

FOREIGN LABOR IN LIBYA

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## CHAPTER I

### INTRODUCTION

A new era of economic and social development was ushered into Libya when oil began to be exported for the first time in the 1960s. Oil revenues gave Libya the means to commence an extensive restructuring of both its economy and society with the expressed goal of improving the, then, depressed standard of living of the people.

The new economic and social development goals are ambitious and far-reaching. However, there is a growing realization that there are serious problems. The concern is that there exists qualitative and quantitative limitations presented by the indigenous manpower supply. This is a major constraint which needs to be dealt with effectively if the programs for restructuring the Libyan economy and social life are to succeed. It is no secret that in order to insure the continuing development of the Libyan economy, Libya was forced in the past to rely heavily on foreign labor and will have to do so for a yet undetermined period of time in the future.

The massive inflow of foreign workers is evident everywhere in Libya. Yet, this subject is one of the least explored areas of development research in the country.

Therefore, this study addresses itself to the examination of the patterns and distribution of foreign labor in various sectors of the economy and proceeds to project the foreign manpower requirements of various skill levels for the period 1981-1985, the years of the latest economic development plan--the second Economic Development Plan. Finally, it examines the origins of foreign labor and possible policy implications.

### I. Objectives of the Study

This study then proposes to do the following:

1. Discuss the important part played by foreign labor in various sectors and occupations in the Libyan economy. In addition, this study will detail the geographic origins of all foreign labor employed in Libya.
2. Project total labor requirements of various skill levels which will be needed in each economic sector for the next five years (1981-1985).
3. Project the extent to which Libyans will be able to fill these requirements.
4. Project foreign labor requirements of various skill levels during the same period (1981-1985).
5. Suggest possible policy recommendations.

### II. Significance of the Study

In view of the accelerating rate of economic growth in

Libya and the inadequate rate of indigenous manpower increase, we must anticipate a continued need for the importation of manpower. The implementation and attainment of the objectives of Libya's economic and social development plans will further increase this same need. All this makes it imperative that we project the future foreign manpower requirements in each category of skills.

Forecasting future manpower requirements at various skill levels is of great importance to many countries. Knowing in advance anticipated shortages of manpower in certain skill levels makes the policy makers fully aware of the problems facing them in carrying out the development projects. They can then proceed to plan in advance to overcome any obstacles caused by the lack of available manpower possessing the required basic scarce skills. Forecasting future manpower requirements is also critically important to planners since manpower shortages in certain occupational categories, such as the professional and managerial, may require years to overcome. Although lesser skills can often be acquired in shorter periods of time, it is important for planners to know in advance the future needs in these categories. Such forecasts will enable policy makers to devise and adopt training programs that will provide the skilled manpower needed in the economic development process and direct attention to the more efficient utilization of human resources. In short, the purpose of manpower forecasting is as stated by Paukert: ". . . to facilitate the making of

plans for the utilization and training of manpower--or, more generally, for matching the supply of and demand for manpower."<sup>1</sup>

Although this study concentrates on Libya, it may also be of use to other countries that share similar economic characteristics with Libya such as Saudi Arabia, Kuwait, and the United Arab Emirates.

### III. Organization of the Study

This study is divided into seven chapters. Chapter I serves as an introduction.

Chapter II describes the state of the Libyan economy. It is essential if one is to study foreign labor in Libya to explore the economic conditions of the country before and after the discovery of oil. In studying the growth of the Libyan economy, three major economic development plans will be explained. These plans are the first three-year Economic Development Plan (1973-1975), the first five-year Economic Development Plan (1976-1980), and the second five-year Economic Development Plan (1981-1985).

Chapter III will be devoted to an examination of the manpower situation in the oil-rich Arab states that share similar economic characteristics with Libya such as Saudi Arabia, Kuwait, and the United Arab Emirates.

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<sup>1</sup>F. Paukert, "The Interdependence of High-Level Manpower Planning and Economic Planning," International Labor Review, Vol. 89 (1964), p. 346.

Chapter IV will examine and analyze the manpower situation in Libya and the need for foreign manpower beginning with an analysis of population and labor force trends in the country. The contribution of foreign workers to various economic sectors will be analyzed. In addition, the geographic origins of foreign manpower will be discussed.

Chapter V will present a model which will be used to project future manpower requirements of various skill levels for all the economic sectors. It also introduces the procedures that will be employed to project foreign manpower requirements of various skill levels needed by the Libyan economy during the next five years.

Chapter VI will present the results of the study.

Chapter VII will summarize the results of the study and present the policy recommendations suggested by the study.

#### IV. Sources of Data

The estimates prepared by the Secretariat of Planning in Libya of output and growth rates of output in various sectors of the economy, and privately acquired by the author, will be used in this study. These estimates are spelled out in the second Economic Development Plan (1981-1985) document. Constant 1980 prices will be used so that all output figures are in real terms.

Data regarding the distribution of various levels of manpower among the different sectors of the economy for the year 1980 and the productivity targets in all economic

sectors were also privately obtained from the Secretariat of Planning and are reported in the second Economic Development Plan document.

Data regarding the Libyan population were obtained from the 1964 and 1973 censuses, while data regarding the manpower situation in the oil-rich Arab states were obtained from the International Migration Project, an extensive study conducted by Birks and Sinclair of the University of Durham in England, which covers the Arab region. This work was commissioned by the International Labor Office, Geneva.

Data from the Immigration Department in Libya regarding the origins of foreign labor, and from the various reports of the Secretariat of Planning, as well as from some working papers of the World Employment Program Research written by Birks and Sinclair for the I. L. O. were used together with relevant data from other official sources.

The data sources mentioned above were assumed to be the most reliable available and to have a considerable degree of accuracy.

## CHAPTER II

### GROWTH OF THE LIBYAN ECONOMY

#### I. Introduction

The economic conditions of Libya before and after the country began to export oil are explored in this chapter. Basically, three major economic development plans will also be discussed; namely, the three-year Economic Development Plan 1973-1975, the first five-year Economic Development Plan 1976-1980, and the second five-year Economic Development Plan 1981-1985. The chapter will conclude with final remarks about the problems generated by the economic plans and, in particular, the growing dependency on foreign labor resulting from the changing economic conditions in Libya.

#### II. Economic Conditions of Libya

##### II.a. Before Oil Exports

Before the exploration for oil began in 1955, Libya was a very poor country. The Libyan economy was so backward that Benjamin Higgins maintained it was

. . . an economy where the bulk of the people live on a subsistence level, where per capita income is well below \$50 per year, where there are no source of power and no mineral resources, where agricultural expansion is severely limited by climatic conditions, where capital formation is

zero or less, where there is no skilled labor supply and no indigeneous enterpreneurship.<sup>1</sup>

He also observed that Libya then combined within the borders of one country virtually all the obstacles against development that can be found anywhere: geographic, economic, political, sociological, and technological. He stated that if there was a way Libya can be brought to a stage of sustained growth, then there is hope for every country in the world.<sup>2</sup>

The total value of exports and re-exports amounted to LD 3.9 million in 1954 while imports amounted to LD 11.2 million in the same year. Public expenditures for the fiscal year 1950-1951 amounted to LD 5.5 million; while the domestic revenues reached LD 3.7 million.<sup>3</sup> The chronic deficit in the budget during these years was covered by foreign aid.

By 1955, foreign oil corporations began investing relatively large amounts of capital as they sought to determine the country's oil potential. The purchasing power of the citizens which was very low, started to rise as a result of the money spent by the oil companies. Although exports continued to be low, imports of various goods and services

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<sup>1</sup>Benjamin Higgins, Economic Development: Principles, Problems and Policies (New York, 1968), p. 26.

<sup>2</sup>Ibid., p. 37.

<sup>3</sup>Rawle Farley, Planning for Development in Libya: The Exceptional Economy in the Developing World (New York, 1971), p. 109.



started a steady increase making possible a relative increase in the standard of living. Thus, the year 1955 was the beginning of a new phase in the economic and social life of the country. Table I shows the public expenditures and revenues for the years 1952-1953 to 1962-1963, the year when oil exports registered a rapid and continuous expansion and public expenditures showed sizeable increases in the areas of public administration, health, and education.

Due to the oil exploration activities and assistance from international agencies and other foreign aid programs, the national income increased from LD 15 million in 1950 to LD 56 million in 1959.<sup>4</sup> Along with these extraneous forces, the construction and trade sector was also responsible for the growth of the national income.

#### II.b. After Oil Exports

The turning point in the modern history of Libya was the beginning of oil exploration at the end of 1961. The strategic location of Libya in North Africa along the coastline on the Mediterranean Sea, its proximity to the oil market in Europe, and good quality crude oil, encouraged the continuous and rapid expansion in production. The oil sector continued from then on to increase in importance, resulting in the economy becoming heavily dependent on the oil industry. Consequently, most of the government revenues

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<sup>4</sup>Ibid., p. 110.

TABLE I

PUBLIC REVENUES AND EXPENDITURES, FICAL YEARS 1952/53 TO 1962/63\*  
(In Thousands of Libyan Dinars)\*\*

	1952/53	53/54	54/55	55/56	56/57	57/58	58/59	59/60	60/61	61/62	62/63
<u>Domestic Revenues</u>	4,881	5,239	5,549	7,061	8,147	9,595	10,269	11,542	15,353	18,882	24,430
<u>External Revenues</u>	1,273	4,013	5,641	6,270	9,979	10,845	6,683	6,821	6,821	6,821	6,821
U.K.	1,110	3,913	3,750	3,750	4,000	4,250	3,250	3,250	3,250	3,250	3,250
U.S.A.	--	--	1,786	2,500	5,714	4,875	3,393	3,571	3,571	3,571	3,571
France	163	--	--	--	--	--	--	--	--	--	--
Loans from U.S.A.	--	--	--	--	--	1,250	--	--	--	--	--
Other	--	100	105	20	265	470	40	--	--	--	--
<u>Total Revenues</u>	6,154	9,252	11,190	13,331	18,126	20,440	16,952	18,363	22,356	25,703	31,251
<u>Adminis. Expend.</u>	6,279	7,621	8,044	9,077	10,313	12,053	15,670	17,844	18,640	28,071	35,432
<u>Development Expenditures</u>	340	612	753	3,901	5,120	4,970	4,354	2,769	9,702	6,385	9,000
LARC***	--	--	--	2,485	4,028	3,851	3,518	1,314	662	--	--
LPDSA	340	612	753	1,416	1,082	1,127	836	609	407	--	--
LAJS	--	--	--	--	--	--	--	846	1,846	1,062	--
DC	--	--	--	--	--	--	--	--	6,717	5,323	9,000
<u>Total Expenditures</u>	6,619	8,233	8,797	12,978	15,433	17,031	20,024	20,613	28,342	34,456	44,432
<u>Deficit of Domestic Revenues</u>	1,738	2,994	3,248	5,917	7,286	7,436	9,755	9,071	12,807	15,574	20,002
<u>Surplus (+) or Deficit (-) of Revenues over Expenditures</u>	-465	+1,019	+2,393	+353	+2,693	+3,409	-3,072	-2,250	-5,986	-8,753	-13,181

\*During this period the fiscal year ended March 31.

\*\*Between: 1950-1970 L.D. 1 = \$2.80; 1971-1972 L.D. 1 = \$3.04; and 1973-1980 L.D. 1 = \$3.38.

\*\*\*LARC = Libyan-American Reconstruction Commission.

LPDSA = Libyan Public Development and Stabilization Agency.

LAJS = Libyan American Joint Services.

DC = Development Council.

Source: Bank of Libya, The Development of Public Finance in Libya 1944-1963 (Tripoli, 1965), pp. 59-60.

and the major part of the national income came to be derived from the oil sector. The oil boom became the cause of something new in Libya, a surplus in the Balance of Payments. Now the Libyan foreign assets which finance the economic development projects are earned solely from oil exports which represent 99.9 percent of the total Libyan exports. It is clear then that, "Oil has caused and stimulated an unforeseen growth. It has also given Libyans the opportunity to restructure their economy and society so as to perpetuate their standard of living."<sup>5</sup>

The rise of oil production and revenues can be seen from Table II. It is shown that between 1961 and 1970, oil production increased from 20,000 barrels per day to 3,320,000 barrels per day. Annual oil revenues increased from \$3.0 million to \$1.3 billion during the same period. Originally the oil exploration concessions did not--as far as prices are concerned--provide Libya with a fair share; however, this changed after 1970 when Libya started a policy of conserving its oil reserves and led other oil producing countries in seeking a higher price for their oil. The success of this move can easily be seen in what impact this had on the level of oil revenues which the oil producing countries began to receive. In the case of Libya, the successful price negotiations with the oil corporations boosted the

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<sup>5</sup>William C. Wedley, "Progress and Problems in the Economic Development of Libya," Dirassat: The Libyan Economic and Business Review, Vol. IV, No. 1 (Spring, 1968), p. 33.

TABLE II  
OIL PRODUCTION AND REVENUE 1961-1977

Year	Oil Production b/d (barrels per day)	Oil Revenues \$ mn. (millions of dollars)
1961	20,000	3
1962	185,000	39
1963	465,000	109
1964	860,000	197
1965	1,220,000	371
1966	1,505,000	476
1967	1,745,000	631
1968	2,605,000	952
1969	3,110,000	1,132
1970	3,320,000	1,295
1971	2,765,000	1,766
1972	2,240,000	1,598
1973	2,180,000	2,300
1974	1,525,000	4,486
1975	1,480,000	5,670
1976	1,930,000	7,500
1977	2,080,000	9,285

Source: J. S. Birks and C. A. Sinclair, Country Case Study: Libyan Arab Jamahiriya (Durham, England, 1978), p. 16.

oil revenues to \$5.7 billion in 1975 as compared to \$1.3 billion in 1970, although oil production had decreased by more than 50 percent during the period in question.

The increase in the per capita income is a reflection of the degree to which the Libyan economic conditions had improved. The per capita income, estimated in the early 1950s to be \$40--when Libya was judged by the World Bank to be one of the poorest nations in the world--had risen to \$1,070 per capita in 1967 and soared to \$6,000 in the year 1977.<sup>6</sup>

The unique economic growth patterns in Libya, Saudi Arabia, Kuwait, and other oil-rich countries caused several scholars to re-examine the traditional economic growth theory. Rather than growth taking place under conditions of capital scarcity, the Libyan pattern of economic growth supports the balanced growth theory, introduced by Nurkse, who based it on the assumption of an unlimited supply of money capital.<sup>7</sup>

The patterns of decision making in Libya, as well as in other oil-rich Arab countries, are not geared, as is the case in other countries, to asking "either/or" questions in the context of capital scarcity. The "either/or" questions

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<sup>6</sup>J. S. Birks and C. A. Sinclair, Migration for Employment Projects. The Kingdom of Saudi Arabia and the Libyan Arab Jamahiriya: The Key Countries of Employment (Geneva, 1979), p. 30.

<sup>7</sup>Ragnar Nurkse, Problems of Capital Formation in Underdeveloped Countries (New York, 1962), p. 75.

are still raised in Libya; however, the increasing value of the oil exports and the accumulation of large amounts of foreign exchange necessary to finance the economic development activities in the country have made the capital constraint far less critical. The factor in short supply was labor. As El-Huni argued, "The 'either/or' questions must be asked in regard to available manpower, for Libya is a case of economic development thrust upon a country with very limited supplies of labor."<sup>8</sup> Farley, on the other hand, pointed a finger at the educational system and the lack of correlation between planned projects and labor availability as some of the limitations to economic development in Libya.<sup>9</sup>

### III. Development Planning in Libya

Economic development planners in Libya have stressed that development implies both the radical transformation of the economic and social structures of the country and growth in the productive capacity of the factors of production, in particular, the human factor.

The economic development plans since the early 1970s have always stressed the goal of building a viable economy by diversifying it and by increasing the share of the

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<sup>8</sup>Ali El-Huni, "Determinants of Female Labor Force Participation: The Case of Libya" (unpub. Ph.D. dissertation, Oklahoma State University, 1978), p. 11.

<sup>9</sup>Farley, p. 251.

non-oil sectors in the Gross Domestic Product. These plans then concentrated on developing the various sectors of the economy and, in particular, agriculture, manufacturing, and the transport and communications networks. They also called for full utilization of the country's manpower and stressed the importance of developing and improving the human resources through effective educational and training programs.

Three Economic Development Plans will be discussed in this chapter: The three-year Economic Development Plan 1973-1975, the first five-year Economic Development Plan 1976-1980, and the second five-year Economic Development Plan 1981-1985.

### III.a. The Three-Year Economic Development Plan 1973-1975

The three-year Economic Development Plan 1973-1975 was a successful plan in that the actual growth rate in non-oil production reached 19.5 percent as compared with the planned growth rate of 17.5 percent. Several other optimistic growth rates were exceeded. This success, so uncommon in the developing countries, "brought about little short of an economic transformation of the country."<sup>10</sup>

The main economic indicators for the three-year Economic Development Plan are shown in Table III. Gross

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<sup>10</sup>J. S. Birks and C. A. Sinclair, Country Case Study: Libyan Arab Jamahiriya (Durham, England, 1978), p. 24.

**TABLE III**  
**MAIN ECONOMIC INDICATORS DURING THE THREE-YEAR**  
**PLAN 1973-1975**  
**(At Current Prices)**

Description	Units	1972	1973	1974	1975	Average Annual Growth Rates
Gross Domestic Product at Current Prices	LD Mill.	1753.0	2182.3	3795.7	3674.3	----
GDP at Current Prices	Percentage	----	24.5	73.9	-3.2	28.0
Gross Fixed Capital Formation	LD Mill	436.6	636.2	979.4	1054.7	----
Per Capita Income	LD Mill	798.0	999.1	1510.8	1368.7	----
Final Consumption (Public and Private) at Current Prices	LD Mill	902.5	1160.2	1791.9	2237.8	----
Final Consumption Growth Rates	Percentage	----	29.4	53.4	24.9	35.4
Input of Goods and Services	LD Mill	552.4	826.5	1427.9	1865.7	----
Input of Goods and Services	Percentage	----	49.6	72.8	16.7	44.5
Exports of Goods and Services	LD Mill	997.8	1240.3	2489.8	2053.2	----
Exports of Goods and Services Growth Rates	Percentage	----	24.3	100.7	-17.5	27.2
Employment	'000'	488.0	538.1	607.2	677.1	----
Libyan Employment	'000'	407.0	419.7	437.4	454.1	----
Non-Libyan Employment	'000'	81.0	118.4	169.8	223.0	----
Ratios of Non-Libyan to Total Employment	Percentage	16.6	22.0	28.0	32.9	----

Source: Secretariat of Planning, Preliminary Study of the Long-Term Development Prospects. Issues and Policies 1980-2000, Vol. I (Tripoli, Libya, August, 1979), p. 16.



Domestic Product increased from LD 1.8 billion in 1972 to LD 3.7 billion in 1975 with an annual growth rate of 28 percent and per capita income rose to LD 1,369 in 1975 as compared with LD 798 in 1972.

The improved standard of living is reflected in the size of consumption (private and public) which increased at an annual rate of 35.4 percent during the years of the plan. Final consumption increased from LD 902.5 million in 1972 to LD 2,238 million in 1975.

Exports of goods and services, where oil constitutes 99.9 percent of the total, increased from LD 1.0 billion in 1972 to LD 2.1 billion in 1975, while imports of goods and services increased from LD 552.4 million in 1972 to LD 1.9 billion in 1975 with an annual growth rate of 44.5 percent. The table also shows that gross fixed capital formation had increased from LD 436.6 million in 1972 to LD 636.2 million in 1973 and had reached LD 1.1 billion by the end of the plan in 1975. These investments were allocated to the different economic sectors in accordance with the plan objectives, so the share of gross fixed capital formation in the agricultural sector was 14.4 percent, in manufacturing industries 13.3 percent, in transportation and communications 14.6 percent, in education 6.5 percent, and in health services 3.0 percent.<sup>11</sup>

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<sup>11</sup>Secretariat of Planning, Preliminary Study of the Long-Term Development Prospects Issues and Policies 1980-2000, Vol. I (Tripoli, Libya, August, 1979), p. 14.

The execution of the various projects as envisaged by the plan necessitated the employment of increasing numbers of foreign workers since the indigeneous labor force was not enough to meet the manpower requirements of the output targets of the plan. Due to the quantitative and qualitative shortages in the Libyan labor force, non-Libyan workers increased from 81,000 in 1972 to 118,400 in 1973 and reached 223,000 by the end of plan in 1975. The ratio of non-Libyan employment to total employment increased from 16.6 percent in 1972 to 22 percent in 1973 and rose to 32.9 percent in 1975.

While the three-year Economic Development Plan 1973-1975 was successful in achieving most of its targets, various development projects faced a number of problems which can be summarized as follows:

1. Inadequacy of the construction capacity of the country to meet the demands placed on it.
2. Lack of pre-feasibility studies for development projects.
3. Shortage of skilled manpower and its improper use.
4. Insufficient port facilities.<sup>12</sup>

### III.b. The First Five-Year Economic Development Plan 1976-1980

The development strategy of the five-year Economic

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<sup>12</sup>Ibid., p. 17.

Development Plan 1976-1980 was basically to continue the economic and social policies underlying the previous three-year Economic Development Plan 1973-1975. They were summarized by the Secretary of Planning as follows:

1. Reduce existing excessive dependence of the national economy on the oil sector;
2. Diversify the structure of the country's production and exports by an accelerated development of the non-oil productive sectors;
3. Launch a large scale industrialization program to include the establishment of heavy industries;
4. Attach high priority to agricultural development; and
5. Increase efficiency of the human factor and its role in the development process.<sup>13</sup>

Measured by what it did, the first five-year plan was a success. During the period of the plan, the Gross Domestic Product increased from LD 3.7 billion to LD 5.1 billion (based on constant 1975 prices), and between 1975 and 1980 there was an average annual growth rate of 6.6 percent. The growth of the Gross Domestic Product of the main sectors for the period 1975-1980 at constant 1975 prices is shown in Table IV. The table shows that the output of the non-oil sector increased from LD 1.7 billion in 1975 to LD 2.8

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<sup>13</sup>Secretariat of Planning, "Performance of the Transformation Plan 1976-1981," The First Draft of the Second Five-Year Transformation Plan 1981-1985, Vol I (Tripoli, Libya, July, 1980), p. 1.

TABLE IV  
GROWTH OF THE GROSS DOMESTIC PRODUCT  
BY MAIN SECTORS IN 1975-1980  
(In Million LD, at Constant  
1975 Prices)

Sectors	1975	1980	Annual Compound Growth Rate
I. Non-oil Sectors			
Total	1713.2	2822	10.4
1. Sub-total: Non-oil sectors other than Public Services	1281.0	1889	8.1
Out of which:			
a) Agriculture	82.9	99	3.6
Manufacturing	65.5	171	21.1
Electricity & Water	17.6	44	20.1
Construction	434.7	579	5.9
Other Sectors	680.3	996	7.9
2. Sub-total: Public Services	432.2	933	16.6
Out of which:			
a) Public Services excl. Education & Health	258.3	579	17.5
b) Education	122.3	239	14.3
c) Health	51.6	115	17.4
II. Crude Oil and Natural gas	1961.1	2236	2.7
III. Grand Total	3674.3	5058	6.6

Source: Secretariat of Planning, "Performance of the Transformation Plan 1976-1980," The First Draft of The Second Five Year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), p. 8.

billion in 1980 with an annual growth rate of 10.4 percent. The annual growth rate of the oil sector was 2.7 percent during this period, while the output of the oil sector increased from LD 2.0 billion in 1975 to LD 2.2 billion in 1980.

Total investments in fixed assets during the first five-year Economic Development Plan 1976-1980 period amounted to LD 6.4 billion. The gross fixed capital formation in the various sectors of the economy for the years 1975 through 1980 is shown in Table V. Additional information including the share of the investments in these sectors as a percent of the total investment allocation for the same years is shown in Table VI. It can be seen from these tables that the agricultural and the manufacturing sectors had high shares of total fixed investments. The gross fixed capital formation in the agricultural sector amounted to LD 149.9 million in 1975 and increased to LD 228.0 million in 1980. The total investment allocation in the agricultural sector during the 1976-1980 period was LD 942.3 million, and the share of investment in this sector reached 14.2 percent in 1975 and increased to 15.9 percent in 1980. The gross capital formation in the manufacturing sector increased from LD 121.5 million to LD 224.0 million between 1975 and 1980, while the total amount of fixed investment allocation in this sector during the Economic Development Plan 1976-1980 amounted to LD 848.1 million. The share of investments in this sector out of the total investment allocation was 11.5 percent in 1975 and rose to 15.6 percent in 1980.

TABLE V  
GROSS FIXED CAPITAL FORMATION 1975-1980  
(Million LD, at 1975 Constant Prices)

	1975	1976	1977	1978	1979	1980	Total 1976-80
1. Agriculture	149.9	162.0	169.9	185.6	196.4	228.4	942.3
2. Oil & Natural Gas	26.1	22.6	39.4	80.5	36.7	43.0	222.2
3. Other Mining & Quarrying	2.3	2.3	2.1	2.5	2.5	2.5	11.9
4. Manufacturing	121.5	159.3	143.5	134.7	186.7	223.9	848.1
5. Electricity & Water	135.1	156.7	168.3	168.7	186.3	186.5	866.5
6. Construction	28.3	24.9	28.4	17.8	23.0	28.0	122.1
7. Trade	5.9	6.3	12.8	19.7	33.6	35.8	108.2
8. Transport & Communication	157.8	186.2	203.5	236.56	193.2	233.2	1052.6
9. Finance	0.2	0.4	0.9	0.8	0.8	0.8	3.7
10. Housing	235.5	228.4	217.3	237.7	143.2	151.1	977.7
11. Public Services (Other than Education & Health)	91.4	104.6	118.1	129.2	130.0	140.0	621.9
12. Education	73.1	68.6	28.6	63.7	59.6	95.7	356.2
13. Health	26.2	25.2	33.5	43.2	50.2	64.6	216.7
14. Other Services	1.4	1.9	1.8	0.9	0.9	0.9	6.4
TOTAL	1054.7	1149.4	1208.1	1321.5	1243.1	1434.4	6356.5

Source: Secretariat of Planning, "Performance of the Transformation 1976-1980," The First Draft of The Second Five year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), p. 12.

TABLE VI  
GROSS FIXED CAPITAL FORMATION IN 1975 AND 1980  
(Million LD, at Constant 1975 Prices)

	LD Million		Annual Compound Rate 1976-80	Share in the Total	
	1975	1980		1975	1980
1. Agriculture	149.9	228	8.7	14.2	15.9
2. Manufacturing	121.5	224	13.0	11.5	15.6
3. Electricity & Water	135.1	187	6.7	12.8	13.0
4. Transport and Communications	157.8	233	8.1	15.0	16.3
5. Housing	235.5	151	-8.5	22.3	10.5
6. Public Services (excl. Education and Health)	91.4	140	8.9	8.7	9.8
7. Education	73.1	96	5.6	6.9	6.7
8. Health	26.2	65	18.9	2.5	4.5
9. Other Sectors	64.2	110	11.3	6.1	7.7
TOTAL	1054.7	1434	6.3	100.0	100.0

Source: Secretariat of Planning, "Performance of the Transformation 1976-1980," The First Draft of The Second Five year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), p. 11.

In spite of the large investment allocation to these two important sectors, their contribution to the Gross Domestic Product continued to be very low. The agricultural output represented merely 2 percent of the total Gross Domestic Product in 1980 while the share of the manufacturing output did not exceed 3.4 percent in the same year.

It should be mentioned that the acute shortage of manpower as of 1977 has contributed to the low implementation level of the various projects. An example is the construction sector where the actual growth rate of output during the 1976-1980 period was well below the planned growth rate, thus the gross fixed capital formation in the construction sector (including housing) has declined drastically from LD 253.3 million in 1976 to LD 179.1 million in 1980. The shortage of manpower inhibited the implementation of most of the housing projects of the plan.

### III.c. The Second Five-Year Economic Development Plan 1981-1985

The second five-year plan 1981-1985 is also considered to be a continuation of the economic and social programs started during the three-year Economic Development Plan 1973-1975. This plan addresses itself to the building of an efficient and diversified economy through the development of the various sectors of the economy with concentration on the agricultural and manufacturing sectors. It also stresses the importance of the efficient and full utilization of



human resources through appropriate training and educational programs as well as measures to increase productivity.

The main aspects of the development strategy emphasized by the plan were summarized by the Secretary of Planning:

1. Continuation and intensification of the development effort and of the rapid pace of economic development;
2. Achievement of rapid and viable development of the two key productive sectors, agriculture and manufacturing;
3. Increased economic self-sufficiency and self-reliance;
4. Reduction of the crude oil output to the level required for financing economic and social development;
5. Assignment of high priority to increasing efficiency and productivity of all factors of production;
6. Intensified efforts to develop the human resources;
7. Further improvement in private consumption, the standard of living, and welfare of the people;
8. Systematic pursuit of a more balanced regional development policy;
9. Initiation of a comprehensive policy concerning the protection and promotion of the natural environment;
10. Direct, active, and effective participation of the masses in the development process.<sup>14</sup>

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<sup>14</sup>Secretariat of Planning, "Overall Development Strategy," The First Draft of the Second Five-Year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), pp. 21-22.

A total amount of LD 15.1 billion is allocated for investments in fixed assets during the second Economic Development Plan 1981-1985 as compared to LD 9.1 billion (at constant 1980 prices) for the Economic Development Plan 1976-1980. The allocation of this large amount of planned gross fixed capital formation to the different sectors of the economy, and the share of each economic sector of the total investments for the Economic Development Plan 1981-1985, as well as the Economic Development Plan 1976-1980 is shown in Table VII. All values are at constant 1980 prices.

Table VII shows that the manufacturing sector will get the biggest share of the investment allocations during the period 1981-1985. It receives LD 2.6 billion of investments in fixed assets representing 17.1 percent of the total investment as compared to LD 1.3 billion or 13.7 percent of the total investments during the previous five-year Economic Development Plan 1976-1980. This is out of a total amount of LD 11.1 billion in fixed investments allocated to the agriculture, manufacturing, electricity, transportation, and housing sectors. The amount of LD 1.1 billion in fixed investments is allocated to the educational sector compared to LD 0.5 billion during the previous five-year Economic Development Plan. Table VIII shows that gross fixed capital formation of LD 2.1 billion in 1980 will rise to LD 3.5 billion in 1985 with an annual rate of growth of 11.0 percent. The annual growth rate of investments in the

TABLE VII

GROSS FIXED CAPITAL FORMATION IN THE FIVE-YEAR PLAN PERIOD 1981-1985 AND  
COMPARISON WITH THE PERIOD 1976-80

Sector	(Million LD at 1980 prices)				
	1981-85 (Planned)	% Share	1976-80 (Actual)	% Share	Index 1981-85 (1976-80 = 100)
Agriculture, Forestry, Fishing	1,873	12.4	1,299	14.2	144.2
Manufacturing	1,578	17.1	1,250	13.7	206.2
Electricity & Water	2,298	15.2	1,282	14.0	179.3
Trade, Restaurants, Hotels	300	2.0	151	1.7	198.7
Transport, Storage, Commun.	2,082	13.8	1,474	16.1	141.2
Housing	2,257	14.9	1,488	16.3	151.9
Public Services (excl. Education & Health)	1,200	7.9	863	9.5	139.1
Education	1,140	7.6	484	5.3	235.5
Health	547	3.6	296	3.2	184.8
Oil & Nat. Gas	520	3.4	335	3.7	155.2
Other Sectors*	309	2.1	205	2.3	150.7
<b>Total</b>	<b>15,104</b>	<b>100.0</b>	<b>9,127</b>	<b>100.0</b>	<b>165.5</b>

\*Other sectors include: Construction, other Mining and Quarrying, Financial Institutions and Other Services sectors.

Source: Secretariat of Planning, "Projections of Investments and Output," The First Draft of the Second Five-Year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), p. 2.

TABLE VIII  
 PROJECTIONS OF GROSS FIXED CAPITAL FORMATION 1980-1985  
 (Million LD at 1980 Prices)

Sector	1980	1985	Index 1985 (1980 = 100)	Annual Growth Rate
Agriculture, Forestry, Fishing	315	440	139.7	7.0
Manufacturing	330	670	203.0	15.7
Electricity & Water	276	504	182.6	12.8
Trade, Restaurants, Hotels	50	60	120.0	3.7
Transport, Storage, Commun.	326.5	504	154.4	9.1
Housing	230	454	197.4	14.6
Public Services (excl. Education & Health)	195	273	140.0	7.0
Education	130	266	204.6	15.4
Health	88	116	131.8	5.7
Oil & Nat. gas	65	92	141.5	7.2
Other Sectors*	45.5	72	158.2	9.6
<b>Total</b>	<b>2,051</b>	<b>3,451</b>	<b>168.3</b>	<b>11.0</b>

\*Other sectors include: Construction, Other Mining and Quarrying, Financial Institution and Other Services sectors.

Source: Secretariat of Planning, "Projections of Investments and Output," The First Draft of the Second Five-Year Transformation Plan 1981-1985, Vol. I, (Tripoli, Libya, July, 1980), p. 5.

manufacturing sector during the 1981-1985 period is estimated to be 15.7 percent, as investments in this sector will increase from LD 330 million in 1980 to LD 670 million in 1985. The annual growth rate of investments during the 1981-1985 period for the agricultural sector will be 7.0 percent, electricity and water 12.8 percent, transport and communications 9.1 percent, and housing 14.6 percent. The gross fixed capital formation in housing will reach LD 454.0 million in 1985 as compared with LD \$230.0 million in 1980. Investments in the educational sector will increase from LD 130.0 million in 1980 to LD 266.0 million in 1985 with an annual growth rate of 15.4 percent during the second Economic Development Plan.

The output of the non-oil sectors is projected to grow at an annual growth rate of 9.4 percent during the next five years. The individual economic sectors are anticipated to show different growth rates as stated in the second plan. The only sector that will show a decline in output is the oil sector, for only an output level that is required to cover the economic and social development needs as well as local consumption needs will be produced and exported. To achieve this goal and still maintain a foreign exchange surplus, the output of the oil sector will decline from LD 6.3 billion in 1980 to LD 4.8 billion in 1985. The rate of this decline during these five years will be 5.2 percent annually. Thus, oil production will decline from 639 million barrels in 1980 (or 1.75 million barrels a day) to 511

million barrels in 1985 (or 1.4 million barrels a day). The surplus in the current balance of payment will decline from LD 3.0 billion in 1980 to LD 627 million in 1985.<sup>15</sup> This decline in oil output is the cause of the low rate of growth of 1.1 percent in total Gross Domestic Product which includes the oil sector, during the next five years.

#### IV. Manpower as an Obstacle Facing Development Plans

It was made clear in this chapter that the quantitative and qualitative manpower requirements of the various projects undertaken by the Economic Development Plans far exceed what is available from the indigeneous labor force. The quantitative shortages stem from the small population of the country, while the qualitative shortages stem from the fact that the indigenous labor force lacks the requisite skills needed for the various development projects. This has necessitated a heavy influx of foreign workers. Problems relating to high labor turnover have risen which, in turn, caused a reduction in the output of many projects.<sup>16</sup>

Political considerations sometimes interfere with the movements of labor among the Arab countries. This makes it

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<sup>15</sup>Secretariat of Planning, "Projections of Investments and Output," The First Draft of the Second Five-Year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), p. 17.

<sup>16</sup>Secretariat of Planning, The Plan of Economic and Social Transformation, 1396-1400 A.H., 1976-1980 A.D., A Resume (Tripoli, Libya, 1975), p. 14.

difficult to rely on certain sources of manpower even though these sources may be the most economical and most appropriate to use. Libya's neighboring countries have surpluses of labor that are needed in Libya, yet because of political considerations, they are not reliable sources. An example of this was the sudden and acute shortage of manpower which developed by the end of 1977 due to the Egyptian/Libyan conflict. The withdrawal of most Egyptian labor, which constituted by far the greatest proportion of Libya's foreign labor, delayed many projects, especially in the construction sector.

#### V. Conclusion

Manpower is the most important constraint to economic development in Libya. Economic development, in any country, cannot be achieved without the human factor in the production process. The development of human resources is the cornerstone in every economic and social transformation plan.

Harbison and Myers stressed the importance of human resource development and argued that human development is a necessary condition for achieving the political, cultural, social, and economic goals of modern nations. They pointed out that "if a country is unable to develop its human resources, it cannot develop much else. . . ."17

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<sup>17</sup>F. Harbison and C. Myers, Education, Manpower, and Economic Growth, Strategies of Human Resources Development (New York, 1964), p. 26.

One of the recent labor and manpower economists who stresses the vital importance of the human resources is Professor Shearer. He argues that

Human resources often constitute the key to development. They are the only active factors of production. Other factors of production produce value only as human resources activate them. Natural resources and capital become meaningful as factors of production only as human resources organize, combine, and control their uses.<sup>18</sup>

This chapter has shown that Libya is no exception to this thesis. Because of Libya's special human resources problems, it has been clearly demonstrated that the realization of the targets of the second Economic Development Plan will require the employment of foreign labor, and considering the large amounts of money allotted to further the economic growth and social development in Libya, the need for foreign labor will definitely increase. This foreign labor is indispensable because the planned rate of economic growth during the second Economic Development Plan is greater than the growth rate of domestic manpower. All this leaves us with the conclusion that the importation of foreign labor of many skill levels will become increasingly necessary and urgent if the economic and social objectives of the country are to be realized.

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<sup>18</sup>John C. Shearer, "Intra and International Movements of High Level Human Resources," in J. J. Heaphy (ed.), Spatial Dimensions of Development Administration (Durham, North Carolina, 1971), p. 52.



CHAPTER III  
FOREIGN LABOR IN THE OIL-RICH  
ARAB STATES

International migration of labor in the Arab world has so far received little attention in spite of the vital role it plays in the economies of the various oil-rich Arab states. Although Libya is extensively dependent on foreign labor to achieve the goals of its economic and social development programs, it is not alone in this regard. Saudi Arabia, Kuwait, the United Arab Emirates, and other oil-rich Arab states face the same problem, and for some the problem is even more acute than in Libya. The most comprehensive work to date is that of Birks and Sinclair which was commissioned by the International Labor Office, Geneva, as part of the International Migration for Employment Project. This chapter is an examination of the foreign manpower situation in those oil-rich Arab states that share similar economic characteristics with Libya, such as Saudi Arabia, Kuwait, and the United Arab Emirates. The data in this chapter is based on the detailed research of Birks and Sinclair.

While foreign labor in the oil-rich Arab states is of great importance to economic and social progress of these

countries and the whole Arab region, the heavy reliance on non-national labor forces has become a significant feature of the economies of these countries. In several Arab oil-exporting states, foreign labor is more numerous than is national labor.

The inflow of foreign labor began to increase significantly from the early 1960s when the oil-producing countries intensified their economic and social development efforts. The expansion and the administration of infrastructure projects such as roads, ports, schools, and health facilities required an increasing number of labor skills which were not available locally.<sup>1</sup>

The 1973 rise in oil prices meant larger revenues for the oil-producing countries. Thus, the oil revenues of Saudi Arabia in 1977 totalled \$37.8 billion. Libya's oil revenues rose to \$9.4 billion and that of Kuwait and the United Arab Emirates topped \$8.5 and \$8.3 billion, respectively.<sup>2</sup> With such large revenues at hand, the Arab oil-producing states launched major economic development plans which resulted in a higher demand for labor. Since 1973, the volume and pattern of international migration to Arab

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<sup>1</sup>J. S. Birks and C. A. Sinclair, International Migration in the Arab Region--Rapid Growth, Changing Patterns and Broad Implications, seminar on: Population, Employment and Migration in the Arab Gulf States, Arab Planning Institute, Kuwait and International Labor Organization, Geneva (Kuwait, December 16-18, 1978), p. 525.

<sup>2</sup>J. S. Birks and C. A. Sinclair, International Migration and Development in the Arab Region (Geneva, 1980), Table 2, p. 128.

oil-exporting countries have been changing rapidly. The acute quantitative and qualitative manpower shortages had to be met by more importation of labor. This was most apparent in Saudi Arabia and Libya which became the principal importers of non-national labor, followed by Kuwait and the United Arab Emirates.

The direction, volume, and pattern of international movements of labor to the oil-rich Arab states has been determined by the uneven distribution of wealth among Arab countries and the uses to which it has been put. Oil exports have resulted in wide disparities in per capita income between the Arab states.<sup>3</sup> The extent of these disparities is clearly seen in Table IX which shows the per capita GNP of selected Arab states in the year 1976.

The table shows that whereas per capita income was \$15,840 in Kuwait and \$6,310 in Libya, it amounted to \$280 in Egypt and \$250 for N. Yemen.

It is this vast disparity over relatively short distances, and widening with the passage of time, that is the essential motivating force behind migration for employment in the Arab world.<sup>4</sup>

Beside the fact that they possess large financial resources, the oil-rich Arab states share common characteristics regarding their population and work force. Table X presents the 1975 total of the indigenous population and labor force of the major oil-rich Arab states. The total

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<sup>3</sup>Ibid., p. 2.

<sup>4</sup>Ibid., p. 11.

TABLE IX  
PER CAPITA GNP FOR SELECTED ARAB STATES IN 1976

State	GNP Per Capita (\$)
Kuwait	15,840
United Arab Emirates	13,990
Qatar	11,400
Libya	6,310
Saudi Arabia	4,480
Oman	2,680
Bahrain	2,140
Iraq	1,390
Tunisia	840
Syria	780
Jordan	610
Sudan	290
S. Yemen	280
Egypt	280
N. Yemen	250

Source: J. S. Birks and C. A. Sinclair, International Migration and Development in the Arab Region (Geneva, 1980), p. 128.

TABLE X  
INDIGENOUS POPULATION AND LABOR FORCE OF  
OIL-RICH ARAB STATES IN 1975

State	Population	Labor Force
Saudi Arabia	4,592,500	1,026,500
Libya*	2,316,500	466,200
Kuwait	472,100	91,800
Bahrain	214,000	45,800
United Arab Emirates	200,000	45,000
Qatar	67,900	12,500
Total	7,863,000	1,687,800

\*Secretariat of Planning, "Overall Aspects of Development, Manpower and Labor Productivity," The First Draft of the Second Five-Year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), pp. 4, 7.

Source: J. S. Birks and C. A. Sinclair, International Migration in the Arab Region--Rapid Growth, Changing Patterns and Broad Implications, seminar on: Population, Employment and Migration in the Arab Gulf States, Arab Planning Institute, Kuwait and International Labor Organization, Geneva (Kuwait, December 16-18, 1978), p. 524.

indigenous populations of Saudi Arabia, Libya, Kuwait, Bahrain, United Arab Emirates, and Qatar stood at 7,863,000, and the indigenous labor force at 1,687,800 or 21.5 percent of total populations. There are several causes of this low overall labor force participation rate of these countries:

1. These states have young populations, a large percentage being less than 15 years old. This explains why in each state the number of persons in the labor market is considerably lower than in similar-sized populations with a more normal distribution of age.
2. The expansion of secondary and university education has resulted in having the educational system hold those who would otherwise have been employed. This is only a temporary withdrawal, although it reduces the current labor force significantly.
3. Women do not generally seek work in wage employment jobs in these states. They work in a limited number of wage earning professions such as teaching, nursing, etc.<sup>5</sup>
4. The small labor force in the oil-rich Arab states is "further restricted by a limited level of educational attainment and a low level of motivation."<sup>6</sup>

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<sup>5</sup>Ibid., p. 20.

<sup>6</sup>Birks and Sinclair, International Migration in the Arab Region--Rapid Growth, Changing Patterns and Broad Implications, p. 524.

This being the case, the investment of oil revenues in various development projects led to large scale quantitative and qualitative manpower shortages which were met by foreign workers.

The major users of foreign labor among the Arab states are those with the highest per capita income: Saudi Arabia, Libya, Kuwait, United Arab Emirates, Oman, Bahrain, and Qatar (see Table IX). As shown in Table XI, they imported more than 1.6 million workers in 1975, representing 47 percent of their combined labor force.

Foreign labor accounted for 33.4 percent of the total work force in Libya in 1975. This dependence on non-nationals was higher in Saudi Arabia where they represented 43 percent of its total labor force. The number of foreign workers exceeded that of the nationals in Kuwait where 69.4 percent of total employment was foreign. In 1975 the United Arab Emirates and Qatar depended almost completely on non-nationals in carrying out their economic and social activities as foreign labor represented 84.8 percent and 81.1 percent of total employment in those two countries, respectively.

The inflow of foreign workers into the oil-rich Arab states reflects a demand/supply imbalance of manpower. "Wage differentials and inequality of opportunities are considered facets of the demand and supply position and its variations over time."<sup>7</sup> The extent to which some Arab

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<sup>7</sup>Ibid., p. 527.

TABLE XI  
EMPLOYMENT BY NATIONALITY IN THE OIL-RICH  
ARAB STATES IN 1975

State	Total Employment	Non- Nationals	Non-nationals as a Percentage of Total
Saudi Arabia	1,799,900	773,400	43.0
Libya*	699,200	233,400	33.4
Kuwait	299,800	208,000	69.4
United Arab Emirates	296,500	251,500	84.8
Oman	207,700	70,700	34.0
Bahrain	75,800	30,000	39.6
Qatar	66,200	53,700	81.1
Total	3,445,100	1,620,700	47.0

\*Secretariat of Planning, The First Draft of the Second Five-Year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), p. 7.

Source: J. S. Birks and C. A. Sinclair, International Migration and Development in the Arab Region (Geneva, 1980), p. 132.



economies depend on non-nationals in their work forces will be examined by studying the cases of Saudi Arabia, Kuwait, and the United Arab Emirates.

### I. Saudi Arabia

Saudi Arabia is considered the richest country in the developing world. Its oil production rivals that of the U.S.A. and the Soviet Union, for about 15 percent of the world oil production in 1976 was produced by Saudi Arabia. Oil production, which totalled 7.6 billion barrels per day in 1973, increased to 9.2 million in 1977. This increase in oil production coupled with the rise in oil prices, which started in 1973, led to a sharp rise in government revenues. Oil revenues increased from \$10.9 billion in 1973 to \$37.2 billion in 1977. On the other hand, government expenditures increased from \$5.1 billion to \$31.6 billion during the same period.<sup>8</sup>

The dependence of the Saudi economy on non-national workers is presented in Table XII, which shows the number of foreign workers in the various sectors of the Saudi economy in 1975.

The percentage of foreign labor is high in all sectors of the Saudi economy except in the agricultural and fishing

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<sup>8</sup>J. S. Birks and C. A. Sinclair, Migration for Employment Projects. The Kingdom of Saudi Arabia and the Libyan Arab Jamahiriya: The Key Countries of Employment (Geneva, 1979), Table 22, p. 62; Table 23, p. 62(a); Table 24, p. 62(a)

TABLE XII  
EMPLOYMENT BY ECONOMIC SECTOR AND NATIONALITY IN  
SAUDI ARABIA IN 1975

Economic Sector	Total Employment	Non- National Employment	Non-nationals as Percentage of Total
Agriculture and Fishing	585,500	54,900	9.4
Mining and Petroleum	27,000	11,600	43.0
Manufacturing	115,900	94,350	81.4
Electricity, Gas, and Water	20,350	13,150	64.6
Construction	239,300	203,400	85.0
Trade	192,100	131,500	68.5
Transport, Storage & Communication	103,800	30,900	29.8
Finance and Insurance	12,100	7,000	57.9
Community Services	443,050	201,850	45.6
Miscellaneous	60,650	24,750	40.8
Total	1,799,800	773,400	43.0

Source: J. S. Birks and C. A. Sinclair, Migration for Employment Projects. The Kingdom of Saudi Arabia and the Libyan Arab Jamahiriya: The Key Countries of Employment (Geneva, 1979), p. 65.

sector where it stands at 9.4 percent of total employment. The highest percentage of non-nationals is in the construction sector, where they constitute 85 percent (203,400) of total employment. In the manufacturing sector, foreign labor totalled 94,350 or 81 percent of employment. The largest number of foreign workers after the construction sector is engaged in community services with a total of 201,850 or 45.6 percent of the employment in this sector. The heavy reliance on foreign manpower is also evident in all other economic sectors as Table XII shows. Foreign labor employed in various sectors of the Saudi economy totalled 773,400 which was 43 percent of total employment in 1975.

The present economic and industrial development plans in Saudi Arabia will no doubt call for an increase in the number of non-Saudi Arabians who will have an enlarged share of the labor force.<sup>9</sup>

## II. Kuwait

Kuwait is one of the major oil exporting countries in the world, as its oil exports amounted to 1.9 million barrels a day in 1977 producing \$8.5 billion in total revenues.<sup>10</sup> The Kuwaiti economy depends heavily on

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<sup>9</sup>J. S. Birks and C. A. Sinclair, Country Case Study: The Kingdom of Saudi Arabia (Durham, England, November, 1978), p. 52.

<sup>10</sup>Birks and Sinclair, International Migration and Development in the Arab Region, Table 2, p. 128.

foreign labor as over 70 percent of the labor employed in Kuwait in 1975 were non-nationals. The reliance on a non-national work force in various sectors of the Kuwaiti economy is shown in Table XIII.

Foreign labor exceeds nationals' labor in all sectors of the Kuwaiti economy except in the agriculture and fishing sector where non-Kuwaitis represented 46.9 percent of the total. Non-nationals represented 94.5 percent and 90.6 percent of employment in the construction and manufacturing sectors, respectively. The non-Kuwaiti work force totalled 30,500 in the construction sector and 22,209 in the manufacturing sector, while in the wholesale and retail trade sector, foreign labor represented 84 percent (33,232). The largest number of foreign workers were in the community and personal services sector where they totalled 102,537 or 61.4 percent of total employment in this sector. It can be concluded from the table that the non-national workers in practically all the economic sectors of the Kuwaiti economy exceed the national workers and the functions of the Kuwaiti economy could not be carried out without the employment of sizeable numbers of foreign workers. There are presently attempts to diversify the Kuwaiti economy to reduce its dependence on the oil sector, but this can only be achieved through industrial development. This can only mean a growing need for foreign labor to build and operate the various industrial projects.

TABLE XIII  
 EMPLOYMENT BY ECONOMIC SECTOR AND  
 NATIONALITY IN KUWAIT IN 1975

Economic Sector	Total Employment	Non-Kuwaiti's	Non-Kuwaiti's as Percentage of Total
Agriculture and Fishing	7,514	3,531	46.9
Mining and Quarrying	4,859	3,080	63.4
Manufacturing	24,467	22,209	90.6
Construction	32,256	30,500	94.5
Electricity, Gas and Water	7,271	5,237	72.0
Wholesale and Retail Trade	39,559	33,232	84.0
Transport, Storage and Communication	15,685	11,118	70.8
Community Services	166,804	102,537	61.4
Total	298,415	211,444	70.8

Source: J. S. Birks and C. A. Sinclair, Country Case Study: Kuwait (Durham, England, July, 1977), p. 20.

### III. The United Arab Emirates

The United Arab Emirates, a federation of seven gulf states (Abu Dhabi, Dubai, Sharja, Ras Al Khaima, Ajman, Um Al Qaiwain, and Fujairah), has the heaviest dependence on foreign labor. Foreign workers stood at 251,500 out of total employment of 296,500 in 1975. This constituted 84.8 percent of total employment (Table XI). Oil revenues per capita amounted to \$49,900 for Emirates nationals in 1975.<sup>11</sup>

It is apparent that the United Arab Emirates will continue to be dependent on foreign labor. Various economic and social activities cannot be carried out without a large contingent of non-nationals in the labor market.

### IV. National and Geographic Origins of Foreign Workers in the Oil-Rich Arab States

The geographic origins of non-national workers vary from one country to another in the labor importing countries of the Arab world. Table XIV shows the foreign workers by ethnic origin and country of employment in the year 1975.

Arab workers constituted the vast majority of the combined non-national work force in the oil-rich Arab states. Arab workers in Saudi Arabia, Libya, Kuwait, United Arab

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<sup>11</sup>J. S. Birks and C. A. Sinclair, Country Case Study: The United Arab Emirates (Durham, England, June, 1978), p. 1.

TABLE XIV

## FOREIGN WORKERS BY ETHNIC ORIGIN AND COUNTRY OF EMPLOYMENT IN 1975

	Ethnic Origin									
	Arab		Asian		European and North American		Iranian, Turkish, and Other		Migrant Work Force Total	
	No.	% of State Total	No.	% of State Total	No.	% of State Total	No.	% of State Total	No.	% of State Total
Bahrain	6,200	20.7	16,600	55.3	4,400	14.7	2,800	9.3	30,000	1.9
Kuwait	143,300	68.9	33,600	16.1	2,000	1.0	29,100	14.0	208,000	13.2
Libya*	223,600	85.6	4,500	1.7	11,200	4.3	22,000	8.4	261,300	16.6
Qatar	15,000	27.9	34,000	63.2	800	1.5	4,000	7.4	53,800	3.4
Saudi Arabia	699,900	90.5	38,000	4.9	15,000	1.9	20,500	2.6	773,400	49.0
United Arab Emirates	62,000	24.6	163,500	65.0	5,000	2.0	21,000	8.4	251,500	15.9
Total	1,150,000	72.9	290,200	18.4	38,400	2.4	99,400	6.3	1,578,000	100.0

\*J. S. Birks and C. A. Sinclair, Migration for Employment Projects. The Kingdom of Saudi Arabia and the Libyan Arab Jamahiriya: The Key Countries of Employment (Geneva, 1979), p. 80.

Source: J. S. Birks and C. A. Sinclair, International Migration in the Arab Region--Rapid Growth, Changing Patterns and Broad Implications, seminar on: Population, Employment and Migration in the Arab Gulf States, Arab Planning Institute, Kuwait and International Labor Organization, Geneva (Kuwait, December, 16-18, 1978), p. 521.

Emirates, Qatar, and Bahrain totalled 1,150,000 representing 72.9 percent of the total labor force working in these states. Saudi Arabia, Libya, and Kuwait are the hosts of most of the Arab workers. Saudi Arabia alone employed 699,900 Arab workers which represented 90.5 percent of the total non-national labor force working in Saudi Arabia and 60.9 percent of total Arab employment in the oil-rich Arab states in 1975. Libya employed 223,600 Arab workers in 1975, representing 19.4 percent of total Arab employment in these states and 85.6 percent of its total migrant workers. In Kuwait, Arab workers represented 68.9 percent of its non-national work force with a total of 143,300.

The rest of the oil-rich Arab states, namely, United Arab Emirates, Qatar, and Bahrain rely more on Asian workers from India, Pakistan, Korea, Phillipines, and other Asian countries with the majority of them coming from India and Pakistan. While Arab workers totalled 62,000 in the United Arab Emirates representing 24.6 percent of its non-national work force, Asian workers totalled 163,500 or 65 percent of its migrant labor. Qatar imported 63.2 percent of its non-indigenous labor force from Asian countries, and Bahrain 55.3 percent while in Libya Asian workers totalled 4,500 or 1.7 percent of the country's foreign labor in 1975.

It is becoming increasingly common in the oil-rich Arab states to award contracts to companies which then supply all the labor force needed in these projects. Companies from southeast Asia, and especially from Korea and the



Phillipines, have been successful in operating on this basis.<sup>12</sup>

Workers from the western European countries and the U.S.A. in the oil-rich Arab states totalled 38,400 in 1975. Of these, 15,000 were employed in Saudi Arabia and 11,200 in Libya.

Workers from Iran, Turkey, Africa, and east European countries are also employed in various proportions in the different oil-rich countries, as Table XIV shows.

In conclusion, this study has shown that the reliance of the oil-rich Arab states on foreign labor is great and is the result of their small populations, their very low labor force participation rates and their explosive economic growth. The need for non-nationals is more intense as the indigenous labor force lacks the skills required to carry out the ambitious economic and social development programs those countries have embarked on. It is expected that the various plans of those countries to diversify their economies and to provide the necessary infrastructure will further increase their need for expatriate workers.

The oil-rich Arab states are concerned with both the stability and predictability of the future flow of foreign labor. Political instability in the region and the possibility of regional conflicts affect the movement of labor between sending and receiving countries considering the

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<sup>12</sup>Birks and Sinclair, International Migration and Development in the Arab Region, p. 33.

heavy dependency on Arab labor. The Egyptian-Libyan conflict in 1977 and the Egyptian-Israeli treaty have influenced the migration of labor and can easily influence future migration trends. By projecting their future needs for imported labor by various skill levels, oil-rich Arab states should be able to improve the reliability of their sources of foreign labor. To the extent that they succeed, they can, thereby, reduce setbacks due to sudden withdrawals of manpower for political reasons. This seems especially important for Libya.

## CHAPTER IV

### THE CONTRIBUTIONS OF FOREIGN WORKERS TO THE LABOR FORCE

#### I. Introduction

This chapter will examine and analyze the manpower constraint in Libya and the need for foreign manpower. It opens with an examination of the population and labor force based on the latest information available, it is followed by an analysis of the contribution of foreign workers in the various economic sectors based on the occupational categories as well as the geographic origins of foreign manpower employed in Libya. The chapter will end with concluding remarks reached by the writer based on the chapter's study and analysis.

#### II. Population and Labor Force

##### II.a. Population

A study of the manpower situation in Libya cannot be embarked on without an examination of the country's population since it is the source of the indigenous manpower. The 1964 Libyan census reported a total population of 1,564,000, comprising 1,515,500 Libyans and 48,900 non-Libyans. In the period 1964-1973, Libya experienced rapid population growth.

The 1973 census showed a total population of 2,290,700 which was made up of 2,088,000 Libyans and 202,700 non-Libyans. This has meant that during the 1964-1973 period the Libyan population registered an increase of 38 percent while the non-Libyan population increased by 315 percent, as shown in Table XV.

The Libyan population has continued to date to maintain a high growth rate coupled with a continuing rise in the standard of living and better nutrition and improved health care facilities. The total population (Libyan and non-Libyan) reached 2,683,100 in 1975, of which 366,600 or 13.7 percent of the total population were non-Libyans. By 1980, the total population reached 3,245,800, of whom 2,804,000 or 86.4 percent were Libyan nationals and 441,200 or 13.6 percent were non-Libyans. Table XVI shows the total number of the Libyan and non-Libyan population as well as a breakdown of the Libyan population by sex for the years 1975 and 1980. The table shows that males constituted 51.3 percent (1,438,100) of the total population and females 48.7 percent (1,366,500) in the year 1980.

Libya has a very young population, in as much as half of the population is below 15 years of age. The main working age population (that is the age group 15-59) constituted 42.6 percent while the age group 60 and above constituted five percent of the population.<sup>1</sup>

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<sup>1</sup>Secretariat of Planning, Directorate General of Demography and Manpower Planning, Report on the Manpower Situation, 1978 (Tripoli, Libya, April, 1979), p. 3.

TABLE XV  
POPULATION CHANGES IN LIBYA BETWEEN 1964 AND 1973

Item	1964 Census	1973 Census	Absolute Increase 1964-1973	Percentage Increase 1964-1973	Average Annual Rate of Increase
Total Pop.	1,564,369	2,290,734	726,365	46	5.1
Libyans	1,515,501	2,087,983	572,482	38	4.2
Non-Libyans	48,868	202,751	153,883	315	35.0

Source: Ministry of Planning and Scientific Research, Report on Manpower Situation - 1974 (Tripoli, Libya, 1975), p. 18.

TABLE XVI  
POPULATION BY NATIONALITY AND SEX, 1975 AND 1980

Population by Nationality	1975	1980	Annual Compound Rate of Increase During 1975-1980 (Percentage)
<u>Population by Nationality</u>			
Total	2,683,100	3,245,800	3.9
Libyans	2,316,500	2,804,600	3.9
Non-Libyans	366,600	441,200	3.8
Non-Libyans as Percentage of Total Population	13.7	13.6	---
<u>Libyan Population by Sex</u>			
Total	2,316,500	2,804,600	3.9
Males	1,188,900	1,438,100	3.9
Females	1,127,600	1,366,500	3.9
Sex Ratio (Number of Libyan Females Per 100 Libyan Males)	948	950	---
Libyan Females as Percentage of Total Libyan Population	48.7	48.7	---

Source: Secretariat of Planning, "Overall Aspects of Development, Manpower and Labor Productivity," The First Draft of the Second Five-Year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), p. 4.

## II.b. Labor Force

The labor force consists of all males and females above 15 years of age who are actively engaged in the production of goods and services. The indigenous labor force's productive capacity is considered the main factor in achieving economic development in the country.<sup>2</sup>

The small size of the Libyan population, the socio-economic circumstances of the country, and low labor force participation rates, especially for women, are the main reasons for the quantitative shortage of the indigenous labor force.<sup>3</sup> The educational system and the lack of sufficient training programs are some of the reasons for the qualitative shortages in the national labor force. The need to employ foreign workers stems from the fact that the manpower requirements of the development programs exceed the supply of indigenous labor in terms of both numbers and skill levels. Foreign workers are needed to bridge the gap between the manpower requirements and the supply of the Libyan labor force, if the country's economic and social programs are to be carried out.

The total labor force of 689,200 in 1975 consisted of

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<sup>2</sup>Secretariat of Planning, General Department of Economic and Social Planning, Demography and Manpower Planning Section, Labor Force Structure, 1977 (Tripoli, Libya, 1977), p. 4.

<sup>3</sup>The overall labor force participation rate was 19% in 1980. The rate for males was 33%; that for females 4.3%. No studies on labor force participation rates were available.

223,000 non-Libyans representing 32.4 percent of the total labor force and 466,200 Libyans. In 1980 the total labor force reached 812,800 and the number of foreign workers increased to 280,000 or 34.4 percent of the total labor force. Thus, between 1975 and 1980, non-Libyan workers increased both proportionately and in absolute terms, showing an annual growth rate of 4.6 percent compared to 2.7 percent for the Libyan labor force. The labor force by nationality and sex for the years 1975 and 1980 is shown in Table XVII.

The Libyan labor force in the same period increased from 466,200, of whom 35,400, or 7.6 percent, were females, to 532,800 of whom 58,900, representing 11.1 per cent, were females. This indicates that the participation of females in the labor force is increasing rapidly and is the result of the measures taken to encourage women to enter the labor force and the social change in the country. The female component of the labor force has increased more rapidly than the male component. The annual compound rate of increase of female labor during the 1975-1980 period was 10.7 percent compared to 1.9 percent for the male component of the labor force. Most females in the national labor force are in limited occupations such as teaching and clerical jobs, having acquired the skills necessary to perform these jobs through the various educational and training programs.

The growth of the foreign population and labor force in Libya during the last decade is best represented in Table XVIII which provides figures for the non-Libyan population and labor force in selected years between 1970 and 1978.



TABLE XVII  
LABOR FORCE BY NATIONALITY AND SEX, 1975 AND 1980

	1975	1980	Annual Compound Rate of Increase During 1975-1980 (Percentage)
<u>Labor Force by Nationality</u>			
Libyans and Non-Libyans	699,200	812,800	3.4
Libyans	466,200	532,800	2.7
Non-Libyans	233,000	280,000	4.7
Non-Libyans as Percentage of Total Labor Force	32.4	34.4	---
<u>Libyan Labor Force by Sex</u>			
Males and Females	466,200	532,800	2.7
Males	430,800	473,900	1.9
Females	35,400	58,900	10.7
Libyan Female Labor Force as Percentage of Total Libyan Labor Force	7.6	11.1	---

Source: Secretariat of Planning, "Overall Aspects of Development, Manpower and Labor Productivity," The First Draft of the Second Five-Year Transformation Plan 1981-1985, Vol. I (Tripoli, Libya, July, 1980), p. 5.

TABLE XVIII  
NON-LIBYAN POPULATION AND LABOR FORCE IN  
SELECTED YEARS (000'S)

Year	Mid-Year Population and Labor Force		Percentage of Increase (+) or Decrease (-)	
	Population	Labor Force	Population	Labor Force
1970	84.0	50.0		
1971	109.0	64.0	(+) 29.8	(+) 28.0
1973	202.0	121.4	(+) 47.7	(+) 49.0
1976	433.6	262.6	(+) 18.3	(+) 17.8
1978	416.5	252.3	(-) 5.2	(-) 5.2
Percentages increase during 1970-1978			(+) 395.8	(+) 404.6
Annual Compound rate 1970-1978			(+) 22.2	(+) 22.4

Source: Secretariat of Planning, Manpower and Human Resource Implications of the Long Term Development Objectives 1980-2000 (Tripoli, Libya, 1979), p. 34.

During this period, the non-Libyan population including workers increased from 84,000 in 1970 to 416,500 in 1978 and the number of foreign workers increased from 50,000 to 252,300 in the same period. That is, the non-Libyan population and labor force increased by 396 percent and 405 percent, respectively, during the period 1970-1978, showing an annual increase of 22.2 percent and 22.4 percent, respectively (see Table XVIII).

The growth in the number of the non-Libyan workers clearly indicates its importance to the Libyan economy, since many economic activities in the country cannot continue without this source of labor. This chapter has so far noted that Libya lacks qualified workers and has been forced to import increasing numbers of foreign workers. This stresses the need for more training facilities and educational programs to provide Libyans with the appropriate skills needed in building their society. The following section will discuss the qualitative shortage and how foreign labor has filled the gap.

### III. Foreign Labor Employment by Economic Sector

Shortages in manpower and, hence, the reliance on non-Libyans exist in all economic sectors with some sectors depending more heavily on foreigners than others. Total employment and foreign employment in each economic sector as well as the structure and share of non-Libyans in each

sector for selected years from 1975 till 1980 are shown in Tables XIX and XX.

The construction sector accounted for more non-Libyans than any other sector in 1975 with 77.5 percent of the total employment in this sector being foreigners. The fact that the construction sector employs the largest number of workers can be explained by the fact that Libya is busy building the infrastructure of the economy to meet the economic and social needs of the people. In actual figures, employment in the construction sector amounted to 152,600 workers in 1975, of whom 118,300 were foreigners; and by 1980, the number increased to 179,600, of whom 134,000, that is, 77 percent of the total employment in this sector, were non-Libyans. Employment in the manufacturing sector increased from 32,900 in 1975 to 58,000 in 1980. Foreign workers represented about 40 percent of the total in both years. It should be noted that in spite of the large investment allocations and the great emphasis placed on this sector it employed only a small percentage of the total work force. Only five percent of all the employed work force in 1975 worked in the manufacturing sector and only seven percent in 1980. This can partly be explained by the capital intensive nature of the various industrial projects.

Health services and educational services are among the sectors that are heavily dependent on non-Libyans even though Libyanization is being speeded up in the latter sector. The medical and health services have always received

TABLE XIX  
EMPLOYMENT BY NATIONALITY AND ECONOMIC  
SECTOR, 1975 AND 1977

Economic Sector	1975*			1977**		
	Libyans and Non- Libyans	Non- Libyans	Non-Libyans as Percentage of Total	Libyans and Non- Libyans	Non- Libyans	Non-Libyans as Percentage of Total
1. Agriculture, Forestry and Fishing	133,100	17,600	13.2	144,900	28,600	19.7
2. Crude Petroleum	10,700	2,700	25.2	11,300	2,200	19.5
3. Other Mining and Quarrying	6,900	2,800	430.6	7,900	3,600	45.6
4. Manufacturing	32,900	13,800	41.9	41,700	17,100	41.0
5. Electricity, Gas and Water	13,000	3,600	27.7	14,700	4,200	28.6
6. Construction	152,600	118,300	77.5	171,400	132,600	77.4
7. Trade, Restaurant and Hotels	48,500	7,700	15.9	52,300	6,500	12.4
8. Transport and Communications	53,400	6,200	11.6	63,100	9,400	14.9
9. Finance and Insurance	7,700	1,600	20.8	8,500	1,500	17.6
10. Public Administration	71,000	5,200	7.3	76,800	4,900	6.4
11. Educational Services	58,000	14,100	24.3	69,900	17,000	24.3
12. Health Services	30,500	9,800	32.1	35,700	12,600	35.3
13. Other Services	58,700	19,600	33.4	66,800	26,000	38.9
<b>TOTAL</b>	<b>677,100</b>	<b>223,000</b>	<b>32.9</b>	<b>765,000</b>	<b>266,200</b>	<b>34.8</b>

Source: \*Secretariat of Planning, General Department of Economic and Social Planning, Demography and Manpower Planning Section, Labor Force Structure, 1977 (Tripoli, Libya, 1977), p. 15.

\*\*Ibid., p. 14.

TABLE XX  
EMPLOYMENT BY NATIONALITY AND ECONOMIC  
SECTOR, 1978 AND 1980

Economic Sector	1978*			1980**		
	Libyans and Non-Libyans	Non-Libyans	Non-Libyans as Percentage of Total	Libyans and Non-Libyans	Non-Libyans	Non-Libyans as Percentage of Total
1. Agriculture, Forestry and Fishing	147,900	28,800	19.5	146,800	23,000	15.7
2. Crude Petroleum	11,700	2,000	17.1	11,700	1,400	12.0
3. Other Mining and Quarrying	8,700	4,200	48.3	9,500	4,500	47.4
4. Manufacturing	47,400	18,000	38.0	58,000	22,700	39.1
5. Electricity, Gas and Water	15,800	4,500	28.5	19,700	5,900	29.9
6. Construction	164,300	122,400	74.5	179,600	134,500	74.9
7. Trade, Restaurant and Hotels	47,500	4,500	9.5	42,900	11,000	25.7
8. Transport and Communications	67,500	8,600	12.7	71,700	11,400	15.9
9. Finance and Insurance	9,100	1,400	15.4	9,600	1,000	10.4
10. Public Administration	75,400	4,400	5.8	65,00	4,400	6.8
11. Educational Services	73,900	17,400	23.5	91,000	20,000	22.0
12. Health Services	38,400	13,500	35.2	45,800	17,800	36.4
13. Other Services	65,100	22,600	34.7	61,500	22,400	36.4
<b>TOTAL</b>	<b>772,700</b>	<b>252,300</b>	<b>32.7</b>	<b>812,800</b>	<b>280,000</b>	<b>34.4</b>

Source: \*Secretariat of Planning, Directorate General of Demography and Manpower Planning, Report of the Manpower Situation, 1978 (Tripoli, Libya, April, 1979), p. 19.

\*\*Secretariat of Planning, Directorate General of Demography and Manpower Planning, Manpower and Labor Productivity in the Transformation Plan 1981-1985 (Tripoli, Libya, July, 1980), p. 49.

high priority in the social planning of Libya, and as a result, hospitals and health centers are increasing in number in the various parts of the country. This explains the large increase in total employment in the health sector over the years, for total employment in this sector increased from 30,500 in 1975 to 45,800 in 1980. Foreign personnel have represented a large share of this increase as the demand for doctors, nurses, and related medical occupations has far exceeded the supply of Libyans in these occupations. Thus the number of foreign personnel in this sector increased from 9,800 in 1975 to 17,800 in 1980; and in percentage, this was a shift from 32.1 percent in 1975 to 38.1 in 1980.

Education is considered a top priority in the economic and social development plan in Libya. Educational and training services have been expanded to meet the goal of developing and improving the human resources of the country. In consequence, the demand for university professors, school teachers, training instructors, and non-teaching personnel in educational and training institutions has increased through the years. Total employment in the educational sector increased from 58,000 in 1975 to 69,900 in 1977 and reached 91,000 by 1980. The share of non-Libyan employment in the total employment in this sector amounted to 24.3 percent and 22 percent in 1975 and 1980, respectively; and in absolute numbers, the non-Libyans has increased from 14,100 in 1975 to 20,000 in 1980. Although the Libyanization

efforts are progressing in this sector, the need for foreign personnel still persists.

Employment in the agricultural sector comes next in importance after construction. It amounted to 133,100 or 19.6 percent of the total employment in 1975 and increased to 146,800 representing 18 percent of the total employment in 1980. The economic development plans give high priority to this sector, and large sums of money are being allocated to it. Foreign employment in absolute numbers, as well as the percentages, have increased in this sector. Non-Libyan workers increased from 17,600 representing 13.2 percent of the total employment in this sector in 1975 to 23,000 representing 15.7 percent in 1980. In spite of the large investments allocated to agriculture, it still has the lowest GDP per worker of all sectors.

The crude petroleum sector has witnessed a slow increase in the total employment due to its capital intensive nature. Total employment in this sector increased from 10,700 in 1975 to 11,300 in 1977 and reached 11,800 by 1980. As a result of the policy of Libyanization of employment in this vital sector, the number of foreign personnel decreased from 2,700 in 1975 to 2,200 in 1977 and further declined to 1,400 by 1980. The share of foreign workers in the total employment in this sector has declined from 25.2 percent in 1975 to 12 percent in 1980. The policy to Libyanize employment in the crude petroleum sector is still in progress for the various skill levels.



The degree of dependence on non-Libyan employment is less in the public administration sector, where non-Libyans represented 7.3 percent (5,200) of total employment in 1975 and 6.8 percent (4,400) in 1980. Foreign employment in the finance and insurance sector declined from 1,600 in 1975 to 1,000 in 1980. This is a decline from 20.8 percent of total employment to 10.4 percent during the same period. The decline in the number and share of non-Libyan employment in the public administration and finance and insurance sectors was due to their sensitive roles in the country as well as the increasing employment of the Libyan women in these sectors after they acquired the appropriate clerical skills through specific training programs.

The "other services" sector, which includes repair services, sanitary services, personal services, etc., is a sector which employs a large number of foreigners. The increasing demand for the various kinds of services offered under this sector is associated with the rise in the standard of living. Total employment in this sector increased from 58,200 in 1975 to 61,500 in 1980, with non-Libyan employment having increased from 19,600, representing 33.4 percent of the total, to 22,400, representing 36.4 percent, during the period 1975-1980. The total increase in this sector amounted to 3,300 additional workers, of which 2,800 were foreigners, which means that most of the increase in demand was met by foreign workers.

The employment of foreign workers is evident in every

sector of the Libyan economy, although this dependency is more apparent in some sectors than in others. This shows that foreign labor had to compensate for the qualitative deficiencies in the Libyan work force. The following section will explain this further as it deals with labor at specific occupational levels.

#### IV. Foreign Labor Employment by Occupational Status

The need for foreign labor of various skill levels became more intense after Libya embarked on its economic and social development programs. The significance of the contribution of non-Libyan workers to the socioeconomic development in Libya can be clearly seen from Table XXI which shows the number and share of foreign workers in comparison with the Libyan workers in selected occupations in the year 1975.

Libya's dependence upon foreign manpower is heavy in all occupations. Total employment and foreign employment figures, as well as the percentage of non-Libyans of total employment in each occupational category for selected years between 1975 and 1980, are shown in Table XXII. The table shows that in 1975, 58 percent of the total employment in professional and managerial occupations were foreigners. Professionals are defined by the Secretariat of Planning as those employees:

Who apply scientific knowledge acquired at the university level to a variety of technological,

TABLE XXI

ESTIMATED EMPLOYMENT OF LIBYANS VIS-A-VIS NON-LIBYANS  
IN SELECTED OCCUPATIONS AT MID-YEAR 1975

Selected Occupations	Employed at Mid-Year 75			% of Non- Libyans in the Total
	Libyans	Non- Libyans	Total	
	(1)	(2)	(3)	(4)
<u>Professional and Managerial Pers.</u>				
1. Architects, civil engineers and surveyors	520	2,930	3,450	84.9
2. Electrical, power, electronics and telecommunication engineers	170	720	890	80.8
3. Mechanical engineers	80	400	480	83.3
4. Petroleum and natural gas engineers	155	300	455	65.9
5. Medical doctors	135	2,065	2,200	93.9
6. Dentists	15	155	170	91.2
7. Pharmacists	80	320	400	80.0
8. Economists and accountants	1,335	2,035	3,370	60.4
9. University, secondary and preparatory education graduate teachers	3,380	4,690	8,070	58.1
<u>Technicians</u>				
1. Civil engineering technicians including draughtsmen	765	2,310	3,075	75.1
2. Electrical, electronic and telecommunications engineering technicians	340	510	850	60.0
3. Professional nurses	1,430	2,170	3,600	60.3
4. Medical x-ray, laboratory, and other medical technicians	455	835	1,290	64.7
5. Pre-primary, primary and preparatory school non-graduate teachers	19,960	10,000	29,960	33.4
<u>Clerical Workers</u>	31,410	6,150	37,560	16.4

TABLE XXI (Continued)

Selected Occupations	Employed at Mid-Year 75			% of Non- Libyans in the Total
	Libyans	Non- Libyans	Total	
	(1)	(2)	(3)	(4)
<u>Skilled and Semi-skilled Workers</u>				
1. Fishermen	460	590	1,050	56.0
2. Miners, quarrymen, well drillers and related workers	3,300	2,200	5,500	40.0
3. Food and beverage processors	4,370	2,460	6,830	36.0
4. Tailors, dressmakers, upholsterers and related workers	900	840	1,740	48.3
5. Blacksmiths, toolmakers and machine tool operators	1,200	4,370	5,570	78.5
6. Machinery fitters, assemblers and related instrument makers	10,000	7,510	17,510	42.9
7. Electric fitters and related electric and electronics workers	7,000	5,455	12,455	43.8
8. Plumbers, welders, sheet metal and structural metal preparers and erectors	4,800	4,510	9,310	48.4
9. Bricklayers, carpen- ters, painters and other construction skilled and semi- skilled workers	14,000	48,300	62,300	77.5
10. Cooks, waiters, laund- erers, hairdressers, barbers, etc.	5,500	3,030	8,530	35.5
<u>Unskilled Workers</u>	122,055	85,105	207,160	42.2

Source: M. G. Gupta, Non-Libyans' Employment and Its Costs and Benefits in Socio-Economic Development of the Country (Tripoli, Libya, 1976), pp. 11-12.

TABLE XXII

EMPLOYMENT BY NATIONALITY AND OCCUPATIONAL CATEGORIES FOR  
THE YEARS 1975, 1977, 1978, AND 1980

Occupational Category	1975*			1977**			1978**			1980***		
	Libyans and Non-Libyans (000)	Non-Libyans (000)	% of Non-Libyans to Total Employment	Libyans and Non-Libyans (000)	Non-Libyans (000)	% of Non-Libyans to Total Employment	Libyans and Non-Libyans (000)	Non-Libyans (000)	% of Non-Libyans to Total Employment	Libyans and Non-Libyans (000)	Non-Libyans (000)	% of Non-Libyans to Total Employment
1. Professional and Managerial	27.7	16.1	58.0	33.2	19.2	57.8	34.3	18.6	54.2	42.2	22.0	52.1
2. Technical and Supervisors	58.1	20.5	35.2	70.2	24.1	34.3	72.3	20.8	28.8	91.9	26.6	28.9
3. Clerical	37.6	6.1	16.4	40.4	5.2	12.9	41.6	2.4	5.8	47.1	3.0	6.4
4. Skilled and Semi-skilled	346.6	95.2	27.5	390.6	120.3	30.8	398.3	117.6	29.5	393.8	122.3	31.1
5. Unskilled	207.1	85.1	42.2	230.6	97.4	42.3	226.2	92.9	41.1	237.8	106.0	44.6
<b>TOTAL</b>	<b>677.1</b>	<b>223.0</b>	<b>32.9</b>	<b>765.0</b>	<b>266.2</b>	<b>34.8</b>	<b>772.7</b>	<b>252.3</b>	<b>32.7</b>	<b>812.8</b>	<b>280.0</b>	<b>34.4</b>

Source: \*Secretariat of Planning, General Department of Economic and Social Planning, Demography and Manpower Section, Labor Force Structure, 1977 (Tripoli, Libya, 1977), p. 28.

\*\*Secretariat of Planning, Directorate General of Demography and Manpower Planning, Report on the Manpower Situation, 1978 (Tripoli, Libya, April, 1979), p. 30.

\*\*\*Secretariat of Planning, Directorate General of Demography and Manpower Planning, Manpower and Labor Productivity in the Transformation Plan 1981-1985 (Tripoli, Libya, July, 1980), p. 52.

economic, social and industrial problems. While managerialials are those employees who are required to exercise discretion in important decision making and administrative functions. Organize, direct and coordinate an area of activities such as a branch, division or section in governmental or industrial enterprise or establishment. May be classified as top-level or middle-level administrators depending on the importance of the decision making authority and/or the size and scope of the area administered.<sup>4</sup>

Libya's need for qualified professional and managerial personnel has been growing rapidly as it moved to meet its extensive social and economic development programs. The importation of manpower with high level skills became necessary to fill the gap between the manpower requirements and the existing supply of indigenous labor having these skills.

Total employment in the professional and managerial occupations increased from 27,670 of whom 16,050 or 58 percent were non-Libyans in 1975 to 42,200 of whom 22,000 or 52.1 percent were foreigners. It is expected that the heavy dependence on foreign professionals will continue in the coming years.

In the case of technicians and supervisors, foreign employment constituted 35.2 percent of the total employment of 58,120 in 1975 in this category. With the progressive implementation of the social and economic development targets, the need for persons--to perform skilled technical duties in support of the professional personnel in technological, medical, scientific, legal, economic, teaching and

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<sup>4</sup>Secretariat of Planning, Labor Force Structure, 1977, pp. 23-24.

related fields--has been increased. The shortages in these skills were met by hiring more foreign workers. Thus, non-Libyan technicians and supervisors increased from 20,470 in 1975 to 26,600 or 28.9 percent of total employment of 91,900 in this category by 1980. The decline in the share of non-Libyans in this category reflects the increasing numbers of Libyan technicians and supervisors entering the labor market. It is expected that this downward trend will continue in the future as more Libyans graduate from agricultural, industrial, petroleum, and various other training institutions in Libya and abroad.

With the increase in economic activity, the need for personnel to carry out the clerical and office duties in government and private agencies as well as the various companies operating in Libya has increased. Total employment in the clerical occupations has increased from 37,560 in 1975 to 47,100 in 1980. However, most of the increase in employment was met by Libyan nationals. The supply of Libyan secretaries and typists from the National Institute of Public Administration as well as the Libyan graduates from the different technical institutes and training centers specialized in providing clerical skills was enough to meet the increase in demand as well as to replace part of the foreign workers in these occupations. Thus, the share of non-Libyans in those occupations has decreased from 16.4 percent in 1975 (6,150) to 6.4 percent in 1980 (3,000). The clerical category is the only one that is witnessing a

decrease in both absolute numbers and the percentage share of foreign workers.

Skilled and semi-skilled occupations are now employing the largest number of foreign workers. Skilled and semi-skilled workers are those

Employees engaged in a variety of manual occupations of skilled and semi-skilled nature requiring dexterity and training in the handling of tools or equipment. This category includes such classes as journeymen, tradesmen, equipment operators and skilled workers in a production process.<sup>5</sup>

Of all foreign workers working in Libya, 43 percent were skilled and semi-skilled in 1975, and 44 percent were so by 1980. The total number of non-Libyans in this category has been increasing in absolute number as well as in proportion to the total employment. The total of skilled and semi-skilled workers increased from 207,160 in 1975 to 393,800 in 1980. Of these, foreign workers represented 27.5 percent (or 95,220) in 1975 and 31.1 percent (or 122,400) in 1980. It is expected that with the implementation of the second Economic Development Plan 1981-1985 and the planned construction activities, the need for skilled and semi-skilled workers will increase.

In the case of occupations which do not require any specific skills such as cleaners, laborers, farm workers, etc., there has also been an increase of foreign workers,

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<sup>5</sup>Ibid., p. 4.



in both percentage as well as in absolute numbers. These occupations are low paid and are considered socially undesirable by many Libyans who do not possess skills. Thus, the number of non-Libyans in these occupations increased from 85,110 (42.2 percent) in 1975 to 106,000 (44.6 percent) in 1980. The planned development programs will increase the need for laborers, cleaners, farm workers, and similar jobs in the coming years.

The number and share of foreign workers in Libya in the various occupations prove

The vital necessity or indispensibility of the non-Libyan workers to the country, if the country services are to be maintained at the present level, if the economy is to be run smoothly, and if the tempo of development launched in the country is not to slow down.<sup>6</sup>

#### V. Geographic Origins of Foreign Manpower

Workers from many countries are attracted to Libya. The numbers and geographic origins of foreign workers from 1973 to 1975 are shown in Table XXIII.

The table shows that the total non-Libyan workers increased from 140,190 at the end of 1973 to 261,352 by the end of 1975. This is an increase of about 53 percent. Non-Libyan Arab workers increased from 119,420 to 224,750 during

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<sup>6</sup>M. G. Gupta, Non-Libyans' Employment and Its Costs and Benefits in Socio-Economic Development of the Country, (Tripoli, Libya, 1976), p. 12.

TABLE XXIII

NON-LIBYAN WORKERS AS OF 20TH DECEMBER 1973, 1974, AND 1975 AND CHANGES IN THEIR NUMBERS AND PATTERN OF ORIGIN

Nationality Groups or Geographical Areas	1973		1974		1975	
	Number	%	Number	%	Number	%
1. Arab countries	119,420	85.2	166,010	85.6	224,750	86.0
2. African countries (excluding Arab countries of Africa*)	180	0.1	520	0.3	670	0.3
3. Asia (excluding Arab countries) and Oceania	2,950	2.1	3,800	2.0	6,080	2.3
4. Europe	15,220	10.9	20,940	10.8	27,340	10.3
5. North America	2,360	1.6	2,390	1.2	2,430	1.0
6. Latin America	50)	0.1	70)	0.1	80)	0.1
7. Others	10)		10		2)	
TOTAL	140,190	100.0	193,740	100.0	261,352	100.0

\*These are: Egypt, Tunisia, Morocco, Algeria, Mauritania, Sudan and Somalia.

Source: J. S. Birks and C. A. Sinclair, Migration for Employment Projects. The Kingdom of Saudi Arabia and the Libyan Arab Jamahiriya: The Key Countries of Employment (Geneva, 1979), p. 81.

the same period and constituted over 85 percent of the total non-Libyan workers. Egyptian workers alone supplied 66.2 percent of the Arab workers and represented 56.6 percent of the total non-Libyan workers in 1975. Other non-Libyan workers came from such non-Arab countries as Pakistan, Yugoslavia, Turkey, Italy, U.K., U.S.A., France, Rumania, and Germany.

Significant changes in the pattern of origin of Arab workers have occurred throughout the years. Table XXIV shows that between 1972 and 1976, the number of Egyptian workers increased from 44,760 in 1972 to 153,280 in 1976. Their share of total Arab employment also increased from 49.3 percent to 66.8 percent during the same period. The number of Tunisian workers increased between 1972 and 1976 from 17,250 to 34,650. This increase in the number of Tunisians working in Libya was a result of the increasing demand for labor in the country as well as the decrease in demand for foreign labor in Europe, especially in France, which led many Tunisian workers to seek employment in Libya.<sup>7</sup>

The special political relationship between Libya and Syria was the major factor in the increase of Syrian employment in Libya. Between 1972 and 1976, the number of Syrians working in Libya increased from 4,810 to 13,030. Jordanian

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<sup>7</sup>J. S. Birks and C. A. Sinclair, Country Case Study: Libyan Arab Jamahiriya (Durham, England, 1978), p. 53.

TABLE XXIV

## NUMBERS OF NON-LIBYAN ARABS IN THE LABOR FORCE, 1972 AND 1976

Nationality	1972		1976		Decrease or Increase of Each Nationality	
	Number	%	Number	%	Number	%
Egyptians	44,760	49.3	153,280	66.8	+108,520	242.4
Tunisians	17,250	19.0	34,650	15.1	+ 17,400	100.1
Syrians	4,810	5.3	13,030	5.7	+ 8,220	170.8
Jordanians	4,360	4.8	7,250	3.2	+ 2,900	66.4
Palestinians	5,270	5.8	6,910	3.0	+ 1,650	31.3
Lebanese	11,440	12.6	5,770	2.5	- 5,670	- 49.6
Sudanese	n.a.	n.a.	5,000	2.2	+ 5,000	
Moroccan	n.a.	n.a.	2,470	1.1	+ 2,470	
Others	2,910	3.2	1,020	0.4	- 1,890	
TOTAL	90,800	100.0	229,380	100.0	+138,580	+152.6

Source: J. S. Birks and C. A. Sinclair, Migration for Employment Projects. The Kingdom of Saudi Arabia and the Libyan Arab Jamahiriya: The Key Countries of Employment (Geneva, 1979), p. 82.

and Palestinian workers increased from 9,630 in 1972 to 14,166 in 1976. The Sudanese as well as Moroccan workers started arriving in significant numbers in the mid 1970s, and by 1976, the number of Sudanese and Moroccans working in Libya rose to 5,000 and 2,470, respectively. The number of Lebanese workers declined sharply from 11,440 in 1972 to 5,770 in 1976. This may be the effect of a lessening in the intensity of the Lebanese civil war allowing many Lebanese workers to return to their home country.<sup>8</sup>

As a result of the Libyan/Egyptian conflict, the number of Egyptian workers decreased by the end of 1977 to 102,800 as compared to 153,300 in 1976. The numbers and shares of non-Libyan workers from Egypt, Tunisia, and Syria, as well as the share of other major suppliers of foreign labor to Libya at the end of 1977, are as follows:<sup>9</sup>

Country of Origin	Number of Employees (000)	Percentage of Total
Egypt	102,800	45.4
Tunisia	31,000	13.7
Syria	11,400	5.0

The other countries contributed the following percentages:

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<sup>8</sup>Ibid., p. 55.

<sup>9</sup>Secretariat of Planning, Directorate General of Demography and Manpower Planning, Potentialities of Expatriate Employment and the Present Shortage of Labor (Tripoli, Libya, 1978), p. 8.

--Yugoslavia	Approx. 4%
--Palestine, Jordan, Pakistan	Each approx. 3%
--Sudan, Turkey	Each approx. 2%
--Lebanon, Poland, U.K., Morocco, Romania, Italy, U.S.A., Bulgaria	Each between 1-2%

In spite of the sharp decrease in the number of Egyptian workers, Arab workers from Egypt, Tunisia, and Syria together provided 64.1 percent of all non-Libyans working in Libya by the end of 1977.

The origins of foreign labor are changing over time. The non-Arab workers were increasing in recent years while the participation of Arab workers was declining. The cause of this change is that the structure by nationality of foreigners working in Libya depends upon a number of factors including:

. . . the strength of social and cultural ties between the states involved; the distance between the origin country and Libya; the countries to which large scale contracts for the execution of projects or the purchase of goods have been awarded, and; conditions in the labor market in the country of origin.<sup>10</sup>

These factors and, in particular, the third factor, namely the importance of the countries that are participating in the execution of various development projects, have caused the share of workers from non-Arab countries to increase

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<sup>10</sup>Secretariat of Planning, Directorate General of Demography and Manpower Planning, Manpower and Labor Productivity in the Transformation Plan 1981-1985 (Tripoli, Libya, July, 1980), pp. 45-46.

from 14.4 percent of total non-Libyan labor force to 33.2 percent between 1975 and 1980, and a corresponding proportionate decrease of non-Libyan Arab workers from 85.6 percent to 66.8 percent during the same period. Table XXV shows the contribution of those major Arab as well as non-Arab countries that supplied most of the non-Libyan workers for the years 1975 and 1980.

The number of workers from western Europe is increasing as more machinery and equipment and the manpower necessary to operate it is required for various development projects. The number of Italian workers increased from 2,087 in 1975 to 7,410 in 1980, and workers from West Germany increased from 1,376 to 2,210 during the same period. The number of workers from the U.K. went up from 3,633 in 1975 to 6,276 by 1980.

Bilateral agreements signed between Libya and some of the non-Arab countries have helped in securing labor supplies from such countries. This was the case with some eastern European countries such as Yugoslavia, Bulgaria, Poland, and Romania. The number of Yugoslavians working in Libya increased from 6,741 in 1975 to 9,452 in 1980, while the number of workers from Bulgaria rose from 2,073 to 5,597 during the same period. Romanians working in Libya numbered 2,214 in 1975 and reached 5,191 in 1980, and the number of Polish workers exceeded 6,400 in 1980. American workers decreased from 2,173 in 1975 to 1,641 in 1980, while on the other hand, the number of Russians working in Libya topped

TABLE XXV  
NON-LIBYAN EMPLOYMENT BY COUNTRY  
OF ORIGIN, 1975 and 1980

Country	1975*	1980**
<u>Arab Countries</u>		
Egypt	148,070	103,537
Syria	12,610	13,220
Tunisia	37,670	39,179
Jordan	6,900	7,462
Palestine	6,570	5,057
Lebanon	5,560	3,206
Sudan	4,250	9,718
Morocco	1,950	2,542
Other Arab Countries		1,678
Total Arab Countries:	223,580 (85.6%)	185,597 (66.8%)
<u>Non-Arab Countries</u>		
Yugoslavia	7,640	9,453
Russia		1,526
Bulgaria	2,070	5,597
Poland		6,463
Romania	2,210	5,191
Turkey	1,920	8,425
Pakistan	4,540	14,737
India		7,790
Korea		2,766
Philippine		531
Bangladesh		2,993
France	1,880	1,261
Germany	1,380	2,201
Britain	3,630	6,276
Italy	2,090	7,410
U.S.A.	2,170	1,641
Others	8,140	6,836
Total Non-Arab Countries:	37,670 (14.4%)	92,040 (33.2%)
<u>Grand Total</u>	261,250	277,637

Source: \*J. S. Birks and C. A. Sinclair, Migration for Employment Projects. The Kingdom of Saudi Arabia and the Libyan Arab Jamahiriya: The Key Countries of Employment (Geneva, 1979), p. 80.

\*\*Secretariat of Interior, Immigration Department, Tripoli, Libya. The Figures for 1980 represent the number of foreign workers at the end of April, 1980.



1,500 by 1980. It is anticipated that manpower from eastern European countries will grow in numbers in the coming years as a result of Libya's agreements with the Socialist states.

Turkey and some of the countries of Asia are becoming increasingly prominent suppliers of foreign labor to Libya. Turkish workers reached 8,425 in 1980 as compared to 1,923 in 1975. As a result of bilateral agreements between Libya and Pakistan, the number of Pakistani workers increased from 4,541 in 1975 to 14,737 by 1980. India, Bangladesh, and Korea were well represented as suppliers of manpower to Libya in 1980. The shortage of trained human resources in Libya and the existence of economic opportunity in the country will no doubt encourage workers from the Asian countries as well as others to participate in meeting the manpower demand in Libya.

It seems necessary now to formulate an immigration policy which can take into account the various manpower needs of Libya as well as the countries from which workers are to be recruited.<sup>11</sup> Information collection regarding the labor market of the donor countries as well as Libya should be encouraged.

## VI. Conclusion

The analysis of the development of the Libyan economy

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<sup>11</sup>Secretariat of Planning, Directorate General of Demography and Manpower Planning, Manpower and Labor Productivity in the Transformation Plan 1981-1985 (Tripoli, Libya, July, 1980), p. 47.

in this chapter shows that what made it possible was the importation of foreign labor. It has been found that in all economic sectors, foreign workers of different skill levels coming from various countries were indispensable. Considering the extent of the economic objectives of Libya, Libya's indigenous labor force was both quantitatively and qualitatively inadequate, and the importation of foreign labor was thus necessary.

The phenomenon that has been observed in Libya's economic scene makes it quite clear that the economic and social planning targets cannot be implemented without "the availability of manpower in the right quantity, of the required skills, at the right time."<sup>12</sup>

It is also clear that in order to achieve the targets set forth in the second Economic Development Plan 1981-1985 as they pertain to the different economic sectors, it is necessary that Libya project the total manpower requirements of the various skill levels needed for each economic sector during the years 1981 to 1985. It is also essential if the economic growth of the country is to be maintained that an estimate of the number of non-Libyan workers at the various skill levels be determined and imported during the years 1981-1985. Economic progress can persist only if the gap between the demand for labor needed to execute the

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<sup>12</sup>Ali El-Huni, "Determinants of Female Labor Force Participation: The Case of Libya" (unpub. Ph.D. dissertation, Oklahoma State University, 1978) p. 24.

second Economic Development Plan and the supply of the indigenous labor force is filled.

## CHAPTER V

### FOREIGN MANPOWER REQUIREMENTS:

#### A PROJECTION MODEL

In this chapter the model employed to project foreign manpower demand at various levels will be presented and explained. The model uses Libya's economic objectives to project the total manpower requirements at various skill levels. The results will also project the number of foreign workers of various skill levels needed to execute the coming Economic Development Plan 1981-1985 and for each year during the next five years if the sectoral outputs and productivity targets envisaged in the next Economic Development Plan are to be met.

#### I. Framework and Assumptions of the Model

1. Manpower will be divided into five skill-levels:
  - a. Professionals and Managerials
  - b. Technicians and Supervisors
  - c. Clerical Workers
  - d. Skilled and Semi-skilled Workers
  - e. Unskilled Workers
2. The 1980 distribution of various levels of

manpower among the different sectors of the economy will be used to estimate the productivity and technical coefficients for each skill level in each economic sector. The productivity targets in each economic sector will be incorporated in the calculations. This means that this study will assume that each skill level will have a variable relationship to the real GDP.

Harbison's forecasts for manpower in Nigeria assumed that employment would rise in proportion to output.<sup>1</sup> Debeauvais argued that productivity of labor may have little or no effect on forecasting the required manpower in a newly independent country where the majority of the high level manpower is foreign because the foreigners are expected to leave and new national graduates will substitute for them.<sup>2</sup> These studies led others, such as Gummed, to justify the assumption of constant productivity of labor.<sup>3</sup> However, this assumption may not be realistic as for one thing labor productivity increases with time due to the use of better capital equipment in the production process. This will lead to a decrease in the labor/output ratio associated with an increase in efficiency and improvement in the utilization of

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<sup>1</sup>Frederick Harbison and Charles A. Myers, Education, Manpower and Economic Growth, Strategies of Human Resources Development (New York, 1964).

<sup>2</sup>M. Debeauvais, "Manpower Planning in Developing Countries," International Labor Review, Vol. 89 (1964), pp. 317-338.

<sup>3</sup>Amer Gummed, "High-Level Manpower Requirements for Economic Development in Libya" (unpub. Ph.D. dissertation, Oklahoma State University, 1979).

human resources. In fact, during the period 1975-1980, the productivity of labor increased in the various sectors of the Libyan economy. For example, productivity of labor in the agricultural sector increased during the Economic Development Plan 1975-1980 by 1.5 percent annually. The labor productivity growth in the mining and quarrying sector was 2.6 percent; in manufacturing 14.2 percent; in electricity, gas, and water 9.9 percent; construction 2.5 percent; trade, restaurants, and hotels 11.4 percent; transport and communications 0.7 percent; finance, insurance, and business services 6.7 percent; educational services 4.5 percent; health services 8.4 percent, and other services 3.8 percent.<sup>4</sup> This shows that an assumption of constant productivity of labor and a related assumption of constant fixed linear relationship between various levels of manpower and GDP may not be justifiable. This is why in this study rates of growth of productivity in the various economic sectors as envisaged by the Economic Development Plan 1981-1985 will be taken into account in the estimation of manpower requirements for the various economic sectors and the foreign labor requirements of various skill levels for the years 1981-1985.

3. Figures on the supply of the Libyan labor force estimated by the Secretariat of Planning for the years 1981-1985 will be used in this study. The Secretariat of

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<sup>4</sup>Secretariat of Planning, Directorate General of Demography and Manpower Planning, Manpower and Labor Productivity in the Transformation Plan 1981-1985 (Tripoli, Libya, July, 1980), pp. 65-66.

Planning is keeping records of the new entrants to the labor force by occupational categories and the graduates from universities, high institutes, various vocational and training institutes and centers in Libya and abroad are estimated for the period 1981-1985 for Libyan nationals. These figures imply an attrition rate of 2 percent per annum for the Libyan labor force, for both males and females, as suggested by the Secretariat of Planning.

## II. Steps of the Analysis

1. The expected level of output of each economic sector for the years 1980-1985 will be estimated. Growth rates of output in the various sectors of the economy as spelled out by the Economic Development Plan 1981-1985 will be applied. Constant 1980 prices will be used in the analysis so that all figures are in real terms.

2. The expected increments of output of the various economic sectors through the 1981-1985 period will be calculated.

3. Productivity coefficients of manpower of different skill levels for each economic sector for the year 1980 will be calculated. Then the rate of growth of productivity in each economic sector will be incorporated to estimate the productivity coefficients through 1985. A productivity coefficient of manpower of skill level  $i$  working in economic sector  $j$  in the year  $t$  represents the output of sector  $j$  (in constant 1980 prices) that is produced by a unit of labor of

skill level  $i$  for the year  $t$ .

4. Technical coefficients of various economic sectors for each skill-level will be calculated through the period 1981-1985. A technical coefficient of skill level  $i$  working in sector  $j$  in the year  $t$  represents the units of labor of the  $i$ th skill level that is needed to produce a unit of output of sector  $j$  (in constant 1980 prices) in the year  $t$ .

5. The increase in the quantity of labor of various skill levels necessary to meet the increase in real output of the different economic sectors will be calculated. Then total manpower requirements of various skill levels for each economic sector will be estimated.

6. Foreign manpower of each skill level that is needed during the next five years to meet the output and productivity targets set by the Economic Development Plan 1981-1985 will be estimated. Foreign manpower of level  $i$  in the year  $t$  will be estimated as the difference between total manpower requirements of level  $i$  minus the indigenous labor supply of level  $i$  in the year  $t$ .

Productivity coefficients will be estimated by the following equation:

$$P_{j,t}^i = (1+g_j)^t \cdot d_{j,i}$$

where:

$P_{j,t}^i$  = the productivity coefficient of manpower of



skill level  $i$  working in the  $j$ th economic sector  
in the year  $t$ .

$$i = 1, 2, \dots, 5$$

$$j = 1, 2, \dots, 12$$

$$t = 0, 1, \dots, 5; \text{ where } t=0 \text{ for } 1980$$

$g_j$  = rate of growth of productivity as envisaged by  
the Plan for the  $j$ th sector.

$d_{j,i}$  = output of the  $j$ th economic sector per unit of  
manpower of skill level  $i$  in the year 1980.

$$d_{j,i} = \frac{GDP_{j,80}}{TLF_{j,80}^i}$$

where:

$GDP_{j,80}$  = Gross Domestic Product of the  $j$ th economic  
sector in the year 1980.

$TLF_{j,80}^i$  = Total Labor Force of the  $i$ th skill level that  
is employed in the  $j$ th economic sector in the  
year 1980.

A productivity coefficient table will be estimated for  
each sector of the Libyan economy.

Technical coefficients will be estimated as follows:

$$n_{j,t}^i = \frac{1}{p_{j,t}^i} = \frac{1}{(1+g_j)^t d_{j,i}}$$

where:

$n_{j,t}^i$  = the technical coefficient of manpower with  
skill level  $i$  working in the  $j$ th economic  
sector in the year  $t$ .

where:

$$i = 1, 2, \dots, 5$$

$$j = 1, 2, \dots, 12$$

$$t = 0, 1, \dots, 5 \text{ where } t=0 \text{ for } 1980$$

$n_{j,t}^i$  represents the number of units of labor of skill level  $i$  needed to produce one unit of output of the  $j$ th sector in the year  $t$ .

A technical coefficient table will be estimated for each economic sector.

Change in sectoral demand of manpower of various skill levels will be estimated by the following equation:

$$\Delta D_{j,t}^i = \frac{1}{(1+g_j)^t \cdot d_{j,i}} \Delta GDP_{j,t}$$

where:

$\Delta D_{j,t}^i$  = change in manpower of level  $i$  required to meet the change in output of sector  $j$  in the year  $t$ .

$$i = 1, 2, \dots, 5$$

$$j = 1, 2, \dots, 12$$

$$t = 0, 1, \dots, 5 \text{ where } t = 0 \text{ for } 1980$$

$\Delta GDP_{j,t}$  = the increment in the Gross Domestic Product of the  $j$ th economic sector in the year  $t$ .

The change in manpower at various skill levels needed to meet the change in sectoral output will be estimated and tabulated for each economic sector.

After calculating the change in manpower of different

skill levels for each of the economic sectors, the total manpower requirements at all skill levels for each economic sector will be calculated using the following equation:

$$TLF_{j,t}^i = \frac{1}{(1+g_j)^t \cdot d_{j,t}} \Delta GDP_{j,t} + TLF_{j,t-1}^i$$

where:

$TLF_{j,t}^i$  = Total labor force of skill level  $i$  that is needed in the  $j$ th economic sector in the year  $t$  in order to meet the output and productivity targets set by the EDP 1981-1985.

$i = 1, 2, \dots, 5$

$j = 1, 2, \dots, 12$

$t = 0, 1, \dots, 5$  where  $t=0$  for 1980

These calculations will be carried out for each economic sector with the exception of the crude petroleum sector, as it is assumed that the level of output in the crude petroleum sector is not related to the size of employment in the sector. A small absolute increase of 1.3 thousand workers was estimated by the Secretariate of Oil and the Secretariat of Planning to be needed in the crude petroleum sector during the next five years. This represents a 2.1 percent annual increase in employment in this sector and will be taken into consideration in estimating the manpower requirements of the sector.

A table representing the various levels of manpower required to meet the Economic Development Plan targets

during the period 1981-1985 will be constructed for each economic sector.

By adding the total manpower requirements of skill level  $i$  for all economic sectors in the year  $t$  and then subtracting the Libyan supply of manpower of the same level in the year  $t$ , the shortage in the  $i$ th level manpower will as such be estimated. This shortage represents foreign labor of skill level  $i$  that must be imported in order to execute the planned economic development targets.

It is expected that the various projections to be carried out in this study will throw some light on the relative significance of each of the economic activities included in the projection and in explaining the magnitude of gross migration of foreign workers to Libya in the years to come. This framework and the projections it helped to produce have important policy implications. They may provide policy makers with the projections which can allow them to be more realistic in setting their plans and targets in sectoral planning, training programs, and the importation of foreign labor with different skill levels for the various economic activities.

This model is both simple and straightforward. However, similar to other manpower projection models it has certain weaknesses. First, it assumes that labor productivity in each economic sector is the same for the various occupational categories; however, the growth rate of productivity may differ among the different skill levels of manpower working

in the same economic sector, and it is difficult to estimate these rates as the output in each sector is realized through the combined efforts of the various skills. It should be remembered that unlike other manpower forecasts that assume constant technical coefficients and, consequently, a constant relationship to real GDP, this model takes into consideration the productivity targets in various economic sectors and, consequently, assumes variable relationships to the real sectoral GDP. It is, therefore, expected that the model will result in reliable estimates of the future manpower requirements of the Libyan economy.

Second, any projection of manpower is bound to uncontrollable uncertainties. In the case of Libya, a change in oil revenue may be reflected in changes in public expenditures which, in turn, will affect the activities of the various economic sectors. Changes in the planned sectoral growth rates of output will result in changes in manpower requirements.

In spite of those shortcomings, estimates of future manpower requirements of the different economic sectors and of foreign labor of various occupational categories are essential needs and should be carried out. Results should nevertheless be reconsidered and adjusted whenever changes in the economic conditions take place.

## CHAPTER VI

### THE RESULTS OF THE STUDY

This chapter will seek to provide answers to three major questions:

1. How many workers of each skill level are needed in each economic sector in the next five years in order to meet the output and productivity targets of that sector as set by the Economic Development Plan 1981-1985?
2. How many workers of each skill level are needed during the next five years if the targets of the second Economic Development Plan are to be met?
3. How many foreign workers of each skill level will be needed during the next five years? By using the estimates of the new Libyan entrants to the labor force in the next five years as calculated by the Secretariat of Planning, the supply of the Libyan labor force of each skill level will be estimated for each year of the Economic Development Plan 1981-1985. An attrition rate of 2% per annum will be applied to the indigenous labor force as suggested by the Secretariat of Planning. The number of foreign workers of each skill level that must be

imported in each year of the Economic Development Plan 1981-1985, in order to meet its targets will then be estimated.

The 1980 distribution of manpower of the five specified skill levels is presented in Table XXVI. The expected level of output of each economic sector during the next five years 1981-1985 is shown in Table XXVII. The annual growth rates of output of the various economic sectors as spelled out by the Economic Development Plan 1981-1985 are used in the calculation of the expected level of output. Table XXVIII represents the expected changes in the level of output during the years 1981-1985. These figures will be used with the technical coefficients of each economic sector to calculate the incremental sectoral demands of the various manpower levels.

#### I. The Productivity Coefficients

The productivity coefficients of manpower of skill level  $i$  working in the  $j^{\text{th}}$  sector in the year  $t$  are calculated by the following equation (see Chapter V for a full explanation of this equation):

$$P_j^i = (1 + g_j)^t \cdot d_{j,t}$$

The productivity coefficient of an  $i^{\text{th}}$  manpower level working in the  $j^{\text{th}}$  economic sector in the year  $t$  represents the output of the  $j^{\text{th}}$  sector (in LD million at constant

TABLE XXVI  
DISTRIBUTION OF MANPOWER BY OCCUPATIONAL CATEGORIES  
AND ECONOMIC SECTORS FOR THE YEAR 1980

Economic Sector	Professional and Managerial (1)	Technicians and Supervisors (2)	Clerical Workers (3)	Skilled and Semi-Skilled (4)	Unskilled (5)	Total
1. Agriculture	2,000	3,600	1,900	79,300	60,000	146,800
2. Crude Petroleum	1,400	2,200	1,900	5,100	1,100	11,700
3. Mining & Quarrying	100	200	200	5,400	3,700	9,500
4. Manufacturing	1,700	3,600	2,400	43,600	6,700	58,000
5. Elect. Gas & Water	1,200	2,500	1,800	12,000	2,200	19,700
6. Const. (incl. housing)	5,200	7,500	2,900	98,800	65,200	179,600
7. Trade, Rest. & Hotels	1,700	1,300	4,500	20,300	15,100	42,900
8. Transport. & Commun.	1,800	2,500	6,100	49,300	12,200	71,700
9. Finance & Insurance	1,700	900	4,600	1,200	1,200	9,600
10. Public Admin.	3,900	4,700	9,800	28,600	18,000	65,000
11. Educational Services	14,300	47,300	3,400	5,000	21,000	91,000
12. Health Services	5,300	11,500	2,500	13,600	12,900	45,800
13. Other Services	2,100	4,100	5,200	31,600	18,500	61,500
<b>Total</b>	<b>42,200</b>	<b>91,900</b>	<b>47,100</b>	<b>393,800</b>	<b>237,800</b>	<b>812,800</b>

Source: Secretariat of Planning, Directorate General of Demography and Manpower Planning, Manpower and Labor Productivity in the Transformation Plan 1981-1985 (Tripoli, Libya, July, 1980), p. 62.



TABLE XXVII  
 THE EXPECTED LEVEL OF OUTPUT OF EACH ECONOMIC  
 SECTOR 1980-1985 AT 1980 PRICES  
 (LD Million)

Economic Sector	1980	1981	1982	1983	1984	1985	Expected Growth Rates
1. Agriculture	152	163	175	188	202	217	7.4
2. Crude Petroleum	6283	5956	5646	5352	5074	4810	-5.2
3. Mining & Quarrying	47	51	55	59	64	69	7.0
4. Manufacturing	243	295	359	437	531	646	21.6
5. Elect., Gas & Water	51	59	68	78	90	103	15.1
6. Const. (incl. housing)	1047	1151	1265	1390	1528	1679	9.9
7. Trade, Rest. & Hotels	450	481	515	551	589	630	7.0
8. Transport. & Comm.	305	328	352	378	407	437	7.4
9. Finance & Insurance	209	230	253	278	306	336	10.0
10. Public Admin.	582	611	642	674	708	744	5.0
11. Educ. Services	239	258	279	301	325	351	8.0
12. Health Services	126	139	153	168	185	203	10.0
13. Other Services	43	46	50	54	58	63	8.0

Source: Secretariat of PLanning, The First Draft of the Second Five-Year Transformation Plan 1981-1985 (Tripoli, Libya, 1980).

TABLE XXVIII  
 EXPECTED CHANGE IN OUTPUT OF THE SECTORS OF THE  
 ECONOMY DURING THE PERIOD 1981 - 1985  
 (LD Million)

Economic Sectors	1981	1982	1983	1984	1985
1. Agriculture	11	12	13	14	15
2. Crude Petroleum	-327	-310	-294	-278	-264
3. Mining & Quarrying	4	4	4	5	5
4. Manufacturing	52	64	78	94	115
5. Elect., Gas & Water	8	9	10	12	13
6. Const. (incl. housing)	104	114	125	138	151
7. Trade, Rest. & Hotels	31	34	36	38	41
8. Transport. & Comm.	23	24	26	29	30
9. Finance & Insurance	21	23	25	28	30
10. Public Admin.	29	31	32	34	36
11. Educ. Services	19	21	22	24	26
12. Health Services	13	14	15	17	18
13. Other Services	3	4	4	4	5

Source: Table XXVII

1980 prices) per worker of the  $i$ th skill level in the year  $t$ .

The estimates of the productivity coefficients of manpower of all skill levels for the various economic sectors are presented in Tables XXIX through XL. These coefficients will be used in calculating the technical coefficients.

## II. The Technical Coefficients

The technical coefficients are estimated by the following equation (see Chapter V for a full explanation of this equation):

$$n_{j,t}^i = \frac{1}{p_{j,t}^i} = \frac{1}{(1+g_j)^t \cdot d_{j,t}}$$

The technical coefficient of the  $i$ th level manpower working in the  $j$ th economic sector in the year  $t$  represents the number of workers of the  $i$ th skill level required to produce LD 1 million at constant 1980 prices of output of the  $j$ th economic sector in the year  $t$ .

The technical coefficients of manpower of the various skill levels are estimated. The results are shown in Tables XLI through LII.

These coefficients will be used with the incremental sectoral output estimated in Table XXVIII to estimate the increase in manpower requirements of the various skill levels needed to meet the changes in sectoral output for the next five years.

TABLE XXIX  
 THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF ALL SKILL LEVELS FOR  
 THE AGRICULTURAL SECTOR 1980-1985  
 (g = 4.1%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	0.0760	0.0791	0.0823	0.0857	0.0892	0.0929
2. Technicians and Supervisors	0.0422	0.0439	0.0457	0.0476	0.0496	0.0516
3. Clerical Workers	0.0800	0.0833	0.0867	0.0903	0.0940	0.0979
4. Skilled and Semi- skilled Workers	0.0019	0.0020	0.0021	0.0022	0.0023	0.0024
5. Unskilled Workers	0.0025	0.0026	0.0027	0.0028	0.0029	0.0030

TABLE XXX  
 THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF ALL SKILL LEVELS FOR  
 THE MINING AND QUARRYING SECTOR 1980-1985  
 (g = 3.8%)

Ocupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	0.4700	0.4879	0.5064	0.5256	0.5456	0.5663
2. Technicians and Supervisors	0.2350	0.2439	0.2532	0.2628	0.2728	0.2832
3. Clerical Workers	0.4700	0.4879	0.5064	0.5256	0.5456	0.5663
4. Skilled and Semi-skilled Workers	0.0087	0.0090	0.0093	0.0097	0.0101	0.0105
5. Unskilled Workers	0.0127	0.0132	0.0137	0.0142	0.0147	0.0153

TABLE XXXI  
 THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
 THE MANUFACTURING SECTOR 1980-1985  
 (g = 6.5%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	0.1429	0.1522	0.1625	0.1731	0.1843	0.1963
2. Technicians and Supervisors	0.0675	0.0719	0.0766	0.0816	0.0869	0.0925
3. Clerical Workers	0.1013	0.1079	0.1149	0.1224	0.1304	0.1389
4. Skilled and Semi- skilled Workers	0.0056	0.0060	0.0064	0.0068	0.0072	0.0077
5. Unskilled Workers	0.0363	0.0387	0.0412	0.0439	0.0468	0.0498

TABLE XXXII

THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE ELECTRICITY, GAS AND WATER SECTOR 1980-1985  
(g = 9.3%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	0.0425	0.0465	0.0508	0.0555	0.0607	0.0663
2. Technicians and Supervisors	0.0204	0.0223	0.0244	0.0267	0.0292	0.0319
3. Clerical Workers	0.0283	0.0309	0.0338	0.0369	0.0403	0.0441
4. Skilled and Semi- skilled Workers	0.0043	0.0047	0.0051	0.0056	0.0061	0.0067
5. Unskilled Workers	0.0232	0.0254	0.0278	0.0304	0.0332	0.0363

TABLE XXXIII

THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE CONSTRUCTION SECTOR 1980-1985  
(g = 3.2%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	0.2013	0.2077	0.2143	0.2212	0.2283	0.2356
2. Technicians and Supervisors	0.1396	0.1441	0.1487	0.1535	0.1584	0.1635
3. Clerical Workers	0.3610	0.3726	0.3845	0.3968	0.4095	0.4226
4. Skilled and Semi- skilled Workers	0.0106	0.0109	0.0113	0.0117	0.0121	0.0125
5. Unskilled Workers	0.0161	0.0166	0.0171	0.0176	0.0182	0.0188



TABLE XXXIV  
 THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
 THE TRADE, RESTAURANT AND HOTELS SECTOR 1980-1985  
 (g = 8.1%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	0.2647	0.2861	0.3093	0.3344	0.3615	0.3908
2. Technicians and Supervisors	0.3462	0.3742	0.4045	0.4373	0.4727	0.5110
3. Clerical Workers	0.1000	0.1081	0.1169	0.1264	0.1366	0.1477
4. Skilled and Semi- skilled Workers	0.0222	0.0240	0.0259	0.0280	0.0303	0.0328
5. Unskilled Workers	0.0298	0.0322	0.0348	0.0376	0.0406	0.0439

TABLE XXXV  
 THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
 THE TRANSPORTATION AND COMMUNICATION SECTOR 1980-1985  
 (g = 2.0%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	0.1906	0.1944	0.1983	0.2023	0.2063	0.2104
2. Technicians and Supervisors	0.1220	0.1244	0.1269	0.1294	0.1320	0.1346
3. Clerical Workers	0.0500	0.0510	0.0520	0.0530	0.0541	0.0552
4. Skilled and Semi- skilled Workers	0.0062	0.0063	0.0064	0.0065	0.0066	0.0067
5. Unskilled Workers	0.0250	0.0255	0.0260	0.0265	0.0270	0.0275

TABLE XXXVI

THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE FINANCE AND INSURANCE SECTOR 1980-1985  
(g = 5.7%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	0.1229	0.1299	0.1373	0.1451	0.1534	0.1621
2. Technicians and Supervisors	0.2322	0.2454	0.2594	0.2742	0.2898	0.3063
3. Clerical Workers	0.0454	0.0480	0.0507	0.0536	0.0567	0.0599
4. Skilled and Semi- skilled Workers	0.1742	0.1841	0.1946	0.2057	0.2174	0.2298
5. Unskilled Workers	0.1742	0.1841	0.1946	0.2057	0.2174	0.2298

TABLE XXXVII  
 THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
 THE PUBLIC ADMINISTRATION SECTOR 1980-1985  
 (g = 3.8%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	0.1492	0.1549	0.1608	0.1669	0.1732	0.1798
2. Technicians and Supervisors	0.1238	0.1285	0.1334	0.1385	0.1438	0.1493
3. Clerical Workers	0.0594	0.0617	0.0640	0.0664	0.0689	0.0715
4. Skilled and Semi-skilled Workers	0.0203	0.0211	0.0219	0.0227	0.0236	0.0245
5. Unskilled Workers	0.0323	0.0335	0.0348	0.0361	0.0375	0.0389

TABLE XXXVIII

THE PRODUCTIVITY COEFFICIENT OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE EDUCATIONAL SERVICES SECTOR 1980-1985  
(g = 2.8%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	0.0167	0.0172	0.0177	0.0182	0.0187	0.0192
2. Technicians and Supervisors	0.0051	0.0052	0.0053	0.0054	0.0056	0.0058
3. Clerical Workers	0.0703	0.0723	0.0743	0.0764	0.0785	0.0807
4. Skilled and Semi- skilled Workers	0.0478	0.0491	0.0505	0.0519	0.0534	0.0549
5. Unskilled Workers	0.0114	0.0117	0.0120	0.0123	0.0126	0.0130

TABLE XXXIX  
 THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
 THE HEALTH SERVICES SECTOR 1980-1985  
 (g = 3.8%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	0.0238	0.2477	0.0256	0.0266	0.0276	0.0286
2. Technicians and Supervisors	0.0110	0.0114	0.0118	0.0122	0.0127	0.0132
3. Clerical Workers	0.0504	0.0523	0.0543	0.0564	0.0585	0.0607
4. Skilled and Semi- skilled Workers	0.0093	0.0097	0.0101	0.0105	0.0109	0.0113
5. Unskilled Workers	0.0098	0.0102	0.0106	0.0110	0.0114	0.0118

TABLE XL  
 THE PRODUCTIVITY COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
 THE OTHER SERVICES SECTOR 1980-1985  
 (g = 6.5%)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	0.0205	0.0218	0.0232	0.0247	0.0263	0.0280
2. Technicians and Supervisors	0.0105	0.0112	0.0119	0.0127	0.0135	0.0144
3. Clerical Workers	0.0083	0.0088	0.0094	0.0100	0.0107	0.0114
4. Skilled and Semi- skilled Workers	0.0014	0.0015	0.0016	0.0017	0.0018	0.0019
5. Unskilled Workers	0.0023	0.0024	0.0026	0.0028	0.0030	0.0032

TABLE XLI

THE TECHNICAL COEFFICIENTS OF MANPOWER OF ALL SKILL LEVELS FOR  
THE AGRICULTURAL SECTOR FOR THE YEARS 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	12.6	12.2	11.7	11.2	10.8
2. Technicians and Supervisors	22.8	21.9	21.0	20.2	19.4
3. Clerical Workers	12.0	11.5	11.1	10.6	10.2
4. Skilled and Semi-skilled Workers	500.0	476.2	454.5	434.8	416.7
5. Unskilled Workers	384.6	370.4	357.1	344.8	333.3



TABLE XLII

THE TECHNICAL COEFFICIENTS OF MANPOWER OF ALL SKILL LEVELS FOR  
THE MINING AND QUARRYING SECTOR FOR THE YEARS 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	2.0	2.0	1.9	1.8	1.8
2. Technicians and Supervisors	4.1	3.9	3.8	3.7	3.5
3. Clerical Workers	2.0	2.0	1.9	1.8	1.8
4. Skilled and Semi-skilled Workers	111.1	107.5	103.1	99.0	95.2
5. Unskilled Workers	75.8	73.0	70.4	68.0	65.4

TABLE XLIII

THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE MANUFACTURING SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	6.6	6.2	5.8	5.4	5.1
2. Technicians and Supervisors	13.9	13.1	12.3	11.5	10.8
3. Clerical Workers	9.3	8.7	8.2	7.7	7.7
4. Skilled and Semi-skilled Workers	166.7	156.3	147.1	138.9	129.9
5. Unskilled Workers	25.8	24.3	22.8	21.4	20.1

TABLE XLIV

THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE ELECTRICITY, GAS AND WATER SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	21.5	19.7	18.0	16.5	15.1
2. Technicians and Supervisors	44.8	41.09	37.5	34.2	31.3
3. Clerical Workers	32.4	29.6	27.1	24.8	22.7
4. Skilled and Semi-skilled Workers	212.8	196.1	178.6	163.9	149.3
5. Unskilled Workers	39.4	36.0	32.9	30.1	27.5

TABLE XLV  
 THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
 THE CONSTRUCTION SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	4.8	4.7	4.5	4.4	4.2
2. Technicians and Supervisors	6.9	6.7	6.5	6.3	6.1
3. Clerical Workers	2.7	2.6	2.5	2.4	2.4
4. Skilled and Semi-skilled Workers	91.7	88.5	85.5	82.6	80.0
5. Unskilled Workers	60.2	58.5	56.8	54.9	53.2

TABLE XLVI

THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE TRADE, RESTAURANTS AND HOTELS SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	3.5	3.2	3.0	2.8	2.6
2. Technicians and Supervisors	2.7	2.5	2.3	2.1	2.0
3. Clerical Workers	9.3	8.6	7.9	7.3	6.8
4. Skilled and Semi-skilled Workers	41.7	38.6	35.7	33.0	30.5
5. Unskilled Workers	31.1	28.7	26.6	24.6	22.8

TABLE XLVII

THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE TRANSPORTATION AND COMMUNICATION SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	5.1	5.0	4.9	4.89	4.8
2. Technicians and Supervisors	8.0	7.9	7.7	7.6	7.4
3. Clerical Workers	19.6	19.2	18.9	18.5	18.1
4. Skilled and Semi-skilled Workers	158.7	156.3	153.8	151.5	149.3
5. Unskilled Workers	39.2	38.5	37.7	37.0	36.4

TABLE XLVIII  
 THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
 THE FINANCE AND INSURANCE SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	7.7	7.3	6.9	6.5	6.2
2. Technicians and Supervisors	4.1	3.9	3.6	3.5	3.3
3. Clerical Workers	20.8	19.7	18.7	17.6	16.7
4. Skilled and Semi-skilled Workers	5.4	5.1	4.9	4.6	4.4
5. Unskilled Workers	5.4	5.1	4.9	4.6	4.4

TABLE XLIX

THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE PUBLIC ADMINISTRATION SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	6.5	6.2	6.0	5.8	5.6
2. Technicians and Supervisors	7.8	7.5	7.2	7.0	6.7
3. Clerical Workers	16.2	15.6	15.1	14.5	14.0
4. Skilled and Semi-skilled Workers	47.4	45.7	44.1	42.4	40.8
5. Unskilled Workers	29.9	28.7	27.7	26.7	25.7



TABLE L

THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE EDUCATIONAL SERVICES SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	58.1	56.5	54.9	53.5	52.1
2. Technicians and Supervisors	192.3	188.7	185.2	178.6	172.4
3. Clerical Workers	13.8	13.5	13.1	12.7	12.4
4. Skilled and Semi-skilled Workers	20.4	19.8	19.3	18.7	18.2
5. Unskilled Workers	85.5	83.3	81.3	79.4	76.9

TABLE LI

THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
THE HEALTH SERVICES SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	40.5	39.1	37.6	36.2	35.0
2. Technicians and Supervisors	87.7	84.7	82.0	78.7	75.8
3. Clerical Workers	19.1	18.4	17.7	17.1	16.5
4. Skilled and Semi-skilled Workers	103.1	99.0	95.2	91.7	88.5
5. Unskilled Workers	98.0	94.3	90.9	87.7	84.7

TABLE LII  
 THE TECHNICAL COEFFICIENTS OF MANPOWER OF VARIOUS SKILL LEVELS FOR  
 THE OTHER SERVICES SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	45.9	43.1	40.5	38.0	35.7
2. Technicians and Supervisors	89.3	84.0	78.7	74.1	69.4
3. Clerical Workers	113.6	106.4	100.0	93.5	87.7
4. Skilled and Semi-skilled Workers	666.7	625.0	588.2	555.6	526.3
5. Unskilled Workers	416.7	384.6	357.1	333.3	312.5

### III. Sectoral Increments of Manpower Requirements

The projection of manpower requirements is based on the 1980 distribution of different manpower levels among the economic sectors, the expected rate of growth of output of the sectors and the rate of growth of productivity in the next five years.

Changes in sectoral demand of manpower of the various skill levels will be estimated by the following equation (see Chapter V for a full explanation of this equation):

$$\Delta D_{j,t}^i = \frac{1}{(1+g_j)^t} \cdot d_{j,t} \quad \Delta \text{GDP}_{j,t}$$

The estimated annual increases in demand for the different manpower levels of the various economic sectors are presented in Table LIII through LXIV. Each table represents the annual increases in demand for the various manpower levels needed to meet the increments in sectoral output for the specified sector as planned by the Economic Development Plan 1981-1985.

### IV. Manpower Requirements of the Various Economic Sectors

The growth of employment during the next five years will vary among the various sectors. The manpower requirements needed to meet the targets set by the second five year

TABLE LIII

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE AGRICULTURAL SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	139	146	152	157	162
2. Technicians and Supervisors	251	263	273	283	291
3. Clerical Workers	132	138	144	148	153
4. Skilled and Semi-skilled Workers	5,500	5,714	5,909	6,087	6,251
5. Unskilled Workers	4,231	4,445	4,642	4,827	5,000
Total	10,253	10,706	11,120	11,502	11,857

TABLE LIV

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE MINING AND QUARRYING SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	8	8	8	9	9
2. Technicians and Supervisors	16	16	15	19	18
3. Clerical Workers	8	8	8	9	9
4. Skilled and Semi-skilled Workers	444	430	412	495	476
5. Unskilled Workers	303	292	282	340	327
Total	779	754	725	872	839

TABLE LV  
ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE MANUFACTURING SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	343	397	452	508	587
2. Technicians and Supervisors	723	838	959	1,081	1,242
3. Clerical Workers	484	557	640	724	828
4. Skilled and Semi-skilled Workers	8,668	10,003	11,474	13,057	14,939
5. Unskilled Workers	1,342	1,555	1,778	2,012	2,312
<b>Total</b>	<b>11,560</b>	<b>13,350</b>	<b>15,303</b>	<b>17,3822</b>	<b>19,908</b>

TABLE LVI

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE ELECTRICITY, GAS AND WATER SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	172	177	180	198	196
2. Technicians and Supervisors	358	369	375	410	407
3. Clerical Workers	259	266	271	298	295
4. Skilled and Semi-skilled Workers	1,702	1,765	1,786	1,967	1,941
5. Unskilled Workers	315	324	329	361	358
Total	2,806	2,901	2,941	3,234	3,197



TABLE LVII

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE CONSTRUCTION SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	499	536	563	607	634
2. Technicians and Supervisors	718	674	813	869	921
3. Clerical Workers	281	296	313	331	362
4. Skilled and Semi-skilled Workers	9,537	10,089	10,688	11,399	12,080
5. Unskilled Workers	6,261	6,669	7,100	7,576	8,033
Total	17,297	18,354	19,477	20,782	22,030

TABLE LVIII

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE TRADE, RESTAURANTS AND HOTELS SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	109	109	108	106	107
2. Technicians and Supervisors	84	85	83	80	82
3. Clerical Workers	288	292	284	277	279
4. Skilled and Semi-skilled Workers	1,293	1,312	1,285	1,254	1,251
5. Unskilled Workers	964	976	958	935	935
Total	2,738	2,774	2,718	2,652	2,654

TABLE LIX

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE TRANSPORTATION AND COMMUNICATION SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	117	120	127	139	144
2. Technicians and Supervisors	184	190	200	220	222
3. Clerical Workers	451	461	491	537	543
4. Skilled and Semi-skilled Workers	3,650	3,751	3,999	4,394	4,479
5. Unskilled Workers	902	924	980	1,073	1,092
Total	5,304	5,446	5,797	6,363	6,480

TABLE LX

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE FINANCE AND INSURANCE SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	162	168	173	182	186
2. Technicians and Supervisors	86	90	90	98	99
3. Clerical Workers	437	453	468	493	501
4. Skilled and Semi-skilled Workers	113	117	123	129	132
5. Unskilled Workers	113	117	123	129	132
Total	911	945	977	1,031	1,050

TABLE LXI

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE PUBLIC ADMINISTRATION SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	189	192	192	197	202
2. Technicians and Supervisors	226	233	230	238	241
3. Clerical Workers	470	484	483	493	504
4. Skilled and Semi-skilled Workers	1,375	1,417	1,411	1,442	1,469
5. Unskilled Workers	867	890	886	908	925
Total	3,127	3,216	3,202	3,278	3,341

TABLE LXII

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE EDUCATIONAL SERVICES SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	1,104	1,187	1,208	1,284	1,355
2. Technicians and Supervisors	3,654	3,963	4,074	4,286	4,482
3. Clerical Workers	262	284	288	305	322
4. Skilled and Semi-skilled Workers	388	416	425	449	473
5. Unskilled Workers	1,625	1,749	1,789	1,906	1,999
Total	7,033	7,599	7,784	8,230	8,631

TABLE LXIII

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE HEALTH SERVICES SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	527	547	564	615	630
2. Technicians and Supervisors	1,140	1,186	1,230	1,338	1,364
3. Clerical Workers	248	258	266	291	297
4. Skilled and Semi-skilled Workers	1,340	1,386	1,428	1,559	1,593
5. Unskilled Workers	1,274	1,320	1,364	1,491	1,525
Total	4,529	4,697	4,852	5,294	5,409

TABLE LXIV

ESTIMATED ANNUAL INCREASES IN DEMAND FOR VARIOUS MANPOWER LEVELS FOR  
THE OTHER SERVICES SECTOR 1981-1985

Occupational Categories	1981	1982	1983	1984	1985
1. Professionals and Managerials	138	172	162	152	179
2. Technicians and Supervisors	268	336	315	296	347
3. Clerical Workers	341	426	400	374	439
4. Skilled and Semi-skilled Workers	2,000	2,500	2,353	2,222	1,632
5. Unskilled Workers	1,250	1,538	1,428	1,333	1,563
Total	3,997	4,972	4,658	4,377	5,160



Economic Development Plan 1981-1985 in a certain sector will depend on the growth rate of output of that sector, the improvement in the productivity of labor working in that sector, and the distribution of employment of the different skill levels in that sector in the base year, 1980. As these variables differ from sector to sector, we expect different sectoral rates of employment growth.

The total manpower requirements in each of the various skill levels for each skill will be calculated using the following equation (see Chapter V for a full explanation of this equation):

$$TLF_{j,t}^i = \frac{1}{(1+g_j)^t \cdot d_{j,i}} \Delta GDP_{j,t} + TLF_{j,t-1}^i$$

The manpower requirements regarding the various economic sectors during the next five years are summarized as follows:

#### IV.a. Agriculture

The agricultural sector is given high priority in the second Economic Development Plan 1981-1985. The plan aims at achieving, in this sector, an output growth rate of 7.4% per year. The results of the study show that the agricultural employment will show a net increase of 55.4 thousand in five years. Total employment is projected to increase from 146.8 thousand in 1980 to 202.2 thousand in 1985, with

a productivity growth rate of 4.1% per year. The annual growth rate of employment in this sector is projected at 6.6% during the next five years.

The projected number of total manpower requirements in the agricultural sector are shown in Table LXV.

#### IV.b. Crude Petroleum

It is assumed that there is no relationship between output in this sector and manpower requirements, because with the automation of production, more oil can be produced with the same manpower and lower production still requires about the same manpower level. The plan calls for 5.2% annual decrease in the output of this sector in order to prolong the time span of the oil reserves. A small absolute increase of about 1300 workers was estimated by the Secretariat of Oil and the Secretariat of Planning to be needed by the oil sector in the next five years. This is why on the basis of this figure an annual employment growth rate of 2.1% has been projected during the period 1981-1985. The results of the manpower requirements of this sector are shown in Table LXVI.

#### IV.c. Mining and Quarrying

This sector is interrelated with the activities of the construction sector since it provides the raw materials needed for construction work such as sand, crushed stone for roads, stone for concrete, etc. With the planned expansion

TABLE LXV

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE AGRICULTURAL SECTOR 1980-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	2,000	2,139	2,285	2,437	2,594	2,756
2. Technicians and Supervisors	3,600	3,851	4,114	4,387	4,670	4,961
3. Clerical Workers	1,900	2,032	2,170	2,314	2,462	2,614
4. Skilled and Semi- skilled Workers	79,300	84,800	90,514	96,423	102,510	108,761
5. Unskilled Workers	60,000	64,231	68,676	73,318	78,145	83,145
Total	146,800	157,053	167,759	178,879	190,381	202,238

TABLE LXVI

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE CRUDE PETROLEUM SECTOR 1981-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	1,400	1,429	1,459	1,490	1,521	1,553
2. Technicians and Supervisors	2,200	2,246	2,293	2,341	2,390	2,440
3. Clerical Workers	1,900	1,940	1,981	2,023	2,065	2,108
4. Skilled and Semi- skilled Workers	5,100	5,207	5,316	5,428	5,542	5,658
5. Unskilled Workers	1,100	1,123	1,147	1,171	1,196	1,221
<b>Total</b>	<b>11,700</b>	<b>11,945</b>	<b>12,196</b>	<b>12,453</b>	<b>12,714</b>	<b>12,980</b>

in the construction sector, an annual growth rate of 8% is planned for this sector. Taking into account a productivity growth rate of 3.8% in this sector during the period of the second Economic Development Plan, the model projects employment will increase by 4.0 thousand in five years. Thus, total employment will increase from 9.5 thousand in 1980 to 13.5 thousand in 1985, an annual employment growth of 7.2%. Table LXVII shows the estimated manpower requirements in this sector if the planned targets of output and productivity are to be met.

#### IV.d. Manufacturing

This sector is given a high priority in the second Economic Development Plan. The planners in Libya believe that diversifying the economic base must be a major concern of any Economic Development Plan. The second Economic Development Plan foresees an output growth rate of 21.6 per year, the highest of any sector during the next five years. Allowing a productivity rate of growth of 6.5% per year, it is estimated that there will be an employment increase in this sector of from 58.0 thousand to 135.5 thousand between 1980 and 1985, a net increase of 77.5 thousand in the next five years. The annual employment growth rate in this sector is projected to be 18.5%, the highest growth rate calculated among all sectors. The results of the estimates of labor requirements of this sector are presented in Table LXVIII.

TABLE LXVII

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE MINING AND QUARRYING SECTOR 1921-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	100	108	116	124	133	142
2. Technicians and Supervisors	200	216	232	247	266	284
3. Clerical Workers	100	108	116	124	133	142
4. Skilled and Semi- skilled Workers	5,400	5,844	6,274	6,686	7,181	7,657
5. Unskilled Workers	3,700	4,003	4,295	4,577	4,917	5,244
<b>Total</b>	<b>9,500</b>	<b>10,279</b>	<b>11,033</b>	<b>11,758</b>	<b>12,630</b>	<b>13,469</b>

TABLE LXVIII

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE MANUFACTURING SECTOR 1980-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	1,700	2,043	2,440	2,892	3,400	3,987
2. Technicians and Supervisors	3,600	4,323	5,161	6,120	7,201	8,443
3. Clerical Workers	2,400	2,884	3,441	4,081	4,805	5,633
4. Skilled and Semi-skilled Workers	43,600	52,268	62,271	73,745	168,802	101,741
5. Unskilled Workers	6,700	8,042	9,597	11,375	13,387	15,699
<b>Total</b>	<b>58,000</b>	<b>69,560</b>	<b>82,910</b>	<b>98,213</b>	<b>115,595</b>	<b>135,503</b>

#### IV.e. Electricity, Gas, and Water

With the expected rise in the standard of living, the level of electricity, gas, and water consumption will undoubtedly increase over time. Electricity, gas, and water in addition are considered vital if industrial projects are to expand. The plan calls for an annual growth rate of 15.1% in output of this sector. In spite of the projected productivity growth rate of 9.3%, the highest among all sectors, the employment growth rate will reach 12% per year during the years of the plan. Total employment in this sector will increase from 19.7 thousand in 1980 to 34.8 thousand in 1985, a net increase of 15.1 thousand. Table LXIX shows the projected manpower requirements for the electricity, gas, and water sector during the years of the plan.

#### IV.f. Construction

The construction sector influences all sectors of the economy. The building of houses, schools, roads, hospitals, etc., depends on this sector for their completion. It is expected that more capital-intensive technology will be used to carry out the construction activities. This is why an annual productivity growth rate of 3.2% is estimated for this sector and the output of this sector is projected to grow by an annual rate of 9.9%. Employment will increase from 179.6 thousand in 1980 to 277.5 thousand in 1985, a net employment increase of 97.9 thousand.

The projected estimates of the manpower requirements



TABLE LXIX

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE ELECTRICITY, GAS AND WATER SECTOR 1981-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	1,200	1,372	1,549	1,729	1,927	2,123
2. Technicians and Supervisors	2,500	2,858	3,227	3,602	4,012	4,419
3. Clerical Workers	1,800	2,059	2,325	2,596	2,894	3,189
4. Skilled and Semi- skilled Workers	12,000	13,702	15,467	17,253	19,220	21,161
5. Unskilled Workers	2,200	2,515	2,839	3,168	3,529	3,887
Total	19,700	22,506	25,407	28,348	31,582	34,779

of the construction sector during the next five years are presented in Table LXX.

#### IV.g. Trade, Restaurants, and Hotels

The Gross Domestic Product of this sector is projected to increase at an annual growth rate of 7% during the next five years. Taking into consideration a planned rate of growth of productivity of 8.1% per year, it is estimated that additional employment in trade, restaurants, and hotels will reach 13.5 thousand in five years. Total manpower requirements will increase from 42.9 thousand in 1980 to 56.4 thousand in 1985 with an annual employment growth rate of 5.6%. The total manpower requirements of this sector in the years of the Plan are estimated and presented in Table LXXI.

#### IV.h. Transportation, Communication, and Storage

This sector is projected by the second Economic Development Plan to grow at an annual growth rate of 7.4%. With a rate of productivity growth of 2.0% per year, it is estimated that total employment in this sector will increase by 29.4 thousand, from 71.7 thousand in 1980 to 101.1 thousand in 1985, with an annual employment growth rate of 7.1%. Table LXXII shows the levels of employment required by this sector in the next five years.

TABLE LXX

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE CONSTRUCTION SECTOR 1980-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	5,200	5,699	6,235	6,798	7,405	8,039
2. Technicians and Supervisors	7,500	8,218	8,982	9,795	10,664	11,585
3. Clerical Workers	2,900	3,181	3,477	3,790	4,121	4,483
4. Skilled and Semi- skilled Workers	98,800	108,337	118,426	129,114	140,513	152,593
5. Unskilled Workers	65,200	71,461	78,130	85,230	92,806	100,839
<b>Total</b>	<b>179,600</b>	<b>196,896</b>	<b>215,250</b>	<b>234,727</b>	<b>255,509</b>	<b>277,539</b>

TABLE LXXI

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE TRADE, RESTAURANT AND HOTELS SECTOR 1980-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	1,700	1,809	1,918	2,026	2,132	2,239
2. Technicians and Supervisors	1,300	1,384	1,469	1,552	1,632	1,714
3. Clerical Workers	4,500	4,788	5,080	5,364	5,641	5,920
4. Skilled and Semi- skilled Workers	20,300	21,593	22,905	24,190	25,444	26,695
5. Unskilled Workers	15,100	16,064	17,040	17,998	18,933	19,868
Total	42,900	45,638	48,412	51,130	53,782	56,436

TABLE LXXII

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE TRANSPORTATION AND COMMUNICATION SECTOR 1980-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	1,600	1,717	1,837	1,964	2,103	2,247
2. Technicians and Supervisors	2,500	2,684	2,874	3,074	3,294	3,516
3. Clerical Workers	6,100	6,551	7,102	7,503	8,040	8,583
4. Skilled and Semi-skilled Workers	49,300	52,950	56,701	60,700	65,094	69,573
5. Unskilled Workers	12,200	13,102	14,026	15,006	16,079	17,171
Total	71,700	77,004	82,450	88,450	94,610	101,090

IV.i. Finance, Insurance, and  
Business Services

This sector will increase in importance in the coming years. The second Economic Development Plan 1981-1985 projected an annual growth rate of output of 10% in this sector. This is the second highest projected output growth rate after the manufacturing sector. Taking into account an estimated productivity rate of growth of 5.2% per year during the next five years, it is estimated that employment will increase by 4.9 thousand during the years of the plan. Total manpower requirements in this sector will increase from 9.6 thousand in 1980 to 14.5 thousand in 1985, an annual employment growth rate of 8.6%. The projections of the manpower requirements of this sector are presented in Table LXXIII.

IV.j. Public Administration

Employment in the public administration sector includes employment in all public services except employment in education, health, and other services sectors.

The Gross Domestic Product of this sector is planned to grow by 5% per year. An annual rate of productivity growth of 3.8% is estimated during the next five years. The net increase in employment in the Public Administration sector is estimated to be 16.0 thousand in the next five years. The manpower requirement estimates in this sector show that total employment in this sector will increase from 65.0

TABLE LXXIII

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE FINANCE, INSURANCE AND BUSINESS SECTOR 1980-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	1,700	1,862	2,030	2,203	2,385	2,571
2. Technicians and Supervisors	900	986	1,076	1,166	1,264	1,363
3. Clerical Workers	4,600	5,037	5,490	5,958	6,451	6,952
4. Skilled and Semi- skilled Workers	1,200	1,313	1,430	1,553	1,682	1,814
5. Unskilled Workers	1,200	1,313	1,430	1,553	1,682	1,814
Total	9,600	10,511	11,456	12,433	13,464	14,514

thousand in 1980 to 81.0 thousand in 1985 with an annual employment growth rate of 4.5%. This is the lowest employment growth rate among all sectors with the exception of the oil sector. The projected estimates of manpower requirements of the Public Administration sector during the next five years are shown in Table LXXIV.

#### IV.k. Educational Services

Education has a very high priority in all Economic Development Plans in Libya. It is through education that human resources can be developed and economic and social goals can be realized. The GDP of the educational sector is projected to grow by an annual rate of 8% during the second EDP 1981-1985. It is estimated that the educational sector will require an additional 39.3 thousand workers in the next five years, presenting an annual productivity rate of growth of 2.8% during the five years of the plan. It is estimated that the total employment in this sector will increase by 7.4% per year, from 91.0 thousand in 1980 to 130.3 thousand in 1985. The projected manpower requirements of the educational sector during the years of the EDP 1981-1985 are shown in Table LXXV.

#### IV.l. Health Services

Improving the medical services has always been stressed in the Economic Development Plans of the country. Good health care affects labor productivity directly and



TABLE LXXIV

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE PUBLIC ADMINISTRATION SECTOR 1981-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	3,900	4,089	4,281	4,473	4,670	4,872
2. Technicians and Supervisors	4,700	4,926	5,159	5,389	5,627	5,868
3. Clerical Workers	9,800	10,270	10,754	11,237	11,730	12,234
4. Skilled and Semi- skilled Workers	28,600	29,975	31,392	32,803	34,245	35,714
5. Unskilled Workers	18,000	18,867	19,757	20,643	21,551	22,176
Total	65,000	68,127	71,343	74,545	77,823	80,864

TABLE LXXV

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE EDUCATIONAL SECTOR 1980-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	14,300	15,404	16,591	17,799	19,083	20,438
2. Technicians and Supervisors	47,300	50,954	54,917	58,991	63,277	67,759
3. Clerical Workers	3,400	3,662	3,946	4,234	4,539	4,861
4. Skilled and Semi- skilled Workers	5,000	5,388	5,804	6,229	6,678	7,151
5. Unskilled Workers	21,000	22,625	24,374	26,163	28,069	30,068
<b>Total</b>	<b>91,000</b>	<b>98,033</b>	<b>105,632</b>	<b>113,416</b>	<b>121,646</b>	<b>130,277</b>

indirectly through better performance on the job and reduction in absenteeism. The output growth rate of the health services is projected to be 10% per year with an annual productivity growth rate of 3.8%. The additional manpower needed by this sector will reach 24.8 thousand in the next five years. Total employment in the Health sector will increase from 45.8 thousand in 1980 to 70.6 thousand in 1985, an annual employment growth rate of 9%. Table LXXVI shows the estimates of the manpower which the health sector will require in the next five years.

#### IV.m. Other Services

The output of this sector, which includes a variety of services such as repair services, sanitary services, personal services, etc., is projected to grow at an annual rate of 8% in the next five years. With an annual productivity rate of growth of 6.5% as projected in the plan, it is estimated that the net increase in employment in the "other services" sector will reach 23.2 thousand in five years, as total employment will increase from 61.5 thousand in 1980 to 84.7 thousand in 1985, an annual employment growth rate 6.6% during the years of the plan. The projected labor requirements of the "other services" sector are presented in Table LXXVII.

#### V. The Supply of Indigenous Labor

The national element of the labor force amounted to 532.8 thousand in the year 1980. Of this total, 20.2

TABLE LXXVI

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE HEALTH SERVICES 1980-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	5,300	5,827	6,374	6,938	7,553	8,183
2. Technicians and Supervisors	11,500	12,640	13,826	15,056	16,394	17,758
3. Clerical Workers	2,500	2,748	3,006	3,272	3,563	3,860
4. Skilled and Semi- skilled Workers	13,600	14,940	16,326	17,754	19,313	20,906
5. Unskilled Workers	12,900	14,174	15,494	16,858	18,349	19,874
Total	45,800	50,329	55,026	59,878	65,172	70,581

TABLE LXXVII

THE ESTIMATED MANPOWER REQUIREMENTS OF VARIOUS SKILL LEVELS FOR  
THE OTHER SERVICES 1980-1985

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managerials	2,100	2,238	2,410	2,572	2,724	2,903
2. Technicians and Supervisors	4,100	4,368	4,704	5,019	5,315	5,662
3. Clerical Workers	5,200	5,541	5,967	6,367	6,741	7,180
4. Skilled and Semi- skilled Workers	31,600	33,600	36,100	38,453	40,675	43,307
5. Unskilled Workers	18,500	19,750	21,288	22,716	24,049	25,612
Total	61,500	65,497	70,469	75,127	79,504	84,664

thousand are professionals and managerials, 65.3 thousand are technicians and supervisors, 44.1 thousand are clerical workers, 271.4 thousand are skilled and semi-skilled workers, and 131.8 thousand are workers who possess no skills (see Table XXII in Chapter IV, p. 69).

Estimates of the number of the new Libyan entrants to the labor force during the second EDP 1981-1985 carried out by the Secretariat of Planning will be used in this study. The Secretary of Planning defines the new entrants as:

. . . all those among the Libyan boys and girls who will become economically active for the first time during the Five-Year Plan. Prior to that, they will have either completed their education or training or dropped out in the middle of the course, allowing, of course, for those who might not acquire even literacy at the time they first join the labor force.<sup>1</sup>

The estimates of the numbers of the new Libyan entrants to the labor market are shown in Table LXXVIII. The table provides the number of expected graduates from the various universities, high institutes, intermediate institutes, vocational and training centers operated by the various secretariats, and the expected number of workers who will acquire their skills abroad in the coming five years. Total supply of new workers entering the labor market during the next five years will be 206.2 thousand. The table shows the number of new entrants from the indigenous labor who will enter the

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<sup>1</sup>Ministry of Planning and Scientific Resesarch, Department of Economic and Social Planning, Demography and Manpower Planning Section, Manpower for the Five-Year Economic and Social Development Plan 1976-1980 (Tripoli, Libya, December, 1975), p. 9.

TABLE LXXVIII  
NEW ENTRANTS TO THE LABOR FORCE DURING  
THE PERIOD 1981-1985  
(LIBYAN NATIONALS)

	Totals
<b>1. Professional and Managerial</b>	<b>18,000</b>
Engineers	4,500
Medical Doctors	1,600
Teachers for Secondary General, Secondary Technical (including teacher training) Universities and High Institutes	5,500
Other Professional Workers	6,400
<b>2. Technicians and Supervisors</b>	<b>50,615</b>
Graduates of Agricultural Institutes	3,540
Graduates of Industrial Institutes	4,300
Graduates of Petroleum Institutes	1,253
Graduates of Electricity Institutes	3,752
Graduates of Applied Engineering Institutes (Secretariat of Education)	1,220
Graduates of Postal and Civil Aviation Institutes (Secretariat of Transport & Communications)	2,550
Graduate of Training Institutes (Secretariat of Public Services)	2,920
Graduates of Health Institutes	7,160
Graduates of Teacher Training Institutes	22,200
Graduates of Other Institutes (Social Service, Arabic Script, Sport, Music)	1,790
<b>3. Clerical Workers</b>	<b>11,035</b>
Graduates of NIPA (Secretaries and typists)	4,500
Graduates of Technical Institutes for Girls (Secretariat of Education)	3,200
Graduates of Secondary Vocational Education Institutes of Commerce (Secretariat of Education)	2,835
Graduates of Training Centre of Libya Central Bank	500
<b>4. Skilled and Semi-Skilled Workers</b>	<b>111,725</b>
Graduates of Vocational Training Centres (Secretariat of Public Services)	88,046
Graduates of Agricultural Training Centres	2,775
Graduates of Industrial Training Centres	3,700
Graduates of Training Centres of Transport and Communication Secretariat	2,500
Graduates of Health Training Centres	6,250
Graduates of Training Centre of Secretariat of Information	400
Graduates of Petroleum Training Centres	826
Electricity Training Centres	1,310
Those who will be trained abroad	5,918
<b>5. Unskilled Workers</b>	<b>14,825</b>
<b>TOTAL FOR ALL THE FIVE BROAD OCCUPATIONAL CATEGORIES</b>	<b>206,200</b>

Source: Secretariat of Planning, Manpower and Labor Productivity in the Transformation Plan 1981-1985 (Tripoli, Libya, July, 1980), pp. 59-60.

labor market, according to their occupational categories. The supply of new Libyan professionals and managerials will amount to 18.0 thousand. Of this number, 5.5 thousand will be teachers graduating from high institutes, 4.5 thousand Engineers, and 1.6 thousand medical doctors. Technicians and supervisors entering the labor market in the next five years will total 50.6 thousand. This number will be supplied by various institutes and training centres. Graduates of teacher training institutes will aggregate 22.2 thousand, graduates from the health institutes 7.2 thousand, agricultural institutes 3.4 thousand, industrial institutes 4.3 thousand, petroleum institutes 1.3 thousands, electricity institutes 3.7 thousand, applied engineering institutes 1.2 thousand, postal and civil aviation institutes 2.5 thousand and the rest from other training institutes as shown in Table LXXVIII.

The number of new Libyan workers entering the labor market as clerical workers in the next five years adds up to 11.0 thousand. This number will be made up of 4.5 thousand secretaries and typists graduating from the National Institute of Public Administration (NIPA), 3.2 thousand graduating from the Technical Institutes for Girls, 2.8 thousand graduating from Secondary Vocational Education Institutes of Commerce, and 500 workers graduating from the Training Center of Libya's Central Bank.

The largest number of Libyan nationals entering the labor market in the next five years comes under the skilled



and semi-skilled category. Various vocational and training centers will provide skills to thousands of the Libyan nationals who have the incentive to be trained in order to secure productive employment in the economy. It is estimated that the skilled and semi-skilled Libyan workers entering the labor market will aggregate 111.7 thousand during the years of the second Economic Development Plan. Of this number, 88.0 thousand will be supplied by the Vocational Training Centers of the Secretariat of Public Services. Agricultural training centers will supply 2.8 thousand workers, industrial training centers 3.7 thousand, training centers of the Secretariat of Transport and Communication 2.5 thousand, health training centers 6.2 thousand, training centers of the Secretariat of Information 400, petroleum training centers 800, electricity training centers 1.3 thousand, and training abroad will provide 6,000 skilled and semi-skilled workers. The unskilled Libyan workers will increase by about 15.0 thousand during the next five years.

The employment figures given in the Secretariat of Planning estimates, imply an attrition rate of 2% per year for the Libyan labor force due to death, retirement, disability, etc. With the application of this attrition rate to the above figures, the net increase in the supply of Libyan workers between 1980 and 1985 will amount to 145.6 thousand. The estimates of the net supply of the Libyan labor force of the various skill levels are presented in Table LXXIX.

Professional and managerial employment of Libyan

TABLE LXXIX  
 THE EXPECTED SUPPLY OF THE LIBYAN LABOR FORCE BY  
 OCCUPATIONAL CATEGORIES, 1980-1985  
 (THOUSANDS)

Occupational Categories	1980	1981	1982	1983	1984	1985
1. Professionals and Managers	20.2	22.6	25.3	28.3	31.6	35.3
2. Technicians and Supervisors	65.3	72.1	79.6	87.9	97.0	107.1
3. Clerical Workers	44.1	45.3	46.5	47.8	49.1	50.1
4. Skilled and Semi- skilled Workers	271.4	285.8	300.9	316.9	333.7	351.6
5. Unskilled Workers	131.8	132.2	132.6	133.0	133.4	134.0
Total	532.8	559.0	584.9	613.9	644.8	678.4

workers will increase by 15.1 thousand with an annual growth rate of 11.8% during the period of the second EDP 1981-1985. Libyan technicians and supervisors will increase by 10.4% per years during the next five years. The net increase of Libyan employment in this category will amount to 41.8 thousand during the period of the plan. The supply of the national clerical workers will show a net increase of 6.3 thousand during the next five years as their number will increase from 44.1 thousand in 1980 to 50.4 thousand in 1985, an annual growth rate of 2.7%.

The supply of the Libyan skilled and semi-skilled workers will increase from 271.4 thousand in 1980 to 351.6 thousand in 1985 showing an annual growth rate of 5.3%. The net increase of national skilled and semi-skilled workers will amount to 80.2 thousand in the next five years. The lowest supply of Libyan workers will be in the unskilled category showing a net increase of only 2.2 thousand workers in the next five years, an annual growth rate of .03%. The number of unskilled national workers which was 131.8 thousand in 1980 will reach 134.0 thousand in 1985.

The annual growth rate of total Libyan employment during the next five years is estimated to be 5.0%, as the number of Libyan workers totalled 532.8 thousand in 1980 and is estimated to rise to 678.4 thousand in 1985.

In this study, the estimated supply of the indigenous labor force will be deducted from the total manpower requirements and the difference will be interpreted as a

shortage or a surplus. The total manpower requirements of a given skill level in a given year if higher than the estimated supply of Libyan workers acquiring that skill level in the same year will represent the extent of the shortage of manpower at the specified skill level that must be filled by foreign workers in that year if the output and productivity targets as spelled out by the second Economic Development Plan 1981-1985 are to be met.

## VI. The Foreign Manpower Requirements

In the preceding analysis, the manpower requirements of the various skill levels for each sector of the Libyan economy were estimated. The estimates cover the years 1981 to 1985 and the results are presented in Table LXV through LXXVII. The total requirements of the various sectors of the Libyan economy of professionals and managerials, technicians and supervisors, clerical workers, skilled and semi-skilled workers, and unskilled workers are summarized in Tables LXXX, LXXXI, LXXXII, LXXXIII, and LXXXIV, respectively. The total demand of the Libyan economy for manpower at the various skill levels for the years 1981-1985 are summarized in Table LXXXXV. The supply of Libyan labor of various skill levels was also projected for the next five years and the results were presented in Table LXXIX.

By adding the total manpower requirements of skill level  $i$  for all economic sectors in the year  $t$  and then subtracting the supply of the indigenous labor force of the

TABLE LXXX

THE ESTIMATED MANPOWER REQUIREMENTS OF PROFESSIONAL AND MANAGERIAL  
CATEGORY FOR THE VARIOUS ECONOMIC SECTOR  
DURING THE PERIOD 1981-1985

Economic Sector	1981	1982	1983	1984	1985
1. Agriculture	2,139	2,285	2,437	2,594	2,756
2. Crude Petroleum	1,429	1,459	1,490	1,521	1,553
3. Mining & Quarrying	108	116	124	133	142
4. Manufacturing	2,043	2,440	2,892	3,400	3,987
5. Elect., Gas & Water	1,372	1,549	1,729	1,927	2,123
6. Construction (including housing)	5,699	6,235	6,798	7,405	8,039
7. Trade, Rest. & Hotel	1,809	1,918	2,026	2,132	2,239
8. Transport & Commun.	1,717	1,837	1,964	2,103	2,247
9. Finance & Insurance	1,862	2,030	2,203	2,385	2,571
10. Public Administration	4,089	4,281	4,473	4,670	4,872
11. Educational Services	15,404	16,591	17,799	19,083	20,438
12. Health Services	5,827	6,374	6,938	7,553	8,183
13. Other Services	2,238	2,410	2,572	2,724	2,903
<b>TOTAL</b>	<b>45,736</b>	<b>49,525</b>	<b>53,445</b>	<b>57,630</b>	<b>62,053</b>

TABLE LXXXI

THE ESTIMATED MANPOWER REQUIREMENTS OF TECHNICIANS AND SUPERVISORS  
 CATEGORY FOR THE VARIOUS ECONOMIC SECTOR  
 DURING THE PERIOD 1981-1985

Economic Sector	1981	1982	1983	1984	1985
1. Agriculture	3,851	4,114	4,387	4,670	4,961
2. Crude Petroleum	2,246	2,293	2,341	2,390	2,440
3. Mining & Quarrying	216	232	247	266	284
4. Manufacturing	4,323	5,161	6,120	7,201	8,443
5. Elect., Gas & Water	2,858	3,227	3,602	4,012	4,419
6. Construction (including housing)	8,212	8,982	9,795	10,664	11,585
7. Trade, Rest. & Hotel	1,384	1,469	1,552	1,632	1,714
8. Transport & Commun.	2,684	2,874	3,074	3,294	3,516
9. Finance & Insurance	9862	1,076	1,166	1,264	1,363
10. Public Administration	4,926	5,159	5,389	5,627	5,868
11. Educational Services	50,954	54,917	58,991	63,277	67,759
12. Health Services	12,640	13,826	15,056	16,394	17,758
13. Other Services	4,368	4,704	5,019	5,315	5,662
<b>TOTAL</b>	<b>99,648</b>	<b>108,034</b>	<b>116,739</b>	<b>126,006</b>	<b>135,772</b>

TABLE LXXXII

THE ESTIMATED MANPOWER REQUIREMENTS OF THE CLERICAL  
CATEGORY FOR THE VARIOUS ECONOMIC SECTOR  
DURING THE PERIOD 1981-1985

Economic Sector	1981	1982	1983	1984	1985
1. Agriculture	2,032	2,170	2,314	2,462	2,615
2. Crude Petroleum	1,940	1,981	2,023	2,065	2,108
3. Mining & Quarrying	108	116	124	133	142
4. Manufacturing	2,884	3,441	4,081	4,805	5,633
5. Elect., Gas & Water	2,059	2,325	2,596	2,894	3,189
6. Construction (including housing)	3,181	3,477	3,790	4,121	4,483
7. Trade, Rest. & Hotel	4,788	5,080	5,364	5,641	5,920
8. Transport & Commun.	6,551	7,012	7,503	8,040	8,583
9. Finance & Insurance	5,037	5,490	5,958	6,451	6,952
10. Public Administration	10,270	10,754	11,237	11,730	12,234
11. Educational Services	3,662	3,946	4,234	4,539	4,861
12. Health Services	5,541	3,006	3,272	3,563	3,860
13. Other Services	5,541	2,410	2,572	2,724	2,903
<b>TOTAL</b>	<b>50,801</b>	<b>54,765</b>	<b>58,863</b>	<b>63,185</b>	<b>67,760</b>

TABLE LXXXIII

THE ESTIMATED MANPOWER REQUIREMENTS OF SKILLED AND SEMI-SKILLED  
CATEGORY FOR THE VARIOUS ECONOMIC SECTOR  
DURING THE PERIOD 1981-1985

Economic Sector	1981	1982	1983	1984	1985
1. Agriculture	84,800	90,514	96,423	102,510	108,761
2. Crude Petroleum	5,207	5,316	5,428	5,542	5,658
3. Mining & Quarrying	5,844	6,274	6,686	7,181	7,657
4. Manufacturing	52,268	62,271	73,745	86,802	101,741
5. Elect., Gas & Water	13,702	15,467	17,253	19,220	21,161
6. Construction (including housing)	108,337	118,426	129,114	140,513	152,593
7. Trade, Rest. & Hotel	21,593	22,905	24,190	25,444	26,695
8. Transport & Commun.	52,950	56,701	60,700	65,094	69,573
9. Finance & Insurance	1,313	1,430	1,553	1,682	1,814
10. Public Administration	29,975	31,392	32,803	34,245	35,714
11. Educational Services	5,388	5,804	6,229	6,678	7,151
12. Health Services	14,940	16,326	17,754	19,313	20,906
13. Other Services	33,600	36,100	38,453	40,675	43,307
<b>TOTAL</b>	<b>429,917</b>	<b>468,926</b>	<b>510,331</b>	<b>554,899</b>	<b>602,731</b>



TABLE LXXXIV

THE ESTIMATED MANPOWER REQUIREMENTS OF UNSKILLED  
CATEGORY FOR THE VARIOUS ECONOMIC SECTORS  
DURING THE PERIOD 1981-1985

Economic Sector	1981	1982	1983	1984	1985
1. Agriculture	64,231	68,676	73,318	78,145	83,145
2. Crude Petroleum	1,123	1,147	1,171	1,196	1,221
3. Mining & Quarrying	4,003	4,295	4,577	4,917	5,244
4. Manufacturing	8,042	9,597	11,375	13,387	15,699
5. Elect., Gas & Water	2,515	2,839	3,168	3,529	3,887
6. Construction (including housing)	71,461	78,130	85,230	92,806	100,839
7. Trade, Rest. & Hotel	16,064	17,040	17,998	18,933	19,868
8. Transport & Commun.	13,102	14,026	15,006	16,079	17,171
9. Finance & Insurance	1,313	1,430	1,553	1,682	1,814
10. Public Administration	18,867	19,757	20,643	21,551	22,476
11. Educational Services	22,625	24,374	26,163	28,069	30,068
12. Health Services	14,174	15,494	16,858	18,349	19,874
13. Other Services	19,750	21,288	22,716	24,049	25,612
<b>TOTAL</b>	<b>257,270</b>	<b>278,093</b>	<b>299,776</b>	<b>322,692</b>	<b>346,918</b>

TABLE LXXXV  
 MANPOWER REQUIREMENTS OF THE VARIOUS SKILL LEVELS FOR THE LIBYAN ECONOMY  
 1980-1985 (THOUSAND)

Occupational Category	1980	1981	1982	1983	1984	1985
Professionals and Managerials	42.2	45.7	49.5	53.4	57.6	62.1
Technicians and Supervisors	91.9	99.6	108.0	116.7	126.0	135.8
Clerical Workers	47.1	50.8	54.8	58.9	63.2	67.8
Skilled and Semi-Skilled	393.8	429.9	468.9	510.3	555.9	602.7
Unskilled	237.8	257.3	278.1	299.8	322.7	346.9
<b>Total</b>	<b>812.8</b>	<b>883.3</b>	<b>959.3</b>	<b>1039.2</b>	<b>1124.4</b>	<b>1215.3</b>

same skill level in the year  $t$ , the shortage in the  $i^{\text{th}}$  level manpower will then be estimated. The shortage represents the number of foreign workers of skill level  $i$  that must be imported in order to execute the planned economic development targets. The foreign workers in the labor force then represent the imbalance between the supply of indigenous labor and demand at each skill level, because foreigners will be employed to fill the gap that exists between the supply of Libyan workers and the manpower requirements generated by the Economic Development Plan projects.

The anticipated supply of Libyan nationals, the manpower demand of the various skill levels and the difference between demand and supply by skill-level for the years 1980-1985 are presented in Table LXXXVI. The table shows that there will be a net increase of 256.9 thousand of non-Libyans employed in the next five years. Foreign labor, which aggregated 223.0 thousand in 1975, and 280.0 thousand in 1980, will increase to 325.4 thousand in 1981 and will be 536.9 thousand in 1985. The annual growth rate of non-Libyans in the labor force, thus, will amount to 13.9% during the next five years. The numbers and shares of the foreign workers in the total labor force according to their occupational categories are shown in Table LXXXVII. The following summarizes the findings of the study.

#### VI.a. Professionals and Managerials

In the category of Professional and Managerial personnel,

TABLE LXXXVI

THE PROJECTED MANPOWER DEMAND, THE EXPECTED SUPPLY OF THE LIBYAN LABOR FORCE,  
AND THE RESULTING DIFFERENCES BETWEEN DEMAND AND SUPPLY  
BY SKILL LEVELS 1980-1985 (THOUSANDS)

Occup'l Category	Projected Manpower Demand						Projected Supply of the Indigenous Labor Force						Foreign Manpower Requirements					
	1980	1981	1982	1983	1984	1985	1980	1981	1982	1983	1984	1985	1980	1981	1982	1983	1984	1985
Professionals and Managerials	42.2	45.7	49.5	53.4	57.6	62.1	20.2	22.6	25.3	28.3	31.6	35.3	22.0	23.1	24.2	25.1	26.0	26.8
Technicians and Supervisors	91.9	99.6	108.0	116.7	126.0	135.8	65.3	72.1	79.6	87.9	97.0	107.1	26.6	27.5	28.4	28.8	29.0	28.7
Clerical Workers	47.1	50.8	54.8	58.9	63.2	67.8	44.1	45.3	46.5	47.8	49.1	50.4	3.0	5.5	8.3	11.1	14.1	17.4
Skilled and Semi-Skilled	393.8	429.9	468.9	510.3	554.9	602.7	271.4	285.8	300.9	361.9	333.7	351.6	122.4	144.1	168.0	193.4	221.2	251.1
Unskilled	237.8	257.3	278.1	299.8	322.7	346.9	131.8	132.2	132.6	133.0	133.4	134.0	106.0	125.1	145.5	166.8	189.3	212.9
Total	812.8	883.3	959.3	1039.2	1124.4	1215.3	532.8	559.0	584.9	613.9	644.8	678.4	280.0	325.4	374.4	425.3	479.6	536.9

TABLE LXXXVII

EMPLOYMENT BY OCCUPATIONAL CATEGORY AND NATIONALITY AND PERCENTAGE OF NON-NATIONALS TO TOTAL EMPLOYMENT FOR THE YEARS 1975, 1977, 1978, AND THE PERIOD 1980-1985 (THOUSANDS)

Occupational Categories	1975*	1977**	1978**	1980***	1981	1982	1983	1984	1985
<b>Libyans and Non-Libyans:</b>									
1. Professionals	27.7	33.2	34.3	42.2	45.7	49.5	53.4	57.6	62.1
2. Technicians	58.1	70.2	72.3	91.9	99.6	108.0	116.7	126.0	135.8
3. Clerical workers	37.6	40.4	41.6	47.1	50.8	54.8	58.9	63.2	67.8
4. Skilled and Semi-Skilled	346.6	390.6	398.3	393.8	430.0	468.9	510.3	554.9	602.7
5. Unskilled	207.1	230.6	226.2	237.8	257.3	278.1	300.0	322.7	347.0
TOTAL	677.1	765.0	772.7	812.8	883.4	959.3	1039.3	1124.4	1215.4
<b>Non-Libyans:</b>									
1. Professionals	16.1	19.2	18.6	22.0	23.1	24.2	25.1	26.0	26.8
2. Technicians	20.5	24.1	20.8	26.6	27.5	28.4	28.8	29.0	28.7
3. Clerical Workers	6.1	5.2	2.4	3.0	5.5	8.3	11.1	14.1	17.4
4. Skilled and Semi-Skilled	95.2	120.3	117.6	122.4	144.2	168.0	193.4	221.2	251.1
5. Unskilled	85.1	97.4	92.9	106.0	125.1	145.5	167.0	189.3	213.0
TOTAL	223.0	266.2	252.3	280.0	325.4	374.4	425.4	479.6	537.0
<b>Percentage of Non-Libyans to Total Employment in each Occupational Category:</b>									
1. Professionals	58.0	57.8	54.2	52.1	50.5	48.9	47.0	45.1	43.2
2. Technicians	35.2	34.3	28.8	28.9	26.6	26.3	24.7	23.0	21.1
3. Clerical workers	16.4	12.9	5.8	6.4	10.8	15.1	18.8	22.3	25.7
4. Skilled and Semi-Skilled	27.5	30.8	29.5	31.1	33.5	35.8	37.9	39.9	41.7
5. Unskilled	42.2	42.3	41.1	44.6	48.6	52.3	55.7	58.7	61.4
TOTAL	32.9	34.8	32.7	34.4	36.8	39.0	40.9	42.7	44.2

Source: \*Secretariat of Planning, General Department of Economic and Social Planning, Demography and Manpower Planning Section, Labor Force Structure, 1977 (1977), p. 28.

\*\*Secretariat of Planning, Directorate General of Demography and Manpower Planning, Report on the Manpower Situation, 1978 (Tripoli, Libya, April, 1979), p. 30.

\*\*\*Secretariat of Planning, Directorate General of Demography and Manpower Planning, Manpower and Labor Productivity in the Transformation Plan 1981-1985 (Tripoli, Libya, July, 1980), p. 52.

the net increase in foreign employment will amount to 4.8 thousand in the next five years. Non-Libyan professionals and managerials will increase from 22.0 thousand in 1980 to 26.8 thousand in 1985 with an annual growth rate of employment of 4.0% during the years of the second Economic Development Plan 1981-1985. The non-Libyan percentage share of total employment in this category will decrease from 52.1% in 1980 to 43.2% in 1985. Thus the contribution of Libyans to total employment will increase from 47.9% in 1980 to 56.8% in 1985. The increasing rate of Libyanization in the Professional and Managerial category is due to the rising numbers of graduates from universities and higher institutions as well as the graduates of foreign higher educational institutions that are expected to join the labor force during the next five years. The estimates for the years 1980 till 1985 are presented in Table LXXXVI.

#### IV.b. Technicians and Supervisors

Foreign technicians and supervisors will increase by 2.1 thousand, from 26.6 thousand in 1980 to 27.5 in 1981 and will total 28.7 thousand in 1985. The annual growth rate of foreign technicians and supervisors is forecast to be 1.5% during the years of the plan. As Table LXXXVII shows, the percentage of non-Libyans to total employment in the technicians and supervisors category will decline from 28.9 in 1980 to 21.1 in 1985. Thus, the percentage rate of Libyan workers will increase from 71.1% in 1980 to 78.9% in 1985.

This increase in the number of Libyan workers is associated with the large numbers of Libyan nationals graduating from secondary technical schools, training centers, and teacher training institutes who are expected to join the labor force in the next five years.

#### IV.c. Clerical Workers

While the non-Libyans' share in the clerical occupations was declining in the last five years, the results of this study indicate that this trend will be reversed during the next five years. Total clerical foreign workers declined from 6.1 thousand in 1975 to 2.4 thousand in 1978 and then increased to 3.0 thousand by 1980 (Table LXXXVI). It is estimated that non-Libyan employment in this category, which amounted to 5.5 thousand in 1981, will reach 17.4 thousand in 1985. The percentage of foreign workers to total employment in this category will increase from 6.4 in 1980 to 25.7 in 1985. The need for personnel to carry out the clerical duties of the planned projects envisaged by the second Economic Development Plan 1981-1985 will exceed the supply of the indigenous clerical workers. Thus, increasing numbers of non-Libyans working in the clerical occupations will be needed during the years of the plan. This increase in foreign manpower in the clerical category may suggest the need to adopt modern techniques such as computers and better filing procedures in carrying out various clerical and administrative duties to reduce this growing need for clerical labor.

#### IV.d. Skilled and Semi-Skilled Workers

The skilled and semi-skilled occupations have always employed the largest absolute numbers of non-Libyan workers. The implementation of the projects set by the second Economic Development Plan will increase the demand for skilled and semi-skilled labor. The results of this study show that the total number of skilled and semi-skilled workers will increase from 393.8 thousand in 1980 to 430.0 thousand in 1981 and will reach 602.7 thousand in 1985. The projected increase of 80.2 thousand skilled and semi-skilled new Libyans who will join the labor market in the next five years will not be sufficient to reduce the country's dependence on foreign workers in this occupational category.

The supply of skilled and semi-skilled Libyan workers will increase from 271.4 thousand in 1980 to 351.6 in 1985 (Table LXXVIX). The imbalance between the demand for and supply of skilled and semi-skilled workers must be filled by non-Libyans in order to meet the targets of the plan. The results of this study show that the net increase in the demand for skilled and semi-skilled foreign workers will amount to 128.7 thousand in the next five years. The number of foreign workers in this category will increase from 122.4 thousand in 1980 to 144.2 thousand in 1981 and will reach 251.1 thousand in 1985. The percentage of non-Libyans of total employment in the skilled and semi-skilled category will increase from 31.1 in 1980 to 33.5 in 1981 and will reach 41.7 in the year 1985 (Table LXXXVII). Thus, the



upward trend in both the share and the absolute number of skilled and semi-skilled foreign workers will continue in the next five years. These trends go further to stress both the importance and the need for various training centers to provide the indigenous labor force with the required skills needed in this occupation category.

#### IV.e. Unskilled Workers

Foreign unskilled workers will increase by 107.0 thousand during the years of the plan. The results of the study indicate that the number of non-Libyan workers in this category will increase from 106.0 thousand in 1980 to 125.1 thousand in 1981 and will reach 213.0 thousand in the year 1985. By looking at the percentage of the non-Libyans of total employment in the unskilled occupations, it can be seen that the most important change will take place in this category. The percentage of foreign workers in this category will increase from 44.6 in 1980 to 48.6 in 1981 and will reach 61.4% in 1985. As Table LXXXVII shows, starting from 1982, there will be more foreigners than Libyans in the category of unskilled workers and this trend will continue in the following years of the plan.

As all the sectors of the economy expand, the relative representation of non-Libyans in the labor force will increase through 1985. The percentage of foreigners of the total labor force will increase from 34.4 in 1980 to 44.2 in 1985. The number of foreigners employed will increase from

280.0 thousand in 1980 to 537.0 thousand in 1985 with a net increase of 257.0 thousand workers during the next five years. The annual growth rate of foreign employment is estimated to be 13.9% during the next five years. But it should be pointed out that the number of foreign workers which need to be imported in the next years does not seem excessive if we consider both the objectives and the structural changes that are expected to take place in the course of the ambitious second Economic Development Plan.

## CHAPTER VII

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The economies of many countries have time and again depended to varying degrees on foreign labor. The United States has, in a sense, always depended on fresh supplies of foreign labor to meet its labor needs, yet such labor has generally come in the form of immigrants who lost little time in entering the national melting pot that has produced the American nation. This was also the case of the Latin American states, Canada, Australia, etc., who depended on foreign labor in the form of immigrants.

Other countries depend on foreign labor basically to meet the demand in those labor categories which the indigenous population does not seem willing to supply. France is host to more than a million Algerian workers, and West Germany has accepted many foreign workers from the Common Market countries, particularly from Turkey and Greece.

A new labor market phenomenon is the growing need for foreign labor in the oil-rich states. Those countries have developed ambitious development programs aiming at the restructuring of the social and economic life patterns in their countries and, given the billions of dollars they earn

as revenue from selling an abundant supply of oil to the rest of the world, they are in a position to spend their billions of dollars on those ambitious development plans and still have a revenue surplus.

Libya is one of those oil-rich states and with billions of dollars to spare has embarked as a matter of official policy on a series of ambitious social and economic development plans aiming at the restructuring of the country's social and economic life and plans to do this in the shortest possible time.

Libya is vast in size, yet small in population. It has a very young population, over half of which is below 15 years of age and, as such, still outside the labor market. It also has a population which, because of years of neglect which preceded the discovery of oil, is still short of the basic skills necessary to implement the official development plans.

Libya, like the other oil-rich Arab states which have large scale development plans, faced with the problem of insufficient national labor to implement these plans, could either have scrapped those plans, or extended the implementation period in order to develop the local labor force. Libya decided, as did many of the oil-rich Arab states, to proceed with her development plans on the assumption that their billions of petrodollars would insure the availability of the foreign labor necessary for the implementation of the projects of the development plans in the short period of

time set for them.

This has meant a massive infusion of foreign labor. Yet unlike the United States, Canada, and similar other countries, it has been official Libyan policy to treat foreign workers as aliens brought in to perform specific tasks who must leave the country once there is no need for them. No plan exists to encourage the foreign workers, or segments of those workers, to remain in the country and become Libyan citizens. The Libyan nationality law is still very strict on this matter; it provides that Libya is for the Libyans. Foreigners are in the country subject to contractual obligations based on need and are required to leave the country once their jobs are completed.

This study has investigated foreign labor in Libya and its importance to Libya's economic objectives. Using information and statistics contained in the second Economic Development Plan 1981-1985, a special model was developed to project the manpower requirements of the country for the years in question both in total figures and by sector and also the foreign manpower requirements of each occupational category.

### I. Summary of the Findings

This study shows that Libya as it begins to implement the second Economic Development plan cannot escape a phenomenal increase in the number of non-Libyan workers in the coming five years. Total manpower demand is projected to

increase from 812,800 workers in 1980 to 1,215,300 in 1985, and the supply of indigenous labor will rise from 532,800 in 1980 to 678,400 in 1985. Therefore, it is projected that foreign workers numbering 280,000 and representing 34.7 percent of total employment in 1980 will increase to 536,900 in 1985, representing 44.2 percent of total employment in that year (see Table LXXXVII). This means that the number of foreign workers must nearly double in five years if the targets of the various economic sectors as spelled out by the second Economic Development Plan are to be realized.

The total projected manpower requirements of all sectors of the Libyan economy during the 1980-1985 period are detailed and presented in Tables LXV through LXXVII.

The study projects the following foreign manpower requirements of the various occupational categories for the period in question (see Tables LXXXVI and LXXXVII):

1. Non-Libyan professional and managerial personnel will increase from 22,000 in 1980 to 26,800 in 1985 with an average annual growth rate of 4% during the same period. The contribution of non-Libyans in total employment to this category will decline from 52.1% in 1980 to 43.2% in 1985.
2. The demand for foreign technicians and supervisors will grow at an average annual rate of 1.5% during the next five years, from 26,600 in 1980 to 28,700 in 1985. The percentage of non-nationals of total employment in this category will decline from 28.9%

in 1980 to 21.1% in 1985.

3. Foreign employment in the clerical occupations will increase from 3,000 workers in 1980 to 17,400 in 1985, an average annual growth rate of 42.1% during the same period. The percentage of non-Libyans of total employment in the clerical category will rise from 6.4 to 25.7 during the same period.
4. The demand for skilled and semi-skilled foreign workers will increase from 122,400 in 1980 to 251,100 in 1985, an average annual growth rate of 15.5% during the same period. The percentage of non-nationals of total employment in this category will increase from 31.1 to 41.7 during the same period.
5. Foreign employment in the unskilled category will increase from 106,000 in 1980 to 213,000 in 1985, an average annual growth rate of 15.0% during the same period. The share of non-Libyans of total employment in this category will rise from 44.6% to 61.4% during the same period.

## II. Conclusions and Recommendations

This study shows that although there will be a gradual increase in the number of Libyan workers available, the demand for foreign workers will increase rapidly and may double in certain categories. The shares of non-Libyans in total employment in the clerical, the skilled and

semi-skilled, and the unskilled occupational categories will increase substantially over the 1981-1985 period. In contrast, the percentages of foreign workers in the professional and managerial and in the technician and supervisors categories will decrease. These results are detailed by year in Table LXXXVII.

Several factors account for this growth in foreign employment and the structure of foreign employment in Libya. Among them are the following:

1. The strong demand for labor in Libya resulting from the ambitious and extensive economic and social development plans which have been targeted for completion over a short period of time.
2. The quantitative and qualitative shortages in the Libyan work force.
3. The government decision to maintain a strong defense force and posture. With a proportionately large standing army, the armed forces have competed with the labor demands of the economic sectors.
4. Libya is a young nation with more than half the population still below the age in which citizens enter the labor market.
5. Women, who normally form at least half of the working age population, are still not part of the effective labor force because they have not received the necessary education.
6. The educational system is still in the developing



stage. New schools and universities are constantly being built and put into service and, in addition, thousands of students have been sent abroad for education and training. This is time-consuming and cannot be completed in the short period of five years.

In light of all the above and in consequence of the results of this study, the writer offers the following policy recommendations and alternatives:

1. Measures should be introduced to increase the availability of labor and to improve labor productivity. Such measures should develop the national human resources both quantitatively and qualitatively. These measures are long-term in nature and should include the following:
  - a. The expansion of the existing educational and training institutes with special emphasis being given to vocational and technical schools. This recommendation reflects the findings of this study that, otherwise, Libya's dependence on foreign workers in the skilled and semi-skilled category will increase disproportionately by 1985. There should also be a policy of encouraging preparatory schools' students to enter the vocational training institutes. This involves changing the attitudes of the young towards

careers based on vocational training. This can possibly be achieved if the state will provide those students with bigger monetary allowances during the vocational training period. Another recommendation is a policy of sending students abroad to specialize in specific technical skills where no such training is available in Libya.

- b. The state should develop a comprehensive plan to provide more women with adequate education, training, and the skills necessary to join the labor force. Although higher female labor force participation rates would probably mitigate the shortages of Libyan labor in all occupational categories, they could be particularly helpful in the clerical category which, otherwise, will experience a quadrupling in the percentage of foreign employment by 1985. New educational facilities in different fields should be established and those already established should be expanded. El-Huni, in his study of female labor in Libya, found that education had ". . . a strong and highly significant effect in pushing female labor force participation

up."<sup>1</sup>

- c. Manpower utilization and productivity in those sectors which employ large numbers of nationals, such as the public administration sector, should be improved. In particular, this calls for the introduction of modern technology and more advanced and effective methods of carrying out various clerical and administrative tasks.
- d. In areas and occupations which call for unskilled manual work, which is unattractive to many Libyans, modern techniques should be adopted (such as more mechanization and automation) to convert those unattractive manual tasks into lesser numbers of more attractive automated and mechanized jobs. The study has shown that, otherwise, Libya's need for foreign unskilled labor will increase during the next five years to considerably higher absolute and percentage levels than those which currently leave the country very vulnerable to the withdrawal of even unskilled labor by source countries.

2. Libya's immigration policies should be reconsidered

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<sup>1</sup>Ali El-Huni, "Determinants of Female Labor Force Participation: The Case of Libya" (unpub. Ph.D. dissertation, Oklahoma State University, 1978), p. 105.

with the following in mind:

- a. The possibility of encouraging certain types of non-Libyan workers to seek permanent residence in Libya and eventually acquire Libyan citizenship. This is essentially a political rather than an economic decision.
- b. Adopt an immigration policy which will, according to the Secretariat of Planning's suggestion,  
  
... take into account not only the types of workers needed, but also the countries from which they are recruited. These decisions should be based on a detailed analysis of the costs and benefits in Libya.<sup>2</sup>

Recent trends have been a growth in bilateral agreements which regulate the flow of foreign labor from specific countries.

3. Present and future development plans should be reconsidered in the light of the shortages of labor. This may call for the adoption of development plans which concentrate on capital intensive projects instead of labor intensive projects.
4. Finally, rigorous and continuous studies of various aspects of the manpower situation should be initiated. Such studies should take into consideration

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<sup>2</sup>Secretariat of Planning, Directorate General of Demography and Manpower Planning, Manpower and Labor Productivity in the Transformation Plan 1981-1985 (Tripoli, Libya, July, 1980), p. 47.

changes in the Libyanization policies and possible changes in the Economic Development Plan. Of particular value for future planning would be studies to project future foreign manpower requirements by detailed occupations for each economic sector.

It is hoped that the findings of this study will help the planners of Libya by providing them with a model for projecting manpower requirements for all economic sectors, and that the recommendations presented will help the country's planners to deal with the problems of both recruitment and training of manpower. Libya needs to overcome her quantitative and qualitative manpower shortages and to bring about a more efficient utilization of such resources. This study may also be of value to planners in other countries which face similar problems and, in particular, the other oil-rich Arab states.

This study concludes with an encouraging observation. It has shown that in some important respects, Libya's strategic vulnerability to foreign labor is decreasing. Its dependence on non-Libyans in the professional and managerial and in the technician and supervisors categories should decrease in percentage terms. This reflects significant progress by Libya in reducing its relative dependence on foreign labor in these critically important categories. It is hoped that in the period following the second Economic Development Plan Libya will continue to make marked improvements in reducing the vulnerability that results from heavy reliance on foreign manpower.

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