1990. Official interest payments increased in recent years as a result of earlier official borrowing. Despite these factors, Oman managed to

sustain positive current account balances except in 1986 and 1988.

Private capital flows generally reflect the activities of the oil sector, including direct investments and export credit. The latter is a consequence of a policy which allows a 30-day lag in payment for oil exports (a positive amount in 1986 and 1988 when prices were falling, and negative in 1989 and 1990 as prices rebounded).

D. PUBLIC FINANCES

Oman's public finances, like its external trade, are dominated by the fate of the oil sector. Oil revenues derive from the Government's own 60 percent share in PDO (Petroleum Development Oman) as well as royalties and payments from its PDO partners and other companies. In 1981, oil and gas revenues amounted to nearly 92 percent of total Government revenues. By 1990, that figure had dropped to 86 percent. As noted, the Government attempted to deal with its financial vulnerability to sharp fluctuations from oil price revenues, by establishing the State General Reserve Fund (SGRF) in 1980. In 1981, current expenditures accounted for 70 percent of total expenditure. By 1990, that ratio increased to 83 percent. The largest category of current expenditure, in turn, is defense and national security, which accounted for 60 percent of current spending in 1981, due to the security threat that Oman faced in the 1970's in its Southern Region. However, that percentage has fallen to a 47% level by 1990. Interest payments on Government borrowing, while still relatively small, have risen sharply in recent years from one percent of recurrent expenditure in 1981 to nearly six percent in 1990. In response to the fiscal crisis that threatened in 1986-87, following the decline in oil prices, both current and capital expenditure were constricted. While current spending resumed its upward trend rather quickly, public development outlays have remained relatively flat, with the exception being capital expenditures which have rebounded strongly from the severe drop of 1987-88.

At least two areas should concern the Government of Oman over the longer term. The first is the continuing need to diversify the revenue base in ways that make Government income less vulnerable to oil price fluctuations and the potential downward trend in oil revenues. The second is the future cost of maintenance of the extensive infrastructure that has been created in the past twenty years. Otherwise, this important base for private sector development will be lost. It is encouraging to note that some steps have recently been taken in this direction.

III. GOVERNMENT OF OMAN DEVELOPMENT STRATEGY

A. GOVERNMENT GOALS

In 1974, the Sultan issued Royal Decree No. 41/74 which attached special importance to establishing long-term "economic development policies and targets" in the creation of its national planning institutions. The long-term strategy thereafter formulated by the Development Council included ten key primary objectives:

- To develop new sources of national income in order to back up and eventually replace oil revenue;
- To enhance investment in income-generating projects, particularly industries, mining, agriculture and fisheries;
- To assure geographic distribution of investments, with priority given to the less developed areas;
- To enhance and develop with the present population centers and stem rural to urban migration, with priority given to the less developed areas;
- To give due attention to the development of national water resources, as water is considered a vital element for sustained economic development and growth;
- To develop human resources, so they can play a full role in Oman's economy;
- To complement the components of a free economy based on a freely competitive private sector, through incentives and tax exemptions, provision of soft loans for productive products and co-financing of vital projects as commensurate with the Government's available resources;
- To complete the nation's infrastructure;
- To promote local commercial activity and eliminate the transport and storage difficulties and other deficiencies that affect market operation and free competition, and;
- To enhance the efficiency of the Government's administrative machinery.

Much progress has been made on meeting these objectives. Infrastructure, including roads, ports, electricity, telecommunications networks, etc. has expanded rapidly. Many types of educational institutes exist where previously there were none. Health care facilities and services have

drastically reduced childhood mortality. Of special significance is the dramatic increase in expenditures on education/ training (schools, classrooms, teachers, students) in the three consecutive plans. Expenditures rose 230 percent from the First to Second Plan, and an additional 38 percent from the Second to the Third Plan. (Oman: Development of Human Resources at the Crossroads, IBRD)

B. FOURTH FIVE YEAR PLAN

As a result, the Fourth Five Year Plan (1990-1995) focuses on and sets explicit targets for the remaining objectives. Principal among these are: (1) the support of human resource development and expand Omani participation in the work force in all economic and social activities, and; (2) the need to continue the policies of economic diversification by investing in non-oil productive sectors.

The first of these, the Government's policy of Omanization, is the result of the predominance of expatriates in the private and public sectors. The targets for the current five year plan are to decrease the overall percentage of expatriates in the labor force from 61 percent to 55 percent by 1995. The Fourth Five Year Plan allocates an estimated RO 40.0 million to achieve this goal.

Key economic objectives of this Plan that relate principally to growth and diversification are for the Government of Oman to:

- Achieve an average annual rate of growth of 6.3 percent (minimum average of 5.0 percent) in GDP;
- Carry on the policy of economic diversification by investing in non-oil productive sectors, particularly agriculture, manufacturing, tourism, and the productive service sector; and
- Increase the share of non-oil revenues to at least 20 percent of the total revenues over the plan period.

This Plan was recently prepared by the Development Council and approved by the Sultan. It clearly identifies the country's development priorities and forms a basis for Government investments. Hence, the OAJC has been asked by the Development Council in preparing this strategy to consider programs and projects that are contained within the Plan or in accordance with its stated objectives. The OAJC has concurred with this approach and all programming options discussed within this document have been fully evaluated in light of the Fourth Five Year Plan.

C. IMPLICATIONS FOR U.S. ASSISTANCE STRATEGY

The proposed U.S. assistance strategy is designed to be supportive of the goals of the current national plan and to contribute to the growth and diversification of the economy. One underlying theme is increased productivity of the economy, and particularly of Omani workers. To date, Oman's economic growth has been based heavily on an expansion of the quantity of physical inputs, i.e. on increasing natural resource (mostly oil) extraction; (expatriate) labor input; and capital investment. Future growth must rely more on the productivity of inputs, as cost-effective sources of these inputs become increasingly scarce. Oil reserves have drawn the most attention, but there are constraints on other inputs as well, notably on affordable water supplies and on material inputs to other industries, not to mention the cost of labor. Moreover, the relative maturity of the economy compared to two decades ago implies a diminished relative need for the kinds of massive capital and infrastructure projects that have characterized much of this period.

Economic diversification also depends critically on increased productivity (including quality of output). The fact that Oman has a small population and limited domestic market virtually dictates that producers in many sectors be export oriented. Successful producers in all sectors must at least be able to compete in the local market against imports. This means that both the cost and the quality of Oman's products must be able to compete internationally.

A unifying theme of supporting increases in the productivity of Oman's economy suggests at least three key strategic objectives that the OAJC should address in an assistance strategy:

1. Increase the productivity, skills, and prevalence of Omani workers in the labor force.
2. Promote the growth of private investment, employment and business activities to better meet future needs of a more diversified national economy.
3. Improve the management and conservation of renewable natural resources, particularly the Sultanate's water and marine resources.

In light of these three strategic objectives, the OAJC reviewed its ongoing programs, and conducted a thorough analysis of both the productive and social service sectors to determine areas where USAID should provide assistance. The criteria included USAID's comparative advantage versus other donors, prior experience in the sector, Government of Oman expressed interest in accessing USAID expertise, etc. Section IV summarizes the results of the sectoral analyses, outlines existing A.I.D. programs in these areas and possible future interventions.

IV. SECTORAL ANALYSES

A. AGRICULTURE

1. Overview

The Omani Agricultural Sector, is composed of three primary sub-sectors - crops (vegetables, fruits), livestock (goats, cattle, sheep and camels) and marine fisheries. While fisheries is technically a subset of the agricultural sector, due to its importance in the economy of Oman, it will be dealt with in a following section.

Prior to the 1970's, Oman's economy was based principally on trade, agriculture and fisheries. Dates, limes and fish are the main export products. However, with the development of the oil industry in the 1970's, agriculture's share of GDP declined to approximately 3.0 percent by the early 1980's. During the "oil income era" from 1970 to 1990, agriculture's share of the non-oil GDP has been relatively small, producing a minor share of income.

Despite the drop in its relative importance, the sector is still a major employer, particularly of Omanis. The private agricultural sector currently employs approximately 115,000 people of which only 30,000 are expatriates (primarily laborers), with the public sector providing jobs for another 3,000. Including fisheries, there is an estimated 62 percent of the Omani labor force engaged in agriculture, which includes considerable employment for women in the traditional economy. Also, more recently, employment opportunities in food processing have increased.

In terms of the sector's current export value, the livestock and vegetable sub-sectors account for 24 percent and 5 percent, respectively (Table 1.1). Overall, sector exports increased by 62 percent from 1986 - 1990, with fisheries registering the greatest sub-sector growth (56 percent) during this period.

Table 1.1
Value of Domestic Agricultural Exports
(R.O. 000s)

Commodity	1986	1987	1988	1989	1990
Live Animals	2259	4975	5755	7545	6692
Fish	9721	11804	18922	14990	17280
Wheat Flour	646	24	0	23	69
Dates	715	479	846	737	744
Lime/Citrus	2536	1000	1884	693	730
Fruits/Vegetables	711	777	1174	1555	1510
Raw Tobacco	367	385	497	412	335
TOTAL	16955	19444	29078	25955	27360

Source: Development Council Statistical Year Book, 1990

Crops

Total arable land available in Oman is estimated as 83,360 hectares, with approximately 56,000 hectares (68 percent) currently under cultivation. Small farmers are estimated to account for 60-70 percent of all farm households, and to farm 15 percent of the cropped area in the country (JICA Agriculture Masterplan Study, 1990). As a general rule, all arable land in Oman requires supplemental irrigation to produce crops. It is estimated that current agriculture activities in Oman use 90 percent of the current developed supply of ground water. Irrigation schemes range from simple gravity fed surface irrigation canals (al falaj) on the small subsistence farms in the interior to high technology drip and sprinkle irrigation on the commercial farms on the coastal plains.

During the last decade, the area under cultivation rose as did yield rates, particularly in vegetable and fruits. Nonetheless, despite the increases in vegetable and fruit production during the 1980's, Oman is currently importing approximately 50 percent of its food.

Production-wise, field crops currently account for 51 percent of total annual crop production, with fruits and vegetables accounting for 26 percent and 23 percent, respectively (Table 1.2). However, commercial fodder accounted for 97 percent (335 of 346 thousand tons) of the field crop production in 1989. Fodder production provides significant support to livestock and dairy activities in Oman, yet is not the most efficient crop if one is looking at food security needs. Increases in fodder production come at the expense, both in terms of scarce water resources and arable land, of higher value vegetables and fruits.

Table 1.
Agricultural Production by Major Crops
(in thousand tons)

Crop	1985	1986	1987	1988	1989
Vegetable	108.5	119.5	133.1	148.9	155.2
Fruits	154.5	159.4	167.4	178.0	176.0
Field Crops	253.0	286.0	314.2	342.8	346.4
Total	576.0	564.9	614.7	669.7	678.2

Source: Central Bank of Oman - Annual Report, 1989

Livestock Production

Livestock production, mainly cattle, goats and sheep has increased significantly since 1981, and continues to play an important role in the diets and income (Table 1.1) of Omanis, especially for the people living in the interior. However, it appears that the current maximum sustainable carrying capacity of most of Oman's rangeland has been exceeded. As a result, it can be expected that rangeland productivity will decline over the short- to medium-term. To the extent that the use of fodder may be contributing to a sustained overgrazing of the rangeland in the short-term, then a significant long-term reduction could occur as a result of rangeland deterioration. Likewise, with the increasing salinity of the ground water in the major fodder producing areas due to over utilization of the water supply, and the increasing need to focus on producing primary foods for Oman's rapidly expanding human population, livestock production will most likely decrease over the medium-term. Ultimately, it will reach a sustainable level based on the carrying capacity of Oman's rangeland, with fodder production being limited to the support of a minimal level of dairy production. However, as the human population increases, the production costs and unit output of commercial animal products (such as dairy products) will have to be weighed against the production costs and unit output of primary food products (vegetables and fruits).

2. Government of Oman Agricultural Policies/Strategy

The significant increase in agricultural production since mid-1970 can generally be attributed to the Government of Oman's liberal support to the sector's development to date, and its concentrated support to the sector during the 1980's. Concentrated support to the agricultural sector has included increased land utilization through land distribution schemes, upgrading of interior al falaj systems, water resources development activities including aquifer recharge dams,

providing desalinization plants in fishing villages, the establishment of experimental and demonstration farms, research and extension centers, livestock vaccination programs, marketing centers, liberal credit schemes, the provision of liberal subsidies (often 50 percent) for the purchase of farm machinery/equipment, pumps and crop production inputs (seeds, fertilizers, pesticides, etc.), and liberal import and foreign exchange policies to ensure that production inputs were readily available. In sum, the Government of Oman has provided an extraordinary level of concentrated support and subsidies to the sector. As a result, there have been considerable incentives for Omanis to remain in the traditional agricultural sector.

The current Fourth Five Year Development Plan (1991 - 1995) continues the Government's concentrated support for agronomy and livestock sub-sector development. Significant increases in crop production can be expected through the adaptation of improved policies, technology and management for the existing area under production. To the extent that water resources development and/or management can be increased/improved under the current development plan (R.O. 60 million budgeted), then additional production from expanded/new farms (i.e., the remaining 40 percent of arable land) can be expected. In addition, a significant increase in human food production could be obtained by converting farm output into higher value fruit and vegetable production.

Although the Government of Oman has budgeted a significant amount of funds for livestock under the current development plan, the potential for continued expansion in the livestock sub-sector is less clear. Over the short-term production may increase with improved animal health and marketing, improved pasture/rangeland management, and expanded fodder production. However, with the human population increasing at approximately 4 percent per annum and the availability of additional water resources questionable, it can be expected that as Oman's capability to import basic food decreases toward the end of the "oil income era", fodder production in Oman will gradually be replaced with vegetables and fruit production. Future livestock production in Oman will primarily be based on rangeland offtake.

In general, the Government appears to have a clear idea as to future sector development, and adequate financial resources over the short-term to achieve established short- to medium-term objectives. Although Oman is currently importing 50 percent of its annual food requirements, if one excludes expatriates and the export of agricultural products, the combined current annual outputs from the agronomy, livestock and fisheries sub-sectors are probably sufficient to feed the

population of 1.5 million. With the conversion of fodder production area to vegetables, the adaptation of improved water management and crop technology, and the significant potential for expanded fisheries offtake (see Section IV-B), food self-sufficiency can probably be reached and maintained for a number of years. However, the long-term opportunities for extensive growth in the Omani crop and livestock sub-sectors are very limited due to the overall lack of ground water and arable land. As the population increases and oil decreases over the long run, the agricultural sector increased contribution to food security and employment will largely depend on the adaptation of intensive technology, and improved crop production practices.

3. OAJC Involvement

To date, the Omani-American Joint Commission support to the agricultural sector has been limited to relatively small amounts of training. Within the agriculture and livestock sections of the Ministry of Agriculture and Fisheries, the OAJC has financed a number of short-term technical training programs in the field of agribusiness, credit, extension, marketing, soils analysis, date production and processing fruit tree production, animal health and farm management. Twenty-six employees of the Ministry have received an average of 7.2 person-months of training each. The total OAJC cost of this training is about \$275,000.

The Omani Bank of Agriculture and Fisheries (OBAF) also received short-term training for approximately 21 of its staff, largely field credit officers. Some additional training was given in credit program management and administration. The total cost of the training supported by the OAJC for OBAF is \$102,000.

The largest beneficiary of OAJC training in agriculture is the Public Authority for Marketing Agricultural Produce (PAMAP). The OAJC has assisted PAMAP to organize and deliver a national extension training program geared toward marketing farm produce. The program focusses on harvesting techniques, post-harvest storage and handling and quality control. Other PAMAP training programs financed by the OAJC targeted strengthening middle management of the organization. OAJC investment in PAMAP training has totalled about \$380,000 over the past seven years.

4. Conclusions and Recommendations of the OAJC Strategy

With the Government of Oman continuing its long-term support for the sector, there are sufficient production inputs including credit and the introduction of intensive crop technology. The OAJC does not believe that

the sector requires major financial support from the U.S. Rather, Oman does need to move rapidly to adapt technologies into economical and sustainable crop production practices, and does require carefully targeted and limited technical assistance and training in the adaptation of such technologies. Finally, the Ministry of Agriculture and Fisheries (MAF) and other institutions could be considerably strengthened by expanded/upgraded skills in agricultural management, technical expertise, research, marketing and extension.

B. FISHERIES

1. Overview

The Sultanate has a natural comparative advantages in fisheries. Its waters are extensive (larger than its land area) and enriched by an annual monsoon-driven upwelling of nutrient-rich deeper, colder water. As a result, Oman's waters are among the richest fishing grounds in the world.

Fisheries is already significant in the economy of the Sultanate, providing over 20,000 jobs, and being the highest non-oil export earner (see Table 1). Landings of fish are currently around 120,000 tons per year, with about one-third of the catch exported. The industry is dominated by labor intensive small-scale fishing and marketing operations, with about 85 percent of the catch being taken by small skiffs and dhows, traditional wooden fishing vessels.

There is scope for substantial gains in income, employment, and exports from fisheries through increased catches, increased prices from better quality and Omanization. With abundant resources, catch rates are high and production costs are relatively low, so that Omani marine products are competitive in world markets. The resource is renewable, and if wisely managed, these advantages are sustainable.

2. Production Expansion

Production from this sector can be increased substantially over the current levels:

- catches of higher value species can clearly be increased - a conservative estimate would be an additional 45,000 tons yield;
- there are additional stocks of small pelagic species, with additional sustainable yield estimates ranging from around 40,000 to over 400,000 tons per year;

- there are huge resources of mesopelagic fish which are not now harvested commercially - with estimates of sustainable yield ranging up to 4.5 million tons per year, but with commercial development still a longer term prospect;
- the value of catches can be greatly increased, with prices for most catches at least doubled by improving the quality on landing;
- there are prospects for mariculture. While factors such as the lack of fresh water, high salinity of available water and high temperatures largely rule out successful pond culture on land, the high productivity of Oman's seas may provide a comparative advantage in the culture of some marine organisms especially the shellfish which are lower on the food chain.

3. Constraints to Further Production Expansion

Realizing the prospective gains set out above requires better fisheries management capacities in the public sector, improved infrastructure and enhanced Omani private investment and skills.

The Sultanate's fish resources are abundant and capable of supporting expanded catches - but they are still limited. Without arrangements to limit fishing effort, there will be a tendency to over-exploitation. If fishing community and industry livelihoods and profits are to be sustained, there is no escaping having the MAF lead an effort to put appropriate arrangements in place. While arrangements which reduce dependence on regular Ministry intervention (such as tendering fishing rights, devolving management authority for locally based resources and transferable quotas) are possible, these require relatively sophisticated interaction between the Government and the fishing communities and reporting and enforcement mechanisms. They also generally work best where there are well defined fisheries with small numbers of species and small numbers of vessels and landing places. Conditions for arrangements of this sort are distant in Oman, certainly in the small-scale fisheries.

For now, the Ministry faces the task of assembling information on the resources, assessing potential yields (a task complicated by the fluctuations over time in the abundance of some major species, monitoring catches and effort, making regulations relating to numbers and types of vessels, quotas, areas, seasons and gear, etc. and enforcing those regulations. This is a central task. If it is not done effectively, the strengthening world demand can be expected to lead to systematic depletion of resources, beginning with the

most accessible and high priced species - instead of sustained gains in incomes and employment.

SUMMARIES OF FISHING SECTOR ACTIVITY 1985-1990

	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Landings (tons):						
- Small Scale Vessels	81525	82776	124133	148168	105247	99797
- Industrial Vessels	<u>13368</u>	<u>13561</u>	<u>10956</u>	<u>17911</u>	<u>12290</u>	<u>18843</u>
- Total	94893	96337	135089	166079	117537	118640
No. of Fishermen	12000	12472	13814	15807	17433	19296
Contribution to GDP (R.O. million) (b)	26.2	27.7	34.8	45.8	33.9	36.5
Share of GDP	1.4	1.6	2.1	2.6	1.1	0.9
Volume of Exports (tons)	19462	18472	20669	35150	28137	30075
Value of Exports (a)	7.8	10.7	11.9	18.9	14.9	17.3

Notes: (a) Directorate General of Fisheries Resources estimates value of fish exports at R.O. 29.3 million. The difference from the Customs data presented here is that adjustments have been made for (i) export shipment for which no value is declared; and (ii) fish taken in Oman's waters landed at overseas ports without passing through Omani customs.

(b) Fishing only, does not include value added in boat building, gear supply, etc., or in fish marketing and processing.

Export marketing of Omani seafood is further constrained by the low quality of fish produced by small-scale fishermen. There is no apparent technological fix to this within the limits of the existing types of vessel. New forms of vessels are needed, which can carry ice, stay at sea longer and range further. Finally, the absence of harbors where such vessels can be moored and serviced is the key constraint. A fishing harbor development plan, included in the Fourth Five Year Plan at RO 40 million, includes three major harbors at Sur, Quriyat, and Lakhbi, and nine smaller harbors.

The new harbors, new vessels and changes in policies will open up new opportunities for investment and employment in fishing, processing and marketing and support activities such as boat building. Omani and foreign investors are already known to be planning to take up these opportunities. In this setting there is

scope for programs to assist Omani enterprises to adapt and adopt new technologies and explore new product forms - the Government is planning assistance towards these ends. A possible missing, or lagging element, is the upgrading of Omani skills - in boat building, fishing, marine engineering and fish handling and processing.

4. Government of Oman Policies/Strategies

The MAF's policies in fisheries are generally sound, in that:

- the Ministry is relatively strongly committed to private sector development in fisheries. The Government owns relatively few productive assets in the sector, having closed or leased out a number of coastal fishing depots it built earlier, and reduced its shareholding (now 25 percent) in Oman Fisheries Corporation.
- the Ministry fisheries programs are centrally focussed on public interest issues relating to the management of fisheries as common property resources, and in particular to the sustainability of commercial fishing. Given the relatively early stage of development of fisheries in the Sultanate, the Ministry has unusually strong programs in areas such as statistics and research. The Ministry's approach to encouraging expansion of the sector has been cautious (it has been criticized for being overly cautious) because of a concern to ensure that the resources are not depleted.
- the level of operating and capital subsidies for the fisheries sector is relatively very low, given the fairly systematic and strengthening pattern of subsidies in other sectors.

Despite these strengths, there are weaknesses at the Ministry that continue to hinder sector growth. These are:

- weak and inconsistent application of policies. Policy decisions are regularly changed, or poorly articulated and implemented, in ways that create uncertainty, and, among other effects, deter investors unsure of stable access to resources.
- weak interaction with fishing communities and companies. The Ministry is highly centralized, and has a weak extension service and no functioning formal mechanism for consultation with the private sector.

- **lack of skills and experience.** Fisheries management decisions tend to be made by simplistic administrative decrees regulating seasons, quotas, etc. Despite its technical strengths in some areas, the Ministry does not have the capacity to successfully design and operate more sophisticated schemes, including more market schemes, such as tenders of fishing rights, transferable quotas or devolution of fisheries management authority.

5. OAJC Involvement in Fisheries

The OAJC is in the early stages of implementation of a second phase, five year, \$20 million Fisheries Development and Management Project to expand the fisheries sector through providing training and technical assistance to strengthen public sector fisheries institutions, especially the Ministry of Agriculture and Fisheries. Through a 10 person technical assistance team, the project is seeking to address the operational and structural weaknesses of the Ministry discussed above.

This project follows the six year, \$13 million Fisheries Development Project which saw substantial gains at the Ministry in terms of technical program development but fell short in some areas, especially in human resource development. The project now seeks to address those shortfalls and to strengthen the Ministry for the larger mission which it now faces.

Major outputs of the project are planned to be stronger capacities to assess and sustain fisheries resources, better policies and strategies for developing Oman's fisheries resources, and a greater capacity to reach out to support the fishing industry especially the small scale fishermen and fish marketing operators.

6. Future OAJC Involvement

Through the Fisheries Development and Management Project, the OAJC already has a major commitment to the fisheries sector, meeting a priority need, and providing assistance which it is able to provide well. During the period 1992-1995, no further OAJC investment is expected in the fisheries sector. After 1995, the OAJC will consider contributing to the Government's program for fisheries ports and harbors. An illustrative Harbor Development Project is briefly discussed later in this paper.

C. PRIVATE SECTOR/INDUSTRY*

1. Overview

According to the latest statistics available, the country's rapid economic growth has corresponded to the number of private sector firms, which has expanded four-fold since 1980. Now estimated at about 44,427, the majority of these firms (64 percent) were engaged in general trade business. A relatively small number (12 percent), which was also the second largest category, were engaged in manufacturing industries, followed closely by the firms involved in construction. (See Table I)

The private sector as a whole accounted for 34 percent of the GDP which totaled RO 4.08 billion in 1990. The firms are grouped in five classes used by the Government known as 'Grades' and they are divided according to the registered investment. The largest number of firms (87 percent) in 1990 were in Grade Four (investment less than RO 25,000) with a total investment of RO 19.7 million (36 percent), while the smallest number (1.5 percent) fell in Excellent Grade (investment RO 250,000 or more) with a total investment of RO 23.4 million (42 percent), the largest of all categories.

The bulk of investment capital (77 percent) in 1990 was in trade and services and the productive sector accounted for only 23 percent of the investment. Manufacturing industries accounted for 8 percent of the total investment. Private foreign investment amounted to RO 411 million and was mainly in oil, industry and banking.

In terms of contribution to the economy, there has been a relatively small growth rate, following the sharp decline in oil prices and subsequent cuts in Government spending. Like most oil-based economies, the activity of the private sector in Oman moves parallel to Government spending which primarily depends on oil revenues. Hence, there was a sharp fall in GDP between 1986-1988 as a result of declined revenues from oil, leading to downturn in private business activity. Indeed, the private sector did not fully recover until 1990 after the oil output regained and Government spending increased again.

* For purposes of this paper, the term private sector refers to all business entities (including Government-owned) registered with the Ministry of Commerce and Industry (MOCI). Use of "private sector GDP" does include the informal sector.

Table 1
Structure of Private Sector in 1980 and 1990

Economic Activity	1980		1990	
	Number	% of Total	Number	% of Total
Productive:	3,920	35.0	11,238	25.3
Agriculture and Fisheries	12	0.1	170	0.4
Mining	25	0.2	58	0.1
Manufacturing	986	8.8	5,531	12.4
Electricity & Water	1	0.0	12	0.0
Construction	2,896	25.8	5,467	12.3
Trade and Service:	7,291	65.0	33,189	74.7
Trade	6,293	56.1	28,616	64.4
Transport	200	1.8	518	1.2
Banking, Insurance, Real Estate	198	1.8	690	1.6
General Services	600	5.4	3,365	7.6
Total	11,211	165.0	44,427	174.7

Source: Statistical Year Books 1985, 1990

2. Government of Oman Policies/Strategies

The Government's objective with regard to the private sector is to maintain a free enterprise system with Government support for investment only as necessary. This strategy is made clear in the following objectives of the Fourth Five-Year Development Plan:

- pursue economic diversification by investing in non-oil productive sectors, particularly agriculture, fisheries, manufacturing, and tourism;
- support the private sector in creating job opportunities for Omanis; and
- maintain a free enterprise system based on market economy, fair competition, and efficiency;

These objectives are carried forward with an appropriate policy framework as well. For example, the Government has maintained an extremely favorable

attitude towards domestic and foreign investment. There are no restrictions on capital movement into or out of the country. Foreign investors can freely take out their profits or reinvest their capital in Oman or elsewhere. There are also no restrictions of any kind on the Omani currency which is pegged to the U.S. dollar. Foreign investors are, however, restricted from owning real estate and are required to have local agents if they do not enter into joint ventures or partnerships with Omanis.

The Omani Government strongly supports the principle of private ownership and has committed itself, with some reservations, to divestiture of state-owned enterprises. While the Government owns equity in a number of companies in the country, some of these investments are deemed "strategic", such as Petroleum Development Oman (PDO) of which the Government owns 60 percent, are unlikely to be privatized. Other "non-strategic" investments such as Rusail cement plant and hotels will be divested. In 1989, the Government divested an agriculture and dairy producing enterprise (Oman Sun Farms) and a year before restructured the largest fishing company in the country with less Government share (25 percent) and more public participation. At present the Government is studying a systematic approach to divest other Government investments.

Other investment incentives focus on industrial development and include the following:

- five-year renewable tax holiday;
- low-interest loans from MOCI and Oman Development Bank (ODB);
- temporary tariff protection on imports identical to ones produced locally in early years of production;
- low-cost facilities and utilities at industrial areas; and
- grants on feasibility studies and small industrial projects.

The incentives are available to all firms including joint ventures of up to 65 percent foreign ownership. Firms 100 percent owned and managed by Omanis are eligible for higher proportions of incentives.

Constraints to Private Sector Growth

The target growth rate for industrial development over the Five-Year plan period seems ambitious. The fact

that large-scale industrial projects take at least a few years of intensive studies before they come on stream make the actual investments unlikely to take place. For these projects and for the existing and future small and medium-scale projects as well, a number of constraints impede industrial expansion. The Omani market is small for large scale industrial activity. Indigenous raw materials are limited in Oman to give it some comparative advantage. Copper deposits are currently being utilized by a copper smelter in Sohar, but other mineral deposits are questionable for large-scale industrial production. On the agriculture side, large agro-industries are not possible given the limited agricultural base which is further constrained by scarce water resources.

Finally, at present Omani industries heavily rely on low-pay semi-skilled and skilled imported labor. With increasing pressures on employing the rising number of Omani entrants in the labor force, the industries do not only face the skills problem, but also labor cost differentials for some categories of employees as well.

Competition and Government Subsidies

In view of the prospects and constraints discussed above, sustainability of Omani industries will largely depend upon two major factors: 1) ability to compete abroad, and 2) succeeding without Government protection and subsidies. For both factors, productivity is the key requirement, both in terms of factors of inputs (raw materials, labor and capital) and the quality of output whether for intermediate or final products.

The industrial sector productivity and competitiveness are key issues for products of high quality and ability to penetrate foreign markets. Such issues will become more pressing if Omanization is enforced with low skill workers unless specialized skill-building training programs are implemented with Government support.

While the Government support for the private sector is needed to attract investment in risky projects, the real economic cost of the financial and non-financial incentives should be estimated and justified economically.

3. OAJC Involvement

Given the high level of Government of Oman support for this sector, credit or other capital inputs from A.I.D. do not seem to be required. On the other hand, the OAJC should continue high levels of U.S. invest-

ment in human resource development and training for private sector employees and new entrants in the job market. Further, although the Government has initiated some incentives for Omani-owned small enterprises, it lacks technical experience and scope to keep them operational and competitive with expatriate-managed small enterprises. As the economic analysis points out, there is scope for OAJC involvement in technology transfer for those small businesses. OAJC assistance to small businesses needs to be channelled through Omani institutions which effectively serve the needs of the business community such as the Chamber of Commerce and Industry and Rusayl Industrial Estates. The Business Development Project discussed later in this paper is the proposed vehicle to deliver such assistance.

D. EDUCATION

1. Overview

With the accession of Sultan Qaboos bin Said to power in 1970, the Government of Oman embarked upon development of a modern economy based upon exploitation of oil reserves. To accomplish this goal, the Government pursued two complementary policies regarding manpower. On the one hand it opened up its doors to importation of foreign labor, while on the other it invested considerable resources in development of an indigenous education infrastructure. The Government thus pursued rapid establishment of modern infrastructure while simultaneously educating its population to take their places in the emerging modern society.

The rapid increase in the Omani population which Oman has witnessed since 1970 and the expansion of the Omani and expatriate labor force has created increasing demand for public services. During the early days of the "Omani Renaissance", demand for labor far outstripped the capabilities of the local population and the expatriate Omanis returning to Oman. The proportion of expatriate labor therefore grew rapidly. The following table shows the increase in the labor force and the growth of the imbalance between expatriate and Omani labor during the 1970's and early 1980's, culminating in the construction boom of 1984/5.

LABOR FORCE GROWTH ¹
Omani Expatriate Total Growth

1975	135,000	65%	74,000	35%	209,000	
1980	152,000	50%	154,000	50%	306,000	46%
1985	192,000	38%	313,000	62%	505,000	65%
1990	207,000	39%	322,000	61%	529,000	5%
1995	308,430	45%	381,570	55%	690,000	30%

Concurrently the education infrastructure was rapidly developing to meet the pent up demand of a population denied local education in the past, and to address the education needs of a growing population. Priority was given initially to primary education and adult literacy programs. The goal, having been largely achieved, was to provide universal primary education, and provide literacy training for the adult population. While establishing basic primary education, the Government of Oman looked to the creating a foundation for a full 12 year public education system, and to addressing the various specialized and advanced education needs of a modern society.

The 1980's saw the expansion and upgrading of a vocational training system, the establishment of specialized training institutes in health, teacher training, public administration, banking, communications, oil, and the security forces as well as development of special education, and sports and youth programs. Additionally, a national university was established, graduating its first class at the end of the decade.

2. The Labor Force

The expatriate labor force, both in absolute and relative terms, has grown consistently over the past two decades. Today, however, that trend is reversing as population growth begins to catch up with economic growth. The new Omani entrants to the labor force differ qualitatively as well as quantitatively from the past profile of the Omani worker. They are better educated, have grown up in a more dynamic environment,

¹ Fourth Five Year Plan 1991-1995, Development Council, Sultanate of Oman

and have expectations born of their parents' experience in an economy with vast opportunities and minimal competition.

As the labor force becomes increasingly Omani, its character, and characteristics, will change, and Omani institutions will change with them. In Oman, the government is managing this change cautiously on the basis of assumptions of substantial overall labor force growth, and a continuing real growth in expatriate labor. The private sector constitutes the principal target for absorption of new entrants to the labor force. A central issue in achieving private sector Omanization targets is inequity between public and private sector wage rates and working conditions. The Government is taking several steps to address this issue. On the one hand it is holding the line on public sector pay raises letting real wage rates decline as inflation has its effect. On the other it is establishing a social security system, defining minimum wages, and providing substantial subsidies for training.

LABOR FORCE DISTRIBUTION BY SECTOR 2

Sector	Total Labor		Omani Labor		% Omani Labor Force		Percent Omanization	
	1990	1995	1990	1995	1990	1995	1990	1995
Ag & Fish	146400	190900	118900	157800	57%	51%	81%	83%
Construction	104800	160600	6000	11800	3%	4%	6%	7%
Trade	82300	94100	5300	23300	3%	8%	6%	25%
Social Services	45800	54200	2200	3300	1%	1%	5%	6%
Government	81000	100900	47500	62800	23%	20%	59%	62%
Remaining Sectors	68800	89600	27400	49300	13%	16%	40%	55%
Total	529100	690300	207300	308300	100%	100%	39%	45%

Expatriate presence manifests itself across the board, at all skill levels, and in every sector of the economy. Nonetheless the concentration of expatriate

labor is most prominent in the modern private sector and most notably absent in the traditional economic sectors, agriculture and fisheries. The public sector continues to be heavily dependent on expatriate labor in spite of an aggressive Omanization program over past years. Progress in Omanizing the public sector has slowed as continued success becomes dependent upon providing specialized skills to replace the technical and professional cadre of expatriates.

The sectoral distribution of Omani labor reflects a society that still has one foot in the past. The Omani share of the modern business sector is just slightly over 20 percent, while 62 percent of total private sector Omani employment is in agriculture and fisheries. In absolute terms this means there are three Omanis working in traditional occupations for every one in the modern business sector. Where special efforts at Omanization of an industry have been made, as in the banking sector, or licensing is restricted to Omanis, as in taxis and fisheries, Omani representation is high. It is notable, however, that in no economic sector, with the exception of the traditional sectors, is Omani representation clearly dominant. The opportunities for integrating the growing numbers of young Omanis into the labor force therefore lie across the spectrum of economic activity, however the focus over the coming decade will be increasing the share of Omani representation in the modern private sector work place.

The bulk of the labor force is in the un-skilled and semi-skilled categories, accounting for over 80 percent. This profile is changing as education has become more accessible. The Five Year Plan anticipates un-skilled and semi-skilled labor will account for a reduced 78 percent by 1995. Given the enrollment rates of Omanis in primary school, and assuming a constant percentage of acceptances to secondary school, the trend towards a better educated and more skilled population will likely continue.

LABOR FORCE DISTRIBUTION BY SKILL CATEGORY 3

Skill Category	Total Labor		Omani Labor		% Omani Labor Force		Percent Omanization	
	1990	1995	1990	1995	1990	1995	1990	1995
Specialized Skills	20300	26200	6900	9200	3%	3%	34%	35%
Highly Skilled	37600	47900	12700	15600	6%	5%	34%	33%
Skilled	69800	89100	17600	40300	8%	13%	25%	45%
Semi-Skilled	199700	260600	76600	104500	37%	34%	38%	40%
Un-Skilled	201700	266500	93500	135700	45%	44%	46%	51%
Total	529100	690300	207300	305300	100%	100%	39%	44%

3. Omanization

One of the principal human resource development goals of the Fourth Five Year Plan is the rationalization of the education and training system in relation to the manpower needs of the Sultanate's developing economy.

The emerging profile of school leavers will dictate the priorities of Omanization. For the medium term there will be a leveling at either end of the education spectrum. Input to the education system at the primary level should grow at a fairly consistent rate of 3 percent, while University education is planned to grow only modestly, particularly in relation to the dramatic increase in secondary school leavers over the Plan period. The largest growth in entrants to the labor force will be among secondary school graduates. Based on 1989 rates of advancement, school leavers entering the labor force at the primary level will increase only 30 percent, the increase in school leavers at the secondary level, will likely increase 175 percent or more.

Targets set in the Fourth Five Year Plan are indicative of this trend. The increase across all skill levels is expected to be fairly consistent over the plan period. Although the largest absolute numbers of Omanis to be absorbed into the labor force are in the un-skilled and semi-skilled categories, the targeted increase in Omanization is greatest in the skilled

labor category. The implications for the training and education establishment are most significant therefore, at the level of secondary and post secondary education. At the level of specialized and highly skilled labor, output of SQU and recipients of overseas scholarships meet 90 percent of the Plan's target.

Public sector growth is slowing, making private sector employment an increasingly important factor in accomplishing the Government's Omanization plans. In the modern private sector, construction and trade account for the bulk of employment, and for 70 percent of the anticipated increase in employment in the modern private sector. These sectors are natural targets for increasing the Omani share of employment in the private sector, and indeed the Plan targets these sectors for the largest relative increase in Omani labor participation.

4. The Educational System

The development of the educational system reflects the demographic imperatives in Oman and the priority given to Omanization. During the past decade an intensive effort has been made to establish universal primary education. Today over 90 percent of school-age children attend primary school. The demand for primary education over the past decade has grown three times as fast as preparatory education and seven times faster than secondary education.

The crowding in primary schools today is indicative of the pressures being put on the system by population growth as demonstrated in the following table. Primary school utilization is at maximum capacity, with nearly every facility being utilized for morning and afternoon sessions. Moreover, nearly a quarter of the facilities are in temporary structures. This is in stark contrast to preparatory school facilities, whose utilization rate is 126 percent, and secondary school facilities, which have no double sessions.

EDUCATIONAL FACILITIES 4

	Primary	Preparatory	General Secondary	Specialized Secondary
	90/91	90/91	90/91	90/91
Number of Programs	386	317	76	5
Number of Schools	201	251	76	5
Ratio of Rented Facilities	5%	4%	0%	0%
Ratio of Temporary Structures	23%	14%	0%	0%
Facility Utilization	192%	126%	100%	100%

Over the coming Plan period, demand for additional educational facilities will be substantial, but most critical at the secondary level where as many as 1,000 additional classrooms could be required to meet the needs of incoming students while maintaining present standards of quality. Because of the overcrowding at the lower levels, particularly in primary schools, existing facilities simply cannot accommodate the additional demand and new facilities will have to be provided to accommodate the growing population. At least 500 additional classrooms will be required to simply maintain the present overcrowded state.

5. Government of Oman Policies/Strategies

A key concern of the Fourth Five Year Plan is to respond to the pressures of integrating the growing number of young Omanis into the labor force. The Plan sets an ambitious goal of increasing the Omani labor force 50 percent by 1995. This goal is based on an anticipated growth of 30 percent of the total labor force, thus increasing the Omani share of employment by 5.5 percent over the Plan period. To accomplish this the Plan looks to:

- Growth of employment in government
- Expanding agriculture & fisheries
- Employing nearly half the new entrants in the private sector.

Significant investments are planned to facilitate this

4 Drawn from the Statistical Yearbook of Education 1990/91, Ministry of Education, Sultanate of Oman

goal. In government, several key ministry training institutes will be expanded. The Ministry of Health is more than doubling nursing training through the establishment of five new nurse training institutes and the Ministry of Education is expanding teacher training facilities to likely double the output of primary teachers by 1995. RO 10 million has been allocated to the Ministry of Civil Service to train 3,200 new entrants to the civil service.

The cornerstone of the plan's private sector Omani- zation plan is the training levy. Recent changes in the training levy expand considerably the extent of government subsidies to salary and training fees for new Omani employees in the private sector. The plan allocates RO 40 million for this purpose. However, this has been an ineffective program in the past. The private sector complains that approvals are difficult and time consuming to obtain. There is real confusion about eligibility and procedures. Training institutes claim the guidelines make effective profitable training programs difficult to conduct. Moreover, existing training institutions are not equipped to handle the planned increase in training.

In 1990 less than RO 1 million of the RO 7 million in available credits were claimed by businesses. The dismal past record of this program suggests it is unlikely to make a significant contribution unless it is substantially reformed. Moreover, the limited number of training facilities available will require a substantial expansion by the private sector, to create the training infrastructure. The Plan directly addresses the private sector training needs through an allocation of RO 1.5 million for support of the Chamber of Commerce Business Training Institute, and RO 29 million for development of facilities at Sultan Qaboos University, of which RO 7 million is for the establishment of the College of Business and Economics.

In education, the Plan allocates RO 88 million to expanding and upgrading school facilities. The distribution of these investments reflects the changing demography of the school-age population. Thirty-two percent of the funds identified for new facility construction at specific levels are allocated to secondary schools, 56 percent to preparatory schools, and 12 percent to primary schools. RO 25.5 million is allocated to extensions, additions, improvements, and repair to unspecified existing schools. At Arthur Anderson's recommended cost per room estimate of RO 10,000 this investment would provide 560 new primary school classrooms and 1,451 new secondary school classrooms. The Ministry of Education planned capital expenditures account for almost 4 percent of total Plan's development expenditures for the Plan period.

6. OAJC Involvement

The priorities in education and training in Oman are dictated by the pressures being faced by the public education system to accommodate the growing number of students, and the need to integrate the growing number of young educated Omanis into the workforce of a modern economy. Because of the growing population, education of the young and provision of employment for school leavers are compelling contemporary issues in Oman. The quality of education is going to have profound effects on the development of the economy as the labor force becomes increasingly Omani. Education and training is needed across the board, at all levels, and in all sectors. Nonetheless there are areas where the OAJC can focus its efforts on key issues, building on OAJC and USAID strengths.

In the public sector, education and training programs are needed to continue the Omanization process. The existing and planned Government institutes in Health and Education will only begin to provide the numbers of technicians and teachers needed. Within the civil service as a whole there is a particular need for applied education in finance and administration, as well as management training for senior Omani officials. The Fourth Five Year Plan targets over 15,000 new jobs in government for Omanis. Although it is a relatively small proportion of the total targeted increase in the Omani labor force, Omanization of the public sector has an important psychological role to play in demonstrating the Government's commitment to Omanization. The U.S. has a comparative advantage in health education and USAID has extensive experience in training public servants in the variety of skills needed for development management.

The Fourth Five Year Plan places a priority on increasing the role of Omanis in the private sector workforce. The proposed Chamber of Commerce Business Training Institute, and the College of Commerce and Economics at Sultan Qaboos University, offer opportunities for the OAJC to contribute to addressing this priority goal. The U.S. is a world leader in business education and has a strong comparative advantage in this area. Moreover, elements of the proposed Business Development Project, Business Scholarships for Oman and development of the in-house capacity of the Chamber of Commerce to administer training programs, help fill the gap in business skills training.

Lastly, population pressures will continue to require investments in educational facilities. Primary schools are overcrowded and secondary schools are facing a wave of new students that will likely triple

enrollment over the Plan period. The OAJC has had relatively successful involvement in the past with school construction, although lack of maintenance is limiting the life of the structures. The OAJC's involvement in this area therefore, should include a demonstration of the benefits of improved facilities' maintenance in prolonging the useful life of the schools and the corresponding analysis of the recurrent cost implications.

E. HEALTH

1. Overview

The measurable indices of health status in Oman show remarkable improvement in the past decade, primarily as a result of an exemplary child survival program. Surveys in 1986 and 1989 substantiate a low infant mortality rate (under 30 per thousand live births and falling), a crude mortality rate of 5.2 per thousand, and a falling death rate. (See Table 1)

Table 1
SELECTED HEALTH INDICES⁵

	1980	1985	1988	1990
Infant Mortality Rate	72	45	34	29
Live Births (000)	41.2	48.6	52.6	55.6
Attended Births (percent)	50	70	87	92
Crude Death Rate	11	7.1	5.8	5.2

Such rapid and dramatic improvement in health status can only be brought about by widespread use of preventive health care measures. The infrastructure of facilities and manpower is essential, but unless they are attuned to the responsibilities for prevention, the basic curative roles of hospitals and doctors will have only a slow impact on improved health in the Sultanate.

The improvements noted above are the result of a significant growth in maternal and child health programs. One key program has been a nationwide vaccination program. Measles, a major killer of children in developing countries (which Oman was 20 years ago), have been controlled. Today 96 percent of Omani children under the age of one have been immunized against measles. About 95 percent of children under one year of age have been protected against

⁵From MOH Annual Report - 1990

poliomyelitis, and the same percentage have received the full DPT vaccinations. These immunization rates exceed the levels achieved by many developed countries. And these figures are based on MOH recorded data, rather than estimates or extrapolations from surveys which may be less accurate.

The surveillance of acute disease, while not perfect, was efficient enough to identify an outbreak of poliomyelitis in 1988 which has been the subject of intensive Ministry of Health (MOH), World Health Organization, and Centers for Disease Control investigation. This is providing new information on the epidemiology of poliomyelitis and its vaccines that is expected to be of assistance in the global eradication efforts.

Excellent progress has also been made in the control of mortality from diarrheal diseases. The incidence of 12 percent of children having diarrhea is lower than in other similar countries. Further, the Ministry of Health has been implementing a program of control of acute respiratory illness (ARI) in children, and this is expected to further reduce childhood deaths. ARI is the largest cause of preventable deaths under the age of five.

As the infectious diseases of childhood become controlled, the next most important factor in improving maternal and child health status for a public health care system is to improve the status of infants at birth. Prenatal care is the measurable factor that indicates access to service and low birth weight indicates the quality of the service. The above mentioned MOH Survey gives data on prenatal care. Of currently pregnant women, 37 percent of women in the first trimester had received antenatal service, 55 percent by their second trimester and 88 percent by the third. (This compares favorably with the City of New York!). Further, MOH reports that only 7 percent of live births are under 2,500 grams, the definition of low birth. (New York City -9.7 percent)

2. Status of Health Manpower

For the health services to remain constant in quantity (or to reach agreed upon goals) the population growth of nearly 4.0 percent per year must either be slowed, the numbers of Omani's enrolled in health professions education increased, or the numbers of expatriate professionals increased. The Faculty of Medicine in the Sultan Qaboos University started functioning in 1986. It is currently training medical students to become the next generation of Omani doctors. The first class will graduate from the University in 1993, and it is estimated that the graduating class will

stabilize at approximately 80 per year. With a constant population growth of 3.8 percent per year, this will still fall short of the needs of the Sultanate. Table 2 illustrates the problem.

Table 2.
NEEDED PHYSICIANS AT GROWTH OF
3.8 PERCENT FOR CONSTANT RATIO

Est.Pop(mil)	1.31	1.52	1.83	2.21
MD Growth**	158	183	221	266
Graduates	80	80	80	80
Expats Needed	78	103	141	186

Although the Sultanate is actively pursuing increasing the supply of health manpower, it will be decades before a fully Omanized and currently educated force is available. It is important in the meantime to assure and preserve the quality of service being delivered. Massive importation of inadequately trained personnel will decrease quality and poor national training programs will defeat their purpose.

The national goal is to have 1.5 or 2 nurses per hospital bed. Hospital beds are used as the index rather than population, since policy makers can understand the need for nurses related to beds, where the concept of community nurses has not yet been accepted. There are 3,415 Ministry of Health operated hospital beds and 727 beds in non-Ministry hospitals, a total of 4,142 beds. There are 4,158 nurses in Oman. The following figures give some idea of the magnitude of the problem.

Table 3
NURSING NEEDS

	1985	1990	1995	2000
BEDS	3210	4158	5307	6773
NURSES	2420	4266	4266	4266
NURSES NEEDED	4815	6237	9676	12349
OMANI NURSES		80	930	1930
DEFICIT	2395	1892	4480	6153

Periodic major overseas recruiting efforts have been able to keep the ratio constant at about one half the desired level. The MOH has recently opened five new schools of nursing outside of the Capital. To date, they have had no difficulty in recruiting students for these schools since students prefer studying closer to

home. A big limitation will be the shortage of qualified nurse educators as well as English language tutors (since most of the physicians with which nursing staff will be working for the next several years will be English speaking expatriates).

Three year diploma graduates will be able to very adequately perform routine nursing duties, but one must look forward to the needs of supervisors and specialized nursing. Without a degree or recognized certificate it will be difficult for Omani nurses to matriculate for advanced training in the UK or the USA. The graduate nurses will have the additional difficulty if their educators are not adequately prepared and maintain currency in the field. Therefore, the nursing syllabus must be evaluated and, if necessary, upgraded to meet international and/or U.S. standards.

The Sultanate has taken other steps to begin to alleviate the shortage of manpower in a variety of fields.

- A new diploma course for assistant pharmacists has been started, but again the first graduates are three years away.
- A new diploma course for public health inspectors has been started, but again the first graduates are three years away.
- A program for laboratory technicians exists at the School of Medical Laboratory Science. However, because this course does not yet meet international standards, when they graduate they go to a hospital laboratory where they are supervised by expatriates (Indian) with lesser training but greater experience.

3. OAJC Involvement

The needs that have been identified above can be divided into three main categories: Omanization, technology transfer and policy dialogue. To the extent possible there has been an attempt to create inter-sectoral links, in this case mainly Ministry of Health, Ministry of Education, and the Inter-Ministerial Committee on Women and Children. The major areas that relate to Omanization are related to long-term human resource development. Technology transfer focusses on the field of continuing education of the

health professionals and short-term technical assistance. Policy dialogue relates to the upcoming census and population issues that this will raise. The proposed Omanization project will address many of the Ministry of Health's specific requests in nursing education, continuing professional education and procurement training for health care equipment. A more detailed discussion of assistance in the health sector follows.

4. Omanization and Long-Term Human Resource Development

Health manpower development is a long-term process, depending upon the existence of a stratum of basically qualified young nationals. The Government's policy is to progressively replace the expatriate health workers with qualified nationals for socioeconomic development of the country. In the health sector, this is still decades away and Oman will be dependent on expatriate health workers for many years to come. This is well illustrated in the case of nurses described above.

However, the Government is moving in that direction, particularly recognizing the large numbers of young women graduating from secondary schools. The recent opening of five schools of nursing is an example of both meeting the needs of the health services and offering an opportunity for young women.

But programs that aim to produce health professionals should be established only if there are firm plans for the programs to meet international certification standards. A major stumbling block for the improvement of Omani nurses at the present time is that their education and training is not done to standards that meet international standards, and therefore training Omani nurses for leadership and educational posts is extremely difficult. Maintaining quality educational standards and up-to-date curriculum in Omani health training programs can result from linkage arrangements with U.S. health schools. The Ministry of Health's request for a consultant to evaluate the current nursing school curriculum and articulate a plan to attain U.S. or international certification appears to be a priority step in any assistance to the sector.

As Oman succeeds in conquering the epidemic diseases of childhood, maternal care becomes a more important factor in the protection of the life and health of infants. Antenatal care and postnatal care are highly dependent upon communication between health worker and the mother. Today ante- and postnatal care is delivered by expatriate nurses and physicians and communication barriers are of major significance in explaining proper activities to the mother.

Proper nutritional advice, for example, is of utmost importance in both the prenatal and postnatal period. Expatriates now mainly use posters to communicate such information and, while helpful, leave much to be desired. In addition most of such advice is given by overworked nurses who have other duties. In the crowded conditions of the clinic, education frequently takes the back seat to immediate needs. There are few expatriate midwives who can devote their full time attention to pre- and postnatal care. The OAJC supports the efforts of the Ministry with the World Health Organization to initiate training programs for Omani midwives.

5. Health Education Technicians

The Ministry of Health has recently initiated an ambitious school health program. The staffing calls for one doctor for 5,000 students and 1 nurse for 2,500. Currently, there are 52 MDs in the program and 94 nurses. All of these are expatriates. Their duties include health monitoring, environmental controls and health education. Of these, the opportunities for health education will have the highest pay-off, but the same limitation of communication that is described previously exists. It is even more pronounced since the pupils will be less likely than their mothers to try to push the doctor or nurse to better interpret material.

There is an opportunity to open additional jobs for Omanis by developing a school of Health Education Technicians. Such a school would accept secondary school graduates who would first receive education in basic health sciences: anatomy, body functions (physiology) and dysfunction (pathology). This course would last a year and be augmented by training in methods communication.

Following this, another year would be devoted to understanding basic health issues with the idea that they would not be taking the place of nurse or doctor, but being able to communicate to children about health information. This curriculum should be developed under the guidance of the Inter-Ministerial Committee on Mothers and Children. The advantage of such an approach, in addition to language compatibility, would be that the health education technicians would be closer in age to the pupils, would be more approachable than the doctors and nurses and hopefully would engender a feeling of confidentiality with the pupils.

The technicians would be encouraged to develop their own health educational material for the pupils, which would be checked for content accuracy by health professionals, but the method of presentation should

be that of the technicians. The closeness of age and customs will make such material more meaningful than material developed by expatriates or highly educated Omanis.

6. Patient Advocates (Social Work Assistants)

The University Hospital would like to develop a curriculum for training a new category of workers called patient advocates. The training is short-term (60 hours). These workers would be Omani women with a Secondary School Leaving Certificate who help patients understand the hospital and its purposes. This training should also benefit the Ministry of Health facilities and would provide an initial training for women who might go on to become Health Education Technicians.

7. Nursing

These are complex needs. As mentioned above, certification of existing programs should come first. This process has been initiated by the Ministry of Health in collaboration with the University Medical School. Upgrading of the existing programs must take priority, complemented by further training. If the program can be accredited, it might be desirable for the MOH to establish a linkage with a School of Nursing that has affiliation with a School of Public Health and would be willing to custom design educational opportunities for Omani nurses. The training in such institutions must be not only for nurse educators, but also for nursing administrators and community health nurses.

This arrangement should be a multi-year project to assure a steady supply of qualified Omani nurses. It is important that they be trained in supervisory techniques since they must have a "career ladder" within their profession. At the present time, the leadership posts are primarily filled by expatriates, and Omanis must be trained for these, not just fill them because they are Omani.

8. Continuing Education

Oman has made great strides in its health status and service through the employment of expatriates. In spite of vigorous efforts to replace expatriates with Omanis, that will be a long time in coming. Therefore, it is essential to maintain the quality of services that have been made available to the Omani citizenry.

A key factor in maintaining quality is continuing education. At the present time various seminars and training courses are held, but there is no overall

planning for this. Communication technology is ripe for exploitation in continuing education. In addition to clinical continuing education, other types of training should be considered: management training and training of trainers. The regionalization of health services will demand a new level of managerial capability throughout Oman and a training center should be prepared to provide such training. Of particular importance, as the health services grow more mature, will be training in human resource management, particularly in skills related to supervision. This becomes more important as the health services become more mature.

The recent regionalization of the health care system will mean that much of the training that is now done centrally can and should be done at the regional level. There will be a need for skilled trainers to plan and conduct such training, therefore training for trainers becomes an important function of a training center.

If a training program is to be developed, consideration of a consultant with special expertise in continuing education to assist in the needs assessment to determine resources available, itemize those that would have to be provided and assist the MOH in designing the overall program is required. With the increasing capabilities of the University Medical School and its strong desire to train for community health work and primary care, the consultant should ideally be responsible to both for guidance, and report to both.

F. POPULATION CENSUS

Many programs in Oman have been hampered by the lack of accurate population statistics. Currently, a group of Omanis are in training with the Bureau of the Census in Washington, DC, to prepare for a nation-wide census in 1994. Since this will be the first census in Oman, strong consideration should be given by the OAJC to supporting a person already skilled in census taking to work through the census, to give back-stopping to the Omanis in the field and act as a quality controller.

In the meantime, there are figures from the Maternal and Child Health Survey that was done in 1988-89 that give support to the fact that the Oman population is growing rapidly. The data cited earlier in Section IV indicates that the population is growing at the rate of 3.8 percent per year.

1. Population

All evidence suggests that Oman will soon be facing enormous population expansion based on continuing rates of growth close to the maximum. Data available from the Ministry of Health dated October 1991, indicate that the population of Omani Nationals has been growing at just under 4 percent per year. The history of this growth is illustrated in Table 1.

Table 1.
POPULATION GROWTH RATE

YEAR	1985	1986	1987	1988	1989	1990
EST. POP (000)	1044	1084	1126	1170	1215	1261
PERCENT INCREASE	3.88	3.83	3.87	3.91	3.85	3.79

If the population were to continue to grow at the same rate for the next ten years, there would be a 77 percent increase. Table 2.

Table 2
PROJECTED POPULATION GROWTH AT NET
INCREASE OF 3.8 PERCENT

YEAR	2000	2005	2010
EST. POP	2230	2687	3238

However, this must be considered a very low estimate. It does not take into account the increasing number of child bearing age women who will be entering the population equation. A more realistic 10 year estimate would be over 3,000,000. There will be an ever increasing number of children surviving for the next decade as the effects of the improved maternal and child health programs are felt. The exemplary child survival program in Oman has been a stimulus to this rapid population growth. When children survive epidemic and endemic diseases, e.g. measles and diarrhea, the population structure undergoes a rapid change. This is due to four main factors:

- the survival of the young child;
- the entrance of the surviving children into the reproductive age;
- the continuing belief of parents that their children will not survive and they therefore need to continue procreating; and

- the fact that the population is a young population, with a high proportion in the reproductive age, and few elderly whose deaths would balance the high birth rate.

The data contained above does not even indicate the true magnitude of the problem. For at least the past 5 years roughly 50,000 people have been entering the childbearing age, so that if it were possible to estimate the fertile proportion of the age group 15-64, it would be seen that the vast majority were still in the childbearing age. The proposed census in 1994 is essential to obtain the data upon which rational population policies and estimates can be made.

2. Government of Oman Policy/Strategies

These issues are understood by the Oman Ministry of Health and are the subject of discussion within the Inter-Ministerial Committee for Women and Children. To date, however, the only program activity that this has produced is health education for women and an active drive to promote breastfeeding for two years. While the latter is an acceptable method of child spacing, it is only a piecemeal approach and inadequate to fully address the high population birth rates.

There is growing evidence that the Omani family is concerned about the need, not to control the population, but to assure that their children are as healthy as possible. They realize that one of the most effective ways of having healthy children is to have adequate spacing between each birth. The evidence that families are concerned is demonstrated in the following tables which show the current levels of contraceptive use. It is obvious that family planning activities are being initiated on an individual basis, but perhaps without good advice. If families are going to attempt to space their children, they should be given the opportunity to do this in the best and most appropriate manner.

3. OAJC Proposed Involvement

Because of its sensitivity, OAJC has not been active in this area. The first step in deciding upon measures is to work with decision makers to address the population problem and establish a clear national policy on the subject. AID has a long history of being able to identify for countries of similar social and demographic structure successful policies that might be useful for Oman. Study tours of Tunisia and Morocco for Ministry of Health personnel is one component of the OAJC's contemplated intervention. External training for public health managers, an educational

campaign for the general public and specialized training for health care professionals in family planning techniques are all potential assistance options. Also AID could be of assistance after policies have been established by providing technical assistance to determine needs and to focus health manpower training, both for services and for management.

CHILD SPACING DATA⁶

	Urban	Rural	Total
Percentage of ever-married women who have ever used a family planning method:			
Age: 0-24	14.4	4.3	7.1
25-34	37.5	10.9	20.2
35-44	39.2	13.0	20.4
45-49	23.4	9.2	12.9
Total	32.6	9.4	16.2
Percentage of currently married women who are currently using a family planning method:			
Age: <25	3.3	1.9	3.8
25-34	13.5	4.5	10.6
35-44	13.8	5.0	11.0
45-49	9.7	2.4	6.0
Total	11.0	3.7	8.6
Percentage of currently married non-pregnant women, who are currently using a family planning method:			
	13.9	4.7	10.9
Percent distribution of current users by method used:			
Pill	26.4	27.3	28.4
IUD	11.4	28.6	17.5
Female sterilization	24.3	27.3	25.3
Condom	18.6	5.2	12.6
Injection	2.1	3.9	3.5
Safe Period	9.3	2.6	6.0
Other	7.9	5.1	6.7
Total	100	100	100

⁶CHILD HEALTH SURVEY, Preliminary Report, March 1990, Sultanate of Oman, Ministry of Health

G. ENVIRONMENT

1. Natural Resources

Water and Wastewater. Although Oman has done much to improve the quality of life for its people, to maintain this progress, the Government must carefully manage its natural resources, especially those in short supply. While exploitation of mineral resources is hard to control, the Government of Oman can and does have a major impact on water use.

The Water and Wastewater service sector involves water supply for domestic, industrial and institutional needs of the population, and collection, treatment and safe disposal of the wastewater. In the past, the whole population was being served by aflaj (an underground and surface canal system) and wells. The aflaj system is naturally controlled by the level of the water table of the aquifer from which the falaj taps water. The survival of a certain community therefore, depended upon how good they managed their water supply. These aflaj systems are still in use in the northern region, where the bulk of the population lives.

With the rapid growth of the country, a demand for a reliable supply of water arose. This demand had to be met first in the capital area where initial development institutions were established, and then in Salalah, the second largest city and the capital of the southern region. Consequently, a new water supply network was constructed in Muscat and then Salalah. As demand grew with development, groundwater sources in Muscat could not meet them, and sea water desalination was the only possible solution. The first desalination plant was therefore, constructed in Muscat in 1974.

The plant started with two desalination units and was later expanded to four units. Now the desalination plant produces over 80 percent of the water consumed in the capital area. The Omani Government is further expanding the desalination plant in Muscat and the OAJC is contributing to this effort by partially financing the related water supply treatment, storage and transmission facilities for the capital area. However, based on past growth trends, the demand for water grows faster than construction of physical facilities can be realized. It is expected that the facilities presently under construction in Muscat will just meet the demands at the time of their completion. With the assistance of the OAJC, the Government has therefore now employed a consultant to draw a master-plan to project demand and supply for water in Muscat

for the coming twenty years.

In Salalah, where the majority of the southern region population resides, the situation is potentially different. Salalah water demands are met by the Salalah aquifer, which is replenished by the yearly monsoon rains. The supply network serves most of Salalah's population. No desalination of sea water has been necessary so far although withdrawal from the aquifer, which also meets agricultural demands, exceeds the annual recharge. The Government, with OAJC assistance, has employed a consultant to draw a water and wastewater masterplan which will look into supply and demands for the next twenty years.

In northern Oman, there has been relatively little investment made in serving the population with modern water supply systems. These systems have so far been constructed only in major towns like Nizwa, Sohar, Sur, Musandam and Buraimi, and are using groundwater as the supply source supplemented by small desalination units in some towns. The rest of the northern region is still dependent on the traditional aflaj and hand dug wells. However, the Government is spending a reasonable amount of money yearly to repair and maintain the aflaj and wells to keep them functioning until a modern system of supply can be installed.

Wastewater treatment facilities tend to be substantially less developed than water supply systems. Most of the existing facilities serve residential compounds or government facilities (hospitals, defense works, etc.) and are operated independently. Given the rate of urban growth over the past two decades, sewerage and wastewater systems are a high investment priority both to protect the environment and water resources and maintaining high health standards for the sizeable urban populations involved.

Government of Oman Strategy/Policies. From a recent study, three of the four recommendations for government action in the natural resources sector pertained to water. The study concluded that the Government needed to do more in water resource policy development aimed at water pricing, and resource development. Similarly, the World Bank and the International Monetary Fund in their reports have highlighted water as a constraint to agricultural production indicating that further increases in production will require improved management of water. The World Bank concluded that water policies are generally sound but that the Government needed to limit groundwater exploitation and in some areas, improve data collection, improve rural agricultural water use and employ desalination to produce fresh water only as a last resort.

The National Water Resources Master Plan is nearing completion. These planners have concluded that the national policy to increase food self-sufficiency cannot be effectively carried out due to water limitations. In areas which are over-exploiting the groundwater resources, agricultural output must be reduced to the available sustainable water resource. Further, population increases (they project a tripling in domestic water consumption by 2010) will need to be accommodated by reductions in water for agriculture. Water can be produced from seawater by desalination but at a very high cost, certainly greater than the economic value of the water when used for agriculture. The general conclusion is that water is and will be a constraint to agricultural production and careful management is required.

The situation can be improved by crop substitution, allocating water supplies based on water quality requirements, wastewater recycling, aquifer recharge/management, recharge dams, improved agricultural water use practices, water conservation, economic pricing of water and land use zoning. To develop and implement those interventions will require skilled personnel, effective institutions and supporting legal and regulatory policies. While the governmental agencies have made significant progress and are aware of the needs, support is required to develop Omani personnel to manage the activities and to provide the technical assistance to carry out the tasks.

2. Coastal Zone Management

A current OAJC project has funded a study of coastal zone erosion. This work complemented the IUCN (International Union for the Conservation of Nature) funded Coastal Zone Management Plans completed in recent years. It is apparent that management of this critical environment is important to the Sultanate recognizing the distribution of population, the importance of fisheries and development plans for this zone. The Government needs to take action through effective land use planning and specific management interventions such as review of planned marine structures and erosion monitoring. There is also the need to enhance conservation efforts through the establishment and management of protected areas.

Any future program must address the institutional question of how to implement such a program. However that works out, it will require skilled personnel and selective technical assistance. The Omani coastline is very long and its management will be a large task and will depend on good cooperation with local authorities.

The Fourth Five-Year Development Plan provides lists of projects by priority according to Ministry. The

following is provided for the purpose of comparison:

FIVE YEAR PLANS
(RO million)

	<u>1986-1990</u>	<u>1991-1995</u>
Ministry of Electricity and Water: Electricity	39.9	151.1
Ministry of Electricity and Water: Water	81.2	95.0
Ministry of Environment	3.8	6.2
Ministry of Water Resources	4.1	42.0

Note: The Ministry of Environment has been merged with the Ministry of Regional Municipalities. Until the Omani budget is revised, the present budget is assumed to be valid.

The large increase for electricity represents the investment needed for the planned 100 MW Manah Power Station and expansions of existing generation plants and transmission systems. The major increase is in water resources with a ten-fold increase in the budget reflecting the seriousness of the Omani Government to improve water resources management. Approximately RO 18.5 million will be invested in assessment of water resources and RO 14.4 million is planned for recharge dams. The Ministry of Environment allocated RO 1.9 million of its project budget (total is RO 4.7 million) to the coastal zone environment. This represents 40 percent of the project budget which is an indicator of their priorities and perceived needs. This is appropriate considering the plans of the Ministry of Agriculture and Fisheries to invest RO 42 million in the development of eleven fishing ports. The recent OAJC-funded work studying coastal erosion indicates that shoreline problems will result if these port improvements are not designed with regard to coastal processes such as sediment transport and erosion.

3. OAJC Involvement

The Water Resource Development Project has been the means to finance activities related to environment, including water resources and coastal zone management. The outputs have been training; Salalah Water and Wastewater Master Plan; Muscat Water Master Plan; technical assistance to the Ministry of Water Resources; Coastal Zone Erosion Study; and construction of wastewater stabilization ponds, water pipelines and a water storage reservoir. It is programmed to finance the detailed design of the Salalah Master Plan improvements and possibly, some construction components.

Over the planning period, the OAJC should support

Omani initiatives and plans to better manage its natural resources. Two areas which are considered top priority are water resources and coastal zone management. Associated with water resources is water supply which is also a priority area. The OAJC has had significant past involvement through the Water Resources Development Project but the task now is to define the objectives of a future program and decide how it might be best structured to be responsive to Omani development plans and to provide the flexibility which recent experience has shown is necessary.

In order for the involved ministries to carry out the work which they have identified, they will need more trained staff, particularly Omani nationals. At present, much of the management is performed by expatriates; in view of the policy of Omanization, this must be shifted to Omani personnel. This will require substantial training programs - long-term, short-term, and counterpart. Also, the ministries will need to strengthen and equip training departments within the ministries and organizations charged with environmental management. Similar information could be developed for coastal zone management. Although progress can be made to simplify this situation, it must be accepted that any training program must be aimed at several organizations and provide the flexibility to respond to changes in policy.

A list of infrastructure projects contained in the Five Year Plan which should be considered for OAJC involvement is contained in Annex B. These projects will require major technical assistance inputs to carry out the tasks such as establishment of saline intrusion monitoring programs, coastal management activities and surface/groundwater assessment studies. The consultants will also need to work with Omani professionals in the ministries to ensure technology transfer. American firms have extensive experience in these areas because in certain areas of the United States we have similar problems.

It will also be helpful if the OAJC could support certain capital investments which the planning and management activities indicate are necessary and/or attractive. A good example is the Salalah Master Plan recommendations to collect sewage, treat it to a high standard and inject it into the aquifer to combat saline intrusion. Similarly, we have been requested to support water supply investments which also could be considered. This should involve, when possible, situations where the OAJC can finance goods from U.S. sources in which we have a comparative and competitive advantage, such as desalination systems.

V. OAJC STRATEGY FOR OMAN

Based on the proceeding sector analyses and coincident with the Government of Oman's long-term development objectives as well as the specific goals of the Fourth Five Year Plan, the OAJC has defined its program goal as:

To increase the productivity of the Omani economy through diversification of the country's economy and development of its human capital.

The importance of economic diversification results from the need to supplement the petroleum sector as an engine of growth and provider of jobs. Diversification is clearly needed to cushion the entire economy from any deleterious impact of short-term oil price fluctuations or a long-term decline in petroleum and natural gas reserves. However, the non-oil productive segments of the economy are still relatively small and no one sector appears capable of displacing oil as the engine of growth.

To assure the growth of the economy, it is essential to increase the productivity of the Omani worker. Hence, one of the key areas that the OAJC will focus on is assisting the Government in its Omanization policy and to upgrade the skills, education, and training of Omanis. This would include not only formal/non-formal education or structured training, but includes transferring educational and training techniques and manpower planning and management technologies. Expatriate dominance manifests itself throughout the economy in both business and industry as well as the public sector. Therefore, our strategy will focus on Omanization in key social service sectors and in expanding the role of Omanis in business and industry.

A. OAJC STRATEGIC OBJECTIVES

1. Increase the productivity, skills, and prevalence of Omani workers in the labor force.
2. Promote the growth of investment, employment and business activities to better meet future needs of a more diversified national economy.
3. Improve the management and conservation of renewable natural resources, particularly the Sultanate's water and marine resources.

B. PROPOSED PROGRAMMING OPTIONS

To achieve these strategic objectives the OAJC is considering the following projects:

1. Strategic Objective I: Increase the productivity, skills, and prevalence of Omani workers in the labor force.

Omanization Training - \$30 million FY 92-FY 97

The purpose of this project would be to increase the skills and participation of Omanis in the workforce. In the public sector, the largest concentration of non-Omanis are in two key social services ministries - Education and Health. The public sector training portion of the project will focus on these two Ministries as well as strengthening the Ministry of Agriculture and Fisheries to address key policy concerns. This effort might encompass:

Health Manpower Training - Degree training for nurses, advanced training in hospital/health care management and planning, including procurement and equipment standardization, and financial planning for the regional directorates; continuing education for health personnel in the regions and establishment of a Center for Continuing Education; assistance to assure accreditation of the new regional nursing schools and other new health professionals, such as a consultant to review the current nursing school curriculum with reference to U.S. and international standards.

The project would be broadly and flexibly defined to enable the OAJC to meet the educational, technical expertise, and training requirements of various key government ministries as they arise. Essentially, the program would set out criteria for financing technical services and training. Annual work plans would be developed based on these criteria.

School Construction II - \$20 million FY 92-FY 95

The purpose of this project would be to expand the basic educational infrastructure of the Sultanate. This project activity would be modeled after the earlier school construction program financed by the OAJC between 1983 and 1987. The project would support the Ministry of Education's expansion of the public education system primarily by financing a portion of the cost of building new schools. In addition to building new schools, the project will fund the development of a pilot school maintenance program which will ensure that investments in existing schools are protected actions.

It is expected that construction activities will be financed on a Fixed Amount Reimbursement basis with a small technical assistance element to design maintenance programs and other project management functions. The expected financial contribution of the OAJC should be adequate to cover the construction costs of approximately 700 new classrooms.

Family and Child Health Project-\$5.0 million FY 94-97

The goal of the project would be to assist the Government of Oman in strengthening maternal and child health care services including the incorporation of family planning within the nation's health care system. The project would consist of a review of the maternal and child health programs and a needs analysis to determine appropriate policies and project interventions. Subsequently, the OAJC would expect to finance training for the relevant personnel at the Ministry, clinical training for nurses and midwives in family planning methodologies, and training in the management of population related activities. The exact components of the project will be determined in close cooperation and consultation with officials of the Ministry of Health.

2. Strategic Objective II: Promote the growth of investment, employment and business activities to better meet future needs of a more diversified national economy.

Business Training and Development Project - \$5-10 million FY 92-96

The purpose of the project is to facilitate the growth of investment and employment, and to strengthen private sector promotional institutions to better meet the needs of a more diversified economy. The project is expected to have the following components:

- Assisting the Omani Chamber of Commerce in establishing a Business Training Institute. The proposed institute will be directed towards secondary school graduates and designed to address the middle management, supervisory, and clerical needs of business. It is expected that the institute will provide internationally certified intermediate level training in areas such as accounting, marketing, inventory control and management, etc.
- Business Scholarships for young Omanis to U.S. universities in fields relating to business, financial management, administration, etc.
- In-Service Training Facilities - This program will help the Chamber of Commerce to identify and organize in-service training facilities for indigenous business.
- Institutional Development - This would include technical assistance to such entities as the Omani Chamber of Commerce and Industry and the Rusail Industrial Estate Authority (RIEA). The

RIEA is currently planning to expand operations to several new sites. Technical assistance to the RIEA would therefore include such topics as estate management, construction planning and improved operations and maintenance. This component would also address issues of government subsidization of RIEA plants and look at long-term competitiveness of these industries.

3. Strategic Objective III: Improve the management and conservation of renewable natural resources, particularly the Sultanate's water and marine resources.

Natural Resources Management \$15.0 million FY 95-99

This would be a follow-on to the ongoing Water Resources Management Project which is expected to terminate in September 1993. The Project would be structured as a broad sector support program designed to provide training and technical assistance in coastal zone management, including problems of salinity intrusion, land use planning, and water resource conservation and management. This would include surface/groundwater assessments. The OAJC would also be able to provide capital goods and equipment for Government of Oman projects in these areas, as well as expansion of the water supply. The project would also be able to provide technical assistance and training to assure environmentally sound construction of Government of Oman infrastructure.

Capital Development of Water/Wastewater Systems and Harbors - \$25.0 million, FY 1996-2000

This activity would follow-on the completion of the Water Resources Development Project, and augment the Natural Resources Management Project by undertaking related construction activities and capital equipment. The project would be designed to focus on municipal utilities, principally water and wastewater systems, dams, saline intrusion monitoring systems, etc. It would provide planning, engineering design, and construction of these systems and provision of capital equipment - mechanical and electrical equipment. Under consideration are Saline Intrusion Monitoring Systems for Dhofar and Batinah, as well as water supply systems for Ibra, Sanaw and Al-Mudhaibi and water distribution networks for Mirbat and Al-Joufa.

The Harbor Development Project will provide infrastructure and technical support to achieve sustainable growth in earnings, particularly export earnings, of the fishing industry. As the preceding analyses indicates, the waters off Oman are rich in marine resources and there is significant scope for increas-

ing employment and export earnings. The components of the project would include:

- Construction of a modern environmentally sound fishing harbor. The Government of Oman has included in the Fourth Five Year Development Plan a harbor development plan. The OAJC might co-finance the construction of particular harbors included in the Plan, which are already in the final stages of design, or from potential projects not yet included for financing in the Plan such as those at al-Ashkara, Sohar and Duqm.
- Assistance in adaption of fishing technologies new to Oman, and expansion of product forms and markets for Omani marine products. Promotion of joint ventures between U.S. and Omani companies to expand existing fishing methods and processing.

4. Fiscal Year Programming

The following represents the OAJC's preferred programming for fiscal years 1992-1997. These programming proposals are predicated on several basic assumptions:

- There will continue to be an annual level of approximately \$15.0 million ESF;
- Over the planning period (FY 92-97) there will continue to be AID participation in the OAJC at approximately the same level of staff (4-6 USDH);
- The operating expense budget will be adequate to support the OAJC, at roughly the magnitude requested in the FY 1993 ABS;
- There will continue to be an Omani-American Joint Commission structure or something similar under which an A.I.D.-like program will operate; and
- The strategic focus of the program as outlined above will continue over the planning period, with some modification as necessary to cover other special interests.

OMANI AMERICAN JOINT COMMISSION FOR ECONOMIC AND TECHNICAL COOPERATION			
PROGRAM STRATEGY, 1992-97: PROJECTS FOR FUNDING CONSIDERATION (US \$000)			
ACTIVITY	OAJC INVESTMENTS	4TH PLAN INVESTMENT*	PROJECT APPENDIX
Business Development	10,000	17,360	G
Omanization Training and Support	30,000	93,628	F
School Construction II	20,000	75,306	A
OAJC II	3,000		
Family and Child Health	5,000	8,923	E
Natural Resource Management	15,000	41,436	B,C,D
Water/Wastewater Development	25,000	* *	
TOTAL	108,000	236,653	
*Refers only to projects listed in Appendices.			
**Projects authorized but not in the Plan are to be negotiated with Development Council.			
OMANI AMERICAN JOINT COMMISSION FOR ECONOMIC AND TECHNICAL COOPERATION			
PROGRAM STRATEGY, 1992-97: PROJECTS FOR FUNDING CONSIDERATION (RO 000)			
ACTIVITY	OAJC INVESTMENTS	4TH PLAN INVESTMENT*	PROJECT APPENDIX
Business Development	3,845.0	6,675	G
Omanization Training and Support	11,535.0	36,000	F
School Construction II	7,690.0	28,955	A
OAJC II	1,153.5		
Family and Child Health	1,922.5	3,431	E
Natural Resource Management	5,767.5	15,932	B,C,D
Water/Wastewater Development	9,612.5	* *	
TOTAL	41,526.0	90,993	
*Refers only to projects listed in Appendices.			
**Projects authorized but not in the Plan are to be negotiated with Development Council.			

<u>Project</u>	<u>Authorization</u> (\$000)	<u>Funding</u> (\$000)	<u>Mortgage</u> <u>After</u> <u>Obligation</u> (\$000)
FY 92			
Business Development	10,000	5,000	5,000
Omanization Training and Support	30,000	10,000	20,000
School Construction	20,000	14,562	5,438
FY 93			
Business Development		5,000	- 0 -
Omanization Training and Support		4,562	15,438
School Construction		5,438	- 0 -
FY 94			
OAJC II	3,000	3,000	- 0 -
Omanization Training and Support		10,000	5,438
Family and Child Health	5,000	2,000	3,000
FY 95			
Omanization Training and Support		5,438	- 0 -
Family and Child Health		3,000	- 0 -
Natural Resources Management	15,000	6,562	8,438
FY 96			
Natural Resources Management		5,000	3,438
Capital Development of Water/Wastewater and/or Harbors	25,000	10,000	15,000
FY 97			
Capital Development of Water/Wastewater and/or Harbors		11,562	3,438
Natural Resources Management		<u>3,438</u>	- 0 -
	<u>108,000</u>	<u>104,562</u>	

VI. MANAGEMENT CONCERNS

A. OAJC STRUCTURE

As noted earlier, the A.I.D. program in Oman operates under a unique bi-national structure - the Omani-American Joint Commission. This Commission was established in 1980 to undertake "technical and economic cooperation" between the two countries as part of a Joint Bases Agreement Act. In addition, there is a best efforts pledge by the United States to provide sufficient economic security assistance funds to finance these efforts.

Omanis and Americans assume equal shares in the operation and work of the Commission. The Commission is under the direction of two Co-Chairman, one of which is the Omani Undersecretary for Political Affairs of the Ministry of Foreign Affairs and the second being the American Ambassador. The Co-Chairman, by international agreement, are vested with the authority of directing the OAJC and its programs. The Co-Chairmen meet regularly to approve actions to be taken by the Commission and review progress of the portfolio. The actual management of the Commission activities is delegated and shared by the OAJC Managing Director who is also the Undersecretary for Economic Affairs, in the Ministry of Finance and Economy and the A.I.D. Representative to Oman.

B. STAFFING

With fairly constant program levels, the USAID staffing component of the OAJC has been consistent at 6 US direct hire employees since 1986. In 1991, it went down to 5 US direct hires. The current staffing includes an A.I.D. Representative, program officer, project management officer, financial and administrative officer, and executive assistant. This staff manages two Personal Services Contractors, with technical expertise in human resources development and fisheries.

In 1991, due to extenuating circumstances, the Government and Commission did not reach closure on a number of new projects, resulting in only approximately \$400,000 of the FY 91 funds being obligated. Consequently, this year the Mission has a large project development and design burden. This will be difficult to handle during fiscal year 1992 with turnover of some staff and a reduced operating budget in AID/W which will limit TDY assistance from NE/DR. Ultimately, the new programs to be developed this fiscal year will result in an increased portfolio which requires additional staffing. The decision from Washington is for the OAJC not to consider increases, but to deal with a further reduction, currently estimated to leave four U.S. direct hires in place. This year, the OAJC has identified staffing shortages as an area of vulnerability in their Internal Control Assessment. With the OYB level expect-

ed to remain at \$15.0 million next year, a growing number of contractors are required to assure that the vulnerability concerns are adequately addressed.

The Omani staff of the Commission, which presently number 12, are employees of the Government of Oman. Their salaries are paid from a joint U.S. and Omani Government funded account.

C. OPERATING EXPENSES

Staff resources as required in this OAJC Strategy require additional USDHs positions above the currently approved level of four for the next several years. The demand of programming five to six projects and the increased workload of managing these projects speaks for itself. If the current and additional USDHs are not provided, these positions will need to be provided on a contract basis. Accepting the premise that the OAJC's unique nature provides the flexibility to have a project that addresses its design, staffing and administrative needs, no additional OE funds are required for contract staff. This concept has been affirmed in Controller Assessments and not found objectionable in audits.

D. MANAGEMENT OPTIONS

Staffing constraints and changing priorities of the Agency for International Development make adequate U.S. direct hire staff to the OAJC questionable in the distant future. As this document is being written there has been a 33 percent cut in staff by A.I.D. in Oman. A vehicle that would provide benefits of A.I.D.'s effectiveness without its cumbersome procedures is the conversion of the OAJC to a foundation. Modeled after the Luso-American Foundation in Portugal, this organization would enable the U.S. to channel assistance through a non-governmental entity to support private enterprise, science and technology development, and educational activities designed to foster the long-term economic development of Oman. The foundation would be governed by a board of directors or trustees appointed by their respective governments preferably including private sector interests. The organization would be designed to be fairly independent, non-partisan, self-governing and be the recipient of funds from both governments. The Board of Directors would establish criteria/guidelines for the use of funding of the foundation, and would approve work plans and budgets of the foundation's activities. The actual operation of the foundation would have a similar mix of staff that is currently employed at the OAJC.