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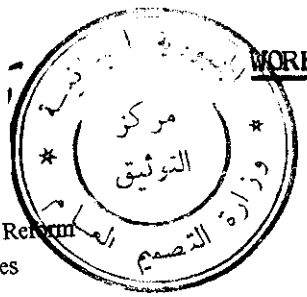

Republic of Lebanon
Office of the Minister of State for Administrative Reform
Center for Public Sector Projects and Studies
(C.P.S.P.S.)

PRELIMINARY ASSESSMENT

OF

MANPOWER RESOURCES AND REQUIREMENTS IN LEBANON

République Libanaise
Bureau du Ministre d'Etat pour la Réforme Administrative
Centre des Projets et des Etudes sur le Secteur Public
(C.P.E.S.P.)

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PART ONE

PREFACE. PARTICIPATION AND FINDINGS

I. PREFACE

In June - July 1959, the Economic Research Institute of the American University of Beirut, arranged a series of meetings to discuss a proposal for the assessment of manpower resources and requirements in Lebanon. During the meeting on July 9, 1959, Government representatives, and representatives of educational and professional institutions in the country, expressed their willingness to cooperate with members of the Institute in examing present and prospective resources of trained manpower in Lebanon.

Due to the absence of adequate statistical information on this subject, it was decided to combine available or easily obtainable data with the informed opinion, judgment and experience of persons that have a special knowledge of the occupations and professions that are being examined. For this purpose, eight major occupational fields were selected, and working groups were formed for each of the fields. However, particular difficulties were experienced with the Business Administration, Public Administration, and Skilled Workers groups mainly because of the complete absence of adequate information on which the participants could base their evaluation. The remaining occupational working groups, namely, Agriculture, Engineering, Medicine and Public Health, Science, and Teachers completed their preliminary assessment, and their reports are reproduced as appendices to Part II.

In presenting this report we would like to acknowledge the strong and enthusiastic support given to our project by His Excellence, The President of the Republic, General Fuad Shehab. We are also deeply grateful

to the many government officials, and representatives of educational and professional institutions whom we interviewed during the course of the assessment, and who participated in the preparation of the reports of the working groups. Finally, we acknowledge with gratitude the assistance of the Ford Foundation in providing the funds of the project, and in making available John F. Hilliard as manpower consultant to the project.

Paul J. Klat
Director
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II. PARTICIPATION

The following persons, listed according to alphabetical order, participated in the project, either by attending the meetings convened by the Economic Research Institute in June - July 1959, or by assisting in the work of the occupational working groups:

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III. FINDINGS AND RECOMMENDATIONS

The preliminary assessment of manpower resources and requirements in Lebanon brought out the following findings, and suggested the following recommendations:

1. Lebanon's greatest economic advantage lies not in its material resources, but in its human resources, Both the trade and services sectors, for example, thrive primarily on the efficiency, skill and adaptability of the country's manpower. Long-range investment in the training, development, and utilization of human resources is therefore the most necessary and the most profitable investment that Lebanon can make.

2. So far, no serious thought has been given in Lebanon to the question of manpower resources and requirements. This is understandable if one bears in mind that Lebanon is still in the early stages of economic development, and up till recently there has been little scope for the utilization of a rapidly increasing number of technical and professional personnel. Furthermore, the free enterprise economy of Lebanon has made it possible for the country's manpower resources to more or less automatically adjust themselves to requirements; where no such adjustments occur locally, shortages tend to be met by imports from abroad, and surpluses are exported, mainly to the less developed Arab countries.

3. However, both the local and the regional scenes are changing rapidly. Lebanon is currently experiencing an extended period of rapid economic

and social growth. Similarly neighboring Arab countries, and countries in the Arab Gulf area, are proceeding at an accelerated pace of economic and manpower development. The mobility of semi-skilled, skilled, and technical manpower in the region is therefore likely to be siginificantly impaired in the future. This suggests the need for immediate planning in the field of manpower both on a country and regional basis.

4. Manpower planning has been defined as the total process by which there is achieved proper development and wise utilization of the human resources of a nation in attaining the objectives to which the nation has committed itself. It involves:

   a. Estimating the kinds and amounts of human resources needed to meet all critical programs of national development:

   b. Developing programs of education and training to produce the additional manpower required; and

   c. Developing the policies and mechanisms needed to distribute human resources to the point of need and to assure their effective utilization.

5. In Lebanon, manpower planning is likely to encounter a number of difficulties: First, there is a lack of adequate statistical data on the dimensions of manpower resources. The last official census of population was undertaken in 1932. The figures available on the total pooulation, the working population, the occupational distribution of the working population, and the distribution of the population by districts are no more than rough guesses. Secondly, the educational system in Lebanon provides a non-coherent mixture of private and public schools, with a large number of

foreign schools. Any attempt to relate a manpower program to the field of education is, therefore, likely to meet difficulties in the reconciliation of such a program with the purposes and objectives of these foreign educational groups. Third, any accurate forecasting of resources and requirements for Lebanon will require close regional cooperation in the field of manpower planning. Finally, there is as yet no governmental unit established for the stimulation and coordination of action in the manpower field.

6. The preliminary assessment conducted during the past year has indicated that on the basis of available information, no overall appraisal can be made of manpower shortages and surpluses in Lebanon. The following sectorical shortages and surpluses were suggested in the reports of the occupational working groups:

   a. In the agricultural field, the working group found a current need for specialized technicians (with at least an M.S. Degree). They also found a surplus of agricultural technicians with a secondary education only.

   b. In the Engineering field, the group felt that in the absence of an effective economic development program, in the government section, no shortages are expected. On the contrary, if there is an increase in engineering graduates from local or foreign universities, a surplus of engineers is likely to develop, unless industry starts employing engineers on the technical and managerial level.

   c. In the field of Medicine and Public Health, the group felt that the demand for physicians, nurses, public health technicians etc.. is likely to increase. The greatest demand is likely to be in the field of nursing. A surplus is expected in the field of pharmacy.

d. In the field of teaching, the group felt that in order to meet future demands, particularly if elementary education is to be made free and compulsory, the number of teachers in Lebanon must be increased by at least 3,000 during the coming five years. The group also felt that although the school population is expected to increase, Lebanon would not require the importation of teachers either in the elementary, higher elementary, or secondary levels of education, except in certain technical fields, such as practical arts, home-making, and vocational education.

7. The preliminary assessment also indicated the need for detailed studies in the following occupational fields:

a. In the field of Science, to survey scientific personnel in the following four sectors of employment:

(i) Government

(ii) Industry and Commerce

(iii) Private practice

(iv) Educational and Research Institutions.

b. In the field of Agriculture, to survey physical, technical and human resources. A study is also recommended of agricultural labor, its number, characteristics, mobility etc...

c. In the field of Business Administration, to survey the commercial and industrial sectors with a view to determining current and projected needs and availabilities.

d. In the field of Public Administration, to determine current and projected needs and availabilities.

e. In the field of skilled workers, to survey unskilled, semi-skilled, and skilled labor in collaboration with the labor syndicates.

8. The following specific recommendations were also made by the occupational working groups:

a. The establishment of a National Register of Scientific and Technical Manpower.

b. The establishment of a "National Scientific Council" to advise the Government, Employers and Educational Institutions on the development and utilization of scientific manpower.

c. The establishment of a Central Agricultural Statistical Office.

9. As the training of men and women is a lengthy process, and requires making plans, taking decisions and investing capital for long periods, which may extend to six years, before any large increase in trained manpower can be expected to appear, it is recommended that immediate consideration be given to the implementation of the recommendations made in paragraphs 7 and 8 above.

10. In particular, the following recommendations are made:

a. The government should establish, as soon as possible, a manpower unit to stimulate and coordinate action on manpower problems. This unit would do well to avail itself of the advisory services of the groups who contributed to the present preliminary assessment.

b. Consideration should be given to the feasibility of a joint study of manpower problems by those countries in the region between which there is a significant flow of trained manpower.

c. Manpower study seminars should be conducted for key faculty members of each major educational institution in the country, to draw attention to the growing importance of harmonizing educational activity and national development.

PART TWO

THE MAIN REPORT

IV. INTRODUCTION

A. Basic Features of the Lebanese Economy

Lebanon is a small country with scarce natural resources. Its arable land is very limited, its mineral resources almost non-existent, and it has no oil. But on the credit side, Lebanon has attractive scenery and a mild climate which make it a pleasant holiday resort all the year round. Lebanon is also located at an important "cross - roads of nations", and its people have specialized in skills suited to their geographic position.

No systematic analysis of the growth of the economy and changes in its structure is possible in the absence of continuous national income statistics. A study of the National Income of Lebanon was undertaken for 1950 by a team of Economic Research Institute Staff Members headed by Dr. A. Y. Badre. Dr. Badre has since attempted to project the estimate into subsequent years, on the basis of the 1950 figures and few other quantitative (including the 1955 Industrial Census) and qualitative indices indicating the extent of growth in each sector of the economy. The national income estimates are in this way brought up to 1958.(1)

In any case a still picture can be drawn of the year 1950, with enough detail to point to the relative importance of the various economic sectors. The percapita income was about 800 Lebanese Pounds for 1950 - which at market rates then was about $ 250, (compared to $ 150 in Turkey and $ 120 in Egypt in the same year). The breakdown into sectors follows:

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(1) Two other estimates, based on Badre's figures for 1950, were attempted by Professor P. Klat for 1956 and 1957 (Le Commerce du Levant, No. 369) and by Doxiadis and Associates for 1956 (Economic Data for the Ekistic Programme of Lebanon, Beirut, 1957). Klat used Doxiadis figures for 1956 and projected them to 1957. Both estimates differ from those of Dr. Badre for the same year.

TABLE I

National Income of Lebanon

1950

Sectors	Millions L.L.	%
1. Agriculture	206.5	20
2. Industry	119.7	11
3. Handicraft	17.7	2
4. Construction	41.7	4
5. Transportation & Communication	36.2	4
6. Trade	285.5	28
7. Banking	47.4	5
8. Real Estate (rents)	96.0	9
9. Government	71.8	7
10. Professional and other Services	100.2	10
11. Net Domestic Product (factor cost)	1022.7	—
12. Net Income from abroad	3.6	—
13. Total National Income Accruing to Residents	1026.3	100

Source : A. Badre, " The National Income of Lebanon" Middle East Economic Papers, Beirut, 1956, p. 13

Table I brings out certain peculiarities of the Lebanese economy. More income is generated in the trade sector than in any other sector. In fact trade and finance - an auxiliary activity to trade - generate between them about one third of the Lebanese national income. Agriculture comes in the second place, and industry in the third. If the construction sector which is really a part of industry is combined with the industrial sector, then industry will not stand in magnitude far below agriculture. Services, including transport services come next in importance to agriculture and industry. These figures lead to the description of the Lebanese economy as mainly a trade economy in contrast to neighbouring Arab economies which are mainly agricultural economies. Generalized, this peculiarity is the preponderance of services over goods production in the national product. The ratio is 65 to 35 while in most other countries the pattern is reversed.

In order to ascertain whether the above picture has been altered since 1950, we may compare the share of each sector of the economy in national income, using Dr. Badre's extrapolation for 1950-52 and 1955-57 inclusive. It appears that between these two periods the services sector increased its share in national income from 10 to 11 percent; the public sector from 6 to 7 percent; transportation and communication sector from 4 to 5 percent; and the financial sector from 4 to 6 percent. The agricultural sector on the other hand showed a drop in its share in national income from 19 to 16 percent, the industrial sector from 13.7 to 13 percent, and the construction sector from 4 to 3 percent. The main sector, trade, maintained its share in national income at 30 percent.(1)

(1) But if we compare Doxiadis' estimate for 1956 or Klat's estimate for 1957 with Dr. Badre's figures for 1950, the direction of change in the various sectors will alter. Thus according to Doxiadis or Klat the construction sector increased its share in national income substantially (from 4 to about 6 percent). The industrial, financial and services sectors also appear to have increased their respective shares while that of agriculture and trade declined a little. The transportation and communication sector contributed the same share to national income in 1956 and 1957 as in 1950.

We may conclude therefore that no basic changes did occur in the structure of the economy in the period 1950-57. Only agriculture was lagging behind in the growing economy of Lebanon.

Although Lebanon is primarily a country of trade and services, when the individual incomes of the various sectors of the economy are compared it is, on the other hand, still true that about half the population derive their income, wholly or partly from agriculture, and a little more than half of the people are rural in the sense that they live in rural areas. Rural exodus to urban centers has been continuous since the second world war, but is rather slow. Seasonal migration is more important.

The population - land and population - capital ratios are on the whole high - consequently the pressure on natural and man - made resources is great. Coupled with a relatively backward technology and a low level of technical skills, this results in low productivity of the factors generally and of labor in particular, especially in agriculture and industry. The economic problem in Lebanon is one of equalizing the levels of development of the various sectors in the economy. The trade and services sectors are more highly developed than the other sectors, in their efficiency, their credit and banking institutions, and their income level. The expansion and improvement of agriculture and industry consist mainly in bringing their levels of performance closer to those of trade and services, by pulling commodity production upward rather than by pushing services production downwards.

But in spite of the fact that Lebanon is deficient in natural resources that are basic to the production of goods, it is nevertheless a relatively prosperous country through the efforts of its human resources. Its large

and well-developed middle class earns for it a good national income through business and professional services. In addition to local services the Lebanese also provide regional services as bankers, brokers, traders, contractors, engineers, physicians, printers, etc... Therefore Lebanon's greatest economic advantage lies not in its natural resources, but in its human resources. As a result,,the ability of the economy to provide its own capital formation at a rate large enough to catch up with the population increase and with the insistent social pressure for higher standards of living, will depend on the ability of Lebanon to put to greater use its human capital and to improve the quality of the available manpower resources.

B. The Importance of Manpower Studies

Manpower, or the human resource in economic activity, has two main significant roles in the process of development. First, that of a productive service or resource where it acts very much like the other productive services in the economic system and contributes to the normal functioning of that system. Second, that of an active factor of production where it reacts to a multiple of challenges that are technological, institutional, cultural, political, or demographic. In all these cases it is the human factor that picks up the challenge and translates it into some form of activity, thus bringing it within the orbit of the economic system. As Dr. John F. Hilliard stated in his address at the American University of Beirut on July 8, 1959, ".. a nation's people are the basic resource for development, as, indeed, they are the main reason for development."

Whatever the reasons that may have made economists in the past underemphasize the role of manpower in economic development, today this factor

is receiving its due share of attention and study. Underdeveloped countries, by virtue of the state of underdevelopment itself, badly need to have reliable and detailed knowledge of their manpower resources. Such knowledge is required as a first step before any proper and enlightened planning for development is possible. Planning in turn necessitates an appraisal of future requirements in manpower resources. Only if such appraisal is made will it be possible for a community to meet what the development it desires calls for in manpower resources of specific skills and aptitudes.

Manpower planning means the total process by which there is achieved proper development and wise utilization of the human resources of a nation in attaining the objectives to which the nation has committed itself. Therefore, it includes identification of the human skills required for every major activity, and a determination of the magnitude and timing of such requirements. It involves the use of existing, or development of new institutions to produce the manpower required, at the right time and in the right quantity and quality. It requires careful integration of the various institutions so that in the total of their functions they produce the people with the skills and knowledge necessary to the nation's economic, technological, intellectual and spiritual growth.

C. Difficulties of Manpower Studies in Lebanon

Up till now, no stock-taking of manpower resources has been undertaken for Lebanon by any agency, public or private. In view of the quickening pace of development, the Lebanese economy is now in need of such stock taking if the economic effort of the community is not to be dampened by manpower shortages and inadequacies in certain sectors of activity. A survey of

existing manpower resources and an appraisal of future requirements in the content of the present economic system and in the circumstances of shortage of statistical information are likely to be a difficult undertaking.

The first main difficulty stems from the fact that Lebanon has no integrated economic development plan. The five year plan presented by the "Planning Board" in 1958 was only concerned with the public sector of the economy, and yet it was not presented to Parliament nor was it adopted officially by the government. Some of the projects included in the plan were, however, executed by the ministries concerned, but this was done as an individual ministry project and with no reference to the integrated plan. As a result of this official attitude toward development planning, it would be very difficult indeed to comprehend the type and volume of economic activities in the various fields in the future even in the public sector. The lack of long-term plans in industry (and all types of activity in general) and the preponderance of small - even single proprietorship - firms add to the difficulties of forecasting future activities in the private sector.

The second type of difficulty is the lack of statistical data on the dimensions of manpower resources and on economic activity in general. Not even the total population is known for sure.

A third difficulty is the profusion of educational systems in the country and the freedom of foreign institutions - especially of higher education - to carry on their educational programs as they choose.

A fourth problem is the high mobility of Lebanese professionals and skilled workers as between Lebanon and neighbouring countries. In time, when these countries develop their own human resources, the Lebanese nationals

will have to seek new markets or return home. Or it could be that the attraction of working in these neighbouring countries will increase for some time. Thus, any accurate forecasing of resources and requirements for Lebanon will require regional cooperation.

D. Objective, Scope, and Methodology of the Present Study

In view of the difficulties referred to above only a preliminary assessment of manpower resources and requirements in Lebanon is attempted in the present study.

The objective of this assessment is to examine present and prospective resources of trained manpower in Lebanon, to project manpower requirements three to five years into the future, based upon foreseeable economic and social developments, and to establish a preliminary basis for an action program to meet the manpower requirements which now exist or which are likely to develop during the next five years.

The scope of the present study will be limited to a general consideration of the characteristics of the Lebanese population and labor force as far as existing data permits, and a more detailed appraisal of Lebanese manpower especially in occupations requiring two or more years of formal training beyond high school, with special attention to manpower resources and requirements in occupations in which serious shortages or surpluses now exist or are impending.

The following occupations have been selected for special study:

1. Agricultural technicians
2. Business Administration personnel
3. Engineers
4. Medical and public health personnel

5. Public Administration personnel
6. Scientists
7. Skilled Workers.
8. Teachers

Due to the absence of adequate statistical information, it was decided to combine available or easily obtainable statistical data with the informed opinion, judgment and experience of persons that have special knowledge of the occupations selected.

For each occupation, a working group was formed, and each group prepared its own report with the assistance of members of the Economic Research Institute. The present report was also prepared by members of the Economic Research Institute.

V. DIMENSIONS OF MANPOWER RESOURCES IN LEBANON

A. Population Characteristics

There is a notorious lack of statistical data on the dimensions of manpower resources. The last official census of population was undertaken in 1932. However, ten years later, another census of population was conducted by the Food Rationing Agency during the Allied occupation of Lebanon (generally known as Mira). The results were never published. Extrapolations based on the 1942 census were published for the year 1943.

As far back as 1948 a foreign firm engaged by the Lebanese government to survey the Lebanese economy noted that "the population is increasing at a rapid rate and the density is becoming such that the provision of adequate nourishment and productive occupation for all is becoming a problem of the first magnitude. The methods to be adopted to deal with this problem cannot be properly devised until more detailed knowledge is obtained about the population".(1) However, nothing came out of this plea.

Not even the total population is known for sure. The population data available at present are the 1932 census figures revised and adjusted from year to year. The most recent figures obtained from the Ministry of Interior refer to 1953. They put the total population at 1,416,600. The method of adjusting the population figures from year to year has been, invariably, to adopt a rate of growth of 23 per thousand per annum.(2) This refers only to Lebanese

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(1) The Economic Development of Lebanon, (Report by Sir A.Gibb & partners, 1948)

(2) This rate has been selected on the basis of the difference between birth and death rates without taking into consideration the population movement either inland (from one district to another) or abroad.

nationals. The figures thus calculated are further adjusted for the loss of population through emigration or for foreigners acquiring Lebanese nationality. Lebanese emigration has averaged 3,000 per annum since the end of Word War II, mostly to Latin America, Africa and the Arab Gulf area. Palestinian refugees and foreigners residing in Lebanon are not included in the figures.

The number of Palestinian refugees residing in Lebanon was estimated at 124,990 in 1956.(1) And the number of resident foreigners is estimated at 20,000.

Present population: It appears to us that the available figures for 1956 estimated by Doxiadis Associates(2) provide a reasonable basis for guessing the present population. The same rate of increase used by the Ministry of Interior will be used for the purpose of projection. This will put the 1959 total population figures at 1,547,000.

Distribution of population by districts: The Ministry of Interior does not take into account population movements between districts in making its estimate.(3) The only possible way of distributing the total population among the five main districts (Mohafazat) of the country, is to adopt the 1959 figures arrived at above, and divide them by the percentages derived from the distribution of the 1942 census. This will provide the following result:

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(1) Distributed as follows: Beirut and Suburbs 48,290 - Saida 28,235 - Tyre 26,320 - Tripoli 13,835 - Beka'a 80,310.

(2) 1,445,000; the I.M.F., gives nearly the same figure 1,450,000, and the U.N. Statistical service 1,425,000 for 1955. (Economic data for the Ekistic Programme of Lebanon, 1957).

(3) In other words, the Ministry of Interior determines the population distribution according to the place of birth (In fact, the place of birth of the head of the family determines that of the members of his family in most cases), and not according to the place of residence. Therefore the figures supplied by the Ministry for 1953 are obviously erroneous and do not represent actual population distribution. These are the figures: Beirut 220,850 - Mount Lebanon 422,190 - North Lebanon 307,715 - South Lebanon 264,870 - Beka'a 201,070. Even if they refer to the distribution by place of birth these figures appear to be unreliable. For if we compare the present figures for south Lebanon with that of the 1942 census figures, we find that the average rate of increase per annum for 1943-53 comes to 5.6 % which is a very high rate of increase for Lebanon.

	% distribution, 1942	Population, 1959
Beirut	22.4	346,530
Mount Lebanon	25.2	389,840
North Lebanon	21.6	334,150
South Lebanon	15.9	245,970
Beka'a	14.9	230,500
	100.0	1,547,000

The above figures require some adjustment in order to reflect the following known facts about the population: First, it is generally beleived that the population of the capital, Beirut, is nearly 400,000 and not 346,000. Second, it is also generally beleived that the population of Beirut has been increased considerably by the influx of rural people from South Lebabon and Mount Lebanon. The picture that emerges from these adjustments shows that more people are living in Beirut than in any other Mohafaza, that Mount Lebanon and North Lebanon come next, with South Lebanon and the Beka'a having nearly the same population. (The population of South Lebanon may exceed that of the Beka'a by a few thousands).

Distribution of population by sex: The figures available at the Ministry of Interior give the following ratios for 1953: Males 53 % and Females 47 %. However, the 1942 census showed a 51 to 49 ratio, and this appears to be more reasonable. The lower ratio of females in the figures of the Ministry of Interior may be explained by the lower registration in the case of female births.

Population of Working Age: The only available figures for the distribution of population by age, are those of the 1942 census, brought up to date by Gibb & partners for the end of 1944.

TABLE II

Distribution of Lebanese population by age groups, 1944

Age group	Population in each group	Percentage of total
0 - 4	149,000	14
5 - 11	170,000	16
12 - 20	213,000	20
21 - 51	393,000	37
52 - 65	96,000	9
66 and over	43,000	4
	1,064,000	100

In table II, the age-groups 0 - 20 years, cover half the total population, and the age groups 21 - 65 years, i.e. the population of working age, cover 46 per cent of the population. However, consideration that a part of the population in the age groups 12 - 20 years, does work, we may conclude that a little over half of the population in 1944 was of working age.

It is not possible to bring these figures up to date. We may venture to say, however, that the percentage of the population of working age was higher in 1959 than it was in 1943. The basis for this opinion is as follows: According to the results of the 1942 census, 622,500 or 59 per cent of the population were included within the age group 4 - 33 years, and by extrapolation we can estimate that about 636,500 fall in the age group 4 - 34 years. Assuming that they all remained alive in 1959, then approximately 636,500 are now in the age group 20 - 50, i.e. 41.1 per cent of the 1959 total population, compared to 35.7 per cent in the age group 20 - 50 in 1943. Even, allowing for deaths during the periods compared, the 1959 percentage remains higher than that of 1943.

Obviously not all the people of working age in Lebanon can be included in the labor force, especially in the case of women and students.

B. Size of Labor Force

The labor force of a country includes all individuals who are able to work, and either have a job or are actively seeking work. The statistical definition of the term "Labor Force" varies somewhat from country to country. It follows that labor force data of different countries are not strictly comparable.

In the United States, the labor force is currently defined as the sum of all persons reported to be employed or unemployed during a certain specific

week. The "employed" category covers all persons 14 or older who have jobs or business for pay or profit, including employers and the self employed, unpaid family workers in a store or on a farm who help produce a saleable product or service, and employees of non-profit enterprises and government agencies. The "Unemployed" category includes persons 14 and older who have no job or business of the above mentioned sort and are seeking such employment during the survey week.(1)

No data exists on the size of the labor force in Lebanon, and there is no basis for making a reasonable estimate. The following figures are presented here only to provide a rough order of magnitude of the distribution of the economically active population on the various sectors of the economy. The estimates for the industrial and the government sectors are perhaps the most reliable. The economically active population in Lebanon is estimated at 610,000 distributed as follows:

Industrial Sector	40,000	(in establishments of 5 workers and above)(2)
	20,000	(in establishments of less than 5 workers)
Buildings and Construction(3)	20,000	
Agriculture	300,000	
Trade, Banking, Services and Professions	153,000	
Transport	30,000	
Government	17,000	
Total	580,000	(cont')

(1) Long, C.D., The Labor Force Under Changing Income and Employment, Princeton University Press, 1958, p. 42.
(2) 35,000 in 1955 according to the Industrial census of Lebanon.
(3) Lebanese workers only.

(cont' from page 29)

Armed Forces	10,000
Unemployed	20,000
Total	610,000
Secondary school and University Students	44,000

The figures on unemployed are merely rough guesses, as no unemployment information is gathered by any public or private institution. In a mature industrial economy, accurate and up-to-date unemployment statistics are very important because of the pressure that may develop when unemployment is high. In Lebanon, while such pressures are not completely unknown, it would be more accurate to state that as far as national development is concerned underemployment is more of a problem than unemployment.

It is very difficult to assess accurately the extent of underemployment in Lebanon. However there is no doubt that a sizeable segment of the labor force is not fully employed, and in some cases can be completely withdrawn from the labor market without any noticeable effect on the gross national product. Examples are the subsistence farmers and the occasional city workers and seasonal workers.

C. Occupational Distribution of the Population

In the 1942 census, all the people that were counted were asked about their occupati ns. But the results showed 754,200 or 75% of the total population as having no occupation (including students). This percentage is too high. It is very probable that a part of the people that were shown as not employed preferred not to declare their occupation to the census authority.

Table III

Occupational Distribution of the Lebanese population, 1943

Merchants	18,713
Farmers	23,149
Independents	20,983
Employees	24,566
Laborers	134,168
Servants	17,871
Civil Servants	9,173
Doctors	1,313
Lawyers	564
Engineers	504
Students	51,902
Without Occupations	702,293
Total	1,004,199

Because of the predominent category that was declared without occupation, this table is not of great use. The number of farmers is obviously underestimated, unless the farmers' families working on the land, and the share croppers and agricultural workers are not considered as farmers. But in this case the number of laborers should reach a much higher level than that reported in the census. Even if we include all the population reported as laborers in the agricultural sector, the number of people working in farming would be

approximately 157,000, i.e. 15.6 % of the total population. This is undoubtedly too low.

More recently, Doxiadis and Associates prepared an estimate of the employed population and its distribution by sectors for 1956. The total number of employed people was given as 434,000.

Table IV

Employment by Sectors of the Economy

Lebanon 1956

Agriculture	219,330
Industry	37,870
Handicraft	11,700
Construction	32,500
Transportation and Communication	23,600
Trade and Banking	58,600
Government	16,100
Other Services	34,300
Total	434,000

This figure represents no more than a rough personal estimate by the Doxiadis team. It assumes that in 1956 only 30 % of the population was employed. It is believed that this figure is a little too low. The industrial handicraft sector, for instance, is underestimated. The figure produced for industry proper does not include olive oil extraction, electricity and power

(2100 workers), water supply and sanitary services. It also does not include any type of repair shops. The figure for handicrafts and all industrial establishments having less than five workers should be close to 20,000, since the number of establishments having less than 5 workers is estimated at 9,550,(1) and an average of two workers per establishment may be safely assumed. The number of people employed in agriculture, (estimated by Doxiadis as representing one half the total employed population, which is quite reasonable) seems to be on the low side in absolute figures. Unlike in other occupations, all the members of the family, including children, help the head of the family in the agricultural sector. Employment in the construction sector, on the other hand, seems to be overestimated, as it is known that most of the construction workers are Syrian nationals.

Starting from 1950, the Ministry of Social Affairs required each establishment in the country to file with the Ministry a record of the people employed in the establishment, their age, sex, sect, marital status, number of children, date of employment and date of leaving the establishment. Each establishment was also required to bring its file up-to-date annually. If complete and accurate, these files would provide needed information on the employment situation in Lebanon in the various sectors of the economy. Unfortunately, out of the total number of establishments, estimated by the Ministry of National Economy at 31,184,(2) only about 3,000 establishments supplied the information to the Ministry of Social Affairs. These records were tabulated by the statis-

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(1) Ministry of National Economy, "Nombre d'entreprises industrielle, commerciales et de services opérant au Liban, 1955056." The total Number of industrial establishments is estimated at 10,400 while the industrial census of 1955 (Establishments of 5 workers & above) covered only 1860 est.

(2) Ibid.

tical section of the Economic Research Institute and distributed on the sectors of the economy. The grand total amounted to 36,984 persons. However, not all the files were brought up to date, and therefore some inaccuracies exist. Furthermore, the 3,000 establishments covered seemed to be above the average in size of employment.

In any case, two tables were prepared on the basis of the above information, and will be presented here for what they are worth. The first table gives the occupational distribution of the persons employed in each sector, and the second the breakdown of employed people into Lebanese nationals and foreigners, also in each sector.

Table V

Total Number of the Lebanese Working Force as Registered in the Ministry of Social Affairs (1) Distributed by Sector and Type of Skills

Type of Work	Grand Total	Trade	Services	Industry	Finance
Total	36984	6803	14817	13566	1798
Engineers	214	33	54	126	1
Engineers Aides	6	2	-	4	-
Mechanics	1254	427	336	480	11
Foremen	784	66	454	235	29
Accountants	812	285	295	137	95
Draftsmen	106	4	65	37	-
Balcksmiths	504	67	77	360	-
Clerks	8359	2856	2413	1976	1114
Executives	933	180	431	190	132
Experts	248	77	75	93	3
Plumbers	48	7	23	18	-
Machine Operators	143	6	93	44	-
Electricians	531	78	236	217	-
Skilled Workers	5423	443	2380	2600	-
Carpenters	573	112	115	346	-
Doctors	27	-	20	7	-
Teachers	736	-	735	1	-
Nurses	237	-	235	2	-
Missionaries	33	-	32	1	-
Unskilled Workers	16013	2160	6748	6692	413

(1) Total Number of establishments registered is 2987.

Source: Ministry of Scoial Affairs, Beirut, Lebanon.

Table VI

Total Number of The Lebanese Working Force as Registered in The Ministry of Social Affairs, Distributed by Nationality and Sector

Nationality	Grand Total	Trade	Services	Industry	Finance
Total	36984	6803	14817	13566	1798
Total Lebanese	33255	6044	12937	12594	1680
Total Foreigners	3729	759	1880	972	118

Source: Ministry of Social Affairs, Beirut, Lebanon.

VI. Educational and Training Institutions in Lebanon

As remarked earlier in this report, there is a profusion of educational systems in Lebanon, especially in the higher education level in foreign institutions which are allowed the freedom to carry on their educational programs as they choose.

In the following sections a brief background information is given regarding the educational system and its development in the last few years:

A. Primary and Secondary Education

The duration of study, in both public and private schools is generally twelve years. Some private schools provide, also, for an additional two years of pre-elementary education. The twelve years are divided as follows: Children beginning at the age of six enter the elementary level of education which is usually five years. At the end of the fifth year children sit for the government "Certificate" examination. Passing this examination, they enter the higher elementary level (Takmili) which is usually four years. At the end of this level, students of both public and private schools sit for a government "Brevet" examination. After securing the "Brevet" diploma, students may enter the secondary level (Thanawi) of education which comprises three years. At the end of the second year, students sit for the "Baccalauréat Première Partie" examination, and also at the end of the third year, they sit for the "Baccalauréat Deuxième Partie" examination.

After completing the Secondary level of education, students are admitted to the University level of education at one of the Universities of the country or abroad. Students may also seek technical or vocational education, after the "Brevet" or the "Baccalauréat" depending on the school

1. Government Schools

When Lebanon attained its dependence in 1943, it had 348 Public Schools in which 23,000 students were enrolled.

Table VII presents Public education figures in the last few years:

Table VII

Number, enrollment and teachers of Primary and Secondary Public Schools in Lebanon 1955 - 1959

Year	Number of Schools	Number of Students	Number of Teachers
1955	1027	87061	3457
1956	1039	88438	3794
1957	1065	89070	4045
1958	1105		4385
1959	1290	105922	5001

Table VIII shows the regional distribution in 1959

Table VIII

Regional distribution of the number, enrollment and teachers of Primary and Secondary Public Schools in Lebanon, 1959

	Beirut	Mount Lebanon	Bekaa	South Lebanon	North Lebanon
Number of Schools	41	439	223	280	307
Number of Students	11658	25047	16502	21897	30818
Number of Teachers	816	1262	647	885	1391

Enrollment in Public Schools increased tremendously between 1943 and 1955. Taking 1943 as the base year (=100), enrollment reached 378 in 1955 - an average increase of 23 % per annum, compared to an average increase of 5.4 % per annum for the more recent period 1955-59.

2. Private Schools

In 1943 Lebanon had 1279 Private Schools in which 108,000 students were enrolled. Table IX presents private education figures for the last few years:

Table IX

Number, enrollment and teachers of Primary and Secondary Private schools in Lebanon, 1955 - 1959

Year	Number of Schools	Number of Students	Number of Teachers
1955	841	133935	3764
1956	1028	150114	4142
1957	1045	153287	4397
1958	1152	157006	4845
1959	1200	160000	5200

Table X shows the regional distribution in 1959

Table X

Regional Distribution of the number, enrollment, and Teachers of Primary and Secondary Private Schools in Lebanon, 1959

	Beirut	Mount Lebanon	Bekaa	South Lebanon	North Lebanon
Number of Schools	219	479	173	102	227
Number of Students	63446	48458	14559	9674	23863
Number of Teachers	2239	1583	408	324	646

Of the 841 Schools operating in 1955, 117 were foreign schools (86 Primary schools and 31 Secondary schools). Total attendance was 21,048.

The rate of increase of attendance in Private Schools was notably lower than in Public Schools in the period 1943 - 1959, especially in the 1943 - 55 period when the average rate of increase was only 2 % per annum. However, in 1955-59 it rose to 4.8 % per annum.

In conclusion we may say, first, that enrollment in all primary and secondary schools in Lebanon slightly more than doubled between 1943 and 1959, and second that the distribution of students between public education and private education altered substantially in the same period. From 17.5 % in 1943, enrollment in public schools increased to 39.4 % in 1955 and 39.9 % in 1959 of total enrollment in Lebanon.

B. Technical and Vocational Education

This type of education is still in a rather primitive stage in Lebanon, and therefore will be dealt with rapidly in this study.

There are, in Lebanon only seven government vocational schools, with a total enrollment, in 1955, of 806 students. Between 1955 and 1959 enrollment increased to 975 students. The curriculum of these schools include such subjects as mechanics, electricity, metal works, filing, printing, carpentry, industrial chemistry and the like, and one school is specialized in Hotel Catering. Three of these schools are located in Beirut, one in Tripoli, one in Sidon, one in Zahlé and one in Deir Kamar. Four other government schools teach agriculture, and are located in Beirut, Beshmizzine, Rayak and Ghazir.

There are in Lebanon sixteen private vocational schools, with a total enrollment of 317 in 1955. Seven of these schools teach nursing, one of which train also in midwifery, and four schools specialize in Radio and wireless. The others train their students in typography, shoe-making and the like.

There are also 35 private schools which may be classified as vocational schools and teach such subjects as languages, book-keeping, commerce, dress - making, dancing and ballet, with a total enrollment of about 9000 in 1959.

Eight foreign vocational schools were also operating in Lebanon in 1955, with a total enrollment of 273.

Higher Education

I. Brief Historical Background

The following is a brief historical background of the six Universities in Lebanon according to date of establishment.

1. American University of Beirut

The American University of Beirut was founded in December 1866, by Dr. Daniel Bliss of American Missionaries of Syria. It was first known as the Syrian Protestant College. In 1920 it was renamed the American University of Beirut. The American University of Beirut is composed of the following Faculties:

(a) Faculty of Arts and Sciences, established in 1866.

(b) Faculty of Medical Sciences, including:

i. School of Medicine, established in 1867

ii. School of Pharmacy, established in 1871

iii. The School of Nursing, established in 1905

iv. The School of Public Health, established in 1954

(c) Faculty of Engineering, established in 1951.

(d) Faculty of Agricultural Sciences, established in 1952.

2. University of Saint Joseph

The University of Saint Joseph is a private institution that was founded in 1875 by the Society of Jesus. It received the title of University in 1881. Its different Faculties and schools are the following:

(a) Faculty of Medicine, established in 1883.

(b) Faculty of Oriental Studies, established in 1902 and became an Institute in 1937.

(c) Faculty of Law, established in 1913.

(d) School of Engineering, established in 1919.

( ) Faculty of Theology.

3. Beirut College For Women

This College was formerly known as the American Junior College for Women. It was founded in 1924, when a freshman college course was offered at the American School for Girls. The College was established under the auspices of the Board of Foreign Missions of the Presbyterian Chruch in the U.S.A.

The College offers a two year course leading up at the end of the sophomore year either to the degree of Associate in Arts or to the degree of Associate in Applied Science, and a four-year course leading up at the end of the senior year either to the Bachelor of Arts degree or to the Bachelor of Science degree.

4. Academie Libanaise

The Academie Libanaise was founded in 1937. It is divided into the following schools:

(a) School of Music, established in 1939.

(b) School of Architecture, established in 1943.

(c) School of Art, established in 1943.

(d) School of Literature and Social Sciences, established 1948.

(e) School of Politics and Economics, established in 1949.

(f) School of Law, established in 1953.

5. Middle East College

This College was founded in 1939 in Beirut by the Seventh-day Adventist Mission, and was at first called the Ecole Adventiste. Later on, its name was changed to the Adventist College of Beirut. In 1946, it was reorganized and renamed the Middle East College. It offers certificates for graduates completing

a two-year program, and a Bachelor of Arts degree for students completing a four-year program in one of the following fields:

(a) Religion and Biblical Languages.

(b) Applied Arts.

(c) Social Sciences and Fine Arts.

(d) Education.

(e) Languages and Literature.

(f) Science and Mathematics.

6. Lebanese University

The Lebanese University was founded in 1951. So far, faculties of Education, Economics and Administration, and Finance have been established. There are plans for the establishment of Faculties of Medicine and Engineering. A Higher Teachers' College is attached to the University.

II. Students Attending Lebanese Universities

1. Total number of students	1957	1958
American University of Beirut	2040	2177
University of Saint Joseph	1569	1649
Beirut College For Women	450	370
Academie Libanaise	380	465
Lebanese University	...	374

République Libanaise
Bureau du Ministre d'Etat pour la Réforme Administrative
Centre des Projets et des Etudes sur le Secteur Public
(C.P.E.S.P.)

3. Total Number of graduates by Degree

a. American University of Beirut

	1957	1958	1959
B.B.A.	32	35	27
B.A.	135	97	109
B.S.	68	61	47
M.B.A.	3	3	4
M.A.	29	32	38
M.S.	3	3	7
B.S.Agr.	38	19	17
M.S.Agr.	-	1	9
B.E.	44	35	63
B.Arch.E.	12	5	7
M.E.	-	3	-
B.S.Pharm.	10	6	13
M.D.	34	24	31
Nursing	13	11	18
B.S.Nursing	3	3	-
Public Health	69	83	91

b. Beirut College For Women

In the summer of 1957, 178 students graduated with college degrees. Of these, 66 students received their B.A. and B.S. degrees, while the rest received their Sophomore certificates.

c. Academie Libanaise

In the summer of 1957, fifty-seven students graduated from the Academie Libanaise: nine from the school of Architecture, fourteen from the School of Literature and Social Sciences, eleven from the School of Politics and Economics, and twenty-three from the School of Law.

d. Middle East College

In June 1957 there were fourteen graduates. Out of these, three weregranted certificates in secretarial sciences or elementary education, and eleven were granted Bachelor of Arts degrees in Business Administration, Education, or in Theology.

C. Lebanese Students attending Foreign Universities

The Institute of International Education reported that 544 Lebanese students attended colleges or Universities in the United States during the academic year 1958-59. Of these 495 were male students and 49 female students.

Students studying in the U.S. during 1958-59 were thus divided by field of specialization:

Agriculture		6
Business Administration		27
Education		19
Engineering		254
	Chemical 21	
	Civil 74	
	Electrical 52	
	Industrial 5	
	Mechanical 69	
	Other 33	
Humanities		55
Medical Sciences		37
	Dentistry 4	
	Medicine 9	
	Nursing 3	
	Pharmacy 3	
	Pre Medicine 18	
Physical and Natural Sciences		66
	Biology 13	
	Chemistry 20	
	Geo-Sciences 7	
	Mathematics 12	
	Physics 14	
Social Sciences		59
Others		6
No Answer		15
Total		544

No information is available on Lebanese students attending foreign Universities outside the United States. But their number may be safely put at more than double the number of Lebanese students in the United States.

VII. Overall Appraisal of Manpower Shortages and Surpluses by the Occupational Working Groups

As stated earlier in this report, eight occupational fields were selected for study, and working groups were formed for each of the occupational fields. However difficulties were experienced with the Business Administration, Public Administration, and Skilled workers groups mainly because of the absence of adequate information on which the participants could base their evaluation. The remaining occupational groups, namely Agriculture, Engineering, Medecine and Public Health, Science and Teachers completed their preliminary assessment and their full reports are reproduced as appendices to this part.

In this section, the over-all appraisal of manpower shortages and surpluses in each of the five occupational fields, as determined by the working groups, is presented:

1. Agriculture: While there is a current need for specialized technicians (with an M.S. Degree) in the field of agriculture, it must be remembered that Lebanon is a small country, and the employment field can be saturated rather quickly. For example, there is already a surplus of agricultural technicians with a secondary education only. These are mainly graduates of the four government agricultural schools. It may be that a change in the curricula of these schools would better equip the graduates for field work in private enterprises and agricultural extension. However, if twenty graduates

a year can create a surplus, then great caution must be exercised in evaluating current needs. It is felt that as a first step the physical, technical and human resources in the agricultural sector must be determined. It is only on the basis of this information that the training and utilization of human resources can be improved.

2. Engineering: On the basis of available information it is very difficult to give an overall appraisal of shortages or surpluses in the engineering field. There are a number of vital statistics that are lacking. For example, no figures are available on the current requirements, and the requirements that are likely to develop during the coming five years. No figures are also available on the number of Lebanese that will be graduating from Europe during the coming five years. Finally, the pattern of future economic development is still uncertain. However, the following very tentative appraisal is suggested:

In the absence of an effective economic development program in the government sector no shortages are expected in the engineering field. On the contrary, if there is an increase in local and foreign graduates a surplus of engineers is likely to develop, unless industry starts employing engineers on the technical and managerial level.

But it is felt that the government technical services require at least twice the number of engineers which they have now. On the other hand, when the number of engineers working in private practice increases, it will be possible to compel proprietors to have engineers for some jobs for which up to now no engineers are required (For example, heating, air conditioning, electric installations, mechanical installations, etc...) and also press the government to allow only engineers to offer tenders for engineering contracts.

3. Medecine and Public Health: It is a known fact that the Medical Schools and Hospitals in Lebanon provide not only for the needs of Lebanon, but also for the needs of a number of Arab Countries. As a result, no accurate appraisal of shortages and surpluses in the field of Medecine and Public Health is possible without regional cooperation on this subject. For example, new and large hospitals are being constructed in Kuwait, Saudi Arabia, and other Arab Gulf countries. These will require physicians, specialists, nurses etc. One can therefore roughly conclude that the demand for Medical and Public Health personnel is likely to increase.

Perhaps the greatest demand is for nurses. The demand is both qualitative and quantitative. For this reason the A.U.B. is planning a degree program in nursing. In the field of pharmacy, no shortage is anticipated. On the contrary, a surplus is expected, as the number of pharmacies in Lebanon is limited in proportion to population.

4. Science: It is not possible to give an accurate overall appraisal of shortages and surpluses in the field of science in Lebanon on the basis of the information available.

5. Teachers: In order to meet future demands, particularly if elementary education is to become compulsory, the number of teachers in Lebanon must be increased by at least 3000 during the coming five years. But Lebanon does not require the importation of teachers either in the elementary, higher elementary, or secondary level of education, except in certain technical fields, such as practical arts, home-making, and vocational education.

APPENDIX 1

A G R I C U L T U R E

At the request of the Director of the Economic Research Institute, Beirut, Professor Gordon Ward, representing the School of Agricultural Sciences of the A.U.B., and Mr. Mohammad Jannoun, representing the Ministry of Agriculture, met with members of the Economic Research Institute to consider the manpower resources and requirements in Lebanon in the field of Agriculture.

Although Lebanon is primarily a country of trade and services when the individual incomes of the various sectors of the economy are compared, it is still true that at least 50 per cent of the total population derive their income wholly or partly from agriculture, and about 60 percent are rural in the sense that they live in rural areas. Thus, the economic development of Lebanon, and the raising of the standard of living of the common man will continue to depend for some time to come on the successful development of agricultural production. Trained men will be required not only to maintain the present rate of growth in the agricultural sector, but also to step up the production and enhance its competitive position in regional and world markets.

Due to the absence of adequate statistical information on the subject, only a preliminary assessment can be attempted in this report. This preliminary assessment is based on the information that is available to us, and on our own personal opinion and judgment. The report attempts to answer the following eight questions which were raised by members of the Economic Research Institute.

First Question: What are the main types of technical occupations in the field of Agriculture in Lebanon.

The main types of occupations are the following:

a. Crop husbandry and horticulture.

b. Animal husbandry.

c. Poultry husbandry.

d. Veterinary.

e. Plant protection.

f. Farm supplies and machinery.

g. Marketing and processing of farm products.

h. Forestry.

i. Agricultural Industries.

j. Irrigation.

k. Agricultural Statistics.

l. Teaching and Research.

Second Question: What is the estimated number of technical personnel employed in the field of Agriculture, by the main occupations selected

No figures are available to us on the distribution of agricultural personnel according to the main types of occupations selected in question one above. Only the following estimates are available:

I Trained Manpower Resources in the field of Agriculture and Animal Husbandry in Lebanon, January 1960.

(1) Total number of agricultural engineers employed by the government 61

(2) Total number of agricultural engineers in private employment (including 11 A.U.B., graduates). 34

(3) Total number of agricultural engineers who applied unsuccessfully for a permanent job at the ministry of agriculture, Oct., 1959 - Jan., 1960. (A.U.B., graduates excepted). 30

(4) Total number of Lebanese agricultural engineers graduated from A.U.B. 65

(5) Total number of Lebaness agricultural engineers graduated from the A.U.B., and residing in Lebanon. 48

(6) Total number of agricultural engineers employed at A.U.B., (A.U.B., graduates : 7; Foreign: 1). 8

(7) Total number of Veterinary doctors employed by the government 15

(8) Total number of Veterinary doctors in private employment (2 Lebanese and 1 French). 3

(9) Total number of Veterinary personnel in Lebanon 18

(10) Total number of agricultural officials in the Ministry of Agriculture - classified by grade:

3rd Grade	1
4th Grade	3
5th Grade	9
6th Grade	23
7th Grade	23
8th Grade	19
Unclassified	8
Total	86

(11) Total number of Veterinary officials in the Ministry of Agriculture-classified by grade:

2nd Grade		1
6th Grade		6
7th Grade		37
8th Grade		4
	Total	48

Sources : For (1) Ministry of Agriculture, for (2) Agricultural engineers' Syndicate members, for (3) The Ministry of Agriculture. The people in this group are presumably either employed in private business (Agricultural supplies and agricultural machinery firms and even insurance companies etc.) or in the government on part time basis, or are seeking employment (i.e. presently unemployed), but are not members of the agricultural engineering syndicate. The number of A.U.B., graduates who applied for a permanent job at the Ministry of Agriculture is 14, for (4), (5) and (6) A.U.B., School of Agricultural Sciences, for (7) the Ministry of Agriculture, for (8) and (9) available data at the A.U.B., School of Agriculture, for (10) The Ministry of Agriculture - out of the 86 agricultural officials, 24 were sent abroad, in the last few years, on scholarships for training, mainly to France and the U.S. The period of training averaged one year, for (11) The Ministry of Agriculture - out of the 48 Veterinary officials, only two were sent abroad for one year training.

II Agricultural officials classified by type of work in the Ministry of Agriculture, 1960

Central Office:

Agricultural education	9

Cooperation	2
Agricultural publications	3
Directorate of Agricultural Economics:	
Agricultural Economics and Cooperatives	5
Statistics	2
Agricultural Machinery	3
Agricultural Industries	1
Agricultural Trade	15 (a)
Rural Improvement:	
Irrigation	4
Agricultural officials in the Mohafazat:	
North Lebanon	3
South Lebanon	2
Beka'a	1
Directorate of Agricultural Affairs:	
Plant Protection	2
Agricultural experimentation	6
Extension	21
Directorate of Forests and Water Resources:	
Forestry	5
Fishing	1

Source: Ministry of Agriculture.

(a) Distributed as follows: Beirut: 8, Tripoli: 2, Aboudieh: 1, Arida: 2, Beka'a: 1, Masna'a: 1.

III Veterinary officials classified by type of work in the Ministry of Agriculture, 1960

Directorate of Animal Resources:	
Veterinary extension	3
Animal Health	3
Veterinary Public Health	3
Animal Husbandry	8 (a)
Directorate of Agricultural Affairs:	
Extension centers	9
Agricultural Sections in the Mohafazat	?
Mount Lebanon	2
South Lebanon	2
North Lebanon	3
Beka'a	2
Directorate of Agricultural Economics:	
Veterinary Quarantine	7
Agricultural Machinery	1
Experiment Stations:	
Terbol	3
Sin El - Fil	3

Source: Ministry of Agriculture

(a) Distribution as follows: Beirut: 5, Tel Amara: 1, Baalbek: 1, Tyre: 1.

IV Agricultural Engineers working at the Ministry of Agriculture, classified by type of work, January 1960

	Permanent	Temporary
Director General	1	
Directorate of Agricultural Economics	1	
Directorate of Agricultural Affairs	1	
Directorate of Forests & Waters	1	
Central Administration	1	
Agricultural Extension	5	
Agricultural Machinery	2	4
Agricultural Education	2	
Tel Amara Research Station	10	
Silk Bureau	1	
Technical Cooperation (Leb. - U.S.)	2	1
Agricultural Trade	1	
Agricultural Statistics	1	
Agricultural Affairs		
Mount Lebanon	1	
North Lebanon	2	
South Lebanon	2	
Beka'a	2	
Forestry	6	2
Fishing	1	
Plant Protection	2	
Agricultural Experimentation	3	
Rural Improvement	1	1
Unclassified	2	—
	51	8

Third Question: Is the education and training required for the occupations selected available in Lebanon ?

The following Agricultural Schools exist in Lebanon:

a. Faculty of Agricultural Sciences of the American University of Beirut.

b. Agriculture School of Beirut.

c. Agriculture School of Bishmezzine.

d. Agriculture School of Rayak.

e. Agriculture School of Ghazir,

The program at the A.U.B., covers the following subjects: Agricultural Engineering, Crop Production, Plant Sciences, Animal Science, Agricultural Economics, Rural Sociology and Extension.

Only the A.U.B., provides Agricultural training and education on a University level. The other schools provide training and education on a secondary level. Instructions in the fields of veterinary and forestry are not available in Lebanon.

Fourth Question: What is the yearly outturn of Agricultural personnel in Lebanon, by the main occupations selected ?

The following figures are available on A.U.B., graduates in the field of Agriculture:

	1956	1957	1958	1959
1. B.S. Agriculture all Nationalities	23	38	19	17
B.S. Agriculture Lebanese	16	26	13	10
2. M.S. Agriculture all Nationalities	--	--	1	9
M.S. Agriculture Lebanese	--	--	1	8

Thus, the total number of Lebanese graduates with a B.S. Agriculture is 65. Of these 48 are working in Lebanon. The occupations of those residing in Lebanon and those residing abroad is as follows:

	Occupations of those residing in Lebanon	Occupations of those residing abroad
Agricultural Engineer	11	6
Teaching	10	2
Graduate Study	7	8
Ministry of Agriculture	1	1
Non-Agricultural work	9	C
Farm Machinery	1	0
Farm Suppliers	6	0
Unemployed	3	-
Totals	48	17

Fifth Question: What is the extent of regional mobility of Agricultural Personnel ?

Trained agricultural personnel move about in the Middle East to where employment is offered at highest compensation, subject to national restrictions on the employment of foreigners.

For example, out of the seventeen A.U.B., graduates residing abroad, 2 are employed as agricultral engineers in Libya, 1 with Aramco in Saudi Arabia, 1 in Jericho employed on vegetable production, 1 in Kuwait employed on land - scaping work, 1 in Morocco with a private company, and 1 in the Persian Gulf employed at the Agriculture Experimental Station.

Sixth Question: What is the estimated number of Agricultural Personnel imported for work in Lebanon ? Indicate main types of occupations for which personnel are imported.

The following is a rough estimate of the agricultural personnel imported for work in Lebanon:

a. Technical specialists in the Ministry of Agriculture	8
b. Teaching and Research at the A.U.B.	10
c. In private companies in Beirut.	2
Total	20

Seventh Question: What is the current estimated requirements for agricultural personnel, and what requirements are likely to develop during the coming five years ?

About 15 to 20 specialized technicians (with an M.S. Degree) are currently required by the Ministry of Agriculture to help in the programs for the development of agricultural research, extension and cooperatives. Over a period of five years, the need is likely to increase to about 60.

No information is available on the requirements in the private sector.

Eighth Question: Give an overall appraisal of shortages and surpluses in the field of Agriculture.

While there is a current need for specialized technicians (with an M.S. Degree) in the field of agriculture, it must be remembered

that Lebanon is a small country, and the employment field can be saturated rather quickly. For example, there is already a surplus of agricultural technicians with a secondary education only. These are mainly graduates of the agricultural schools referred to in the third question. It may be that a change in the curricula of these schools would better equip the graduates for field work in private enterprises and agriculture extension. However, if 20 graduates a year can create a surplus, then great caution must be exercised in evaluating current needs. We feel that as a first step the physical, technical and human resources in the Agricultural Sector must be determined. It is only on the basis of this information that the training and utilization of human resources can be improved. With such a program in view, the following recommendations are suggested for consideration:

1. The establishment of a Central Agricultural Statistical Office.
2. The assessment of agricultural resources and potentialities.
3. The study of agricultural labor: number, characteristics, mobility etc..

April 11, 1960.

Appendix 2

ENGINEERING

At the request of the Director of the Economic Research Institute, Beirut, the following group met with members of the Institute to consider the manpower resources and requirements in Lebanon in the field of Engineering:

Professor George Abi-Rached, engineering school, American University of Beirut.

Professor Joseph Najjar, Development Board and University of Saint Joseph, Beirut.

Mr. Lutfi Ramadan, Order of Engineers and Architects

The following answers were suggested to the questions raised by members of the Institute:

First Question : What is the number of Engineers, by type, registered with the Engineering Syndicate ?

In Beirut, there are 800 Engineers registered with the Order. In Tripoli the number is 70. Thus, a total of 870 engineers are registered with the Orders in Lebanon.

A breakdown of this figure is available as follows:

a. Number of Engineers registered with the Orders of Engineers by type of employment:

	Beirut	Tripoli
Building and public works	656	44
Industry	118	18
Agriculture	26	8
Total	800	70

b. Number of Engineers registered with the engineering Syndicates by type of employer:

	Beirut	Lebanon
Private Practice	432	23
Company Employees	148	31
Government Employees (Full Status & by contracts)	220	16
Total	800	70

Second Question : What is the estimated number of engineers, by type, not registered with the engineering syndicate ?

It is estimated that there are about 400 Engineers working in Lebanon but not registered with the syndicate. For example, there are about 100 engineers working with the government, and not registered with the Syndicate. A few engineers are not actually practicing the profession and are either working as executives in companies, or are running their own commercial or industrial business. In addition, there are quite a few foreign engineers (approximately 100) employed with local or foreign firms (including the oil companies).

Third Question : What is the distribution of Engineers by Muhafazat ?

North Lebanon is covered by the Tripoli Syndicate. As stated earlier, there are about 70 engineers registered with that Syndicate. The majority of the Engineers in Lebanon are working in or from Beirut.

The following figures provided by Saint Joseph University illustrate the pattern of distribution of Engineers in Lebanon. There are 360 graduates of Saint Joseph University working in Lebanon. These are distributed as follows:

Beirut	331
Aley	1
Becharreh	1
Djounieh	2
Saida	4
Tebnine	1
Tripoli	17
Zahli	3

Fourth Question : What is the estimated number of Engineers unemployed ?

During the disturbances in 1958, there were about 40 or 50 Engineers unemployed. At present the number is very small (less than 10). Most of them graduated recently, and have had little time to settle in a job. There is, however, some under-employment among engineers who practice privately (mainly construction engineers). This under-employment is being considerably reduced by the quota system adopted by the Orders of Engineers of Beirut and Tripoli. In considering unemployment and under-employment it should be kept in mind that the local market for Engineers is small, and the slightest imbalance can be felt immediately.

Fifth Question : What is the yearly out-turn of Engineers in Lebanon ?

In the year 1958/59, a total of 63 Lebanese engineers graduated from the three Universities in the country. 24 graduated from the Ecole Superieure D'Ingenieurs, 35 from the American University of Beirut and 4 from the Lebanese Academy.

The following figures are also available for previous years:

a. American University of Beirut

Academic Year	Number of Graduated Engineers
Before 1925	1
1925 - 1929	7
1930 - 1934	11
1935 - 1939	14
1940 - 1944	11
1945 - 1949	42
1950 - 1954	50
1955 & over	126
Total	262

ECOLE SUPERIEUR D'INGENIEURS (Appendix 2)

Beyrouth

Année Scholaire	Nombre d'Ingénieurs sortis
1921 - 1922	12
1922 - 1923	10
1923 - 1924	4
1924 - 1925	9
1925 - 1926	9
1926 - 1927	8
1927 - 1928	10
1928 - 1929	11
1929 - 1930	12
1930 - 1931	19
1931 - 1932	19
1932 - 1933	17
1933 - 1934	23
1934 - 1935	Régime 4 ans
1935 - 1936	11
1936 - 1937	11
1937- 1938	8
1938 - 1939	12
1939 - 1940	9
1940 - 1941	12
1941 - 1942	14
1942 - 1943	18
1943 - 1944	18
1944 - 1945	23
1945 - 1946	30
1946 - 1947	40
1947 - 1948	24
1948 - 1949	12
1949 - 1950	6
1950 - 1951	21
1951 - 1952	21
1952 - 1953	26
1953 - 1954	24
1954 - 1955	22
1955 - 1956	20
1956 - 1957	35
1957 - 1958	29
1958 - 1959	24
1959 - 1960	-

Sixth Question : What is the extent of regional mobility of Lebanese Engineers ?

Lebanese Engineers are in demand in the less developed Arab countries. For example there are 28 graduates of the A.U.B. employed in Arab countries. There are also 136 graduates of Saint Joseph University employed in Arab countries. These perhaps represent only one half of the Lebanese engineers currently employed in Arab countries. More exact figures regarding these engineers are not available.

Seventh Question : What is the estimated number of Engineers imported for work in Lebanon ?

It is estimated that there are approximately 100 foreign engineers working with local firms and Oil Companies in Lebanon. A breakdown of this figure is not avaialable

Eighth Question : What is the estimated number of Engineers who received their education abroad

At least 10 to 15 per cent of the Engineers in Lebanon received their education abroad. Exact figures are not available, but figures supplied by the Institute of International Education in New York indicate that in the year 1958 - 59 there were 254 Lebanese students studying engineering in U.S. Universities. This figure may be divided according to specialization as follows:

21	Chemical
74	Civil
52	Electrical
5	Industrial
69	Mechanical
33	Other
254	Total

The number of foreign graduated engineers is increasing, and there are students at present taking engineering courses in France, England, Germany and the United Arab Republic.

Nineth Question : Give an overall appraisal of shortages and surpluses in the Engineering Field

On the basis of available information it is very difficult to give an overall appraisal of shortages or surpluses in the Engineering Field. There are a number of vital statistics that are lacking. For example, no figures are available on the current requirements, and the requirements that are likely to develop during the coming five years. No figures are also available on the number of Lebanese that will be graduating from England and Europe during the coming five years. Finally, the pattern of future economic development is still uncertain. However, the following very tentative appraisal is suggested:

In the abseence of an effective economic development program in the government sector, no shortages are expected in the Engineering field. On the contrary, if there is an increase in local and foreign graduates a surplus of engineers is likely to develop, unless industry starts employing engineers on the technical and managerial level.

It is the opinion of this group that the government technical services require at least twice the number of engineers which they have now. On the other hand, when the number of engineers working in private practice will increase, it will be possible to compel proprietors to have engineers for some jobs for which up to now no engineers are required (for example, heating, air conditioning, electric installations, mechanical installations, etc..), and also press the government to allow only engineers to offer tenders for engineering contracts.

Appendix 3

MEDICINE AND PUBLIC HEALTH

At the request of the Director of the Economic Research Institute, Beirut, the following working group assisted members of the Economic Research Institute in the preliminary assessment of manpower resources and requirements in the field of Medicine and Public Health:

Dr. Joseph Azar, School of Medicine, American University of Beirut.

Professor Charles Churchill, School of Public Health, A.U.B.

Professor Amin F. Haddad, School of Pharmacy, A.U.B.

Miss Wadad Hamdan, School of Nursing, A. U. B.

Dr. Antoine Husari and Dr. Elias Sader, Medical Syndicate, Beirut.

Dr. Husni Jalloul, Ministry of Public Health.

Before attempting to answer the questions suggested by members of the Economic Research Institute, the following background information is given regarding Medicine and Public Health in Lebanon.

As of December 31, 1959, there were in Lebanon 195 Hospitals, and 113 Dispensaries (other than government and Red Cross dispensaries). The distribution of these hospitals and dispensaries by districts (Mohafazat) was as follows:

	Hospitals	Dispensaries
Beirut	68	38
Mount Lebanon	23	50
North Lebanon	24	10
South Lebanon	77	4
Beqa'	3	11
Total	195	113

Lebanon has also two Medical Schools that provide for the needs of Lebanon, and other Middle Eastern countries. At the A.U.B., the School of Medicine was established in 1867; the School of Pharmacy in 1871; the School of Nursing in 1905; and, the School of Public Health in 1954. The School of Dentistry at the A.U.B., was established in 1910, but was closed down in 1940. At the University of Saint Joseph, the School of Medicine was established in 1883, and the School of Pharmacy in 1889. The faculty is now known as the "Faculté Francaise de Médecine et de Pharmacie". The School of Dentistry was established in 1920, the School for Midwives in 1922, and the School of Nursing in 1942.

In addition, there are 5 schools for general nursing in Lebanon, one school for psychiatric nursing (without basic nursing), and one for Assistants Sociales.

Due to the availability in Lebanon of two Medical Schools, and a relatively larger number of hospitals, Lebanon now provides not only for its own medical needs, but also for the needs of other Middle Eastern countries. The two schools of Medicine include students from the United Arab Republic, Jordan, Iraq, Iran, Kuwait, Saudi Arabia, and other countries. For example, the living Medical Alumni of the A.U.B., are distributed as follows:

Lebanon	404	Iraq	39
U.A.R.	174	Saudi Arabia	23
U.S.A.	169	Kuwait	13
Jordan	90	Britain	11
Unknown	58		
		Total	981

In the year 1957 - 58, the students at the Faculté Française de Médecine et de Pharmacie represented the following nationalities:

Lebanese	303
Syrians	46
Egyptians	24
Palestinians and Jordanians	21
French	12
Greek	7
Iranians	7
Other Nationalities	14
Total	434

A large number of non-Lebanese also seek medical treatment in Lebanon. These come mainly for specialist treatment, surgery, and medical care at the tuberculosis and mental hospitals.

With the above general remarks as background information, the following answers were given to the questions raised by members of the Economic Research Institute:

First Question : What are the main occupations in the field of Medicine and Public Health in Lebanon ?

In this report, the main types of occupations that will be covered are:

1. Physicians and Surgeons
2. Dentists
3. Nurses and Midwives
4. Pharmacists
5. Public Health Nurses, Sanitary Engineers and Health Controllers.

For greater detail, reference can be made to the international standard classification of occupations prepared by the international Labour Office, Geneva.

In the fields of Internal Medicine, Head Diseases, and Surgery, the types of specializations in Lebanon are listed in Attachments "A", "B", and "C" to this report.

With regard to Pharmacists, the following rough percentages indicate the distribution of pharmacists by occupation:

		Percentage
1.	Retail Pharmacist	50
2.	Retail to the physicians	20
3.	Responsible for wholesale drug stores and foreign drug firms	16
4.	Hospital Pharmacist	3
5.	Teaching Science in High School	5
6.	Teaching in Schools of Pharmacy	3
7.	Government service (including administration, hospital pharmacy and laboratory)	3

Second Question: What is the estimated number of persons employed in the field of Medicine and Public Health, by the main occupations selected?

The following figures were provided by the Ministry of Public Health as of December 31, 1959:

1.	Physicians (including Surgeons)	1445
2.	Dentists (as of Dec. 31, 1958)	451
3.	Nurses and Midwives	964
4.	Pharmacists (as of Dec. 31, 1958)	332
5.	Sanitary Engineers and Health Controllers	29

Third Question: Is the Education and Training required for the Occupations selected available in Lebanon ?

With the exception of specialization in the field of Medicine, the education and training required for the occupations selected are available in Lebanon. For example, the medical course at the A.U.B., extends over the five years beyond the junior class of the faculty of Arts and Sciences (pre-medecine program) or its equivalent, and leads to the degree of Doctor of Medecine (M.D.). When followed by a year of internship this training meets the requirements for an American "class A" medical school, as well as the Lebanese and Syrian government regulations.

In the School of Pharmacy, the course represents four years of study and twelve months of practical experience in an approved pharmacy after the completion of the Lebanese Baccalaureate II or its equivalent. This training leads to the degree of Bachelor of Science in Pharmacy (B.S. in pharmacy), or Diplome de Pharmacien.

With regard to nursing, the regular nursing course covers a period of three years' study and clinical experience beyond secondary school work, and leads to a Nurses' Diploma. A degree course is also offered which requires additional work in conjunction with the Faculty of Arts and Sciences and leads to the degree of B.S. in Nursing.

Also a post basic course in administration and teaching in nursing during two academic semesters is offered at the school of nursing, A.U.B. to graduate nurses with one or more years of staff nursing experience. This will be extended to 11 months next year.

Finally, the School of Public Health at the A.U.B. offers two one - year programs: (a) An advanced program of post-graduate studies intended for holders of university degrees, and leading to a diploma in some field of public health; and (b) A non-degree program of technical training intended for holders of secondary school or nursing school certificates, and leading to a certificate in sanitation, public health or laboratory technology.

Fourth Question : What is the yearly outturn of Medical and Public Health personnel in Lebanon, by the main occupations selected ?

The following Lebanese students graduated in the year 1958/59 in the main occuptions selected.

	1958 - 1959	
	A.U.B.	St. Joseph
Physicians	22	25
Dentists	—	
Nurses and Midwives	68	
Pharmacists	11	
Public Health	4	

Attachment "D" to this report gives the number of Lebanese graduates from the School of Public Health, A.U.B., for the period 1951 to 1959.

Fifth Question : What is the extent of regional mobility in the field of Medicine and Public Health ?

There is a high demand in the Arabian gulf area and in North Africa for Physicians, Nurses and Public Health technicians. As a result, regional mobility in these fields,is high. For example, current information on Lebanese

Doctors who graduated from the A.U.B., indicates that 3 are in Iraq, 6 in Jordan, 6 in Kuwait, 2 in Libya, 18-25 in Saudi Arabia, and 4 in Syria. It is also estimated that there are at least 60 Lebanese nurses working in Arab countries. As to the sanitarians who graduated from the A.U.B. School of Public Health, it is estimated that at least one - half of the Lebanese graduates are employed in Arab countries.

Sixth Question: What is the estimated number of Medical and Public Health personnel imported for work in Lebanon. Indicate main types of occupations for which personnel are imported ?

Relatively few foreign specialists are imported for work in Lebanon in the field of Medicine and Public Health. The total number of these specialists registered in the syndicate is 77 distributed by nationalities as follows:

Nationality	Number
Syrians	29
Palestinians	8
Jordanians	3
Egyptians	4
Iraquis	3
Total Arab	47
British	4
French	12
Greeks	2
Australians	1
Americans	5
Brazilians	1
Turks	2
Iranians	1
Total nonArabs	30
Gran Total	77

It is to be noted that such foreign specialists work mainly in the Medical Schools.

Seventh Question : Give an overall appraisal of shortages and surpluses in the field of Medicine and Public Health ?

As stated earlier in this report, the Medical Schools and Hospitals in Lebanon provide not only for the needs of Lebanon, but also for the needs of a number of Arab countries. As a result, no accurate appraisal of shortages and surpluses in the field of Medicine and Public Health is possible without regional cooperation on this subject. The current opinion, however, is that this field is quite saturated in Lebanon, and it is expected that a surplus of physcians will occur in the near future. For example, new and large hospitals are being constructed in Kuwait, Saudi Arabia, and Other Arabia gulf countries. These will require phsycians, specialists, nurses etc... One can therefore roughly conclude that the demand for physicians, nurses, public health technicains, etc... is likely to increase.

Perhaps the greatest demand is for nurses. The demand is both qualitative and quantitative. For this reasoh the A.U.B., is planning a degree program in nursing. After completing the freshman prerequisites, the student would follow a four year course leading to the B.S. degree in nursing.

In the field of pharmacy, no shortage is anticipate. On the contrary, a surplus is expected. The number of pharmacies in Lebanon is limited in proportion to population. In Beirut, there is one pharmacy for every 7000 people. In other areas the ratio is 1 to 5000.

Attachment "A"

Total Number of Specialists in Internal Medicine and Public Health in Lebanon as of Dec. 31, 1959.

Internal Diseases	Number
Total	301
Internal diseases	104
Heart diseases	19
Chest diseases	27
Mental diseases	11
Liver & digestive system	20
Anesthesia	9
Laboratories	6
School health	2
Infectious diseases	2
Genite - Urinary system	5
Homeopathie	1
Rabies	1
Glands	8
Malaria	2
Pediatrics	59
Public Health	16
Blood diseases	3
Pediatric & digestive system	1
Tropical diseases & Public Health	2
Tropical diseases & health education	1
Bones & joint diseases	1
Forensic Medicine	46*
Veneral Medicine	17**

* 45 Doctors are not registered yet.

** 17 Doctors are not registered yet.

Attachment "B"

Total Number of Specialists in Other Fields in Lebanon as of Dec. 31, 1959

Head Diseases	Number
Total	89
Skin diseases	3
Aural, Nasal & Larynx	44
X - ray Specialist	21
Trachoma	1
Skin, Urinary & Syphilis	14
Chemistry	6

Attachment "C"

Total Number of Specialists in Surgery in Lebanon as of Dec. 31, 1959

Specialists in Surgery	Number
Total	164
General Surgery	54
Gynecology & Obstetrics	35
Surgery, Gynecology & Obstetrics	51
Chest Surgery	2
Surgery of Urinary tract	13
Pediatric Surgery	1
Bone Surgery	7
Surgery of the Nervous System	1

Attachment "D"

LEBANESE GRADUATES FROM THE SCHOOL OF PUBLIC HEALTH

1951-1952		
Public Health Nursing	3	
Sanitation	4	
Laboratory Technique	4	11
1952-1953		
Public Health Nursing	6	
Sanitation	6	
Laboratory Technique	3	15
1953-1954		
Public Health Nursing	6	
Sanitation	10	16
1954-1955		
Public Health Nursing	1	
Public Health Education	1	
Sanitation	4	
Laboratory Technique	11	17
1955-1956		
Public Health Nursing	3	
Public Health Administ.	1	
Sanitation	5	
Laboratory Technique	6	15
1956-1957		
Public Health Nursing	1	
Public Health Education	1	
Public Health Statistics	1	
Sanitation	5	
Laboratory Technique	10	18

(Attachment "B" cont')

1957-1958

Public Health Nursing	1	
Sanitation	9	
Laboratory Technique	8	18

1958-1959

Laboratory Technique	4	4

GRAND TOTAL 114

APPENDIX 4

S C I E N C E

At the request of the Director of the Economic Research Institute, Beirut, the following working group met with members of the Institute to consider the manpower resources and requirements in Lebanon in the field of Science.

Professor Levon Babikian, Biology Department, A.U.B.

Professor Wasfi Hijab, Chairman, Mathematics Department, A.U.B.

Professor Theodoor Raven, Chairman, Geology Department, A.U.B.

Professor Adib Sarkis, Chemistry Department, A.U.B.

Professor Hurst Shoemaker, Chairman, Biology Department, A.U.B.

Professor Antoine Zahlan, Chairman, Physics Department, A.U.B.

was invited but was unable to attend.

For the purpose of this report, the following definitions were agreed upon:

1. Main types of Specialization in the field of Science in Lebanon.

As it was noted that there were separate working groups dealing with Agriculture, Engineering, Medicine and Public Health, the group decided to consider the scientists in the following three types of specialization only:

a. Chemists, Physicists, Geologists, and other Physical Scientists.

b. Biologists, and related Natural Scientists.

c. Mathematicians and Statisticians.

2. Sectors of Employment.

It was agreed that in Lebanon the main sectors of employment for Scientists were the following:

a. Government departments, including the Army.

b. Industry and Commerce.

c. Private Practice.

d. Educational and Research Institutions.

3. Functions Performed

It was agreed that Scientists could be roughly classified for the purposes of this report into Junior Scientists and Senior Scientists. Persons with a Bachelor's Degree or a Master's Degree would be regarded as Junior Scientists. Those with a Doctorate Degree or equivalent would be regarded as Senior Scientists. It would be helpful to think in terms of a Junior Scientist and a Senior Scientist when considering:

a. The needs of Lebanon, and

b. If the education and training required for a "Scientist" are available locally.

As to the functions which Scientists perform, these can be divided into:

a. Teaching

b. Research

c. Technical

d. Executive and Administrative.

With the above general remarks as background information, the following answers were suggested to the seven questions raised by members of the Economic Research Institute:

First Question: What is the estimated number of Scientists employed in Lebanon by the main types of specializations selected.

No figures are available on this subject. The following main indicators of resources in the field of Science are lacking in Lebanon:

a. Membership rolls in Science Societies.

b. A National Register of Scientific and Technical Manpower.

c. A Survey of Scientists in the various sectors of employment.

As a result, the following rough estimates are made on the basis of individual judgment and experiences:

Chemists	: 70 to 100
Geologists	: 10
Mathematicians	: 50 to 60
Statisticians	: 10

Second Question: Is the education and training required for the specializations selected available in Lebanon.

In some fields, such as Geology, the education required is not available in Lebanon. In most of the other fields, the education and training up to the level of a Master's degree is available. However, for the Doctoral level, education must be sought outside Lebanon.

From the purely educational point of view it may be concluded that Lebanon is not yet a producer of "Senior Scientists".

Third Question: What is the yearly outturn of Scientists in Lebanon, by the main specializations selected.

The following figures were provided by the A.U.B.:

	1955		1956		1957		1958		1959	
	B.A.	M.A.	B.A.	M.A.	B.A.	M.A.	B.A.	M.A.	B.A.	M.A.
Chemists	4	5	4	0	13	0	9	2	14	4
Physicists	1	0	7	0	2	0	3	0	1	2
Geologists	-	-	-	-	-	-	-	-	-	-
Biologists	10	3	12	0	17	0	19	1	4	0
Mathematicians	0	1	5	1	2	0	2	0	5	0
	15	9	28	1	34	0	33	3	24	6

Thus, the total number of graduates at the A.U.B., in the selected fields of Science during the past 5 years were 153, of whom 134 graduated with a B.A. Degree and 19 with an M.A. Degree. These figures relate to all the graduates of all nationalities. During the year 1959/60 there were 528 Lebanese in the School of Arts and Sciences and 1603 non-Lebanese. If we apply the same ratio to the graduates in the field of Science, it would become very clear that the number of Lebanese Science graduates in the A.U.B., during the past 5 years was very small(about 50).

Some Science subjects are also taught at the University of Saint Joseph, the Middle East College, and the Beirut College for Women. The following figures prepared by the statistical section of the Ministry of Education and Fine Arts for the year 1956/57 give an indication of the total number of Lebanese students studying a Science subject in all Universities and Colleges in the country:

	Males	Females
Law	579	43
Political Science	84	37
Engineering	325	2
Agricultural Engineering	43	
Medicine	253	30
Pharmacy	34	18
Dentistry	23	4
Science	204	37
Administration and Finance	107	11
Literature	349	353
Theology	67	3
Total	2068	538
Grand Total	2606	

Thus, in 1956/57, out of a total of 2606 students, 241 were studying a Science subject, or approximately 9 per cent of the total number of students. A breakdown of this figure is not available.

Fourth Question: What is the extent of regional mobility of Scientists

Scientists are in demand in Lebanon. As in all professions, some Lebanese scientists are attracted by employment in Europe or the United States. A smaller number seeks employment in the Arab Gulf area. However, "mobility" is not a material factor in Lebanon in assessing resources and requirements in the field of Science.

Fifth Question: What is the estimated number of Scientists imported for work in Lebanon. Indicate main types of occupations for which personnel are imported.

No figures are available on the four sectors of employment agreed upon. The following very rough estimates are made on the basis of individual judgment and experiences:

Chemists	:	15 to 25
Geologists	:	8
Biologists	:	12
Mathematicians	:	20
Statisticians	:	5

Sixth Question: What is the current estimated requirements for Scientists and what requirements are likely to develop during the coming 5 years.

There are no figures available on the "unfulfilled" local requirements for Scientists. It would also be very difficult, on the basis of available information, to forecast future requirements.

Seventh Question: Give an overall appraisal of shortages and surpluses in the field of Science.

The present group feels that it is not possible to give an accurate overall appraisal of shortages and surpluses in the field of Science in Lebanon on the basis of the information available. The group, therefore, strongly recommends:

1. That a survey be made of existing Scientific Personnel in the following four sectors of employment:
   a. Government
   b. Industry and Commerce
   c. Private Practice
   d. Educational and Research Institutions.
2. That future expected additions to the field of Science be determined through contacts with local and foreign educational institutions and missions.
3. That information on the current and future demand for Scientific Personnel be sought through a survey of employers, and in the light of plans for economic development.
4. That consideration be given to the establishment of a "National Scientific Council" to advise the government, employers and educational institutions on the development and utilization of scientific manpower.

APPENDIX 5

T E A C H E R S

At the request of the Director of the Economic Research Institute, Beirut, the following group met with members of the Institute to consider the manpower resources and requirements in Lebanon in the field of Teachers:

Dr. Khalil Al-Jurr, Ministry of Education and Fine Arts.

Mr. Alexis Boutros, President of the Academie Libanaise.

Professor Jibrail Katul, Department of Education, American University of Beirut.

Dr. Farid Najjar, Lebanese University, Beirut.

Professor Elie Ghannage of Saint Joseph University participated in the preliminary meetings, but was unable to assist on the working group for Teachers due to his absence from Lebanon.

Before attempting to answer the six questions suggested by members of the Economic Research Institute, the following brief background information is given regarding the educational system in Lebanon.

When Lebanon attained its independence in 1943, it had 348 Public Schools and 1279 Private Schools. The number of students and teachers in these schools were as follows:

	Number of Students	Number of Teachers
Public Schools	23,000	451
Private Schools	108,000	3985
	131,000	4436

The above figures indicate that in 1943 only 21 per cent of the Schools in Lebanon were Public Schools, and only 10 per cent of the total number of teachers were employed in Public Schools.

By the end of 1959 the picture had changed considerably. The number of Public Schools increased from 348 in 1943, to 1,290 in 1959. (Only elementary and higher elementary Public Schools are included in these figures. The 10 Public Secondary Schools are not included). On the other hand, the number of Private Schools decreased from 1,279 in 1943 to 1,200 in 1959. The number of students and teachers in these schools by the end of 1959 were as follows:

	Number of Students	Number of Teachers
Public Schools	105,922	5,001
Private Schools[1/]	160,000[1/]	5,200[1/]
	265,922	10,201

Thus, by the end of 1959 the number of Public Schools increased to 52 per cent of the total number of schools in Lebanon, and the number of Teachers in Public Schools increased to 49 per cent of the total number of Teachers. During the same period the total number of teachers employed in Lebanon increased from 4,436 in 1943 to 10,201 in 1959.

The duration of study in elementary and secondary Public and Private Schools is generally 12 years. Some Private Schools provide

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1/ The figures for the Private Schools have not yet been finalized. The figures given in this report are estimated figures based on previous years.

for an additional two years of pre-elementary education. The twelve years of schooling are divided as follows:

Children beginning at the age of six enter the elementary level of education which is usually five years. At the end of the fifth year children sit for the Government "Certificat" examination. After this examination, children enter either the higher elementary level (Junior High) which is four years, or a seven-year secondary school. At the end of the higher elementary level, students of both Public and Private Schools sit for a Government "Brevet" examination. After securing the "Brevet" certificate, students may enter the Secondary level (Senior Level) of education which comprises three years. At the end of the second year, students sit for the Baccalaureat Premiere Partie examination. At the end of the third year, students sit for the Baccalaureat Deuxieme Partie examination.

After completing the Secondary level of education, students are admitted to one of the three Universities or four Colleges in the country. The period of study at this level is generally three or four years, at the end of which the students qualify either for the B.A. (or M.A.) degree or the "Licence" depending on the Institution.

Students may also seek technical or vocational education in one of the 33 schools available for this purpose

First Question: If we divide teachers into Elementary Teachers, Secondary Teachers, University Teachers, and other Teachers, would it be possible to give an estimate of the number of persons employed in each of these divisions ?

As stated earlier in this report, the educational system in Lebanon includes the elementary level (5 years), the higher elementary level (4 years), and the senior secondary level (3 years). The total number of Teachers in Public Schools during the period 1955 to 1959 was as follows:

Year	Number of Teachers in Public Schools
1955	3,457
1956	3,749
1957	4,045
1958	4,385
1959	5,001

The above figures include teachers in the elementary level and in the higher elementary level only. A breakdown of this figure is not available, and no figures are available regarding the Public Secondary Schools. However, there are only 10 Public Secondary Schools, and a rough estimate of the teachers employed in these schools would be about 200 teachers, including the Elementary Teachers College.

As regards Private Schools, the number of teachers during the period 1955 to 1959 was as follows:

Year	Number of Teachers in Private Schools
1955	3,764
1956	4,142
1957	4,397
1958	4,845
1959	5,200 (estimated)

The above figures include teachers in the elementary level, higher elementary level, and Secondary level. No breakdown of this figure is available. However, in 1959 there were 122 Secondary Private Schools and 1078 Elementary Private Schools. If we apply the same ratio to the total number of teachers in Private Schools, we get a rough estimate of approximately 520 teachers in Private Secondary Schools.

The above method of estimation would indicate that the total number of teachers employed in the elementary, higher elementary, and secondary education in Lebanon is approximately as follows:

	Elementary and Higher Elementary	Secondary	Total
Public Schools	5,001	200	5,201
Private Schools	4,680	520	5,200
		Grand Total	10,401

As regards the number of University teachers in Lebanon, the only figures available are for the year 1956-57. These show a total of 911 University teachers divided as follows:

	Lebanese	Foreign	Total
Males	435	324	759
Females	77	75	152
		Grand Total	911

If we allow University teachers a rate of increase similar to that of all elementary and secondary teachers in Lebanon, a rough estimate of the number of University teachers in Lebanon during the year 1959-60 would be approximately 1,100.

There are no figures available on the number of teachers in technical and vocational schools.

Second Question: Is the education and training required for teachers in each of the above divisions available in Lebanon ?

There is dire need in Lebanon for teacher training, properly so called. The following Schools offer teacher training:

1. American University of Beirut
2. Beirut College for Women
3. British Lebanese Training College
4. Ecole Superieure de Lettres
5. Higher Teachers Institute at the Lebanese University
6. Public Elementary Teachers College

The total annual output of these Schools is estimated at 220 primary teachers, and 50 secondary teachers.

In Lebanon, many teachers are in the profession only temporarily. The University graduates in liberal Arts often take a teaching job only until they can locate employment with a commercial firm, or find higher paid employment outside Lebanon. Many Secondary School graduates also take up teaching while at the same time prepare for some other profession such as Law or Engineering. Thus, the need in the field of teachers training is not only for more Teachers Colleges, but also for creating an attractive teaching profession, both socially and financially, that would permit life-time devotion to this vital profession.

Third Question: What is the extent of local and regional mobility in the teaching profession ?

As regards local mobility, the big cities of Beirut, Tripoli and Sidon are as attractive to teachers as they are to the majority of the

rural population. However, the recent building of modern schools in rural areas has helped to lessen the influx of teachers to the big cities. There are no figures available on the mobility of teachers.

As regards regional mobility, Lebanon is gradually losing its position as a supplier of teachers to the less developed Arab countries. Occasionally, Lebanese teachers are recruited for teaching positions in the Arab Gulf area or in North Africa, but the number is decreasing every year, and a rough estimate for 1960 would not put the total number of Lebanese teachers employed outside Lebanon at more than 250.

Fourth Question: What is the estimated number of teachers imported for work in Lebanon. Indicate main types of specializations for which teachers are imported.

There are no figures available on the number of foreign teachers in the elementary, higher elementary and secondary levels of education. There are at least 117 foreign schools, including French, American, British, Greek, Italian, and German Schools. A number of teachers in these schools are members of ecclesiastical missions. If the relationship of schools to teachers in the private sector is taken as a guide a very rough estimate would place the number of imported teachers in foreign schools at approximately 500.

Teachers are also imported for work in National Private Schools. It is estimated that there are approximately 400 Arab teachers from the Egyptian Region of the United Arab Republic and approximately 100 other non-Lebanese teachers.

As regards University teachers, the figures for the year 1956-57 indicate a total of about 400 teachers.

In evaluating the question of imported teachers, it is important to keep in mind that a good number of these foreign teachers are in Lebanon not because there are no Lebanese with adequate educational background to perform their jobs, but because they are a part of religious, charitable, or other missions to Lebanon.

Fifth Question: What is the current estimated requirements for teaching personnel in the 4 divisions mentioned above, and what requirements are likely to develop during the coming 5 years.

There are no figures available on the current "unfulfilled" requirements for teaching personnel. As to the future, a very rough estimate can be arrived at by comparing current school population and teachers with expected future school population.

The 1959 figures indicate a total school population of approximately 266,000 students in elementary (5 years), higher elementary (4 years) and senior secondary levels (3 years) of education. The total number of teachers is approximately 10,400. Thus, very roughly this would average 26 students for each teacher.

The following figures are available for Lebanese births from 1944 to 1958:

1944	29,347
1945	28,043
1946	24,765
1947	25,462

1948	32,081
1949	22,613
1950	28,953
1951	30,553
1952	31,821
1953	34,070
1954	39,571
1955	66,319
1956	62,008
1957	53,925
1958	39,621

The above figures include only those Lebanese that registered the birth with the Directorate of Population. For our purposes the children that will enter elementary education in 1960 would be the births of 1954. The children that will enter the elementary education in 1961 would be the births of 1955, and so on. Thus during the coming five years a total of approximately 261,000 student will be entering the first 5 elementary classes.

As stated earlier, this figure only includes those Lebanese that registered the birth with the Directorate of Population. We are informed that there is at least a five per cent margin of error, and we therefore estimate the births for the years 1954 to 1958 at approximately 274,000. The average mortality rate for children in Lebanon between the ages of 1 to 5 years may be taken at 12 per cent. The total figure for the coming five years is therefore likely to drop to approximately 241,000. To this figure must be added those children who will enter the elementary classes over the ages considered. Also, those children who repeat their classes. A rough estimate for these would be 30,000. Thus, the total number of students who will be

entering the first five elementary classes during the coming five years may be roughly estimated at 270,000.

During 1959, there were approximately 226,508 students in elementary Private and Public Schools. Of these approximately 20,000 may be regarded as overage and 26,000 as non-Lebanese. If we regard the balance as approximately 180,000, the expected increase in the population of the first five elementary classes during the coming five years would be 90,000.

Needless to say, this is a very rough estimate, developed mainly to indicate the expected increase in school population. if we apply the current average of 26 students for each teacher, the 90,000 additional students would mean approximately 3400 additional teachers.

Sixth Question: Give an overall appraisal of shortages and Surpluses in the field of teaching.

In concluding this report the following general observations are made on the overall shortages and surpluses in the field of teaching:

1. In order to meet future demands, particularly if elementary education is to be compulsory, the number of teachers in Lebanon must be increased by at least 3,000 during the coming five years.
2. Although the school population is expected to increase, Lebanon does not require the importation of teachers either in the elementary, higher elementary, or secondary level of education, except in certain technical fields, such as practical arts, home-making, and vocational education.

3. In increasing the number of teachers in Lebanon, greater emphasis must be placed on teacher training. For this purpose greater use should be made of the facilities of local Universities and Colleges. In-service teacher education should be increased, and Teachers Colleges should be set up in each of the Muhafazat.

4. Teacher training must be based on a revised program of teacher education which will reflect recent educational findings and research in this field.

5. Finally, in order to attract and keep competent teachers, the conditions of service of teachers as regards salary, employment benefits etc.. must be improved to meet the rising living costs and standards of living.