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Suggestions for a Development
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CYPRUS-

Suggestions for a Development Programme

Prepared for the Government of the Republic of Cyprus

by Willard L. Thorp

Appointed under the United Nations

Programme of Technical Assistance



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EXPLANATORY NOTES

The term "donum" is a Cyprus measure of land equivalent to 1,600 sq. yd.

The term "oke" is a Cyprus measure equivalent to 1.13 liq. qt.

A Cyprus "mil" is equivalent to 1/1000 of a United Kingdom pound.

Details and percentages in tables do not necessarily add to totals, because of rounding.

INTRODUCTION AND ACKNOWLEDGEMENTS

On 1 February 1960, the United Nations received a request from the Government of Cyprus, asking for a four-man team to come to Cyprus not later than 1 September 1960, to "undertake an intensive economic survey of the Island and provide the Government with a report, with recommendations for future action." The suggested life of the Mission was three months. While the request was made formally by the Governor of Cyprus, it had the approval of the Transitional Government. A contingency allocation of the necessary funds was quickly made by the United Nations Technical Assistance Board, with a special allocation to the Food and Agriculture Organization for the requested agricultural expert.

The formal terms of reference of the Mission were as follows:

"The basic purpose of the Mission is to make an independent and objective study of the economic prospects for Cyprus in the light of its resources, and to prepare recommendations to the Government of Cyprus for action looking towards the acceleration of its economic development. While the two months' period will not permit the preparation of a full-scale economic plan in much detail, it is our hope that it will be possible, within that period, to draw the main lines of an economic program which will lead to the appropriate development of agriculture, industry, and other economic activities, aimed at providing additional employment and increased national income. Particular emphasis will be given to problems of investment needs and possible sources of funds, and to such institutional arrangements as appear to be desirable."

The membership of the Mission was somewhat expanded beyond the original proposal in order to cover the problems of Cyprus more completely. The members were:

Roberto Arce, Technical Adviser in Mining and Geology, Bureau of Technical Assistance Operations, United Nations,

A. G. Black, Agricultural Economics Adviser, Food and Agriculture Organization,

José Dumoulin, Water Resources Development Centre, Department of Economic and Social Affairs, United Nations,

Christophe Dupont, Research and Planning Division, Economic Commission for Europe,

Lars Esmark, Tourist Director, Department of Communication, Government of Norway,

Einer Slaatto, Director of Division for Industrial Development, Department of Industry, Government of Norway,

Willard L. Thorp, *Chief of Mission*, Director of the Merrill Center for Economics and Professor of Economics, Amherst College.

Most of the members of the Mission arrived in Cyprus early in September and received every possible assistance from the Government of Cyprus and from countless individuals, ranging from the heads of the largest economic institutions to farmers in the poorest villages. Much the greatest aid came from the Economic Advisory Commission which had been appointed by the Council of Ministers of Cyprus to prepare material and proposals for the Mission to consider. Its report, "Economic Report on Cyprus", proved to be an invaluable aid. The members of the Commission were:

Mr. Simos G. Vassiliou, *Chairman*,

Mr. Fuad Sami,

Mr. Andreas Patsalides.

Each of them, and especially the Chairman, gave unsparingly of his time to assist the Mission in its work and to make its stay in Cyprus as pleasant as possible.

Each of the experts investigated his special field and prepared a report which was submitted to the Chief of Mission who, in turn, prepared this Report. He relied heavily upon the work of the experts, but took the liberty of revising and expanding it. The Report is, therefore, that of the Chief of Mission and he must be held accountable.

The Mission might have limited itself to a programme of work which could easily have been completed in the brief period of its life. But the economic problems of Cyprus are both of great importance to the Island and of great interest to the analyst. Without question, the Mission was asked to do a larger task than could be accomplished by so few persons in such a short time. The Report does not present a five-year plan, for this could only be done after many more months of work. It is exactly what it is called—suggestions for the economic development of Cyprus.

Chapter I

THE PROCESS OF ECONOMIC GROWTH

1. Cyprus is a less-developed country only in the sense that much of its present production is not based on modern techniques, that it needs more capital investment, and that its level of living is low. It is certainly not underdeveloped in the sense that North America or Australia were in the eighteenth century when vast natural resources were idly waiting to be utilized. To some extent, Cyprus may be regarded as over-developed in the sense of being exhausted. The present problems of drought, soil erosion, and water shortage are in part the product of past errors in the protection and preservation of natural resources.¹ Clearly, the history of Cyprus suggests that there must have been considerable economic activity and wealth on the Island at various times in the past. As the following chapter will indicate, the recent history of Cyprus has recorded substantial economic development, but it seems to have come to a temporary halt. The problem is to resume and accelerate the process of economic growth on the Island.

2. Economic growth is a goal of all modern economies, though not the only one. Full employment, price stability, and equitable distribution are all economic objectives which cannot be disregarded. However, in long-run terms, economic growth stands out as a most important goal. Nowhere has the level of living reached the point where all or even most of the members of the economic community are satisfied. There is a fundamental urge to raise the plane of living of the present and future generations. This ambition includes having more of the benefits of private expenditures as well as increased services provided by government.

3. Economic growth has a wider significance than the direct pleasures from increased levels of consumption. It makes possible improvements in health and education. It provides a sense of achievement in belonging to a dynamic and expanding world.

4. There are various concepts and measures of economic growth but all refer to output, or the capacity for output, of goods and services.² In its simplest and most straightforward sense, the economic growth of a country may be viewed as an increase in its real output of goods and services under conditions where the wealth of the nation is not declining. The nearest to any such measure is the gross national product in constant prices, i.e., with a correction for any changes resulting from fluctuations in the level of prices.

5. In some instances the total record is important but in others one must consider how the average person is faring. Since population is increasing in Cyprus, im-

provement for the average person moves less rapidly than increases in the total, and the measurement of welfare should be related to output *per capita*. It is not possible or particularly useful in the case of Cyprus to apply some of the more refined measures often used which indicate productivity, such as output per man-hour.

Factors in growth

6. The output of an economy depends on the quantity and quality of productive resources available for use (natural resources, labour, and capital), on the extent to which they are used (per cent of capacity), and on the efficiency with which they are used (technology and organization).

7. If one uses broad categories to describe the productive resources of a country, it is clear that they are not fixed quantities. In Cyprus, the natural resources are not yet fully known, either in terms of mineral or water availability. Even the agricultural land has never been subjected to a general soil survey. In a very real sense the natural resources are not fixed but can be increased.

8. The second productive resource is labour. One can safely assume an increase in the working force as the younger age groups grow older; but here again, the resource is not fully developed and there is room for great improvement in training and skill. There are undoubtedly many individuals who are under-employed in agriculture, who could be more productive if the economy were organized more efficiently.

9. The third productive resource is capital. Capital is the result of income not being consumed but being invested in some way to increase the future output of goods and services. It may be a water pump or a grain elevator, a truck or a new house. The process of savings can be done either privately or by the Government using some of its resources for investment, or by borrowing or being given savings from some other country. Of the three types of resources, capital is the one over whose supply man has the greatest control.

10. The great increase in output in the last century in many countries is to be explained in considerable part by the growth in labour force and in the supply of capital. In addition, productivity has risen greatly due to the improvement and efficiency with which labour and capital are used.

11. The contribution resulting from more efficient use deserves special comment. Some of it is related to improvement in technology—a pound invested in machinery seventy years ago did not buy as effective an instrument as a pound today. Some is based upon a new level of skill in both the labour force and the business manager. Specialization has developed as well as greatly improved forms of organization. And some may

¹ See *The Economic and Social Development of Libya*, United Nations publication, Sales No.: 1953.II.H.8, for similar comments concerning Libya.

² The author is indebted to unpublished documents of the United States Commission on Money and Credit, of which he is a member, for some of the comments in the analysis which follows.

come from a speeding up of the learning process. In this connection, it may be noted that in no country do "best practice" and "average practice" ever coincide. Time is required for machines to wear out and for individuals to change their habitual ways of doing things. But progress can be accelerated by speeding up the modernization process.

12. In this area of the better use of natural resources, labour, and capital, Cyprus will not need to go through the costly experimental stages of investigation and trial and error. The problem is one of finding ways and means of bringing to Cyprus the experience of other countries, and then of course carrying it into application. A small amount of transfer of knowledge can be done through books and periodicals. Most of it will have to come from personal contact by Cypriots going abroad or foreign experts visiting the Island.

13. The above comments have been made without any mention of the Government, and many of them are as relevant to Government operation as to private enterprise. However, the Government is an important part of the design for a number of reasons. The most obvious one is that a considerable part of the gross national product, more than one-fourth if one includes transfer payments, goes through its hands. It can greatly influence the lives of its citizens and the functioning of the economy both by the manner in which it collects its revenue and by the pattern of its disbursements.

14. Perhaps as important as these fiscal matters is the fact that the Government is responsible for the general economic environment. It must lay down and enforce the rules which govern economic behaviour. It must operate various essential services such as the post office and fire protection. It can establish quasi-public institutions to act in fields such as electricity, telecommunications, or even long-term credit extension. Through control of imports and the use of excise taxes, it can encourage or discourage various forms of economic activity.

15. Finally, the Government can provide various services which are of aid to the community, from employment offices to geophysical surveys relating to possible mineral deposits. Such services are particularly appropriate for Government action when the benefit relates more to the whole community than to the particular individual involved, or when the long-term outlook of the Government can see values not evident to the short-term view of the private operator.

16. One other general comment needs to be made and that has to do with the interlocking nature of an economy. There are certain fundamental requirements which must be met before there can be any considerable amount of economic growth: security and order, literacy, sanitation and health, transportation and communication, power, and a relatively honest government. Cyprus has moved a considerable distance in each of these directions, especially as to the character of its Government. Economic growth will be facilitated by still further development of these prerequisites, but they no longer need to come first and can proceed along with other aspects of the economy. Nevertheless, it is easy for an economy to develop bottle-necks so that some one element may hold back other parts of the economy. To maintain a moving equilibrium is the essence of full-scale development planning.

17. The Mission has proceeded on the assumption that the people and the Government are eager for further economic development. The brief period of the Mission has not permitted the development of a plan of the sort mentioned above. It has been possible, however, to examine the various parts of the economy and to make countless suggestions for improvement. Undoubtedly, much more can be said about economic growth in Cyprus than the various comments in this report. However, no added data can change the basic framework within which development takes place—the effective marshalling of resources and their efficient use.

Chapter II

THE CYPRUS ECONOMY

1. Cyprus is a large island but a small country. With an area of 3,572 square miles it is the third largest island in the Mediterranean Sea, being exceeded by Sicily and Sardinia. Its population of nearly 570,000 is the third smallest in the United Nations, more numerous only than Iceland and Luxembourg. Its population density of 160 per square mile is about the same as Cuba, Indonesia, and Greece, but far below that of Puerto Rico, India, or the United Kingdom.

2. The population of Cyprus must be estimated, since no census has been taken since 1946, although one is scheduled for December, 1960. Based upon an incomplete registration in October, 1956, it is estimated that the number at that time was 549,000. The estimated number at the end of December, 1959, was 561,400. The existence of emigration, which may vary considerably from year to year, makes any population forecast quite uncertain. Unpublished estimates by the Statistics and Research Department suggest that the normal increase is likely to be somewhat more than 8,000 persons per year and that the point of 600,000 will be reached early in 1965. One may therefore use 1.5 per cent *per annum* as a rough rate of population increase.

3. Cyprus has the highest *per capita* income in the Mediterranean area, except Israel.¹ The average annual income (1958) for 16 countries in the area was £75 *per capita*. While Israel was about £185, Cyprus was £145, Greece £100, Turkey £75, and the United Arab Republic £45. It is true that as of 1958 the Cypriot economy was far from normal, but the figure for 1959 had fallen only to £137 *per capita*.

4. The Cyprus economy recorded a substantial increase up to 1957 from 1950, which is as far back as the Mission's examination went. *Per capita* income on the basis of constant prices increased more than 4.2 per cent per year. However, 1957 was a peak and the gross national product dropped in 1958, and again but slightly less in 1959, so that the rate of increase for the whole period 1950-1959 averaged about 1.8 per cent. Most other countries have shown a higher rate during this period.

Structure of the economy

5. The statistical picture of Cyprus economic life is summarized in Table 1. The upper half of the table presents the actual contribution of each sector to the total, in terms of millions of Cyprus pounds. The lower half of the table is calculated as though prices

had not changed since 1950. The changes from year to year in the top half therefore represent changes in value, whether due to price or quantity. The changes in the lower half represent quantity changes only.

Table 1

INDUSTRIAL ORIGIN OF GROSS DOMESTIC PRODUCT^a
(Millions of Cyprus pounds)

	1950	1953	1956	1957	1958	1959
A. Current factor cost:						
Agriculture, etc.	10.6	19.5	19.7	18.2	17.9	16.8
Mining	4.8	6.9	11.4	9.2	8.0	8.4
Manufacturing	5.9	7.0	8.3	8.6	8.0	8.4
Construction	1.3	2.9	4.3	4.4	4.0	3.2
Electricity, etc. ....	.2	.3	1.2	1.6	1.8	2.0
Transport and communications	1.5	3.1	5.0	5.2	4.8	4.8
Trade	4.3	5.7	9.0	10.3	7.8	8.0
Banking, etc. ....	.6	.8	1.6	1.6	1.7	1.7
Ownership of dwellings	2.4	3.2	4.7	5.3	5.7	5.8
Public administration and defence	3.4	4.5	9.8	14.4	15.6	12.0
Services	3.7	6.1	5.8	5.4	5.0	5.5
Total	38.7	60.0	80.8	84.2	80.3	76.6
B. Constant factor cost of 1950:						
Agriculture, etc.	10.6	14.8	13.8	14.2	12.5	13.4
Mining	4.8	4.6	6.0	6.4	6.3	6.5
Manufacturing	5.9	6.4	6.8	7.0	6.6	6.9
Construction	1.3	2.0	2.3	2.4	2.2	1.8
Electricity, etc. ....	.2	.3	1.2	1.6	1.8	2.0
Transport and communications	1.5	2.7	3.4	3.7	3.5	3.5
Trade	4.3	4.7	6.2	6.3	5.1	5.2
Banking, etc. ....	.6	.7	1.0	.9	1.0	1.0
Ownership of dwellings	2.4	2.5	2.7	2.8	2.8	2.8
Public administration and defence	3.4	3.7	6.8	9.3	9.9	7.6
Services	3.7	4.7	4.6	4.2	4.0	4.4
Total	38.7	47.1	54.8	58.8	55.7	55.1

^a The above figures relate to the entire Republic of Cyprus including the areas of the United Kingdom bases, although United Kingdom expenditures for military installations are not included. Gross capital formation in the Base areas which is included is estimated by the Statistics and Research Department at current factor cost to be:

1954	£1,500,000	1957	£3,500,000
1955	£2,900,000	1958	£700,000
1956	£4,600,000	1959	£500,000

A very difficult problem of definition relating to future gross national product estimates is whether or not to regard all economic dealing with the Bases as visible and invisible foreign transactions.

Source: *Cyprus Economic Review* 1958 and 1959.

6. Looking at the pattern of the Cypriot economy and comparing it with other non-industrial countries, agriculture makes less than the usual contribution; mining is high; manufacturing is low; and there is an unusual amount of income from other services, the most important of which are the employment and income from the United Kingdom bases.

¹ See *FAO Mediterranean Development Project. The Integrated Development of Mediterranean Agriculture and Forestry in relation to Economic Growth: a Study and Proposal for Action*, Food and Agriculture Organization, Rome, 1959.

7. Of tremendous importance is the part played by foreign trade. Cyprus is a clear demonstration of the proposition that the smaller the economic unit the less it can be self-sufficient. Actually, Cyprus imports an amount equal to more than half the total gross national product. In other words, looking at investment and consumption on the Island and including services like housing and teaching as well as commodities, more than half of the average Cyprus pound spent is for imported goods. Cypriot imports are about £75 *per capita*, while those of Greece are £20, Turkey £5, and the average for the Mediterranean area is £15. It follows from the above data, that only half of Cyprus' production moves into the normal channels of trade on the Island. The remainder is either exported or involved in economic activity at the Bases. The significance of foreign trade cannot be over-emphasized. Foreign markets and foreign prices are of great importance to Cyprus and its balance of payments is one of the most crucial elements in its economy.

AGRICULTURE

8. Agriculture is the largest industry on the Island. More than half of all workers are engaged in agriculture, not counting the considerable number in related or auxiliary activities. Agriculture produces less than one-fourth of the gross domestic product. Considering the total number of persons directly dependent upon agriculture, their average *per capita* income in 1959 was £67. This can be compared with the average for the non-agricultural population of £196 *per capita*. Relatively low *per capita* income is associated with rural population everywhere, although the gap in Cyprus may be rather large.

9. Since the rural areas have considerable under-employment, this excess population attributed to agriculture tends to reduce the *per capita* figure and agriculture should be given the credit for providing a kind of social insurance. Of course, within the agriculture group, there are wide differences in income, ranging from landless shepherds to owners of highly developed, irrigated citrus plantations. Although there are substantial agricultural exports of fruits, nuts, vegetables, carobs, and wine, agricultural imports are even larger.

10. Agricultural production has risen about 40 per cent above pre-war levels, a rate about equal to the population increase. There has been no clear increase in output since 1953. The Emergency was not conducive to lonely work in the fields and there have been several years of drought. While it does not show in output figures, nevertheless, there has been a substantial increase in the use of fertilizer, mechanical equipment, and irrigation.

11. With so high a proportion of families bound to the soil, the level of living in Cyprus is bound to remain low as long as so much of the population is engaged in obtaining so low a return from the land. This is the largest producing element and the largest market. Its improvement is essential for any sustained economic growth. This, in turn, involves problems of water supply, land use and land holdings, farm management and choice of crops, capital needs and over-hanging debt, and the nature of the marketing structure.

12. Cyprus earns a large part of its foreign exchange from tourists and the expenditures by the troops and military authorities located at the Bases. In fact, as sources of income the Bases far overshadow the temporary visitors. So far as the latter group is concerned, Cyprus has not yet shared in the world boom in tourism, due in part to the fact that its earlier sources of tourists, the United Arab Republic and United Kingdom troops plus families on leave, are no longer coming to Cyprus in number, and to the fact that the Emergency stopped all voluntary tourism for the time being. The future of this type of income for Cyprus turns largely upon the future of the Bases and secondarily on whether or not Cyprus can meet the intense competition for tourists from other points in the eastern Mediterranean.

MINING

13. Copper mining is a very old Cyprus industry, and still continues as an important contributor to the economy. Minerals constitute 50 per cent of all exports and mining produces 10 to 12 per cent of the gross national product. The tonnage has increased by 35 per cent since 1950 and kept on rising until 1959.

14. Consideration of mining production raises two problems: reserves and markets. The presently known reserves in Cyprus have a very limited length of life and new exploration is therefore extremely important. Since nearly all of the mineral products are shipped abroad, they enter into world markets far beyond the control of Cyprus. How important this can be is illustrated by the fact that a new method for obtaining sulphur from natural gas had a drastic effect on the market for iron pyrites, which has been an important Cyprus export. The problem of copper seems to be less one of markets than of reserves.

MANUFACTURING

15. Manufacturing contributes only about 10 per cent of the gross national product, a very low figure even for non-industrial countries. It is in the field of manufactured goods that the largest part of the imports is found. Actually, manufacturing in Cyprus during the last decade has lost ground to all the other contributors to the gross national product. In volume of product it has not even kept up with the growth in population. The leading industries are food products, textiles and clothing, and wood-working.

16. The most important limiting factor to the development of manufacturing is the size of the market, namely, 140,000 households of which only 50,000 are urban and the remainder scattered through hundreds of small villages. There is virtually no export of Cyprus manufactured products other than processed agricultural materials. The Cypriot manufacturer has his difficulties with quality control, high costs, and customer preference for imported goods. Many products cannot be made in Cyprus for one reason or another and must be imported. But the fact remains that in most countries, people have succeeded in making more goods for each other and raising their level of living thereby. The problem of how to increase manufacturing output in Cyprus is one that stands out in first examination of the record.

17. There are other important elements in the economy which might be noted. The rapid increase in electricity leads all the rest and the increasing share of government needs to be noted. Transportation and communication likewise boomed with the expanded use of the automobile in Cyprus. The actual volume of business involved in ownership of buildings, retail and wholesale trade, and services, all seem to have moved parallel with the increase of population. From the point of view of economic development, the items separately discussed above are the more dynamic and the growth and strength of Cyprus' economy will depend largely on the record which they make in the next few years.

The boom from 1950 to 1957

18. The years from 1950 to 1957 were boom years for Cyprus. The gross national product in current prices increased at an average rate of 11.9 per cent *per annum*. Even when adjusted to constant prices, the increase was at the rate of 5.8 per cent *per annum*. Prices were rising, wages were rising, and imports were rising.

19. There were three basic factors which contributed to the boom, although any boom develops certain self-generative powers. The first was the very favourable trend in export prices relative to import prices. Comparing 1956 with the period 1946-50, one unit of exports in 1956 would buy not only what it would have bought in imports in the earlier period but two-thirds of a unit more. This was the result of favourable markets for both copper and citrus fruit.

20. The second stimulant was the great increase in expenditures by the Military Authorities in connection with the development of the Bases. Roads and houses were built, military construction and all the amenities relating to a military establishment provided employment to thousands of Cypriot construction workers, and the addition of thousands of individuals to Cyprus' consumers put pressure on available supplies. In 1956, government transactions brought some £20,000,000 to the Island.

21. In the third place, and not completely independent of the boom, there was a rapid expansion in the supply of money and credit. By 1957, currency in circulation was double that of 1950 and bank loans and advances had multiplied three-and-a-half times, an increase of £16,500,000.

22. Capital formation increased during this period, though much of it went into automotive equipment and houses which were intended to be rented to troops' families. The cost of living index rose 54.7 per cent. Real average weekly earnings rose even more, namely, by 37.8 per cent after allowing for the rise in the cost of living. This is an extraordinary increase for a seven-year period and clearly reflected the unnatural conditions which existed.

The turn in 1957

23. The boom came to a definite stop in 1957. Many things happened more or less simultaneously which contributed to the downturn. The peak in agricultural income was reached in 1956 and although agricultural production was higher in 1957, farm income fell by 7.6 per cent because of lower prices. Copper prices fell very sharply in 1957. The level of construction activity in the Bases began to decline as more and more of the work was completed. The amount spent by the Military Authorities in 1957 was 21.7 per cent less than in 1956. The Emergency not only put an end to tourism but was itself a factor disturbing to normal life. Curfews and road-blocks are hardly conducive to economic activity and the surprising thing is that there was not more of a general decline in business in 1958.

24. In the meantime the financial expansion and the volume of imports went on rising. Total debt in Cyprus increased considerably, the commercial banks alone having increased their loans by £8,500,000 from 1957 to 1959. This supported further increases in prices, which rose another 6.6 per cent during the two years. In spite of the reduced activity at the Bases, average weekly earnings rose by a slightly larger amount than the cost of living.

25. Unemployment began to appear in 1958 with the drop in construction. It appears that there was a kind of over-employment before and various workers had been drawn from villages to enter the booming labour market, who did not return. In addition to those engaged by the Military Authorities, government employment also fell. By 1960, the unemployment situation was such that the rate of emigration rose sharply. For the first nine months in 1959, the number was 3,588, while for the same period in 1960, it was 9,959.

26. In late 1959 and early 1960, the impending change in Government led to a flow of capital (to move funds) out of Cyprus and speculative purchases of imports in anticipation of possible increases in tariff barriers. Both these disturbing factors seem to have been temporary and appear to have been halted. The sharp drop in government spending resulting from the termination of the Emergency and the conservative attitude of the new government in financial matters, contributed to creating a downward and sideways movement of the economy rather than any strong upward movement.

27. Unfortunately drought conditions continued into 1960 and agricultural income probably dropped still further. The few available indicators of domestic consumption—beer and cigarettes—both showed considerable declines. *Per capita* gross national product was £161,300 in 1957, £144,600 in 1959, and may be below £140,000 in 1960.

28. The Cyprus economy, as the Mission found it, seemed to be running along a downhill and rather bumpy road. The succeeding chapters will review the various sectors of the economy, examining the prospects of each and suggesting ways of creating and accelerating a healthy upward trend.

Chapter III

WATER

1. In many areas of the world, water is the key natural resource. The productivity of land, labour, and even capital investment depends upon the adequacy of the water supply. In Cyprus one is continually reminded of the need for water. One can see the remnants of Roman aqueducts and rain-collecting cisterns, Turkish chains of wells, mass-concrete dams, open irrigation ditches, miles of iron pipes of various ages, and modern wells.

2. The Republic of Cyprus, due to its geographical position and its climatic conditions, must be considered a semi-arid country. All available water in Cyprus is believed to have a meteoric origin. The average annual rainfall is 19.4 inches, although recorded figures show that rainfall for the entire Island in a very wet year has been as much as 27 inches and in a very dry year as low as 9.7 inches. The bulk of this rainfall (82 per cent) is confined normally to the months from November to April, while December and January, the wettest months, receive 45 per cent of the total annual rain in an average year. It never rains in the summer.

3. Not only are there variations from year to year and within the year but there are wide differences among the different areas. In general, there is much more rainfall in the mountain areas than in the central plain. The long-run average for the highest point in Cyprus is 40.5 inches and for Morphou Bay, 11.0 inches.

4. The average rainfall represents a total amount of approximately 160,000 million cubic feet of water falling on the Island, which is about 45 million cubic feet per square mile or 280,000 cubic feet *per capita*. As is true of all countries, much the greater part of the total rainfall, 80 per cent or more, disappears through evapotranspiration. Rough estimates, which have a wide range of error, suggest that somewhat more than 7,000 million cubic feet represents the total input to the ground-water resources and somewhat less than 9,000 million cubic feet is surface water which, unless prevented, would flow into the sea. That these two sources of water are so nearly equal is an unusual characteristic of a semi-arid country.

5. The presently available rough estimates show that at least 46 per cent (3,300 million cubic feet) of the ground water resources are used. In fact, in some areas there is exhaustion and even an almost complete destruction of aquifers. Only 30 per cent (2,500 million cubic feet) of the surface water is controlled and used. While the breakdown between domestic, industrial, and irrigation water is not possible to ascertain due to lack of records, it is probable that less than 10 per cent of the water used is for domestic purposes. Since industrial uses are negligible, this suggests that at least 90 per cent of the water whose use has been directed by man, is utilized in irrigation.

6. It might appear from the above figures that Cyprus has more water available than its requirements and thus should have no problem. The difficulty is

that water is not available evenly throughout the year nor over all areas. There is surplus water in February but a shortage in September. There are stream basins and watersheds where relatively more water is available than land, and other areas where the demand is permanently higher than the supply such as the Mesaoria and Famagusta areas. In addition, the rapid growth of the larger towns has created a new set of water problems. As to the villages, it is estimated that 102, or 16 per cent of the total, still need piped water.

7. In addition to the problems of unequal water distribution, man himself has created another inequality because of the pattern of development and control which he has allowed to develop. While the average person in some towns obtains 15 to 20 gallons of water per day (the accepted objective is 50 gallons), private interests all around the same towns are permitted to use unlimited quantities of fresh ground water for irrigation purposes. In fact no irrigation scheme yet put into operation in Cyprus contains any provision for effective water control.

8. Ground water in Cyprus is an important part of the total hydrological cycle. Although they have been considerably developed, their potential is still very large, due to existing but not yet developed aquifers. Investigation should permit the development of water resources up to hundreds of millions of cubic feet annually. The known ground water potential is contained in some stream beds; the unknown, but potentially positive, lies in many untapped aquifers distributed almost all over Cyprus. At the present stage, estimation of quantities can be but a mere guess. Only future scientific investigation can provide reliable data.

9. Surface water provides a different problem. It is clearly visible in the winter and spring as it rushes down the valleys and out over the plains into the sea. If held back, much of it might percolate into the ground and strengthen existing ground water operations. If stored, it could be used as needed for irrigation. Here is the potential for a substantial increase in Cyprus' usable supply of water.

10. No program which can now be clearly forecast and which today is economically feasible can so redistribute water throughout Cyprus as to make irrigation possible for all land areas. While some added water can be brought to the Mesaoria plain, it probably will have to remain largely a dry-farming area subject to the variations in rainfall, until deep drilling or some new technological development turns up a new source. However, for much of Cyprus the chances for water development are more promising. The additional utilization of ground water and, even more important, the utilization of the surface water, should provide substantial new water resources. In many areas, with appropriate development, water should no longer be a limiting factor on agricultural production.

11. To develop and distribute these known but as yet unutilized water supplies should require all the energy and funds available for the purpose during at least the next five years. For the time being, the national water policy should be directed to the location of new sources of ground water and the preservation of the existing aquifers and to the full development of the important surface water which now flows into the sea.

12. If after a few years, the intensive development of ground and surface water fails to meet the requirements of the future, there are a number of directions in which Cyprus may turn. With the rapid development of modern technology, some of them may prove to be feasible five or ten years from now. At the moment, there is so much room for development along more conventional lines that extraordinary projects need not be started. However, they all should be kept under careful scrutiny and some preliminary studies might be made.

13. The first possibility is to create additional rainfall by some cloud-seeding process. Modern techniques have been devised and experiments are being carried on, particularly in Australia and the United States. Progress in this field may be expected to occur rather quickly and these techniques may bring positive results at some unknown point in the future. Cyprus is in a favourable position for such a procedure since it has no immediate neighbors who might charge it with stealing their rainfall. However, the process is still in the experimental stage, is very expensive, and its operation under exceedingly dry conditions is not known. There is no record now available to indicate the extent to which there are rain-bearing clouds which pass over Cyprus during the dry months. At least such a record might be kept for possible future application of the technique.

14. In the other direction, down rather than up, there is the possibility that water might be found at levels considerably below those presently explored by drilling. There are some people who believe that some local springs might have their origin from, or be actually fed by, the continent, particularly from the Taurus range in Turkey through a subterranean river under the floor of the Mediterranean. There are geologic and hydrologic arguments against this notion. Record and measurement data for a number of past years have consistently shown that spring discharges in Cyprus are affected by local seasonal variations and even by annual rainfall variations. Furthermore, official maritime maps show that between Turkey and Cyprus there is a wide sea-valley with a depth of more than 3,500 feet. It seems quite impossible for water to flow so far at such a depth and then come up in Cyprus at points where natural springs can be explained by Cyprus' own geology.

15. If one discards the conception of the under-sea river from Turkey, this does not deny the possibility that fresh water might be found at considerable depth below the Island. Deep drilling, as other issues connected with water, has in Cyprus a strong emotional aspect, especially among the people of the Mesaoria plain. Yet chances of finding abundant and good water at several thousand feet depth are rather remote. In the past, 5 boreholes over 1,000 feet in depth were drilled, all of them in Mesaoria, 1 of them to 4,100 feet. Some fresh water was found up to a depth of 500 feet; in the strata below (marls, clays, or gypsum

beds) only rock salt and gypsum were found. However, the impermeable formation was not entirely penetrated and therefore the question may not be considered as definitely solved. Given the real water needs in the Mesaoria area it may therefore be advisable to exhaust all possibilities and to continue to investigate the matter accordingly. Deep drilling needs to be carried out, but since the cost is enormous because it requires the use of expensive rotary rigs, a detailed geophysical survey of the selected area is required before starting the drilling operation. It may also be advisable to combine deep drilling for water with mineral and oil exploration. It is obvious that if deep fresh water were found in great quantity, without adverse effect on the Kyrenia range hydrological system, the economic position of Mesaoria would change tremendously and the benefits for the whole of Cyprus' economy would be immense.

16. If neither altitude nor depth provide additional sources, it may be possible to find added water by going beyond the shoreline. During the last two or three years, the possibility of converting sea water into fresh water for the city water supply of Cyprus has often been mentioned. The geographical distribution of Cyprus is favourable in this respect. Except for Nicosia, the six main cities of the Island are situated on the coastline.

17. The idea of saline-water conversion into fresh water is not recent. For over two hundred years man has been able to extract water from saline water by simple distillation processes, i.e., by boiling saline water and collecting and condensing the resulting steam into pure water. While this is technologically efficient, it is a highly expensive method of sea-water conversion. At the present time, saline water is converted by taking water out of salt (distillation and freezing) and taking salt out of water (membrane technique and electrodialysis). Still other processes are under development.

18. In saline-water conversion the limiting factor is cost and vast amounts of research are being carried on in many countries to find less expensive techniques. The United States and Israel are conducting many experiments in pilot plants, some of them capable of producing 1,000,000 gallons per day. Reported costs range from 700 mils down to 350 mils for 1,000 gallons. A recent report concerning Libya stated that present costs of salt-water conversion (1960) have been reduced to about 200 to 250 mils per 1,000 gallons.¹ It is also estimated that costs would need to be reduced to about 25 mils to make desalinated water an economic proposition for most crops in Libya. The process as presently being developed is sometimes associated with the production of power or some other complementary operation.

19. As far as sea-water conversion processing for Cyprus is concerned, the present cost is too high for it to be seriously considered. It does not offer an immediate solution to the agricultural demand for water. However, sea-water conversion into fresh water is indeed one of the world's biggest promises. It is not unrealistic to believe that by the end of the sixties and at any rate in the seventies, this technique may be able to help Cyprus measurably in its search for an abundant and cheap water supply.

¹International Bank for Reconstruction and Development, *The Economic Development of Libya* (Baltimore, the Johns Hopkins Press, 1960), p. 103. Original figures were in piastres.

20. There remains still one further possibility and that is to import water from the mainland. The petroleum industry has been making rapid advances in transportation of liquid. It is probable that the use of rubber-plastic bags would not be practical; up to now, the largest bag capacity is about 5,000 tons. There is, however, much more promise in the possibility of a floating pipe-line. Rough estimates suggest that a 24" pipeline, anchored to the bottom but supported 200 feet below sea-level by another pipeline acting as a buoyancy pipe, could deliver 460,000,000 cubic feet of water per year, enough to supply Nicosia, Kyrenia, and Famagusta at a cost below that of the Great Nicosia Scheme, a programme now under construction for supplying Nicosia with water from wells in the Morphou Bay area. If natural gas were to be transported in the buoyancy pipe and oil in the water-pipe at intermittent intervals, the cost would be considerably lower.

21. The various future possibilities discussed above are all of them exactly that—possibilities in the future. For the next five years, every effort should be devoted to locating and utilizing the ground and surface water in Cyprus. The remainder of this chapter and the relevant annexes will be devoted to the development of such a programme.

The elements of water policy

22. The direction of general water policy which has been suggested above is that activity during the next five years be concentrated upon the development and use of ground-water and surface-water resources. To achieve the desired result, this must not be done as in the past, when no clear water policy was ever formulated and when water development was carried out on a village scale, largely in the form of individual and isolated schemes. No real inventory was made of actual water resources. Drilling was not controlled and illegal drilling had become quite common. Water distribution and use were not based on adequate engineering and economic programming. Research was neglected both as to resource evaluation and specific crop water requirements for irrigation. Finally, no systematic effort was made to improve the antiquated, archaic, and confusing body of water legislation. To be sure, there are some forward-looking items which should be placed on the credit side, such as the establishment of an extensive network of water-gauging stations.

23. Water control and conservation must be recognized as a primary duty of the Government. The basic principle for an integrated national water policy must be that the State shall determine the development and use of water as fully as may be required. In other words, water resources should not be the private property of any individual interest for free and unrestricted exploitation, but should be regarded as a national resource to be used in the national interest. There are two basic reasons why the Government must be in a position of control. First is the fact that independent individual action will not only lead to inefficient development and wasteful use, but it may actually damage the broader development of water resources in the area. Second, when water is a scarce commodity it must be allocated on some basis and only the Government is able to consider all the interests of the community.

24. The development of a national water policy for Cyprus must cover each of the stages from discovery to final use. These are discussed in the following pages.

DISCOVERY AND INVESTIGATION

25. There are various techniques which can be used to locate, investigate and evaluate the natural water resources of a country. In Cyprus, due to the geological and topographical conditions, this task is not easy, and there has been no basic programme for accumulating information in scientific form. Some water resources were discovered by mere chance without any scientific or technical approach. Today the demand for new water resources is so great that "water divining" is flourishing, and drilling operations by private drillers is very prevalent in Cyprus; however, the result often is a "dry borehole".

26. It is urgent that the problem be attacked using modern methods. Today the creation of a sound inventory of water resources requires the application of modern science and up-to-date technology.

27. Although ground and surface water are definitely interrelated and are integrated in the hydrological cycle, for the purpose of location, investigation, and inventory, a division has to be established. So far as surface water is concerned, surface hydrology is the science to be applied. Due to local geological conditions it appears that, contrary to conditions existing in many countries, surface water in Cyprus is a more promising source than ground water. While the location of surface water does not require any scientific or technical approach, its evaluation requires certain continuous and other special studies in the form of applied surface hydrology. In Cyprus the surface-water balance is not accurately known. While there is a network of thirty-four surface water-gauging stations, there are problems both of coverage and accuracy. Much more data are needed to be able to plan the proper use of the surface water resources.

28. Methods for locating, investigating, and evaluating ground water have been improved in recent decades and ground water hydrology, or general hydrology, is the main technique to be applied along with general geological analysis. The geology of Cyprus is so complicated that extensive geological and hydrogeological work is of great importance. It must be recognized that such a task is difficult and will give results only after data have been accumulated for some time.

29. A geophysical approach to ground-water investigation should be of great benefit to Cyprus. The data obtained from the 1958 survey have proved to be valuable for ground water development. Nevertheless, additional geophysical surveys are needed. In addition, subsurface investigations are also required. Thickness, composition, permeability, and yield of aquifers can be learned by test drilling. Test drilling by apparatus of small diameter is often valuable prior to well or borehole drilling. Test holes may also serve as observation wells for aquifer study. Although several hundred boreholes have already been drilled, more drilling for exploration purposes is required.

30. At present, the Government is not staffed to carry on these various essential tasks of building up basic knowledge concerning the water resource in Cyprus. While strictly hydrologic work belongs to the

Water Development Department, the broader geological and geophysical surveys are of importance for mining as well as water development. Therefore, the suggestion is advanced in Chapter V that a well organized and fully equipped geological survey department be created to serve both interests, and that external assistance be sought from the United Nations Special Fund or other sources to achieve the purpose. In order to provide an adequate basis for future water development, it is to be hoped that arrangements can be made for intensive survey work during the five-year period.

DEVELOPMENT AND DISTRIBUTION

31. The second aspect of an integrated water policy concerns the development and distribution of water resources once the resources have been located and investigated. In Cyprus this aspect of water policy is particularly important because of many factors, the most obvious of which is the scattered way in which existing water resources and land are located at many points on the Island. In addition, demographic and social conditions are important in the context of directing the flow of water to points of greatest usefulness.

32. In Cyprus planning for water must be done both at the national and regional level, the latter including districts or even watershed areas. It is often necessary to make choices among several areas or to establish priorities. Technical considerations (dealt with in detail elsewhere in this report) also justify regional planning.

33. The basis for planning a water-development policy should rest on the fact that at present more than 70 per cent of the known surface water resources are not developed at all because they are mostly lost into the sea, while all known aquifers are in danger of being over-developed by extensive drilling and over-pumping. It seems clear that surface water development should be given immediate priority.

34. The process of development has many difficult technical problems, whether drilling for ground water is involved or retaining surface water. Particularly in the latter case, careful engineering is required to determine the most efficient design. The consequences of a dam's collapsing and permitting an unexpected flooding of the areas below are often extremely serious so there must be a high safety factor. On the other hand, construction work involves considerable expenditure and the cost factor must be kept in mind.

35. Likewise, there are many problems in designing distribution systems, particularly when there is a considerable distance between the point where the water is collected and the point of use. There are many ways of directing the flow of water, ranging from open ditches to expensive pipelines. No one system is appropriate for all situations and, again, efficiency and cost must be weighed.

36. Proper water management depends largely on the legal control of water development and use. In Cyprus water rights are more extended than in any of the surrounding countries; in fact they are privileges whose origin in some cases goes back as far as the 16th century. The legislation relating to prospecting, drilling, and utilization of water is no more than a network of antiquated Ottoman water laws, to some extent "modernized" in accordance with the generally admitted principles of public utilities. This legislation actually tends to hamper water development instead

of contributing to it. The local water authorities believe that the existing laws should be replaced by new and simplified legislation. In spite of the fact that rather broad water rights are vested in the Government, it happens too often that the building of a dam, for example, is delayed because private water and property rights based on *ab antiquo* possession must be adjusted before actual work can begin, or the boring of a well takes place when the aquifer cannot support it and the result is a falling water table.

37. Legislation relating to land tenure also affects water development. Cyprus suffers severely from extreme fragmentation of land ownership. This together with antiquated ownership and estate laws and customs involving water rights, has hampered the development of water resources. Vested private interests in land and water are protected by the present laws to such a degree that private owners, even when offered compensation, can frequently obstruct the execution of a project. It is obvious that no water development programme for the benefit of the general population, can be readily carried out under such circumstances.

38. While it is true that the Government has powers to acquire the water rights of private individuals, the laws are antiquated and very complicated. With present water legislation providing such obstacles to an integrated water program, steps should be taken for its revision. To that end, it is suggested that arrangements be made to bring to Cyprus a foreign expert who is experienced in actions which have been taken in other countries to modernize their legislation bearing on water development.

WATER USE

39. Water discovery and development presumably are for a purpose. They are the necessary result of the fact that there is a demand for water by someone for some purpose. The knowledge of water demand is important for two reasons. First, it will indicate how great an effort should be made to increase the available supply. Thus desalinization may be justified in Kuwait where there is not enough fresh water even for human consumption, but is much too expensive for application in Cyprus where added water is desired primarily for irrigation purposes. Second, if there is a shortage of water, knowledge of the demand will contribute to the appropriate allocation of the limited supply.

40. The highest use of water on the scale of priorities is for human consumption. As population and education increase, the domestic water supply demand grows. As farm population moves to the towns, the water problem in Cyprus is increased because it is more difficult to supply a large amount to a concentrated area than it is to satisfy a demand spread over a countryside. Finally, with a rising standard of living, *per capita* water consumption also rises. An evaluation of domestic demand is particularly difficult for the villages because water is distributed free of charge through pipes and fountains. One might get a clearer picture of demand if a wider use of meters might be introduced. There is considerable justification for the position that water, being a scarce commodity, should be sold at an appropriate rate by the State or the local communities.

41. In view of the limited supply of water, the inevitable increase in the demand for human consump-

tion is bound to conflict with demands for other uses. In Cyprus more than 60 per cent of the population derive their livelihood from agriculture and related activities. As is pointed out in Chapter IV, agricultural progress in Cyprus is largely dependent on irrigation. Agriculture is a great water consumer and therefore priorities for development should be established. First should come the irrigation of high-yielding cash or export crops such as citrus, other fruit, and vegetables; second, fodder or forage crops for livestock, especially in areas close to towns and villages where such crops would have a high revenue; and third, wheat and barley, but only in the form of spate irrigation.

42. As regards the use of water by industry, it is clear that the present water shortage implies that in much of Cyprus high water-consuming industries cannot be contemplated. New industries should be carefully evaluated in the light of water availability. When it comes to matters of industry location, the water requirements should be taken into account not only for the plant use but also the fact that it will tend to increase the population clustered in the vicinity. On the basis of water availability, the area about Limassol is best suited for industries where water is an important factor.

43. It need not be stressed that these considerations call for a very close working arrangement between those developing the water programme and those responsible for the development of agriculture and industry. No absolute priorities can be established for water use. While agriculture in general might receive priority over industrial requirements, this does not mean that all agricultural projects are to be preferred to all industrial projects.

44. The benefits to be obtained from particular uses must not only be weighed against alternative uses, but also against the costs which are involved. The problem of evaluating water projects is particularly difficult to assess in view of the multi-purpose use of water. It is not too surprising to find that in the past, many water schemes, chiefly in irrigation, have been primarily inspired by social and political considerations rather than by economic and engineering criteria. Often too little attention was paid to such factors as operating, maintenance, and financial costs. In analyzing a project, however small, costs should be clearly ascertained and balanced against benefits, so far as is possible.

WATER CONSERVATION

45. The conservation of water is a special dimension of the whole process of supplying water for use. Cyprus cannot afford to waste any water. Water conservation has two main aspects, technical and legal, and has to be applied to both ground and surface water. In Cyprus the immediate requirement in water conservation is the preservation of already existing water resources (in particular ground water) and the storage of surface water actually wasted, both by streams flowing into the sea and by man as a result of misguided action.

46. An important aspect of conservation policy in Cyprus is the prevention of action leading to the depletion of ground resources. The Water Development Department is often hampered by laws which are too lenient to permit efficient combating of depletion, contamination, and destruction of aquifers, as in the cases

of Morphou and Famagusta. At present, the only action taken by the authorities is to record the daily dropping in the water level of almost all aquifers on the Island. The Government has to date not enacted a law to put an end to this disastrous situation. Already many wells or boreholes have dried up; and in many areas along the sea fresh ground water has been replaced by sea water. Due to the local hydrological conditions, these aquifers are lost.

47. Conservation may also play a part by improving the use of water. For example, in 1957, a mission of the United Nations Food and Agriculture Organization (FAO) recommended the creation of an Irrigation Institute. In 1960, the Cyprus Government submitted to the United Nations Special Fund a request for the implementation of a Research Agricultural Institute which would have an irrigation section. While such an organization could make many contributions toward more efficient irrigation methods, one project needs to be started as quickly as possible if only as a pilot scheme; namely, experiments on water requirements for various crops. The project could be carried on at the Morphou Experimental Farm.

48. The considerations outlined above for the development of a national water policy will be further elaborated in the following pages. However, it seems clear that the achievement of the goals outlined will be no easy task. It will require a substantial strengthening of the Water Development Department which must decentralize its operation so that regional officers can keep in close touch with local situations. It will need to work in much closer relations with other departments in the Government, mostly the Geological Survey, the Ministry of Agriculture and Natural Resources, and the Ministry of Commerce and Industry. These matters are discussed in greater detail in Annex IV. The fundamental fact of course is that without adequate personnel and appropriate organizational procedures to carry it out, no national policy can be effective.

Problems of inventory and development

49. Any study of water resources must start with observations concerning the initial supply of water. Precipitation is of more interest to the meteorologist than to the hydrologist; yet, once the moisture reaches the ground, it becomes a basic element of hydrology. The problem is first to estimate how much water is made available and then to determine what happens to it thereafter.

GROUND WATER

50. There are three main stages in ground-water exploration—geological and hydrogeological techniques, geophysical techniques, and drilling. These three stages are examined below.

Geological and hydrogeological techniques

51. The study of a country's geology has to do with rocks, minerals, and soils, underground water, petroleum deposits, etc. While some work of this kind is often done by private companies, it is the more usual situation in technologically advanced countries that extensive geological activities are carried on by the government. Despite some efforts towards assessing the

ground-water resources in some areas, no comprehensive hydrological map depicting the existence of water-bearing horizons is as yet available for Cyprus. Recently, the Water Development Department started work on a systematic survey of the Morphou Bay Basin which is the Island's main known aquifer. This work needs urgently to be completed by a systematic and careful search for additional and deeper aquifers.

52. Cyprus has a rather complicated geology. Obviously the main discipline involved for purposes of water research is hydrogeology and good hydrogeology is impossible without first-class geology. It would be of great assistance in finding more ground water to carry out additional geological surveys. A list of areas where work of this type might be helpful is contained in Annex I.

Geophysical techniques

53. Geophysical surveys represent the use of modern forms of instrumentation to determine the nature of formations below the earth's surface. These methods have often yielded positive results in ground-water exploration. From 1938 to 1958 Petroleum Development (Cyprus) Ltd. carried out geophysical surveys in some areas of Cyprus. In 1957, the Forest Oil Co. undertook to review the previous geophysical results, without themselves carrying out field operations. However, the examination of available maps and data would suggest that more geophysical investigation is needed in Cyprus, particularly in Mesaoria. The 1958 survey,¹ though limited in coverage, has permitted the development of many localized but very important aquifers. Any further geophysical investigation should take this earlier work into account.

54. A well staffed and equipped geophysical section should be included in the Geological Survey Department which is suggested in Chapter V. The section would utilize both electrical and seismic methods. For the purpose of ground water investigation by geophysical means, areas which appear to be best suited are listed in Annex I.

Drilling for ground water

55. The third stage in ground water exploration is drilling. In Cyprus, drilling is a fairly advanced technique: a number of drilling rigs are in continuous operation and the percentage of drilled holes per square mile is one of the highest in the world. Since 1949 more than 2,500 officially recorded boreholes have been drilled for water exploration and development by the Water Development Department. Furthermore, during this period private drillers have sunk several hundred additional boreholes, often illegally, since drilling requires a Government permit. As a result the area under pumped irrigation has risen from about 60,000 donums in 1949 to 160,000 donums in 1959.

56. The rapid development of irrigation is undoubtedly of great benefit to the country's economy. But, since excessive drilling may lower the water table and ruin further development, such extensive and not always controlled drilling may cause great long-term damage at the cost of a purely temporary benefit. A

¹This survey was carried out by a private firm working under Government contract. The Cyprus Water Development Department has some light geophysical equipment but there is no geophysicist.

grave situation of this kind has already arisen in both the Famagusta and Morphou areas.

57. It is essential to put an end to the very disturbing anarchy which at present exists with regard to drilling. With a view to putting drilling on an orderly basis, several main aspects have to be considered and certain conditions should be changed as soon as possible.

58. *Cyprus Drilling Activity*: A recent estimate of the Department of Statistics and Research on available drilling equipment in Cyprus, shows the following data:

Table 2

NUMBER OF DRILLING RIGS

<i>Owners of rigs</i>	<i>Number of drilling rigs</i>
Mining companies	43
Private drillers	8*
Cement firms	10
Quarries	19
Water Development Department	15
Total	95

* According to an estimate of the Water Development Department there are 36 private drilling rigs, most of them for water.

59. Private owners of drilling rigs benefit from having modern equipment in generally good or fair condition for ground water exploration and development. For instance, a rotation diamond core-drill (for depth as much as 1,500 feet) is available for exploration in hard consolidated formations such as that in the Kyrenia range and private rotary rigs are also available for depths up to 5,000 feet.

60. The Drilling Section of the Water Development Department is most active despite many limitations, inadequate equipment, and other adverse factors. Its present stock is composed of 15 rigs, of which 2 are on loan from the United Kingdom military authorities. As far as percussion drilling technique is concerned, there is no manpower problem and many local drillers are available. Although the Government rigs are reported to be "good" to "very good" (and only two rigs are classified as "very old"), they are limited in their use and unsuited to many local geological conditions. Thus, drilled diameters for final boreholes are only 8 inch or 10 inch which are too small for efficient use. Moreover, these rigs are not economical for ground-water exploration in consolidated hard formations.

61. The Government equipment needs to be modernized and made capable of drilling in hard formation such as crystalline limestone, calcareous sandstone, and pillow lava. Percussion rigs are very efficient in clay, marl, sandstone, soft formations and river beds, boulders, gravel and sand, but they are inefficient and highly expensive for work in hard formations. Hence rotation rigs and rotary machines will have to be used in Cyprus for drilling at least in a number of areas.

62. Cypriot drillers are well qualified in percussion drilling and should be able to master rapidly the techniques of rotation and rotary rigs as well as those for borehole development and gravel packing. Recently some tests of gravel packing and borehole development were carried out. It was found that these operations, though efficient, were too expensive chiefly due to lack of staff training in this particular but common technique. If modern equipment is to be used, practical training should be provided by an expert.

63. The present Government equipment makes possible only one borehole for government purposes as

compared with fifteen being drilled for private interests. A more usual proportion would be one government (or public utility) to four private. There is a simple division of function which can apply between the Government and private drillers. The Government's drilling force should be used mostly in drilling for development purposes while approved boreholes for the use of private interests should be drilled by private drilling contractors. At present in Cyprus, the Government's drilling staff and equipment is utilized much of the time serving private interests.

64. The lack of utilization of the Government's drilling facilities for its own purposes has resulted in preventing observation boreholes from being drilled in water conservation areas, although the study and control of aquifers is so vital in connection with the falling of the water table. A special effort should therefore be made to carry out drilling operations in the Famagusta and Morphou aquifers where the problem of conservation of ground water resources is so serious.

65. A brief description of areas where future drilling for ground water appears most appropriate is given in Annex II at the end of the report.

66. *Government control of drilling*: The basic water development policy requires the Government's full control over water resources and the effective enforcement of relevant water laws. As a corollary, drilling operations should be under government control. Private drillers can be authorized to drill either for public or private purposes, but borehole location and other relevant considerations should have to comply with the requirements of overall water policy and detailed water regulations.

67. To achieve this, the Government must have a much better knowledge of water supply and requirements in each area than it has at present. In order to have such intimate knowledge as is required to approve each proposed drilling, there needs to be a series of regional governmental units, e.g., a regional or district engineer of the Water Development Department working in cooperation with the Geological Survey Department.

68. It will not be enough merely to make suggestions to owners and drillers, but there must be effective enforcement. When added boreholes can threaten the water supply of whole communities by being misplaced or by creating over-pumping, there should be no leniency to anyone who flouts his lawful obligations.

69. Private drilling can make a further contribution to water development. Results of sunk boreholes and soil samples are very helpful to geologists, yet in Cyprus none or few log sheets or geological section sheets and samples are supplied by private drillers to the Water Development Department. The accumulation of geologic information is one of the main functions of government and cooperation by private drillers to this end can be of great value.

70. *Maintenance of the Water Table*: Up to now scientific techniques have been used in Cyprus almost entirely for water development and the study and conservation of natural aquifers have been neglected. One of the main tasks is the hydrological study and evaluation of the present known and used aquifers. As mentioned above, the examples of the Famagusta aquifer and the Morphou Bay Basin (where neither hydrological map nor hydrological balance was established) have to be kept in mind. In these areas the water table

in some parts of the aquifers has dropped dangerously. Many boreholes have dried up. Sea-water encroachments have penetrated inland; and some soils, which were very productive, have become sterile for cultivation. To investigate and develop ground water is one important task, but at least as important is the conservation and wise use of what nature has provided. This is being recognized all over the world as a vital task. It is especially important in Cyprus where nature has not been over-generous, but where, unfortunately man has not taken full advantage of his opportunities.

71. In order to maintain or increase the natural supply of ground water resources, artificial recharge has been attempted in many countries and in numerous cases has been successful. In the United States and Europe artificial recharge for ground water was started in the nineteenth century. The methods applied have either been water spreading through the flooding method, basins, ditches, channels, or irrigation; or water infiltration through pits and shafts, or wells, or induced recharge. These methods were always designed and constructed in such a way that only filtered, clean and non-polluted water is introduced in the aquifer.

72. The first recharge scheme in Cyprus was started in Limassol, followed later in the Famagusta area in 1954. A detailed evaluation of the Famagusta scheme, of which the first stage was recently completed, is given in Annex III. The original designers of this scheme wisely insisted that this artificial recharge scheme be considered as purely experimental and that it was advisable to proceed cautiously. They suggested that a possible shortage of surface water might be a limiting factor and proposed that systematic measurements and records be made for not less than five years. The main technical difficulty was the method of introducing the surface water into the aquifer, which was done through an underground gallery.

73. Artificial recharge of ground water is unquestionably a technique which must be utilized in Cyprus, but this technique requires highly advanced applied hydrology as well as good engineering design and construction. Furthermore, a careful economic study comparing cost with benefit should be carried out for each particular scheme, especially when artificial recharge is intended to provide ground water for irrigation purposes. Unfortunately, in the case of the Famagusta recharge scheme, some basic principles for scientific work have not been respected. No cost-benefit study has been made, nor have proper measurements and records been kept. Recharge is provided through a gallery which offers opportunity for the sides and bottom to become clogged with silt and clay layers. In addition, heavy turbid surface water is directly introduced into the gallery and polluted water and bacteria are introduced as well. Under these circumstances the artificial recharge technique for ground water in Cyprus needs revision. Concerning the immediate requirements for the artificial recharge schemes of the Famagusta and Morphou Basin, specific suggestions for action are provided in Annex III.

74. Some administrative and legal measures have already been taken by the Government to deal with over-expansion of drilling in the critical areas. Water conservation areas have been established. A stricter control over private drillers is beginning to be applied; a hydrological survey of aquifers is under progress. This unfortunately is not enough. In the most import-

ant aquifers of Cyprus the water table is continuously dropping, more boreholes and wells are drying up, and more sea encroachments are reported. The ground-water reserves are diminishing at a fast rate. This problem should therefore be faced with strong determination. Suggested measures to be taken might be as follows:

(a) Immediate investigation, review, and revised construction of the artificial recharge schemes for ground water in the two main aquifers—Famagusta and Mor-phou Bay Basin.

(b) Completion of the hydrological surveys of the aquifers and sinking of new observatory boreholes.

(c) Administrative inquiries and court action against sinking of boreholes which are illegal under existing laws. It has been estimated that in Famagusta District at least 200 illegal boreholes were sunk during the last few months.

(d) Land and borehole consolidation wherever possible in order to achieve better water use and more efficient control.

In such future ground water areas as are developed, boreholes should clearly be government controlled and land consolidation and irrigation divisions should be organized before pumping and irrigation start.

75. If the above-mentioned measures are not immediately implemented and strictly applied, it is of little use to establish any water development plan for Cyprus and the agricultural economy and the future of this country would be compromised.

SURFACE WATER

76. Due to the nature of the precipitation and the geographical, geological, and hydrographic pattern, surface water is still the most evident and potentially important water resource of Cyprus. Since the appearance of surface water is a brief phenomenon in the winter and early spring, its investigation and study are not very easy.

77. Numerous attempts have been made in the past to prepare a tentative water balance showing the relative contribution by the precipitation over the Island to surface run-off, evapotranspiration, percolation into the ground, and water lost into the sea. Although no satisfactory computations are available, it seems clear that the available potential of surface water is still the most important in the hydrological balance of the country. Approximate estimates of the Water Development Department show that every year if only the wasted surface water flowing through the Troodos range streams could be used, at least some 200,000 donums could be permanently irrigated. To this important amount, additional thousands of donums could also be seasonally irrigated along the Kyrenia range slopes where the surface water does not reach the sea but is lost by spreading and evaporation.

78. The accepted technique for the control and conservation of flood water is to hold back the water by means of dams. Many problems then arise—where to place the dams, what capacity and strength will be required, what design will be best suited as well as lowest cost, and how should the stored water be used. In order to make such decisions wisely and to have adequate but not too extensive construction, numerous and accurate water-flow records are needed before the complete development of a stream basin can be efficiently achieved. Furthermore, additional information outside

the water field is needed from fields such as agriculture, for example.

79. Finally, it is now widely recognized that uncoordinated water projects, isolated dams in the case of Cyprus, cannot as a rule be undertaken with optimum benefit unless there are at least the broad outlines of a plan for the entire stream basin. Consequently it is desirable to examine the problems in developing a plan for surface-water development.

Hydrology and improvement of basic hydrological data

80. Although it has been said in various reports that the general hydrology of Cyprus is simple and well known, detailed surface-water records and data have still to be greatly improved. For the purpose of providing a basic framework capable of incorporating all future hydrological information, the drainage pattern of Cyprus has been divided into 42 catchment areas. This pattern for analysis and the relevant report published in 1958 can be considered as the most valuable work produced by the Hydrologic Section of the Water Development Department, established in 1954. A network of 34 water-gauging stations is in operation throughout Cyprus. Cumulative annual floods of the most important springs and streams are recorded with an estimated accuracy of 90 per cent, although in some cases this accuracy is admittedly only 75 per cent or even less. The margin of unknown is still too wide for a meaningful calculation of a hydrological balance of the Island.

81. More wells or boreholes are drilled every year and more dams are to be built in the near future. Any work effecting a local modification of one of the terms entering into the hydrological cycle reacts on the others, not merely locally but throughout a whole basin and even in adjacent regions. It follows that, in hydrology, the scope of any study must be extended both in space and in time.

82. The present water-gauging station network is composed of 37 water-level recorders with 33 installed on streams and equipped with monthly charts, and 4 on irrigation channels with weekly charts. Unfortunately, all these instruments record in ink and the actual record is extremely unclear because of ink spreading and dilution due to temperature and moisture. This could be corrected by using metalized charts with dry pencil or needle without ink. Moreover, the intake pipes have to be modified because of silting, which makes the records inaccurate so that the amount of water recorded is much less than the amount which has passed through the water-gauging station. This might be corrected by using vertical supporting pipes as intake. A better and simpler solution, however, would be to replace the present water level recorders by more modern instruments. It also appears that the present rate which is expressed in imperial gallons per day or week should be replaced by either cubic feet or cubic metres per second to correspond with present technical usage.

83. The present centralized system must be reorganized. The maintenance and control of water-gauging stations needs to be operated on a district or hydrological area level; i.e., the Hydrological Section should post a technical assistant in each district or hydrological region.

84. Because the floods are so torrential, it does not appear necessary to recommend the use of current meters. However, although the floods carry soil with

them, the measurement of the transport of solids by streams is not available in many catchments and not accurate enough in others. However, such records are essential for the design of dams and irrigation schemes in order to determine what deposits will be made in the dam pool. Evidently, the present water-gauging station system was designed and implemented with a view to obtaining hydrological records for the design of mass gravity over-flow dams. In the future it seems probable that a series of earth dams will be built and accurate hydrological records are absolutely necessary for spill-way design.

85. There is another important aspect of the hydrological problem to be considered. Currently, in the Water Development Department, there is no hydrologist and the Hydrologic Section only deals with routine operations. Since there does not appear to be an experienced hydrologist available in Cyprus, it is recommended that the services of a senior hydrologist be requested under a technical assistance programme. He would organize the preparation of an adequate water balance, a prerequisite to a planned water economy, the collection of a great variety of data which may take several years of observation and study, and the training of the local hydrological staff.

Stream-basin development

86. The hydrographic pattern of Cyprus consists of 34 streams widely distributed from and around the Troodos Range, including 15 streams of average importance flowing on its southern slope and some 128 small streams on the slopes of the Kyrenia Range.

87. In many stream valleys land resources are scarcer than water resources, but at the same time many valleys, particularly in their lower reaches, have more land than water. Too often in valleys and coastal plains dry farming is still practised while millions of cubic feet of water could be made available for irrigation. For the immediate future, however, each stream basin must be considered as an entity and developed as such. In the future, however, once stream basins around Troodos are fully developed, schemes operating in the upper reaches or methods of diverting water floods from one valley to another could be carried out for any excess water flowing into the sea.

88. The main purpose of stream-basin development, viewed in its hydraulic aspect, is to improve the distribution and utilization of surface water usually for irrigation purposes. An interesting approach to this problem has recently been made by the Water Development Department in close co-operation with the Department of Agriculture (see: "Investigation on the Impoundment of Water in the Pendaskynos Catchment").

89. The fundamental method of modifying water distribution is to build dams which store water on its way towards the sea. In the past, most of the dams in Cyprus were built on the upper or medium reaches of the streams. Moreover, being mass-concrete gravity or masonry structures, they were built on igneous rocks (where natural foundations can support such structures) but where slopes are steep and the ratio of the height of the dam to the volume of water stored is very high, which makes for costly storage. Another objection to such dams is that their location generally excludes any large availability of land for irrigation in their immediate neighborhood. It is therefore necessary to install pipes or lined channels over great dis-

tances at considerable cost to reach the downstream land.

90. Even though the general types of waterworks used today differ little from those used in the past, progress in technology now permits, and increasingly will permit, a growing expansion in the variety of water development structures and utilization. Cyprus should be prepared to utilize various types of structures which are appropriate. For example, compacted earth dams have not been constructed so far, although they have the advantage of being easily located in the lower reaches of the streams where more natural storage capacity exists and more land suitable for irrigation is available.

91. Although a few low earth dams or embankments were built in Cyprus in the past (e.g. in the Mesaoria plain) this technique can be very valuable in its modern form. Improvements in earth-moving equipment (heavy excavators, dump trucks, tractors, and scrapers) have made possible the construction of great earth dams and canals in less time than in the past, even when thousands of workers were employed. Progress in soil mechanics technique permits the construction of earth structures to increasingly greater heights without danger of failure.

92. A recent survey made in Cyprus shows that earth-moving machinery is available in various government departments or owned by private contractors. A soil mechanics laboratory could be easily established as some equipment already exists in the Department of Agriculture laboratory. But experts experienced in earth-dam design are not at present available in Cyprus. Therefore, it is suggested that an expert on dam design be requested from the United Nations Technical Assistance Programme. His duties should be as follows:

(a) To assist the Water Development Department in dam design and construction control;

(b) To carry out designs for low and average height (generally not exceeding 100 feet) earth dams, mass-concrete gravity, and rock-fill dams;

(c) To prepare a set of basic technical instructions for dam design and construction;

(d) To train several local civil engineers in dam design and construction.

93. In stream-basin development some additional engineering requirements have to be met which involve economic and social problems as well. Thus in Troodos range flood protection and land reclamation schemes should also be provided, particularly where land is scarcer than water. However, for the next few years, water control and conservation should come first.

94. A serious complication in stream-basin development is the presence of private land and water rights. For any unified planning, the random character of land distribution and water rights can be a major obstacle, at least so far as the upper reaches of the stream are concerned. Revisions of land ownership and water rights may take a long time, but ways must be found whereby individual interests yield to the collective social interest, subject to the payment of fair, just, and prompt compensation.

95. Sooner or later, the existing laws will have to be revised and adjusted to modern times. However, this obstacle can be avoided in some cases if the first streams to be developed are those whose lower reaches are on the coastal plain, where land distribution and water-

rights problems would often be less troublesome. Such locations are preferable also because these areas are endowed with good sites for earth dams of great storage capacity; the projects in these areas would be much less costly; these areas are favourably located in respect to possible irrigation schemes and water use. The possibility of combining projects of this sort with irrigation schemes is discussed in the next section.

Irrigation

BASIC DATA REQUIREMENTS

96. Increasing the irrigated area is an important goal. Permanent irrigation will increase output, land values, and annual incomes.

97. The two elements in promoting a sound policy of irrigation are the correct assessment of the amount of water available for irrigation and an inventory of land for which there is need for irrigation. This must take into account alternative uses of both water and land.

98. When knowledge is clear about water and land availability, there must be some information as to the possible ratios of use between the two. At present, this is a blind spot in Cypriot knowledge. Research is needed to provide data on the water requirements of various crops. In 1957 a report by the Food and Agriculture Organization on "Water Use Research in Cyprus" pointed out that there were neither data on the potentially irrigable land nor on crop irrigation requirements. Today these data are still badly lacking. A proposal for such a research project to be carried on in Morphou is strongly endorsed in Chapter IV.

EVALUATION OF FUTURE IRRIGATION DEVELOPMENTS

In Cyprus there are four types of irrigation.

Irrigation from natural springs

99. Hundreds of natural springs have already been improved by means of excavation, drainage, and building. This represents a most valuable operation because spring water is generally permanent, of good quality, and free of cost. In many places, lined channels for distribution have been provided. However the discharge of springs can be neither increased nor controlled. Their input into the total irrigated area of Cyprus is not accurately known, though the most important ones are periodically gauged.

100. Throughout the world, discharges of most natural springs are slowly decreasing. Thus, as the potential of these springs is negative or constant at best, it is not advisable to rely on them for any further expansion of irrigation. To be sure, some improvement in the final delivery by means of channel lining and better water use can be achieved, but these methods will bring about little increase in irrigated land area.

101. As regards water use one of the most difficult cases is that of Kythrea spring, the largest spring in Cyprus. Progress in this region is hampered by the following factors: adverse topographical conditions particularly in the valley, scattered land and building distribution, and complicated water-rights agreements.

Spate irrigation

102. Spate irrigation is that related directly to the winter and spring floods. Although this type of irrigation takes place in winter and, as far as engineering is concerned cannot be controlled over a period of time, its place in the agricultural economy of Cyprus is of some importance. Most of the existing spate irrigation schemes divert and spread water over wheat and barley cultivation. Some improvements could be made. As regards the southern slope of the Kyrenia Range where most of this irrigation is practised, it seems that a combination of spate and controlled irrigation might be achieved. This area is one of the most suitable on the Island for earth-dam construction and its water potential is quite promising. Well designed and properly built dams with control valves and escape spillways would increase crop yield and provide possibilities for new crops. Irrigation would be partly of the spate type, related to the use of winter floods, and partly of the seasonal type in the form of early spring irrigation based on the use of regulator dams.

Stream-basin irrigation

103. At present most irrigation schemes in stream valleys are designed on the basis of masonry or mass-concrete gravity dams, built in hill valleys on the igneous or volcanic rocks. As their main purpose is to extend the period over which spring irrigation is feasible, when streams are still flowing with a very low discharge, these dams are of relatively small storage capacity. Waterworks such as weir intakes, groyne intakes, and overflow spillways are also erected in hill valleys. Channels several miles long are provided in order to irrigate downstream land. The cost of such irrigation schemes is usually high in relation to storage capacity. This is because igneous and volcanic rock valleys are, for the most part, steep and narrow.

104. After a careful examination of this type of scheme the following comments can be made:

Although they are very seldom economical these dams and irrigation schemes are technically suitable in the upper part of Troodos where natural foundations are composed of igneous or volcanic rocks. For instance these structures can be used in the streams flowing into the sea between Xeros and Polis along the north west coast.

For the rest of the hydrographic system of the Island (made up of streams flowing to the sea between Polis and Larnaca along the south coast) similar structures can, if required, be constructed in the upper rocky reaches.

In the lower reaches close to the coastal plain, there is scope for constructing much less expensive earth dams. The water would then come nearer to the land to be irrigated by natural flow rather than be transported downhill through pipes or channels.

105. The following stream and irrigation developments would fit into this general pattern:

(a) In the upper reaches of these streams where soils are composed of solid igneous and volcanic rocks, where valleys are narrow and steep, and where land for good irrigation is rather scarce, gravity or arch dams, and even rock-fill dams can be built. Their storage capacity would be rather small and their cost high, but their main advantages would be to assure spring and

early summer irrigation of the surrounding land, and to act as regulator dams which would serve as silt traps for the very often turbid and violent floods.

(b) In the lower reaches of these streams, where soils are composed of clay, silt, marls, alluvia, etc., and where great natural storage capacity exists because of a gentler slope, and where good land for irrigation is abundant, earth dams should be built. Their main advantages would be:

- (i) Much greater storage capacity for a much lower cost per unit of water stored;
- (ii) Possible use of water in the wider valleys and especially along the vast coastal plains;
- (iii) Improved and cheaper utilization, almost without lined channels and pipes, of classical and modern design irrigation schemes. At least geometric irrigation schemes could be constructed and application of modern irrigation methods would become possible.

106. Such projects in the lower reaches also include another favourable factor of great importance. The 1958 geophysical survey, although limited in its coverage, showed that millions of cubic feet of water are available all year round in the alluvial beds of these streams. Thus, a combined scheme, with surface-water irrigation commanded by the earth dams and permanent ground-water irrigation through boreholes sunk in the stream beds, becomes feasible.

107. It is unnecessary to emphasize the irrigation potential which exists in such schemes and their possible contribution to the agricultural economy.

Pumped irrigation

108. This term includes water pumped from natural ground reservoirs for irrigation purposes. During the last fifteen years, the expansion of irrigation by pumping has been spectacular in Cyprus. In some areas there has even been over-expansion. In such cases the water balance becomes negative, i.e., more water is extracted from the underground than is replenished in the aquifers.

109. Although some localized aquifers can still be developed in the near future, it is unlikely that any major areas for great new ground water production will be found in the future. To give an order of comparison, it can be expected that the remaining ground water still to be developed will be considerably less than the present annual pumped output which is estimated at 3,300 million cubic feet. This comment does not include the stream beds' ground-water potential which should have an annual output of at least several hundred million cubic feet per year for 14 streams already geophysically surveyed, while 20 streams have yet to be surveyed.

110. The immediate requirements for pumped irrigation are not investigation and development but rather control, conservation, and careful use of the existing developed aquifers.

CHANNEL LINING AND PIPES

111. Expenditure in the past on channel lining and pipes may have been excessive considering that so much water was being lost every year in the sea. Before lining so many channels and laying down hundreds of miles of pipes, it might have been more profitable to build more dams and waterworks with a view to conserving more surface water.

112. Any water technician or expert visiting the Island would be struck by the fact that Cyprus has proportionately more water-conveying means (lined channels, pipes) than storage structures (dams and reservoirs). Over the last eight years the Water Development Department alone spent £500,000 in lining some 125 miles of channels and roughly £1,000,000 in laying down some 900 miles of pipes, while only £120,000 was spent for building eight dams. One would have supposed that dams would have had priority over channel lining and imported pipes, although quite obviously in many schemes some lined channels and pipes are also essential.

113. Although large sums of money were allocated to channel lining and piping, the design and methods used appear to be in great need of modernization. Improvements along the following lines would be particularly beneficial:

(a) Elimination of reinforcement steel bar in concrete and mortar lining, except where safety is involved. Such a process can provide a saving of 10 to 15 per cent in the total cost;

(b) Development of subgrade-guided slip-forms where asphalt and cement concrete linings are possible;

(c) Standardization of canal shapes and sizes which would provide lower costs and faster completion of engineering details;

(d) Use of buried asphalt membrane lining, pre-fabricated or hot sprayed *in situ* asphalt cement covered with a protective blanket of earth or gravel. This type of lining can be applied either on gentle slopes or flat land;

(e) Use of compacted clay or impermeable material wherever possible, particularly in the lower reaches of valleys and in flat irrigated areas. If bentonite can be obtained from local deposits, it can also be used for lining;

(f) The gradual introduction of mechanized lining.

LEGISLATION

114. Ground-water legislation for irrigation is contained in the Wells Law which, as far as borehole drilling by private drillers is concerned, gives some control to the District Officer and to the Water Engineer. Prospecting, drilling, and utilization of water, however, are governed by a complex series of laws based on old Ottoman water laws somewhat modified by principles derived from modern utility legislation.

115. The existing laws should be replaced by new and simplified legislation. Thus, at present there is a constant unnecessary dropping of the level of almost all aquifers in Cyprus and there is no legislation under which the Government may prevent it. Already many wells or boreholes have dried up and in many areas along the sea, fresh ground water has been replaced by sea water. Consequently, surrounding land on which flourishing cultivation existed has become sterile. These very grave developments continue to occur now as they have in the past; yet the Water Development Department is powerless to take remedial action and paradoxically can do no more than calculate the rate of destruction. Drastic action is required to prevent continuing destruction on a massive scale.

116. Although all ownership of waste surface water belongs to the State, this in fact limited by the exist-

ence of private rights along the streams. The public authorities often are reluctant to alter the antiquated traditions of private water use and to revise the obsolete and extremely complicated ownership rights and water laws.²

117. It seems clear that valuable assistance could be obtained from a qualified water legislation specialist who could be assigned to Cyprus under an international technical assistance programme.

THE COST-BENEFIT RATIO OF IRRIGATION

118. Only very tentative data exist at present in Cyprus on the possible benefits which might be derived from irrigation. A 1959 report put the justifiable expenditure for irrigation under the most favourable circumstances at £300 per donum. On the other hand the Water Development Department (Irrigation Section) gives a figure for net profit per donum at only £50.³

119. While it is almost always true in Cyprus that irrigation by pumped ground water (such as in the Morphou Bay Basin and the Famagusta private schemes) or by spring water is economic, it is more difficult to ascertain whether irrigation based on prior construction of mass-concrete gravity dams and channel lining is economically justified.

120. It may well be that the Kafizes and Lefka irrigation schemes are not economically justified. The fact that irrigation water at Lefka will cost 250 mills per 1,000 gallons makes it probably unsound from an economic point of view. It is quite evident that engineering should not be the only criterion to use when planning a new irrigation project. Costs and benefits should also be considered and only when this calculation, which may include social benefits and costs as well, shows a favourable balance can a project be considered as "viable" and be put into effect.

The cost of the programme

121. Water expenditures have not been small in the past, although it is not easy to determine what they have been with any great degree of exactitude. Nevertheless fiscal records give some definite information and estimates can be made from data concerning private drilling. The ordinary budget of the Water Development Department has not been included although much of its expenditure is related to the development and supervision of new projects.

Table 3

ESTIMATED DEVELOPMENT EXPENDITURE FOR WATER, 1955-1959
(Thousands of Cyprus pounds)

	Public ^a	Private	Total
1955	900 ^b	460	1,360
1956	1,140	460	1,600
1957	1,510	530	2,040
1958	1,510	510	2,020
1959	1,510	500	2,010

^a Ordinary budget of Water Development Department not included was £100,000 or less in each year.

^b Expenditures from Development Fund arbitrarily allocated.

^c As an example of the many anomalies found in the present legislation the following can be cited. According to the (private water) Irrigation Association Law a person owning a fraction of the flow of a spring, while not owning any land, may still become a member of an association even though he might not use any water at all, not having land on which to use it.

^d This figure refers to an irrigation scheme supplied either by ground and pumped water or by gravity surface water.

Thus, for the three years 1957-59, the public and private expenditures for water development appear to have exceeded £2,000,000.

122. The main problems for the future development of natural water resources have been analysed in the earlier sections of this Report. Some of the suggestions can be considered as immediate or relatively short term and others are more long range in character. By the end of the programme almost all known surface water lost into the sea at present should be controlled and some 200,000 new donums should be under perennial irrigation. The ground-water supply would be measurably increased, although deep-drilling operations would not yet be completed. Village and town water supply systems should be adequate to meet the demand with the possibility of a 50 per cent increase to meet the demand of the increased population in the years after 1965. The recharge schemes, too, would be completed according to the programme.

123. This section endeavors to evaluate the budgetary requirements involved. For purposes of making estimates, it has been assumed that the broad outlines of water policy previously outlined and given in more detail in Annexes I, II, and III are to be carried out at an accelerated pace. It assumes that the detailed geological and geophysical survey work and the exploratory drilling to be done by the Geological Survey Department will be done soon enough so that it will not seriously delay the necessary detailed programming. It assumes that serious legal impediments will be removed. And it assumes that the Water Development Department will be strengthened and reorganized along regional lines.

124. The sums required to carry out the various projects, very roughly estimated at current cost levels, are as follows:

Table 4

ESTIMATED PUBLIC COST OF SUGGESTED WATER PROGRAMME
(Thousands of Cyprus pounds)

Hydrology, geology, geophysical investigation, and drilling	600
Cities' water supply:	
Nicosia	2,000
Famagusta	400
Limassol	300
Larnaca	300
Paphos-Ktima	200
Morphou	150
Kyrenia	100
Village water supplies	1,500
Dams	4,100
Irrigation schemes	1,800
Recharge schemes:	
Morphou	200
Famagusta	175
Approximate total	11,800

These figures, which relate only to public expenditure, do not include staff costs which should probably reach something like £200,000 per year when the programme is fully activated. There will always be a considerable number of specific projects being developed and planned and others under construction, so that a much larger staff of competent engineers will be required than is employed at present.

125. There is no fixed period ever which the programme must be completed. However, threatening

water shortages in villages and towns, and the economic contribution to be made to agricultural production call for carrying out the programme as quickly as possible. In the first year or two, many projects will not be able to proceed beyond the planning stage but will then move into the construction stage. For example, it can be assumed that the number of earth dams under construction will be small at the start but will increase over the period. On the other hand, the development of village water supplies will be particularly active in the early years and then can be reduced. Some items such as the Great Nicosia Scheme are already programmed and nearly half the expenditure in 1961 must go to moving it along. If the entire programme were to be completed in five years, the total public development expenditures might be distributed as follows:

Table 5

PUBLIC EXPENDITURES FOR SUGGESTED WATER PROGRAMME
OVER FIVE YEARS
(Thousands of Cyprus pounds)

1961	1,500
1962	1,700
1963	2,800
1964	2,600
1965	3,200
Five year total	11,800

It should be noted that these figures do not include the considerable work in connection with water development to be done by the Geological Survey. This is included in Chapter VIII in connection with proposed development expenditures relating to mining.

126. In view of the fact that delays are much more likely to develop in a multi-project programme than unexpected expediting short-cuts, it would seem unlikely that the programme can be completed in five years because of various technical difficulties. If one allows a six-year span, the total cost will not be changed but can be spread over one additional year. If such a basis is adopted, there should be no reduction in the amounts for the first two years. These involve operations with respect to certain projects now under construction such

as the Great Nicosia Scheme and the two recharge schemes, as well as intensive field investigations. A substantial programme of dam construction, mainly earth dams, could begin in the second year. By the third year, the whole programme could be in full swing. On a six-year basis, the public expenditures during the third, fourth, and fifth years could be at the rate of approximately £2,150,000 per year and this rate would need to be maintained for one additional year to complete the programme.

127. The above estimates relate to public expenditures under the head of water development but this is not the only expenditure on water. It was indicated in Table 3 that about £500,000 per annum is spent on water development from private sources. Over the 1961-65 period, there should be some decline in private drilling and the estimate for this type of expenditure shows a decline from £500,000 per year to £300,000. On this basis, the total public and private expenditure used in the final summary in Chapter XIII is as follows:

Table 6

SUGGESTED DEVELOPMENT EXPENDITURES FOR WATER, 1961-65
(Thousands of Cyprus pounds)

	Public	Private	Total
1961	1,500	500	2,000
1962	1,700	450	2,150
1963	2,150	400	2,550
1964	2,150	350	2,500
1965	2,150	300	2,450

As stated above, these estimates are based upon the assumption that the load of public expenditures is carried on for a sixth year. In addition, it should be kept in mind that other government expenditures also contribute to controlling the water situation, such as agricultural expenditures for soil conservation and those anti-flood projects which are regarded as public works. While the first will always be useful in providing and improving agricultural land, the proposed water development programme should greatly reduce the danger and damage from floods as a by-product of increasing Cyprus' water supply.

Chapter IV

AGRICULTURE, FORESTRY, AND FISHERIES

The place of agriculture in the general economy of Cyprus

POPULATION

1. Agriculture is generally accepted as the most important single industry of Cyprus. Some measure of its importance may be gained through consideration of available information concerning the population and its composition.

2. At the end of 1959, the official estimate placed total population at 561,400. The annual increase described in Chapter II is about 1.5 per cent per year and the total population is expected to reach 600,000 persons in 1965.

3. Of the average population for 1959, some 329,000 constitute the potential working force and represent about 59 per cent of the total population between the ages of 15 and 64. Of these, 265,400 were employed in 1959.¹ The agriculturally employed (owners, family workers, and casual labour calculated at 254 man-days per person) were 134,800 or 50.8 per cent of the total number gainfully employed. In addition to this number there are non-farming landlords dependent upon agriculture.

4. It should also be noted that many of the above persons are employed only part-time in agriculture. There is evidence that more than half of the so-called agriculturally employed also work off the farm part-time, have other occupations, or are employed elsewhere for at least part of the year. This results from the necessity to supplement the low average farm income. This will receive further comment later.

5. The type of farming in much of Cyprus also frees a large part of the farmers' time for considerable periods. In the case of dry-land wheat or barley farming, after the grain is sown in the late fall, there is little labour required until harvest the next April to June. And after harvest little is done once the ground is plowed until the following fall. Animals do not figure importantly in this type of farming. In consequence, long periods of time are free for employment elsewhere, if it can be found. Often members of the family work off the farm.

6. The special case of shepherds should be noted. A very large, but unknown, proportion of them do not own land but graze their flocks in almost nomadic fashion wherever a bit of grazing may be found. They will usually have a permanent home in some village but will be away with their flocks, often many miles off, for long periods of time. Since the shepherd has no farm of his own, members of the family will usually seek non-farming jobs; or the shepherds may own tiny bits

of land wholly inadequate to support their families. Sometimes these plots will be rented to other farm operators; sometimes they will be farmed in order to get whatever income is available, but the family is hardly dependent at all upon farming for its livelihood.

7. There are an estimated 65,000 agricultural holdings. Possibly this number is increasing. At any rate it is likely that at least 60 per cent of the population of Cyprus is dependent to a substantial degree upon agriculture as a means of livelihood,² especially if one takes into account the various auxiliary activities which are required to serve the farmers.

8. Agriculture in Cyprus is organized largely upon the village basis as is so typical of most countries of the Middle East. There are 627 villages, including 10 rural municipalities. There are a few very small villages under 50 in population. There are likewise a few large villages of from 2,000 to 5,000 or 6,000. Quite a number are from 1,000 to 2,000 but most are from 100 to 1,000, with a concentration around 500 population. These data are based on a survey several years old and therefore are not presented precisely. They are offered here merely to convey an impression of the population distribution of the individual villages.

9. There has been a shift of population from rural to urban. In 1921 rural population was 80.6 per cent of the total population, by 1956 this had dropped to 66.6, and probably the shift has continued. It is usually said that the great increase in the number of construction workers in recent years has been due to population shifts from the villages.

10. The literacy of the rural population has been increasing in recent years. It appears that now more than 90 per cent of the children of the villages attend elementary school. This percentage may have been as low as 50 per cent in some villages as recently as ten years ago. Officials have stated that there is as high as 90 per cent literacy among the village population at present. This may be true of the younger group but the older population probably falls below 50 per cent.

11. The extent of literacy is important because it gives a rough index of the difficulty that extension workers may meet in their task of teaching village farmers improved methods of agricultural production. Happily extension workers will have decreasing difficulties on this score as the years go by. The improving literacy rate will enable them to utilize printed material to disseminate agricultural information. Their efforts should, in consequence, be increasingly effective.

12. In many countries, village groups are often tradition-bound and skeptical of adopting methods of

¹ *Cyprus Economic Review*, 1959, p. 28.

² D. Christodoulou, "Contributions Toward a Development Plan for Cyprus Agriculture," Cyprus, Department of Agriculture, (Nicosia, May 1960), p. 3.

production that vary from those handed down from earlier generations. A favourable situation exists in Cyprus in that there is much evidence that the villages welcome the opportunity to adopt improved methods of production.

The agricultural plant

LAND HOLDINGS

13. The land area of Cyprus is 3,572 square miles, or about 6,900,000 donums. Much of this area is mountainous or hilly and other areas are given over to urban sites, roads, bases, and river-beds. An unknown but not insignificant area has become waste land through the operation of soil erosion or by virtue of uncontrolled floods in many of the rivers.

14. The maximum figure given for agricultural land is 4,500,000 donums.³ Consideration of soil erosion losses and the encroachment of non-agricultural uses, reduces this figure to 4,000,000 donums or even less, in the estimate of qualified students.⁴

15. It has been noted that there are about 65,000 farm holdings. The average holding is, therefore, about 60 donums per operator or 20 acres held in 14 dispersed plots. It should be noted that such an average figure includes much bad land as well as good, rain-fed land as well as irrigated, mountain terraces as well as level plains. There is likewise much variation in size of operating units. There are not many very large land-owning operators. Within villages holdings may range from less than 1 donum to over 200 or even 1,000 donums. The Agricultural Census of 1946 recorded that 16.3 per cent of holdings were less than 10 donums; 40.4 per cent were between 10 and 39; 29.4 per cent between 40 and 99; and 13.9 per cent 100 donums or more. At that time the average was 57 donums or 19 acres. In one more recent survey of 135 holdings in 46 different villages, the range of operators' holdings was from 2 in the 1 to 4 donum class to 2 with over 1,000 donums. Many of these operators rented additional land. They owned on the average 100 donums, much larger than the country average, and rented as much more to bring their operating unit to over 200 donums.⁵

16. In another area where 301 properties were examined, it was found that 9 per cent of the owners owned less than 1 donum, 22 per cent of the properties were 1 to 3 donums in size, 23 per cent 5 to 9 donums, 26 per cent were 10 to 19 donums, and 11 per cent were 20 to 39 donums.⁶

17. These data are cited as illustrations of the variation in size of farm holdings in Cyprus. They do not pretend to be representative of averages for the country but are illustrations that may be helpful in enabling readers to appreciate the variability in size of holding and especially the extent of very small holdings.

18. Elsewhere in the reports cited it is shown that although the bulk of the properties consisted of a single plot, more than one third were held in properties con-

taining from 2 plots per property to 10 to 19 plots per property. Indeed two consisted of more than 20 plots per property. The problem of fragmentation will be discussed later in this report.

LAND USE

19. As indicated above, there are about 3,900,000 to 4,000,000 donums of arable land in Cyprus, of which 80 to 85 per cent are cultivated. Of this area it is estimated that at the end of 1959, 614,500 donums received some form of irrigation leaving a balance of about 3,300,000 donums that are dry-farmed. Of the irrigated acreage 91,000 donums are under perennial gravity irrigation and 162,500 are irrigated from wells. The remaining 361,000 donums receive water by gravity flow but only during the seasonal flow of the rivers.

20. It is not possible to state exactly what proportion of which crops are irrigated. It is known, however, that citrus and deciduous fruits are, in general, irrigated, as well as most of the vegetable crops and some types of green fodder such as lucerne. It is possible that some cereals are irrigated by spate irrigation but only a minor part of the total. In general cereals are rain-fed.

21. Irrigation is being expanded at the rate of about 2.0 per cent per year of seasonal irrigation and nearly 7 per cent annually of perennial irrigation, the latter mostly from tube wells. If water were available, it might be possible to irrigate as much as 1,300,000 to 1,900,000 donums. However, on the basis of the presently known sources of water, the potential additional perennial irrigable land area may reasonably be estimated at 200,000 donums. It appears therefore that as much as 3,000,000 donums will continue to be dry-farmed.

22. A recent tabulation of average crop areas (1954-58) shows that there are about 1,803,284⁷ donums of all crops. However, these include considerable areas of irrigated crops. The figure does not include the area devoted to deciduous fruits and nuts which are also irrigated. It is not possible therefore to determine just what area of crops are produced on dry land. Although the area of 1,034,580 donums of cereals is mostly dry-farmed, some of this area receives some seasonal irrigation.

23. Approximately 1,500,000 donums of the cultivatable area is unaccounted for in listing of crop average, and must be presumed to be in fallow. This conclusion is in part supported by the statement that the "largest single acreage every year is perhaps still occupied by fallow land."⁸ An undisclosed part of it is now lost to crops because of inroads of water logging, salinity, and especially soil erosion.

24. It may be assumed that the cultivable area of Cyprus is already substantially occupied. Some countries have room for expanding the cultivated area by such means as clearing forests, draining swamps, or reclaiming deserts. Opportunities for expanding crop average in Cyprus by these methods are limited. The best estimate is that the area of land in cultivation can hardly be expanded by more than 10 per cent. There are, however, possibilities of improving the quality and hence the productivity of much of the land already under cultivation.

⁷ D. Christodoulou, "Contributions Toward a Development Plan for Cyprus Agriculture", Cyprus, Department of Agriculture, (Nicosia, May 1960).

⁸ *Cyprus Economic Review*, 1958, p. 94.

³ *Cyprus Economic Review*, 1958, p. 94.

⁴ D. Christodoulou, *op. cit.*, p. 4.

⁵ D. Christodoulou, "Tenancy and Share Cropping in Cyprus," *Land Tenure Research No. 2*, Cyprus, Department of Agriculture, (Nicosia, August 1957).

⁶ D. Christodoulou, "Some Statistics concerning Land Tenure in Kridhia Village Area", *Land Tenure Research No. 3*, Cyprus, Department of Agriculture, (Nicosia, September 1957).

25. It has been noted above that the major part of the agricultural crop land is devoted to cereal production. Wheat occupies about 586,000 donums and yields in the neighborhood of 73,000 tons annually. The 424,000 donums of barley have in recent years yielded about 65,000 tons. Oats yield 2,300 tons from 24,000 donums. Dry legumes of various kinds occupy 198,000 donums and yield 25,000 tons of product.

26. The per-acre yield of the principal crops are about 5 bushels per donum for wheat, 6.5 bushels for barley, and 5.2 bushels for oats. These are not unusually low yields by international standards for dry lands. Proper treatment however should improve them considerably. Yields during the past two years have been perhaps one-third below these yield figures because of drought.

27. There appear to be opportunities for an expanding livestock industry in Cyprus. Means by which this may be accomplished are discussed in a later section and data will be given showing the magnitude of this branch of agriculture.

28. There are about 55,000 head of draft animals in Cyprus. They consist of horses, mules, donkeys, and a very few camels. The number of draft animals has been declining for several years, due primarily to the introduction of a considerable degree of mechanization and the consequent lesser dependence upon animals for farm power.

29. There are about 600,000 meat, wool, and milk animals. The sheep population, kept for wool, meat, and milk, has been increasing and now numbers about 430,000. Goats are about 145,000 in number, pigs 20,000 after a very sharp drop from 35,000 due to an epidemic, and cattle 31,000. The goat numbers have been declining, due in part to attempts to limit the goat population if not to eliminate it. Cattle numbers of about 30,000 have been fairly stable for the last decade but are fewer than in earlier years. Formerly they were used for farm power but the need for them for power purposes has declined. They are increasingly used for meat and milk purposes.

30. Poultry numbers have increased rapidly as has egg production. Recently commercial broiler production has been introduced and is expanding.

31. The principal livestock products are meat, wool, milk, and eggs. The production of wool has increased about one-third over a twenty-year period. Milk has almost doubled in volume, increasing from 8,110 tons to 15,467 tons, and egg production has increased from 16,473,000 to 24,374,000.⁹

The agricultural income

32. The following table gives figures for total agricultural income for the period 1950-59. No allowance is made for depreciation of capital. The data include forestry, fishing, and hunting, although these do not affect the totals to any appreciable degree. The first column is based on current prices and is a reflection of actual income derived from these sources. The second column, which is based upon the prices of 1950,

⁹ These comparisons are between the periods 1934-39 and 1954-58. D. Christodoulou, "Contributions toward a Development Plan for Cyprus Agriculture", Cyprus, Department of Agriculture, (Nicosia, May 1960), p. 9.

reflects the changes in income due to changes in the physical quantity of product rather than to changes in prices.

Table 7
INCOME FROM AGRICULTURE, 1950-59
(Thousands of Cyprus pounds)

	Current prices	Constant prices of 1950
1950.....	10,600	10,600
1951.....	12,400	9,500
1952.....	15,600	11,400
1953.....	19,500	14,800
1954.....	17,500	13,400
1955.....	16,400	12,700
1956.....	19,700	13,800
1957.....	18,200	14,200
1958.....	17,900	12,500
1959.....	16,800	13,400

Source: *Cyprus Economic Review*, 1958 and 1959.

It will be noted that the first three years of the decade witnessed very rapid increases in income and in physical output. Physical production, however, has remained below the 1953 level ever since. In fact, as recently as 1958 output was 16 per cent below the peak five years before. Likewise, the total income seems to have fluctuated about a persistent average in the neighborhood of £18,000,000, although drought adversely affected the last two years. The 1960 figures are expected to be lower in both categories due to continued drought.

33. Agriculture is the most important single contributor to the gross domestic product, 21.9 per cent for 1959. This represents a decline from 27.4 per cent in 1950 and 32.5 per cent in the peak year 1953. Since then other sections of the economy have been expanding much more rapidly than agriculture.

34. It should be noted that whereas over 50 per cent of the labour force is employed in agriculture, they contribute only 24.3 per cent to the gross domestic product at 1950 constant prices, and only 21.9 per cent at current prices. It is clearly evident that the *per capita* income in agriculture must be relatively low. The *per capita* gross domestic product in agriculture in 1959 was £67 as compared with £137 for the country as a whole. The farmer received about half as much as the average for the entire population. This disparity is characteristic of agricultural incomes almost everywhere in the world. In Cyprus the conditions which contribute in large part to the disparity will be examined in later sections.

CAPITAL FORMATION

35. Capital formation in agriculture is low as compared with capital formation in other sectors. The following table shows details of the capital formation in agriculture during the years 1953-59:

Table 8
AGRICULTURAL CAPITAL FORMATION, 1953-59
(Thousands of Cyprus pounds)

	1953	1954	1955	1956	1957	1958	1959
A. Current market prices:							
Machinery plus installation costs ..	399	574	1,070	888	1,206	894	818
New buildings and public works	215	300	200	300	300	300	200
Capital sunk in plantations	20	168	300	500	500	450	482
Total	634	1,042	1,570	1,688	2,006	1,644	1,500

B. Constant prices of 1950:

Machinery plus installation costs ..	429	644	943	779	1,049	777	700
New buildings and public works	190	263	160	220	213	213	132
Capital sunk in plantations	20	168	300	400	400	400	418
Total	639	1,075	1,403	1,399	1,662	1,390	1,250

Source: *Cyprus Economic Review*, 1959, p. 32.

These tables show that the greatest proportion of capital invested in agriculture during recent years has taken the form of agricultural machinery (including pumps, engines, and other irrigation equipment). By the end of 1959, there were 3,038 licensed tractors in Cyprus. These figures are exceedingly low considering the economic importance of agriculture. The growing amount of capital in plantations is a reflection of the expansion of the fruit and nut industries, particularly citrus planting.

36. It is estimated that capital formation represents only about a 0.3 per cent *per annum* addition to capital already invested (other than land). But over a period of five years, the net rate is only one-third of the gross rate because of depreciation. This slow rate of capital accumulation gives some indication as to why productivity and efficiency are low in agriculture.

Exports and imports

37. The agricultural sector is an important contributor to the exports of Cyprus. The manner in which export figures are usually classified may lead to an understatement of the importance of exports of agricultural origin. It is clear that food, beverages and tobacco, and animal and vegetable oils are agricultural in origin. But in the standard classification entitled *Crude Materials*, often assumed to be mineral products, there are four divisions containing products of agricultural origin. When these are included, exports originating in the agricultural sector were 34.8 per cent in 1958, 38.6 per cent in 1958, and 38.1 per cent in 1959 of the total exports of Cyprus. In absolute quantities they amounted to £6,559,000 in 1957, £6,802,000 in 1958, and £7,248,000 in 1959.

38. It should be noted in addition that of the total exports of industrial origin except alcoholic beverages, products using local agricultural raw materials represented at least 34.8 per cent in 1957; 42.7 per cent in 1958; and 41.9 per cent in 1959. If alcoholic beverages are included, these percentage figures rise to 64.5 per cent in 1957, 71.3 per cent in 1958, and 73.7 per cent in 1959 of the industrial origin category.

39. The chief class of export commodities originating directly in the agricultural sector is food, totalling £5,123,000 in 1957; £5,000,000 in 1958; and £5,610,000 in 1959. Within this category, the most important commodities are citrus with a total value of £2,321,912 in 1959; feedingstuffs for animals, consisting mainly of carobs with very minor contributions from other sources totalling £860,000 in 1959; alcoholic beverage exports of £835,000 in 1959; and food potatoes with a value of £1,131,000 in 1959.

40. There were scores of minor export items some of which no doubt may be expanded in time. Of those

contributing from £100,000 to £300,000 the following should be noted: table grapes, grapefruit segments, carrots, raisins, hides and skins, wool, tobacco, and animal and vegetable crude materials including seeds and bulbs for planting. Carob seeds also bulk large in the category of animal and vegetable crude materials.

41. Cyprus imports large quantities of products of agricultural origin as well. In 1957, the imports of such items totalled £8,307,000; in 1958, £7,919,000; and in 1959, £8,696,000. It does not follow that all of these imports could or should have been produced in Cyprus. Some of them are luxury or semi-luxury items such as some of the alcoholic beverages imported. Some are of a specialized type needed for consumption in Cyprus, but whose production might not be successful, such as the larger part of the tobacco imports. Others could not be produced because of climatic limitations, such as coffee, tea, cocoa, and spices. Sugar, too, is imported and it is doubtful if it would be practicable to attempt its production in Cyprus.

42. It must be noted that Cyprus is an important importer of a number of items that it also produces in quantity. The question must be raised whether it may not be possible to increase the production of these products which it is known can be successfully produced here. For example, large quantities of wheat are imported, as much as 827,000 cwt. in 1957, 1,982 cwt. in 1958, but an increase to 415,000 cwt. in 1959. Imports are larger again in 1960. Barley too is imported in some years. In 1957, 141,000 cwt. were imported, only 11,000 cwt. in 1958, and none in 1959, but imports have been resumed in 1960. Maize is imported in apparently increasing quantities. There were 16,000 cwt. imported in 1957, 61,000 cwt. in 1958, and 66,000 cwt. in 1959. Possibly maize cannot be produced successfully in Cyprus, but barley and grain sorghums can be produced and are good substitutes for maize. There are "other cereals" imported, probably sorghums. In 1957 these amounted to 25,000 cwt., in 1958 to 17,000 cwt., and in 1959 to 36,000 cwt.

43. Cyprus also imports about £2,000,000 worth of meat, meat products, dairy products, and eggs. Surely a substantial portion of these products could be economically produced. This will be given more detailed attention in a later section.

44. Likewise, large quantities of animal and vegetable oil are imported. The total reach of value of almost £700,000 annually. Some of these are of tropical origin and perhaps could not be replaced, but many of the other oils could be produced, or satisfactory substitutes could be raised. Increased attention should be given to production of oil seeds.

45. It is a striking fact that a country which is largely devoted to agriculture should nevertheless import more agricultural products than it exports. To some extent, this is because of its size and its limited climatic variation. However, the imports do point the way for possible agricultural development, since they indicate the existence of a market for the equivalent or an appropriate substitute if it can be grown in Cyprus.

46. The effort to expand those products which are successful in export markets and to replace imports so far as possible with local products would also contribute constructively to the solution of the foreign exchange problem of Cyprus. This would release foreign exchange

for use in development in other sectors of the economy or, for that matter, in agriculture itself. This prospect must be slightly modified by the fact that development may require a certain component of foreign exchange expenditure.

47. In development along the lines here suggested, the country must always be mindful of the possibility that resources used to achieve these purposes might be even more effective if employed in other sectors, and could contribute even more in the way of closing the foreign exchange gap than if employed in agriculture. It does not always follow, therefore, that under all circumstances expansion of exports of agricultural products or becoming relatively more self-sufficient with respect to food products now imported is a sound line of development to follow. Sometimes social considerations, population pressures, lack of non-agricultural job opportunities may prevent the organization of agriculture into such efficient farming units as to permit the economic production of those products now imported. If the country can produce such products only inefficiently and at high cost, perhaps it may not be good policy to attempt to produce them. However, the most superficial examination of the production potentialities of Cyprus discloses that much more can be done than is now being done to close the present import-export gap.

48. There are large imports of goods used in agricultural production that must be considered in relation to the export-import balance. The production goods include such items as fertilizer, insecticides, agricultural machinery, tractors, etc. Machinery and tractors are not annual cost items but enter into the capital account. If in time they should "level off" they in effect do become an annual cost so far as the nation is concerned. The following table does not include all items used by agriculture, as it is impossible to identify all the various imported manufactured products that eventually are used in farm production. Similarly the table includes some items that in part are used in non-agricultural production. An undisclosed number of the tractors imported no doubt are employed in non-agricultural work. On the other hand, some items not included, such as some motor trucks, automobiles, etc., are used in agriculture. If all such items could be accurately identified they would tend to offset one another. In any case, precise identification and consequent modification of the values could not importantly affect the data as presented.

Table 9

IMPORTED AGRICULTURAL PRODUCTION ITEMS
(Cyprus pounds)

	1957	1958	1959
Fertilizers	1,130,211	1,024,338	986,317
Insecticides, etc.	109,592	110,750	92,544
Agricultural machinery im- plements and appliances ..	225,205	285,681	213,208
Tractors, parts	142,174	96,504	23,958
Tractors, wheeled	368,402	172,426	275,254
Tractors, crawler	173,421	52,963	54,729
Total	2,113,005	1,742,662	1,646,010

49. A recapitulation of the foreign balance of the agricultural sector is shown in the following table:

Table 10

FOREIGN BALANCE OF AGRICULTURE
(Thousands of Cyprus pounds)

A. Exports:	1957	1958	1959
Agricultural exports	6,559	6,802	7,248
Industrial exports of agricultural origin*	276	316	289
Total exports, agricultural sector	6,835	7,118	7,537
B. Imports (agricultural in origin):			
Food products, beverages, tobacco, oil and oil-seeds, and agricultural crude materials	8,307	7,919	8,696
Total agricultural production import items, fertilizers, machinery, etc. ...	2,113	1,743	1,646
Total imports, agricultural sector	10,420	9,565	10,342
Excess of imports over exports	3,585	2,447	2,805

* Except alcoholic beverages which are included in agricultural exports.

50. This table indicates that on balance the agricultural sector showed an import balance of £3,585,000 in 1957, £2,447,000 in 1958, and £2,705,000 in 1959. The figures suggest the possibility that agricultural development may be able to follow lines which would also be helpful in strengthening the foreign payments position of Cyprus.

The need for increased agricultural development

51. The foregoing pages describing the agricultural plant and the comments upon the agricultural population and its relationship to land resources, the agricultural income situation and its relationship to capital formation and the heavy dependence of the Island's population upon imports of basic food all point to the need for increasing agricultural output. Perhaps the most important reason for increasing agricultural output is that this seems essential if agricultural incomes are to be raised and the economic welfare of the farming population to be raised to a level more nearly comparable with that enjoyed by non-farming groups.

52. Another reason for increasing output is its relationship to savings and investment. It has been noted above that capital formation in agriculture is extremely low. Agricultural investment (except in land) is not generally attractive to non-farming groups. If agriculture is to have the benefit of improved productivity deriving from the use of increased amounts of capital, it probably must provide this special capital largely from its own earnings.

53. Heretofore agricultural incomes have been so low that there was little opportunity for capital accumulation from that source. Not many farmers or others connected with the agricultural sector have surpluses for plowing back into the enterprise. There may be a few large landlords and institutional owners of land, such as the Church and Evcaf, who do have such surpluses; but calls upon their surplus funds are such or prospective earnings in agriculture are sufficiently limited as to rule out very much capital investment in agriculture or in agricultural development.

54. It is most important, therefore, that farm incomes be increased so that they may become a source of capital formation. Increased farm incomes will tend

to make capital investment more attractive as compared with returns that may be received from non-farm investments.

55. A further reason for increasing the incomes of those in the agricultural sector is that such increased income will greatly benefit the nation as a whole. If the income of such a large section of the population is increased, this will be quickly felt throughout the Cypriot economy. It is often said that improvements in the agricultural situation of under-developed countries are dependent upon industrial development which will provide jobs that can relieve the population pressure upon the agricultural sector.

56. One of the prerequisites of industrialization is a domestic market able to absorb a large part of the products of the factories. A considerable growth in industrialization can take place by producing more and more of those items of consumption which are now imported. Industrial production primarily for export is a most uncertain venture for a newly-industrialized country. Sound industrialization must be impressively supported by a vigorous domestic market.

57. In Cyprus 60 per cent of the people are dependent upon agriculture and related activities. One-half of the labour force is gainfully employed in agriculture. The breadth and depth of the domestic market, therefore, depends largely upon the purchasing power of these people. It has been shown that the economic condition of these people is depressed. It would appear, therefore, that one of the chief objectives to be gained on the way to economic viability would be the systematic improvement of the economic circumstances of the agricultural majority of the population.

58. Improving crop yields and total production will increase total and *per capita* agricultural income. Such enlarged production should result in measurably larger purchasing power among the agricultural population. Increased production and increased income would generate enlarged employment possibilities, not only in agriculture itself, but in all those industries directly or indirectly affected by agriculture; increased tonnage of crops would require more transportation facilities; these in turn would require additional workers to operate and maintain; all handling, merchandising, and processing industries would increase in number and size and would likewise require enlarged storehouses and equipment, all of which require additional workers.

59. Increased income would not be confined to the agricultural sector but would in turn be a primary factor that would give impetus to increasing incomes in the total economy. Surely an increasingly prosperous agricultural population can contribute greatly, can perhaps even be the key factor in energizing the "economic take-off" for which the nation is so earnestly striving. It is not an understatement to conclude that substantial economic progress can hardly be accomplished without a significant improvement in agricultural production and in the lot of the farmers.

60. Agricultural development must be considered in relation to economic development generally. Full development requires that all available resources be exploited to their fullest economic potential. Some resources are of a nature which permits a certain degree of substitution or a certain freedom of choice with respect to their use. Agricultural resources, however, although they may be shifted to a certain extent from the

production of one farm product to the production of another, nevertheless must continue to produce agricultural, including animal, products.

61. If such resources are to contribute fully to national economic progress, they must be developed at a pace consistent with the development of all sectors. If agricultural development lags, the total resources of the nation are not contributing as much as is possible to total development. The development of agricultural resources is essential if the sought-for increase in agricultural income is to attain the level that is possible.

62. Apart from the need to increase farm incomes, the developing nation needs increasing quantities of foodstuffs and agricultural raw materials. Although the Cyprus population is not badly fed so far as calory content of the diet is concerned, as compared with neighboring States, the increasing population requires annually increased quantities of foodstuffs. The population is increasing at the rate of about 8,000 per year. At the end of the next five-year period there will be 40,000 additional persons to feed.

63. It is estimated that the Cyprus diet averages 13.0 oz. of flour per day *per capita*. At an assumed 80 per cent extraction rate, this means the wheat requirements are 16.25 oz. per day per person. This amounts to 370.7 pounds of wheat per person per year. For an additional 8,000 persons, therefore, an additional 1,324 tons of wheat must be produced or imported. At the end of five years, therefore, an additional annual production or importation totalling 6,620 tons will be required to supply the population with the same amount of wheat per day as is now consumed. When converted to bushels, this increased requirement calls for an increased domestic production or an increased importation of 49,425 bushels of wheat annually, or a 9.0 per cent increase over the average production of the last five years. Should production increases lag behind this rate, any deficit in requirements would have to be met by increased imports, or a rise in food prices will result from the shortage.

64. It should be noted, furthermore, that if incomes increase, which must be one of the objectives of the Government, food requirements will also increase. With increased incomes, more food *per capita* is consumed. This phenomenon is known as income elasticity of demand. No studies have been made in Cyprus concerning this matter, but in a number of other countries having somewhat the same *per capita* income, the income elasticity of food appears to be about 0.6 to 0.75. A conservative estimate would be that with each 1.0 per cent increase in *per capita* income an increased food demand of about 0.7 per cent would result.

65. Wheat has been discussed here in great detail, because it constitutes the largest item of the diet. What has been said about the increased requirements for wheat because of population increases and income elasticity also applies to other foodstuffs. Available data however are hardly adequate to permit a similar analysis.

66. It is important that production of other foodstuffs be increased so as to improve the quality of the national diet. The *per capita* food intake is low in its content of animal proteins (meat, milk, eggs) and production of these foodstuffs should be increased. The same is true of fruits and vegetables. In the long run, including more of these items in the diet will have a

beneficial effect upon the health and energy of the people.

Means of increasing agricultural production

67. Measures to increase agricultural production form a complex pattern. They differ widely in kind and in degree. Some are fairly simple and easy to apply; others involve far-reaching policy decisions and may be instituted only after long consideration and difficult deliberation. Nevertheless, all have an influence upon production and if some measures for one reason or another cannot be undertaken in a manner that makes it possible to put them into effective practice, to that extent production may well be affected adversely.

68. Some practices can be adopted by farmers themselves, and their adoption may be in no way dependent upon the activities of other farmers or of the Government. Measures of this kind deal primarily with farming practices that can be introduced by the farmer himself, within the confines of his own operating unit. For example, the individual farmer can adopt improved methods of preparing his land before seeding. This may require deeper plowing and careful seed-bed preparation so as to create the most favourable conditions for germination and early growth of the newly planted seeds. Such preparation usually reduces the difficulty of keeping the crop free from weeds, as the newly sprouted weeds will be killed before the crop is seeded. This permits the crop to make good progress and to minimize the danger of damage from later growth of weeds.

69. One of the primary means by which production may be increased is to secure an optimum plant population per acre. Almost certainly germination of seed will be better and plant population will be larger if the seeds are planted in a well prepared seed bed.

70. A second basic practice over which the farmer has control is the planting of good seed of the best available varieties. Good, viable seed can be secured from known reliable seed producers, or from government sources, where care is taken to keep varieties pure, free from weed seeds, and where germination is tested. The individual farmer is seldom equipped to develop new varieties and he must depend upon the Government plant breeders and research organization to perform this important function. Later, under the section dealing with agricultural research, this matter will be given further attention.

71. The application of the optimum quantity of the proper formula of fertilizer is a practice that farmers may follow upon their own initiative. Use of chemical fertilizer has increased more than three times since 1949 and has doubled since 1955. Growth of fertilizer use is commendable and should be maintained and probably increased.

72. Importations of fertilizer point to an average application of .32 cwt. of nitrogenous fertilizer per donum on the basis of 1,800,000 donums in crops, and .36 cwt. of phosphatic fertilizer per donum. This amounts to about 1 cwt. per acre of nitrogenous fertilizer, or about 22 lbs. per acre of nitrogen and about 18 to 20 lbs. of P_2O_5 . These are extraordinarily high averages for country-wide applications of fertilizer and one cannot but wonder whether the basic data are correct. Questions must be raised especially when the rather

low yields per acre are considered in relation to the fairly high average fertilization. Of course much heavier applications are used upon citrus, fruit crops, and vegetables. These higher applications would offset statistically lower than average applications to the standard cereal crops.

73. It is reported that agricultural officials believe that some crops are actually over-fertilized. That is possible, but, if so, it may point toward the need for developing varieties that have a higher capacity for fertilizer. It is certainly a fact that certain varieties of crops show a greater response to application of fertilizer than others. It would doubtless be a fruitful line of research to develop varieties of crops that were suitable for dry-farming conditions and, at the same time, were able to use effectively increasing amounts of fertilizer.

74. A further practice which may be applied by individual farmers is that of adequate plant protection. In most countries effective plant protection will add about 15 per cent to production—much more in some years. Plant protection includes both insect pest control and control of plant diseases. This is not the place to discuss at length the various measures of plant protection. It is enough to observe that adequate plant protection necessitates application of a spraying or dusting schedule determined by the requirements for controlling the several pests. The schedules and contents of spray can usually be learned from agricultural extension personnel, who, in turn, must depend upon agricultural research to discover the methods that are most effective.

75. Other pests are controlled by various forms of fumigation and crop sanitation. Some diseases have no practicable artificial control but can only be combatted by means of developing disease-resistant strains. This latter approach is not possible for the individual farmer; but once such strains are available, it is the farmer's responsibility to obtain and plant the improved disease-resistant seeds.

76. Weed control is essential if best returns are to be gained from crop production. Weed control is in the hands of the individual farmer. It involves much hard work, often hand work, and it involves careful cultivation. A detailed description of weed-control measures is out place in this report. It is sufficient to emphasize its importance as a limiting factor in achieving the best results. Under some circumstances, the inroads of weeds cause actual abandonment of crop acreage. Sometimes weeds become so completely established as to make their elimination sufficiently difficult and costly as to be economically impractical.

MECHANIZATION

77. Mechanization of farming is likewise a method largely under the control of the individual farmer. Even though his farm may not be large enough to warrant his buying a tractor for his own use, or his financial means may not permit him to make such a capital investment, he can still avail himself of certain types of mechanization by employing tractor or machine owners to perform the required operations on a custom basis.

78. No studies have been made to determine the economy of introducing mechanized methods in agriculture. Apparently, farmers are convinced that the move is desirable as they have very rapidly brought a large proportion of agricultural operations under mechanical performance. Officials have informally esti-

ated that as much as 80 per cent of soil preparation, cultivation, and harvesting of cereals is done mechanically.

79. The rapidity of mechanization may be illustrated by the fact that 3,449 tractors have been imported since 1949. Between three and four times as many tractors are being imported annually now as in 1949 and 1950. Plows for mechanical power have been imported at the rate of 648 in 1957, 484 in 1958, and 534 in 1959. The number of combined reapers and threshers imported in 1957 was 29; there were 80 in 1958; and 31 in 1959. All of these are high capacity machines and can take care of the demands of many hundreds of donums.

80. In view of the fact that the average farm holding is small and usually fragmented, it is surprising that mechanization has advanced so rapidly. This advance has been made in a situation where probably agriculture was over-manned and under-employed. Mechanization surely adds, at least temporarily, to the amount of agricultural unemployment or under-employment. For many reasons, mostly social, increased mechanization might be deplored. As mentioned earlier, studies should be made to learn what its effects have been. Despite some possibly unhappy results, mechanization is not likely to be abandoned. More likely it will increase.

81. Despite the unknown social cost, mechanization has certain advantages which bulk very large in the minds of the farmers, especially in a country of hazardous weather conditions. Lands can be plowed deeply and efficiently in a very short time. Seed beds can be prepared quickly and thoroughly, and seeding can be completed in only a fraction of the time required by animal power. Timeliness of operation is more exacting in a country with weather conditions like those of Cyprus than in many more generously-endowed countries. Likewise, mechanical harvesting is important as it can be done quickly. Certainly more grain can be recovered in cleaner condition than would be possible from the primitive threshing floor. Finally, the stubble can be quickly plowed, thus greatly simplifying the matter of weed and pest control and easing the preparation of the land for succeeding crops.

82. The use of mechanical power releases animal power and releases the land that would be used for the production of fodder for the draught animals. Later it will be pointed out that this fodder (and more) can be diverted to animals yielding valuable products much needed by the country.

83. Probably introduction of mechanization has not increased the average size of the farm holding, although normally it would be expected to have that effect. No doubt greater productivity would result if farm units were larger and mechanical power could be used more efficiently. However custom, inheritance laws, existing fragmentation, and divided ownership, together with the presence of an impressive proportion of unemployment and under-employment, all are influential, individually and in combination, in preventing or perhaps only delaying the formation of larger, more efficient farming units.

IRRIGATION

84. One of the most important factors limiting increase of production is the availability of water for irrigation. Cyprus is a land of little rainfall, as described

in Chapter III. The rainfall is badly distributed for agricultural production. Most of the rain comes in the months from November to April.

85. Although this distribution prevents the year-round cultivation of crops, it is not so unfavourable for the production of winter crops that mature about the time the seasonal rains cease. While it would be desirable to have more rainfall even for the winter crops, the fact that it is concentrated during the months of growth of such crops as wheat and barley makes production of those crops possible, which would probably not be so were the same rainfall distributed more or less evenly throughout the year. Even the concentration of rainfall in the winter hardly gives sufficient water to produce a full crop of cereals. Additional water is only possible from spate irrigation, and because of the contour of the land, even this is unavailable for large areas of cereal producing land. A favourable factor is that the rainfall comes during periods of low temperature. The losses from evaporation are less and the amount of rainfall more effective than would be case if the rainfall came during the hot summer season.

86. There are no perennial rivers in Cyprus. Such rivers as exist flow in spate for a few days or at the most a few months, carrying water to the sea from the high mountain rainfall or melting snows areas. On the way they recharge underground waters and give flood irrigation to some areas. A very small part of the run-off is impounded in reservoirs for later irrigation of lands commanded by the few dams or for recharge of underground waters. Most of the irrigation, and almost all of the perennial irrigation, is from ground water pumped from boreholes.

87. Full discussion of the water situation and the potential development of water is given in Chapter III. Discussion here will be directed to those matters having to do with irrigation that are within the control of the individual farmer. Much of the water question is one of national policy and cannot be considered by the individual farmer, who must operate within the framework of policy set by Government. He is likely to have little flexibility as to the quantity or timing of the water available to him. If the water comes from perennial sources he may have something to say about timing of the irrigation, but he has almost no control over flood waters and must be prepared to use them effectively when, as, and if they come.

88. However, the individual farmer can have considerable influence in the use of water and, in particular, he can use it efficiently or inefficiently. He may use it economically or may be wasteful of water in which case, although his own crops may not be harmed, the country's production is reduced—water wastefully used could be effectively used on other farmers' lands.

89. Much is heard about the development of new sources of water as though that was merely a matter of exploration and perhaps spending of indeterminate amounts of money. However, almost nothing is heard about the more effective use of the water now available. Evidence of wasteful and inefficient use of water is apparent almost everywhere irrigation is practised.

90. Some improvements in irrigation methods cannot be put into effect as long as the lands are fragmented and farmers have multiple "toy" holdings. Water has to be led to each of these through meandering courses which, of course, have to avoid the many intervening

plots of land owned by others. Later, this question will be more fully discussed, but it is sufficient to say here that one of the strongest pleas for the systematic consolidation of farm holdings can be based upon the national necessity to conserve water and to put it to its most productive use. These possibilities are prevented by the extreme fragmentation of farm holdings.

91. There are at least five ways in which the individual farmer can improve the efficiency of his water use. When water is brought to the farm it should be carried to carefully levelled fields. Badly levelled fields are one of the prime causes of wasteful water use. The result of irrigating such fields is that one end of the field is flooded, perhaps actually damaging the crop, while the other end gets no water and suffers from drought.

92. The second method of saving water is to have the field channels carefully laid out, running in straight lines and designed and constructed so as to prevent loss of water. This objective is now only partly within the control of the farmer because of fragmentation.

93. The third method is to use only as much water as is required by the crops being irrigated. There is a great temptation to over-irrigate. However, water requirements for the several crops, under the conditions that exist in Cyprus, are not exactly known, and should form the subject of extensive experimental work.

94. The fourth method of saving water is to reduce the number of irrigations, in conformity with crop requirements and according to variations in soil types.

95. A fifth has to do with spreading of water within the fields. Technical requirements will determine whether there should be flood irrigation or furrow irrigation, how long the water "run" should be, whether to use ridges for planting of crops, and numerous other water-spreading techniques which can be learned by the farmer only by trial and error, or by research authorities in systematic experimental research.

96. Should proper irrigation methods be generally put into practice, it is not unlikely that half of the presently developed water could be saved for use on additional areas of land. In this connection, a recent report from India (not yet published) may be mentioned in which it was estimated that half of the water supplied at the field outlet was lost to crops in faulty conveyance and half of the balance was again lost in bad watering of the fields. Observation of practices here leads to the conclusion that this statement is hardly a misrepresentation of the conditions that prevail in Cyprus.

SOIL CONSERVATION

97. Soil conservation measures can be adopted by individual farmers; however their effectiveness often depends upon their application to larger areas than the individual farm. For example, individual efforts may prove of little value in dealing with floods that come from a vast catchment area of which the individual farm is only an infinitesimal part. Similarly, a system of contour terraces may involve construction of works on other lands in order to make terracing effective on the individual farm.

98. Despite these situations, there are opportunities for the individual to protect his lands from erosion. Often small gullies on the farm may be checked and

further erosion halted by proper methods of tillage and gradual establishment of protective cover. Certainly the farmer has it within his power to plow and cultivate and plant on the contour. These practices are important elements in preventing erosion.

99. Sometimes it may be possible to establish water courses protected by vegetation, although it must be recognized that this is a difficult accomplishment under conditions of very low rainfall. Should the practice of keeping the ground covered with a crop as much as possible instead of exposing it to the danger of erosion by fallowing, be generally adopted, a good deal of unnecessary loss of soil could be prevented.

MIXED FARMING

100. Individual farmers can gradually adopt a changed system of farming without the necessity of concerted action by large numbers of farmers or of special pressure by the Government.

101. In Cyprus there is relatively more land than water. Consequently, large areas will continue to be dry-farmed and dependent upon rainfall. As has been noted earlier, this has resulted in a system of cereal farming combined with fallow that results in relatively low incomes, increases or maintains under-employment, and subjects the land to unusual hazards of soil erosion. Modern dry-farming methods have been evolved elsewhere in the world where conditions prevail similar to those in Cyprus. These methods demonstrate the possibility of securing measurably better returns than are now common in Cyprus.

102. Adoption of modern dry-farming techniques will require large-scale shifting from the fallow system of farming. This will result in a crop each year instead of one crop in eighteen months as is the usual practice over much of Cyprus' dry-land areas. This extra crop should be a forage crop to be fed to livestock green or, preferably, be made into hay to carry the livestock through the short feed season in the late summer and early fall, before the beginning of the normal rainfall cycle.

103. Possibly some useful oilseed crop could be raised during the "off" years to be harvested as seed. Vetch might be a useful high-protein crop for use in animal feeds. A dry-land grain crop of promise is one or more of the sorghums. Trials should be made of the possibility of finding one of these high grain-producing sorghums that might be adapted to Cyprus' conditions. There is widespread belief on the Island that the harvesting of vetch for seed harms the subsequent wheat or barley crop. Perhaps further research will find this notion unfounded or it may appear that proper fertilization practices will more than offset any such harmful effects.

104. Because of the necessity for increasing farm income, it would be desirable if some high-value crop could be found for use in the dry lands of Cyprus. Unfortunately, no such crop is available. Probably production primarily of wheat and barley, although low-valued crops, offers the best use for these dry-land areas. No alternative crop seems to offer serious competition.

105. It so happens that these crops which are best adapted to dry-farming conditions in Cyprus yield products that are in short supply. As already noted, imports of wheat are large and barley is supplemented by im-

ports of livestock feed grains. In addition, large quantities of foreign foodstuffs which have been converted abroad into meat, dairy, and poultry products are imported annually in their converted form. Hence, there appears little prospect of Cyprus overproducing these best adapted dry-land products.

106. The most casual observation shows that, with certain exceptions, the livestock of the country are lamentably underfed. This can only result in disappointing returns of milk, meat, and wool. If dry-land farming moves toward eliminating the year of fallow, the resulting crop can be most effectively used for feeding livestock. The adoption of this cropping system must result in increasing livestock population or at least in increasing livestock product output. Development of a thriving livestock industry depends upon a supply of adequate feedstuffs.

107. In view of the large imports of meat and other animal and poultry products, every encouragement should be given to the development of mixed farming which would include animals to consume usefully the forage that the improved system of farming would yield.

108. Efforts also should be directed toward improving the quality and number of sheep and goats. In some quarters the belief is held that the goat should be eliminated. This is probably a mistaken conviction. There is nothing wrong with the goat. The harm, if any, that is attributed to him is the result of faulty management and not of the goat himself. Certainly there are conditions in Cyprus under which only goats properly handled can convert the very rough grazing into useful products. If these animals are eliminated, considerable amounts of useful forage will be lost as neither sheep nor cattle can be successfully grazed under those conditions.

109. Sheep are the most important class of animals in point of numbers and will probably continue to be the mainstay of the animal industry. Their production should be encouraged.

110. Pigs are a relatively small element in animal husbandry. They may expand in numbers, especially if barley production is increased. At present prices pig production is profitable, but it is uncertain whether expansion would be recommended if pigs have to depend upon imported grain. Even in that circumstance, though, it is probably sound for the country to produce its own pigs rather than to import a considerable quantity of pig products.

111. Cattle are much less certain of gaining a place in the Cyprus farm economy. There is opportunity for increasing the number of dairy cows, but marketing improvements are probably a prerequisite for the growth of dairy cow numbers. In any case, they can probably only prosper under the conditions that exist near population centres, where they can be fed upon green forage produced under irrigation.

112. Natural pastures should be encouraged. Soil conservation in these areas requires that grazing be strictly controlled. Such control would undoubtedly improve the carrying capacity and surely would increase the output of wool, meat, or milk per square mile of grazing land. There are likely to be periods each year, however, when natural grazing under the best of conditions must be supplemented with sun-dried or artificially-dried hay. Attempts to introduce improved

exotic grasses have thus far not been outstandingly successful. The attempts should continue on an experimental basis, but the outlook at present does not appear hopeful.

113. The adoption of mixed farming often is a matter of choice by the individual farmer. In many cases, possibly in the majority, the existence of badly fragmented holdings seriously handicaps, and in some cases, would prevent the adoption of livestock enterprises. Full development, therefore, will have to await public action to bring about land consolidation. Furthermore, the practice of using the fallow lands of villages as common grazing grounds would effectively prevent the use of isolated plots lying within these areas to produce forage crops.

114. One of the principal reasons for recommending the expansion of mixed farming is that the addition of livestock to the farm economy would give useful, profitable employment to many of those on farms who are now unemployed or under-employed.

SHEPHERDS

114. Attention must be given to the semi-nomadic, landless shepherd. This is a national problem quite beyond the control of individual farmers. Freedom to graze on crop residues or fallow land often leads to over-grazing, damage to the land from erosion, and prevents the orderly adoption of mixed farming in the villages. Grazing on public lands likewise may result in over-grazing and injury from soil erosion due to the destruction of vegetative cover.

116. As the shepherds number several thousand, they are a national social and economic problem and should be dealt with as such. Gradually these people should be settled on the land or provided employment elsewhere. The unregulated moving of sheep and goats to all parts of the country should cease. With the development of mixed farming these animals can be usefully absorbed in small numbers within individual farms.

OTHER CROPS

117. Cyprus, because of its favourable climate, produces a number of sub-tropical agricultural products that meet acceptance in foreign markets. These are good earners of foreign exchange. Production is increasing and further expansion should be encouraged. Mention has been made earlier of some of the detailed aspects of the export situation.

118. Production of these items is largely one for the individual farmer to decide. Some of the products, like citrus, are dependent upon irrigation. But carobs and olives and perhaps some of the nut trees are dry-land crops.

119. Of the export crops, carob is in the most favourable competitive situation in the principal market, the United Kingdom, where the market prospect appears favourably for any quantity that is likely to be produced for many years. It should be noted that the Cyprus carob enjoys a higher market price in the United Kingdom than is paid for carobs from other countries. The benefit of this preferential price may not always prevail.

120. Cyprus enjoys a favourable environment for carob production. As the carob is a dry-land tree crop, there are ample areas for expansion in the "carob belt",

which extends around much of the perimeter of the Island—beginning a short distance inland from the sea and extending some distance into the foothills. Some of this land is planted to cereals and would probably yield more return if planted to carobs.

121. All reasonable encouragement should be given to the increased planting of carob trees. They are slow-growing and do not come into bearing for some twelve or fifteen years, so a rapid increase in production cannot be expected. But carobs are such a reliable foreign exchange earner that Cyprus should not neglect to increase the production as rapidly as possible. During the early years some income from the land might be derived from inter-planted grain or fodder crops. In this connection attention is directed to FAO Report No. 974 on Carob Production in Cyprus issued in 1958.

122. A competitor of the carob for the farmers' attention is the olive. It grows under the same conditions as the carob and is found in the same "belt" in Cyprus. Under present conditions carobs yield about 30 per cent higher income per tree than olives. However, if olive trees were properly cultivated and cared for, the olive would yield an income of about 40 per cent per tree more than the carob. Olives can therefore be recommended for increased planting, but only if correct cultural methods are applied. In this connection reference is made to FAO Report No. 1006 of 1958 dealing with olive production.

123. It should be noted that the Cyprus olive yields 21 per cent oil which is the highest of any country in the Mediterranean area, but it yields only 5.7 kg. of olives per tree which is the lowest of any country in the area. This low yield reflects the poor cultural methods used in olive production as well as the scarcity of water.

124. Many other smaller export crops are grown in Cyprus and individual farmers should consider expanding their production. Perhaps the total export from these sources will never rival that of citrus, but if suitable marketing arrangements can be developed, these smaller exports may well prove profitable.

THE MARKETING SITUATION

125. There are certain economic situations which appear to hamper the fullest agricultural development. For the most part they are not within the control of the individual farmer, but they do have an impact upon his activities, and sometimes influence him to restrict rather than to expand his production effort. Certain aspects of these matters will be dealt with later under the discussion of agricultural policy. They are mentioned in this section because they are likely to discourage agricultural development.

126. There is general complaint by farmers concerning the marketing systems which prevail for the various farm products. The entire citrus export crop, except that marketed by one or two local co-operatives and direct shipments made by certain large producers, is handled by a few private exporters who buy the crop, transport it from the grower to the packing sheds, sort and pack the fruit, ship, and sell it abroad. Growers appear convinced that the margins between what they receive and the price the same fruit brings in an export market such as London is higher than is required to pay the packing and shipping costs plus a reasonable profit.

127. Whether or not this belief is a fact, can be determined only by a study of marketing costs, which would be a proper governmental research project. If the costs proved to be high, the producers might set up a marketing organization to pack, ship, and sell their own products. This could be a co-operative in form, although for some reason co-operatives have not flourished in the citrus field. Alternatively, an organization might be established either by producers or by a governmental agency to set up a pilot operation in packing, shipping, and selling citrus.

128. One field in which the present marketing organization is especially faulty is that of livestock products. Slaughtering of animals and distribution of meat are uncontrolled and disorganized. Likewise the marketing of dairy products is haphazard and is not likely to encourage added production. In both these fields, margins appear to be unusually high, and expansion may be permanently retarded without widespread improvements in the marketing system. If there were expansion, it should permit a more efficient marketing system.

129. There does not seem to be very active interest among producers in the development of co-operative marketing organizations despite the fact that, in a relatively short period of time, credit co-operatives have proved themselves very useful. The bulk of the carob crop is handled by a co-operative and a part of the wine industry is organized co-operatively. Most of the producers of grapes belong to the co-operative, but its capacity is so limited that it is able to take only a fraction of the grapes produced by its members. There are two co-operative cheese factories and some co-operative activity in connection with the marketing of some of the deciduous fruit, but in general co-operative activity in these fields, as well as in the supplying of fertilizers, feed, seed, etc., has not developed in any important way.

130. Except for wheat and barley which are sold to the Government, farm products are sold to private dealers. Margins appear to be excessive; for example, tomatoes being sold in a mountain village for 25 mils per oke might be sold in a nearby city for 200 mils per oke, and even at a shop in the same village for 60 mils. Officials have declared that such cases are not exceptional.

LAND TENURE AND AGRICULTURAL REFORM

131. Land tenure arrangements in areas where much land is rented are not conducive to increased land development and increased agricultural production. In most areas not much land is rented but in some places as much as 75 per cent of the land is rented. Various religious organizations are large land holders and their rental policies are not always conducive to the adoption of improved agricultural practices. For example, the land may be rented for only eighteen months or two years and at the termination of the rental period the lease is auctioned. The farmer therefore has no assurance that he will again farm the land and if he makes any improvements he will be penalized by having to pay higher rent. Other variations of rental terms are such as to discourage agricultural improvement and to discourage the adoption of the best farming practices.

132. Intensive studies of the tenure situation should be undertaken with the objective of making recommendations for land-tenure reforms.

133. In all part of Cyprus the land is badly fragmented. This fact has been briefly mentioned heretofore. In cases where a farmer's holdings are divided into multiple plots, scattered sometimes over a distance of several miles, it is impossible to apply modern systems of farming and modern technical methods. Certainly farming efficiency suffers by such fragmentation and total production in the country must be decreased to a considerable extent because of this factor alone.

134. Consolidation of holdings is a long-term programme but it should be undertaken and vigorously prosecuted within the limits of funds available and of governmental powers. This situation needs comprehensive investigation leading to recommendations of ways and means of combining holdings into single units of sufficient size to permit the adoption of the most advanced production and management techniques.

THE FARM CREDIT SITUATION

135. Short term credit machinery is fairly adequate although there is a general complaint concerning its present lack of availability. This situation seems to have developed as a result of the rapid rate of mechanization, combined with the recent succession of drought years which have prevented farmers from repaying their loans. Some lending agencies are no longer able to extend additional credits because of exhaustion of loanable funds. Merchants also are declining to extend additional credit. This may be due in part to the moratorium recently declared by the Government.

136. Private money lenders supply considerable credit to farmers. Rates of interest charged by private money lenders are almost always higher than those charged by organized credit institutions—figures as high as 25 per cent *per annum* being frequently mentioned. These money lenders are often local merchants. It is a customary practice to provide that farmers sell their products to the money lender as a condition for granting of the loan.

137. There is no doubt but that many of the farmers are deeply in debt. One suggestion which has been made is that funds be provided to the co-operative banks, so that they may advance money to farmers to pay off their loans to money lenders—an amount estimated at some £3,000,000. This would mean mostly a transfer of funds to the money lenders from the Treasury and secondarily a reduction in interest charges paid by the farmer, though no reduction in their debts. There would be nothing to stop further borrowing and this seems to be a very costly procedure for a limited benefit. It would appear to be a very inflationary proposal. Another difficulty is that these debts were not all incurred for agricultural purposes. The part that has been incurred for personal expenditures of various kinds probably could not be assumed by the agricultural credit agencies. There will always be a certain amount of credit transactions of a personal nature which should not be handled by agricultural credit institutions.

138. The essential purpose of short-term credit is to take care of emergency situations. Loans to farmers should be paid off in good times and it is clear that there has not been as much credit discipline in the past as there should have been. Steps have been taken to carry farmers through the coming season, and the United States Public Law 480 (1954) Assistance Program will

provide added assistance to those in the more depressed areas. It is to be hoped that the coming agricultural season will improve the situation. Otherwise, there may be a need for added assistance in special situations.

139. The weakest area in the field of agricultural credit is that for long-term purposes, in spite of a general demand for long-term credits for land and water development, livestock and machinery purchases, and for buildings.

140. The Agricultural Bank of Cyprus appears to be serving a useful function in this field. However, its loanable funds are so limited that it cannot meet a large part of the demand for long-term credits. It appears almost certain that an agricultural credit investigation would find genuine need for additional long-term credit. The logical institution to deal with this problem is the Agricultural Bank. It is recommended that the Government give consideration to increasing the capital of the Bank, or providing it in other ways with funds for lending to farmers for long-term purposes.

141. A much more careful examination is needed of the entire agricultural-credit situation than the Mission was able to make. However, it seems clear that the present situation is not satisfactory either in the short-term or the long-term field. Excessive rates are being charged and it is fairly certain that some land improvement schemes and the adoption of certain improved techniques are being delayed due to the absence of adequate long-term credits. Substantial sums have been advanced to farmers in the past and it is not clear as to how constructively they have been used, nor how much pressure has been put on them to repay. Any detailed study would have to look at the basic needs of agriculture for capital and consider how to ensure that loans which were made would be used effectively. There are many ways by which governments have made low-interest loans available to farmers, such as providing guarantees or making funds available to special lending institutions at low rates.

Agricultural processing

142. As agriculture is such an important part of the total economy of Cyprus, there are naturally a number of industrial plants occupied with the processing of agricultural products or with the packing and preparation for sale of such products. These plants vary in size and complexity of operation from single hand operations, such as drying and packing of figs—often carried on with a very few employees working in small unpretentious buildings—to large industrial plants, using elaborate machinery and employing scores of employees, such as some of the flour mills or wine and spirit factories or the single large canning factory. In a few cases, export markets have been developed. A considerable quantity of fruit juices and tinned citrus products are exported as well as some tinned vegetables, soups, and vegetable juices.

143. Agricultural production for the most part is seasonal. Consequently the processing firms are intensely busy during the harvest season, after which their activities may decline to a point where they consist almost entirely of custodian duties or filling of orders from existing stock. Employment is strongly seasonal and undoubtedly raises difficult problems for those workers who must somehow find employment during the off-seasons.

144. The cheese factories are closed during summer and fall. They depend almost entirely upon sheep and goats' milk, and for much of the year the supply of milk completely stops. The largest canning factory is busiest during the citrus season but it extends its season as much as possible by canning vegetables and deciduous fruits and berries. These activities do not keep the plant running at capacity. In order to occupy a part of its excess capacity, consideration is being given to canning meat and meat products, using frozen meat imported from Africa.

145. The flour mills can operate continuously because the demand for flour is constant and the wheat used is not perishable and can be stored for long periods. Imported wheat constitutes from one-third to one-half of the wheat consumed in Cyprus.

146. Differing conditions are found with respect to capacity. There clearly is excess capacity in flour milling. One firm is reported to have purchased a number of small mills and closed them down in order to be able to operate its larger mill more nearly at capacity. It would appear that there is sufficient industrial capacity to handle a somewhat increased production of most products. It is possible that additional fluid-milk plants may be needed if the dairy industry increases as the result of a shift to mixed farming.

147. Wine producers complain that their plants are insufficient in size to handle the grape crop. The fact that large quantities of zivania are produced instead of wine lends support to this expressed need for enlarging the wine-making facilities. However, difficulties in marketing wine suggest that perhaps the greatest problem of the industry lies in that sector. It is estimated that about half of the wine grapes are surplus. Reference is made to the extensive survey of the vine industry of Cyprus by F. J. Rossi in 1956. Few of the excellent recommendations contained in that report have been completely implemented.

148. With respect to oil-processing plants, there are many which process olives by primitive means. These mills are old or operated by hand or animal power. They number perhaps as many as one thousand. There are from one to five in each village in the olive-growing areas. Only some of them operate each season. Their total output is decreasing but they still produce from 10 to 15 per cent of the olive-oil production of Cyprus.

149. There are about 150 modern oil plants using mechanized power. About 100 of them are reasonably efficient. These plants all use too short a time in their processing operations and, in consequence, more than 20 per cent of the olive oil that could be extracted mechanically is left in the solid residue and must be extracted by solvents.

150. The olive oil produced is insufficient for Cyprus' needs. Some 5,000 tons of oil of all kinds are imported. About 300 to 500 tons of non-edible solvent oil is exported. It would appear that consideration might be given to the import of oil seeds for crushing and oil-extraction in Cyprus. Oil obtained in this manner should be cheaper than imported oil. Producing oil would give employment to a number of additional workmen. The oil-cake residue is in great demand in the livestock-feed industry. In fact some oil cake is imported. There is almost certain to be a saving in foreign exchange. This question should be given early attention. In connexion

with this whole matter, special consideration should be given to the unpublished report of Professor C. Ricci of Italy, a Food and Agriculture Organization expert, who has just completed a study of the olive-oil processing industry in Cyprus.

151. Animal-feed compounding plants are also working under capacity but their situation may improve. Should the animal population increase as a result of a gradual increase of mixed farming, demand for prepared feeds will surely increase. Demand will probably increase in any case as farmers appear to be learning the necessity for better feeding of livestock.

152. Very little supervision of the feed plants is given by officials. Feeds bear labels of carbohydrate, fat, protein, and crude fibre content; but the composition of the feeds is not published and millers are free to substitute grains at will, so long as the general chemical composition is maintained. From the farmers' point of view this is not a good practice as different combinations of feeding stuffs give different results, although the basic chemical composition may remain the same. These plants should be regularly inspected and labelling requirements should be established.

153. Assistance in the development and expansion of agricultural processing establishments should be one of the areas for active interest on the part of the Cyprus Development Bank which is described in some detail in Chapter X.

Agricultural policy

154. The foregoing pages have pointed out the directions which agricultural development may take if the fullest effective use of available resources is to be achieved. Some of these measures can be applied quickly and results should be apparent within a short period. Others cannot be introduced without far-reaching modifications in the agricultural structure. These would involve rather profound changes in the approach to agriculture in certain of its aspects and probably would require far-reaching governmental action, or at least active governmental support and leadership. These changes can take place only over a long period, but unless they can in some way be brought about, the fullest potential agricultural development would appear to be beyond the reach of the Cyprus farmer.

155. Without some modification of situations that are the outgrowth of long-standing attitudes and of long historical and traditional sanction, the farmers will continue to work within an environment that prevents the introduction of a number of the modern farming arrangements that are most productive of results—whether measured by increased income per family, volume of product, or lowered cost per unit of product and, consequently, lower prices to consumers.

156. In initiating these measures, it is assumed that the Government will assume an active role. In a country just beginning intensive development efforts, private enterprise may not be sufficiently developed to take the initiative in many fields of development. Until such time as non-governmental enterprises are able to assume responsibility throughout the field of agriculture, their activities are apt to be limited to those areas in which profits may be realized abundantly and quickly. But there may be services to perform or investments to be made which will be essential to agricultural development

and are extremely important to the economy, yet will not attract private enterprise.

157. If the Government does assume a major role in influencing agricultural development, it must do so in order to bring about fulfilment of its agricultural policy. Unless it formulates, either actively or tacitly, fairly well-defined policies, the separate actions it takes may well be inconsistent one with another, or run counter to generally accepted criteria of the public welfare. To be most effective, the agents of the Government, in assessing the feasibility of projects for agricultural development, should be able to judge these in relation to the agricultural policies prevailing, and to decide whether and to what extent the prosecution of each project will or will not be in accord with government policy.

158. Policies must be defined in sufficiently specific terms to permit their being used as guide lines against which specific projects may be judged. For example, it might be a policy of the Government to so order its actions in the fields of price control, subsidization, commercial policy, or in physical development projects such as irrigation, or land development, as to increase the output of certain crops and reduce it for others. Or it might place great weight on water conservation. Some countries as a matter of policy have taken actions which tended to reduce the prices of foodstuffs to consumers, even at the expense of the farmer producer.

LAND AND LAND TENURE POLICY

159. Some countries have adopted as a policy the placing of as many people as possible on the land, even though this may have meant the division of the land areas into such small holdings as to prevent the adoption of the most improved methods of farming. Such a policy usually also means a relatively low income per family in agriculture.

160. Other nations have, as a matter of policy, limited the size of agricultural holdings permitted to a single owner. Ownership of lands in excess of these permitted holdings have been assumed by the government for re-distribution to landless farmers or to increase the holdings of small holders in order to make them of economic size.

161. Some countries have taken policy action to prevent the continued fragmentation of holdings and have forbidden their subdivision below a minimum size. In some countries programmes of consolidation of land holdings are a policy of government, and laws are passed to bring about consolidation, even to the point of forcing such action. Often government lands have been used to encourage consolidation. Parcels of land are given to "block up" separated "toy" holdings or to facilitate exchanges of parcels of land among owners.

162. Elsewhere, governments as a matter of public policy have given permanence of tenure to farm tenants or have regulated rental charges paid to landlords. Under certain conditions, landlords' lands have been made over to the tenants who have previously operated them, usually with compensation to land-owners.

163. Resolution of problems such as the foregoing requires policy decisions. Inaction is in itself a policy decision—the policy being in such a case not to disturb the *status quo* even though the *status quo* carries with it deep injustices. Avoiding the decision thus establishes

as official policy the continuation of known inequities. A country can hardly be seriously concerned about development if decisions which would promote development are avoided when they seem to run against the desires of established interests and the inertia of habitual practices.

164. It must be fully understood, however, that a political situation might be sufficiently grave as to prevent or delay positive actions which are generally known to be needed. No one can lightly recommend action or inaction that might have serious political consequences. However, those whose responsibility it is to weigh such consequences should be aware of the "cost" of whatever decision is finally made.

165. In the light of the present situation in Cyprus, the more or less haphazard disposal of government lands in small, uneconomic plots to farmers or to landless people should be postponed until policy decisions have been reached upon such questions as are raised above. Present disposal policy may make even worse the unsatisfactory condition of land holdings. Public lands might be a valuable tool which some aspects of land problems, such as fragmentation, tenure, land use, and soil conservation would be influenced.

166. Consideration should also be given to the question of whether or not unrestricted and unlimited ownership of land should be given in connection with the transfer of government lands. In many areas of the world it is felt that unrestricted ownership rights may not work for the best interests of the nation. Perhaps limitation upon the right of unlimited division is one such restriction that, under certain circumstances, might be imposed. Another might be the requirement that proper measures of soil conservation be adopted in order to prevent wastage of a valuable national resource.

167. In some areas thought is being given to the proposition that, although a land owner or land operator has certain rights and often is given certain benefits by government, he also has obligations to farm his land in a workman-like manner according to generally accepted farming standards so that the nation may be assured of a continuing supply of agricultural products for food and industrial purposes. Perhaps the time will come when, because it is a valuable national asset, a farmer will not be free to abuse his land or to destroy it. In most countries, it is unlawful for a man to abuse his animals. Perhaps this expression of mercy and kindness should be extended to the farmers' lands which are so essential to the continued well-being of nations.

WATER POLICY

168. As indicated earlier, water use is of vital importance to Cyprus. As pointed out in Chapter III, the time has arrived when the unregulated use and haphazard development of this resource can no longer be permitted.

169. It is strongly urged that the Government take vigorous control over water development, licensing of new well drilling, and regulating of pumping from already existing wells. It should require installation of proper irrigation works within farms and the adoption of modern and efficient irrigation practices.

170. Unless these matters are taken in hand, it can be reasonably expected that most of the lands presently irrigated from boreholes will go out of cultivation. As most of the wells are being over-pumped, the water

level will fall to a depth where it will be uneconomic to pump. Many wells located near the sea will become useless because of inroads of salt water.

MARKETING POLICY

171. It has been noted elsewhere that marketing conditions are costly both to agricultural producers and to consumers. The Government should take an active interest in improving this situation as a matter of policy. Costs of marketing and middle-men's margins are far too high, reflecting gross inefficiencies or too-high profits or both.

172. There are four general approaches to improving marketing conditions. One is to fix prices and margins that may be charged; a second is to go into business by setting up pilot enterprises at various points in the marketing chain in order to demonstrate fair prices to consumers and to eliminate some of the middle-men; a third is to encourage development of co-operative marketing organizations, including co-operative stores supplying consumers; the fourth is to supply an environment within which the forces of supply and demand can work quickly and effectively through competition.

173. The fixing of prices and margins is extremely difficult to administer and to enforce. Since margins vary widely as do costs, there is no easy way to determine the "just price". Usually the fixing of margins merely "freezes" the distribution system as it exists and perpetuates indefinitely whatever inefficiencies, redundant links in the merchandising chain, and malpractices there are in the marketing system. Under this approach there is little opportunity for competition to operate to reduce margins and to weed out the inefficient, the unnecessary, or the corrupt merchant.

174. If prices are fixed too low, consumers overbuy and shortages develop that can be supplied only by increasing imports. Such shortages may result in black market prices and products moving through shady channels rather than through the regular distribution system. The more usual development is that the system itself becomes a party to the black market and the pricing regulations break down. In a situation such as this, only an elaborate and incorruptible policing system can prevent illegal transactions.

175. If the prices should be set too high, stocks accumulate. If the Government is determined to maintain the high prices, it must be prepared to purchase products at the high price and store them, disposing of them eventually at a probable loss. Throughout the world when governments have undertaken to purchase products in order to maintain high prices to producers, they have almost always suffered staggering financial losses.

176. In some countries, a range of prices has been fixed, the government offering to purchase supplies if market prices fall below the floor price and agreeing to put supplies into the market if prices rise above the ceiling figure. This presupposes the existence of fairly substantial reserve stocks. This type of plan has met with some success in some Asian countries but when, because of bad weather, crops were very small, the governments could not control the price situation, despite the existence of substantial stocks, and the plans broke down.

177. Another approach to the problem is that of "fair price" shops which are operated by the govern-

ment as a guide to consumers and as a check on the operations of private traders. No attempt is made to handle large quantities of goods in this manner, but it can have a salutary effect if the government shop is efficiently operated. It must operate under the same conditions as a private shop, or it does not provide a fair guide.

178. In many countries the development of co-operatives, both to handle producers' products and to assume other functions such as manufacturing, wholesaling, and retailing, is encouraged as official policy. Usually the government extends credit to such organizations and may provide various other advantages, such as partial or complete tax exemption, or various degrees of monopoly for the providing of certain services.

179. Development of co-operatives to the point where they can exert an important influence upon marketing practices and margins is a long-term program not designed to produce quick results. Over long periods of time co-operatives of various kinds have become important elements in the economy of the Scandinavian countries, in certain branches of business in the United Kingdom, in Israel, and in many other countries in varying degrees.

180. Unless co-operatives can be developed and operated in such a way as to improve upon the efficiency of the existing trade, they can hardly be justified and they will find it extremely difficult to establish a place for themselves. This means that good, skilled management is essential. It takes time to train and develop experienced management in large enough numbers to staff the various co-operative organizations.

181. The co-operative approach should be encouraged but it is not a panacea, and can exert its influence only slowly. It is not a quick solution. Attempts to promote co-operatives too rapidly usually result in failure and disillusionment.

182. Marketing conditions can be improved by improving the business environment in which trading takes place. As long as producers and traders are not well-informed about prices and supply and demand conditions, marketing operations will be more or less chaotic. Margins will be high because risks are high and because the situation encourages unscrupulous practices and the taking of excessive profits. The Government can exert a helpful influence by supplying detailed and up-to-date information on prices and supplies, as well as trade information from many markets, local and metropolitan and, in the case of export products, prices abroad. Such information must be given wide circulation in the press, by radio, by special trade bulletins, and even by telephone. Consumers will do a considerable amount of regulating if they have more information. Price posting would be a great help to bring about a more balanced market price.

183. Along with the supplying of current market news, grades and standards for the various products should be developed and the selling of products by grade should be encouraged. Under certain circumstances it should be mandatory. Selling by grade also results in a variation of prices between high and low-grade products. This price differential is important in encouraging the production of better quality products. As long as producers receive the same price for their products regardless of quality, there is no incentive to produce better products.

184. Regulated public markets should be established in various market centres. The methods of trading in such markets should be under constant supervision and definite rules and regulations should be developed. Market practices must be continually observed and unfair or dishonest practices must be punished; prices should be posted and deviations not allowed; traders on such markets should probably be licensed; standard weights and measures must be adopted; and scales should be frequently inspected.

185. For export products, it is important that government inspection be maintained and strongly supported in order to prevent inferior or poorly packed products from being sent abroad. Unless the quality of products from a country can be depended upon, products lose their reputations in the foreign markets. Should this happen, it is extremely difficult to regain good standing.

186. Some countries have established commodity-marketing boards. Such bodies, representative of all elements in the trade, plus representatives of producers, consumers, and government may be given wide powers to regulate trade at all stages in the marketing process. They can impose quality requirements. In some cases they have even been given important price-setting functions. Such boards are most likely to be useful in the case of export products.

187. Marketing boards must not be looked upon as automatic solvers of all marketing problems. Their record is one of failure as well as success. They should not be set up merely because some other country uses them. Only after thorough examination of the marketing situation and a clear understanding of the functions that could be helpfully undertaken by a board, should they be established. One danger is that such a board may become merely another link in the marketing chain of costs that may widen rather than reduce the gap between the producers' and the consumers' prices. A commodity-marketing board is also likely to become a special pleader for the particular commodity with which it is concerned and the producers of that commodity. They may be so successful in pushing their special interest that consumers suffer and the nation suffers also as the special benefits given may result in lop-sided agricultural development.

SUBSIDIZATION POLICY

188. It is almost certain that the Government's subsidy policy should be re-examined. It may be causing developments in agriculture that are contrary to the best interests of Cyprus.

189. The Government, through the Cyprus Grain Commission, pays Cyprus farmers £40 per ton of wheat. The import price is about £24. The difference represents a subsidy which makes wheat growing relatively profitable. It has undoubtedly caused lands to be put into wheat that probably should never have been ploughed. It has also caused farmers to continue expanding wheat production and has discouraged adoption of improved farming systems including mixed farming. Because the price of wheat paid to farmers is high, the price is also high for certain products such as high-quality flour and animal foods such as bran. Bran from domestic wheat is priced at £22.400 to £24.800 (depending upon fineness) per ton, while imported bran can be delivered to Cyprus for £16 to £18 per ton. This represents a "tax"

upon the livestock industry, an industry which should be encouraged.

190. Similarly, the subsidy upon ordinary wine grapes of 4½ mils per oke is encouraging production in the plains, an area that should not be devoted to wine grapes. Because of the high yields in the plains, wine become a very profitable crop. But wine grapes should, as far as possible, be restricted to hill areas where there are few alternative crops. The subsidy tends to bring about over-production, as evidenced by the quantity of grapes that must be processed into zivania which is difficult to sell.

191. Subsidies in certain circumstances may be useful devices to improve agriculture. In general, however, it would minimize possible adverse effects of subsidies if they are used to encourage greater efficiency of production. By such use, costs would be lowered and the products would have a better chance of competing in world markets.

192. Payment of subsidies upon the use of fertilizer, or of improved seed, or of insecticides are examples in which the farmers' income is improved both by lowering his costs and by securing increased yields. Subsidization of credit terms is also a way in which net farm incomes may be increased. Used in this way, subsidization avoids distortion of the farming pattern which occurs when increased production of certain crops that might better be curtailed is encouraged. The land and other resources might better be used for more needed products.

193. It must always be kept in mind that subsidies really are transfers of income from one group to another, for purposes that presumably are for the benefit of the public generally. With respect to agricultural subsidies, these may represent a net gain to the agricultural sector only if there is a large non-agricultural sector which may be taxed in order to raise revenue from which subsidies may be paid.

194. In the case of Cyprus, it should be noted that half the population is engaged directly in agriculture. If to this half are added those who are dependent upon agriculture—because they are landlords, or because they process agricultural products or buy or sell agricultural products, or provide supplies such as fertilizer, feed, insecticides, or farm machinery—it will be realized that the agricultural sector, in its true entirety, includes much more than half of the economy of the country. It becomes increasingly difficult, therefore, to raise funds outside the agricultural sector in order to pay subsidies to a part of the agricultural sector. Hence, the effects of subsidization may easily be mistaken. Certainly if everyone were subsidized equally, the effects would cancel out.

195. There appears to be a disposition to press for additional subsidies for additional purposes, as this seems to be an easy and painless way of increasing incomes. Such subsidies are likely to perpetuate inefficient, uneconomic types of production. Income can also be increased by adopting more efficient methods, by using methods that increase production, and by using methods of production and handling which improve quality.

196. It is difficult to estimate the actual amount of farm subsidies in Cyprus. The 1960 budget appropriation item designated as "Subsidies" was £420,000, but probably various other items should be added which

were charged to the Development Fund or took the form of advances as in the case of wine, raisins, and zivania, or were made by subsequent legislative action as in the case of tobacco. It is possible that the figure may be as high as £1,000,000 per year, or about 2 per cent of the total spent on the Island each year for consumption. It is 6 per cent of the income of all farmers, although it is not distributed equally. The subsidy programme gives evidence of having grown haphazardly with almost no over-all supervision nor any constant evaluation to determine whether in fact the piece-meal, unconnected subsidy programme as it has developed in Cyprus produces constructive results. It seems that some of its major results are merely to produce situations upon which claims for increased subsidies are based. Although it may have been intended to lower prices, it is quite likely to result in higher prices to the consumer in the long run.

197. It is recommended that a special investigation be made of the whole subsidization question to determine what the effects of the present subsidy schemes have been, whether subsidies are necessary, and whether the subsidies as presently handled do, in fact, contribute to the welfare of farmers and the country.

198. Such an investigation should examine the question of whether or not the expenditure of £1,000,000 annually on such programmes as land consolidation, improvements of irrigation methods, replanting of vines, planting carob trees, soil conservation practices and structures, controlled grazing, and assisting in gradual elimination of the landless shepherd might not yield a greater total return to the country than that realized under the present system.

199. The present subsidy programmes and the claims for increased subsidization are really the response to disaster situations. They take on some of the characteristics of relief. There is no denying that disaster situations such as extended drought, for example, should be given attention; but the attempt to ease the difficulties arising from such causes should not be permitted to saddle the country permanently with a non-constructive subsidy programme. Relief or charity should be handled on their own merits. Subsidies should be used to promote the implementation of the Government's agricultural policies.

RESEARCH, EXTENSION, AND EDUCATION

200. It is a usual government policy in most countries to give financial support to agricultural research, extension, and education.

201. Basic to any sustained advance in agriculture is satisfactory research. Much investigation and testing are required before the farmer can be told with confidence what is the best thing to do in relation to the numerous alternatives which he faces. There must be country-wide surveys to investigate the quality of the soil, the water resources, and the best prospective grasses for dry-land pastures. There have to be field investigations, followed by pilot demonstrations for all the varied requirements of a developing farming policy. There is need to discover the crop varieties which are most suited to Cyprus and to improve their capacity to give higher yields, to respond to higher applications of fertilizer, and to resist disease. There is need to discover which fertilizer to use for various soils, the inter-action between fertilizer, the sowing date and

spacing, the best cultivation methods, the optimum water requirements, the best cropping patterns responsive to modern farm management, the particular benefits and best kinds of machinery, the best layout of irrigation and drainage where it is needed. The whole range of animal husbandry—problems of disease, nutrition, breeding, livestock care and management—must come in for wide research attention, as must the problems of pest control for field and vegetable crops. Finally, there is the whole area of economic and market research.

202. While much can be learned from work being done in other countries, considerable special testing must be done to determine its suitability for Cyprus. Much useful work has been done already on the Island, but in its present state this research is so full of gaps that it is inadequate to meet the challenge of rapid agricultural development. To fill these gaps in knowledge, additional funds must be provided. Funds spent for research should be considered as investments, not expenses, since they often yield a very high return. Fertilizer experiments in Cyprus resulted in changing the formula used for potatoes—saving the farmers over £120,000 per annum. The introduction of the new barley variety *Athinais* increased the yield by 10 per cent. Recent studies suggest that carob production can be increased by the application of nitrogen.

203. The results of research discoveries at home and abroad must be carried to farmers by the extension workers. It is they who encourage the farmers to adopt new practices, new varieties, new systems of farming. They conduct demonstrations in villages. They are really the front-line and theirs is the heavy responsibility of getting improvements adopted by the farmers. There should be more such workers at the village level than there are today. The number of extension workers is simply not sufficient to do the job that must be done if farm production is to increase in volume and quality, and to develop along the lines of greatest value to the farmer and to the country.

204. Consideration should be given of ways and means by which young people may be given training in agricultural fields—short of university training—which will qualify them to undertake certain levels of extension work in the villages. If they are adequately backed by university-trained people and are given supervision, they can be useful supplementary personnel until such time as more highly trained persons become available.

205. It should be realized, however, that there are numbers of young trained agriculturalists in Cyprus who are not now employed because of lack of places in the Ministry of Agriculture and Natural Resources. A first step in extending the coverage in agriculture both in research and extension work would be to absorb suitable persons within the organization and put them immediately to work.

206. It has been wisely decided not to introduce agriculture into education at the university level. However, in the elementary schools and in the secondary schools efforts should be made to introduce an interest in agriculture. The extension service might well consider the advisability of promoting agricultural education among farm boys and girls by means of young peoples' clubs.

FARM ORGANIZATION

207. The Government might well encourage the strengthening of the organizations of agricultural pro-

ducers. Organizations of specialized commodity producers are desirable as well as organizations of a general nature. Many already exist but they can be strengthened. They can be very useful in bringing to the attention of the authorities difficulties that may be faced by farmers and suggestions for their solution. They can also be useful to the Government as a channel for disseminating information about government policies and as a means for enlisting support among farmers for measures designed to improve present-day conditions.

Suggested development expenditure in agriculture

208. It was shown in Table 8 that capital formation in agriculture between 1955 and 1959 was estimated at £1,500,000 to £2,000,000 per year. These figures may be regarded as very low. The following table of estimated development requirements in agriculture for 1961 to 1965 is based in large part upon data prepared by the Economic Advisory Commission.

Table 11

SUGGESTED DEVELOPMENT EXPENDITURES IN AGRICULTURE, 1961-65
(Thousands of Cyprus pounds)

Year	Public sector	Private sector	Total
1961	1,000	2,000	3,000
1962	1,000	2,200	3,200
1963	1,000	2,400	3,400
1964	1,000	2,500	3,500
1965	1,100	2,600	3,700

209. No effort is made here to specify the fields in which funds should be expended. The estimates suggested include items for land improvements and tree planting at an increased rate over what is now being planted, as well as for soil-erosion control and for miscellaneous projects. It assumes that private expenditures for machinery and equipment will not be reduced.

210. Certain observations may be helpful. It would be prudent to consider these figures as tentative rather than as precise goals. They give a general impression of the size of the investments that might usefully be made. It may be found, however, that for various reasons, the country may not be able to expend constructively sums of this size within a period of five years. A handicap may well be that there are not enough Cypriots with the requisite technical training to man development projects the cost of which would total the expenditures here indicated.

211. An estimate for expenditures for land consolidation is omitted entirely. This is not because it is believed that no expenditures in this field are necessary but because no effective programme has been brought to the attention of the Mission. If a consolidation programme is undertaken, large sums of money will be needed to purchase lands and to use such purchased lands to round out and consolidate holdings. These lands would probably be sold to farmers, no doubt upon a long-term repayment plan. Consolidation funds thus become a type of revolving fund used to make consolidation possible, but having a characteristic somewhat different from more usual development expenditures.

212. As consolidation probably cannot be undertaken without legislation, it appears doubtful that an active field programme could be initiated as early as 1961.

But once the necessary legislation is adopted and the plans for an action programme formulated, it should be supported with the necessary funds to make it a success.

213. There has been included in the suggested expenditures in the Public Sector, the share to be contributed by the Cyprus Government to the Agricultural Research Institute project which is now being considered by the United Nations Special Fund. The Cyprus Government is to provide the land, buildings, and equipment. The request is that the United Nations Special Fund would contribute additional equipment and library, plus experts, consultants, and fellowships for Cypriots to be trained to work in the Institute. The Cyprus Government's contribution is about £170,000 and the United Nations Special Fund would contribute about £200,000. Since there are many applications from all over the world being made to the Special Fund, there is no way of telling whether or not this particular project will be approved. It might be that this particular project might be of interest to some individual government which wished to assist in the development of Cyprus. In any event, the Cyprus Government should be prepared to expand its budget for agricultural research by its share of the total.

214. A much smaller project involving £75,000 also deserves support and has been included in the estimated expenditures in the public sector, based upon the recommendations made by Professor C. Ricci (not yet published) that the Agricultural Research Institute also provide for research in the field of olive production and olive-oil processing and analysis. He recommends that a pilot plant be constructed at an estimated cost of less than £10,000 and that a fund of about £15,000 be provided for experts and fellowships. He also recommends that the equivalent of about £35,000 be lent on a long-term basis for the improvement of oil-processing plants. The whole project thus would involve about £12,000 per year over a five-year period.

215. Professor Ricci believes that such a long-term project for the development of the industry would add about £45,000 annually to the value of the olive crop. This would represent a return of nearly 70 per cent of the total cost of the project in a single year.

Forestry

216. Cyprus has a world-wide reputation for its forestry programme which has a history of some eighty years of experience. About 18 per cent of the land area of Cyprus is now included in the forest area and considerable sums have been spent in the past in its development, especially during the period between 1945 and 1955. The following five years saw a substantial deterioration. Large areas of highly productive forests were destroyed by fires and have not been reforested.

217. The administration of forests is one of the longest long-term projects in which the Government is involved. Present investments may not yield a return for many years, yet the Cyprus forests are now in a position to produce some financial return; and there is a regular program of selling timber for cutting on a carefully controlled basis. The income received by the Government from the sale of standing trees and other produce from the forest is at present estimated at £100,000 per year.

218. A five-year development program has been prepared by the Forest Department. It was based upon the following five objectives:

(a) Protection of the forest areas from fires, diseases, and pests;

(b) Construction of additional forest roads;

(c) Reforestation of the burned and presently unproductive areas;

(d) Development of industries using forest products; and

(e) Development of forests as an attraction to tourists.

219. In the view of the Mission the priority objectives in this list are (a) the protection of the forests and (c) reforestation. So far as fire protection is concerned, it has been estimated that the losses during the period from 1955 to 1959, counting cost of fire-fighting and damage caused to forests, were more than £500,000 per year. While this was an abnormal period, the greater number of private automobiles in Cyprus will increase the number of forest visitors in the future and increase the hazards from that source. At any rate, the proposal to clear added fire traces is the best form of fire insurance, and in the long run the reduction of fire damage should more than pay for the cost involved.

220. The reforestation programme is related primarily to about 22 square miles of burned areas. While nature would probably carry out such a project in time, the result would be haphazard and slow. An excellent forest area is involved, and controlled reforestation can both speed up the process and increase its value. Both these programmes will create fairly steady employment for persons living in mountain villages.

221. As to the construction of additional forest roads, there seems to be no convincing argument as to why these activities should be accelerated. To be sure, it might permit more rapid access for fire-fighters and it might provide some added attractions for tourists, but neither of these objectives justify giving special emphasis to this programme. So far as tourists are concerned, the present road system is sufficient to offer access to varied scenic beauties, although a wider road at certain points might make the experience less nerve-racking. Objective (d) which related to the development of industries using forest products is discussed in chapter VI and would fall within the province of the proposed Cyprus Development Bank (see chapter X).

222. The sum of £100,000 per year should be sufficient to carry on the two development programmes

which were assigned priority above, and even leave a small additional amount for doing some work on forest roads beyond that included in the regular budget.

Fisheries

223. Cyprus fisheries are not rich, presumably because of the lack of nutrient salts in the neighboring waters. There are ten motor trawlers with crews of from five to eight but most of the off-shore fishing is done in small boats. Slightly more than 1,000 individuals are engaged in commercial fishing. Existing legislation not only limits the number of trawlers, but fishing by trawler is prohibited during June, July, and August. The lack of water in Cyprus makes impossible the development of fresh-water fish. There is no deep-sea fishing nor are there processing plants.

224. There has been a slight increase over the last decade in the quantity of fish landed. In 1950, the total was about 450 tons and the present level is about 550 tons per annum. Fish has never played a large part in the Cypriot diet but imports have increased very substantially in the last few years. From about 100 tons of fresh, chilled, or frozen fish imported in 1954, the amount increased to 300 tons by 1958 and nearly 800 tons in 1959. There has been an even greater increase in the quantity of tinned fish imported.

225. Various suggestions have been made as to how further to develop the Cypriot fishing industry. These usually focus on the possibility of fishing in more distant areas. There are fish near the shores of Turkey and the United Arab Republic, and of course there are fish in more distant ocean areas. Except for the coast of Turkey, which is near enough to be reached by the present Cypriot fishing fleet, long-distance fishing would presumably require added investment, training of crews, and probably the development of shipping yards on the Island.

226. The prospects for fisheries development require appraisal by an expert in the field and it is fortunate that application has been made to the United Nations Food and Agriculture Organization for the provision of such an expert. In the meantime, it appears that there are a number of regulations which were issued during the Emergency which are burdensome to the industry. These should be reviewed and removed in all cases where they do not serve an essential purpose. In accordance with the principles outlined in chapter IX, import duties levied on items used in fishing such as nets, for example, should be withdrawn.

Chapter V

MINING

1. The mining industry in Cyprus is very old. There is archaeological evidence that open-cast mining for copper was practiced 2,500 years before Christ. The mining done by the Phoenicians and the Romans is recorded in enormous slag piles and ancient underground workings. There even appears to be some relation between the word "copper" and Cyprus, although there is no agreement as to which is the original and which the derivative.

2. After the time of the Romans, no important mining activity took place in Cyprus until 1914, when a large ore body of cupreous pyrites was discovered in Skouriotissa. Continuous development work went on in the following years and the first copper was exported in 1923. Exports reached a peak in 1929. The ensuing depression caused only a brief hesitation and the industry soon was flourishing. With the Second World War European markets were closed and practically all mining operations in Cyprus were stopped.

3. The mines started operating again in 1945 and then began a period of tremendous growth. The development of the exceptionally rich Mavrovouni cupreous pyrite ore body and the high metal prices of the early 1950's were responsible for increasing the value of mineral exports from about £1,000,000 before the Second World War to nearly £14,000,000 in 1956. While copper in various forms and iron pyrites are much the most important factors in the total, asbestos, chromium, and timber also make their contribution. The record for the years since 1950 is shown in the following table:

Table 12

INDICES OF MINERALS EXPORTED, 1950-59

	Quantity ^a	Value		Quantity ^a	Value
1950	100.0	100.0	1955	102.3	191.2
1951	103.0	146.0	1956	125.6	254.0
1952	120.6	190.3	1957	134.3	191.3
1953	95.4	142.8	1958	131.0	166.7
1954	108.9	175.7	1959	134.6	173.6

^a The quantity index is weighted by 1950 prices.
Source: *Cyprus Economic Review*, 1959.

4. One immediately sees the effect of the Korean War upon prices and values, the jump in output in 1956, and the decline in total value after 1956 despite the maintenance of a high level of output. These wide fluctuations in value have created variations in the share of mining in the gross domestic product of Cyprus. During the last decade it has been as high as 16.7 per cent in 1952 and as low as 10.1 per cent in 1958 and 11.0 in 1959.

5. In two other dimensions the mining industry is of special importance to the economy. It has always, during the past ten years, provided at least 50 per cent of all exports, and thus been of prime importance as an earner of foreign exchange. With respect to taxes, the

mining companies have been paying 20 to 25 per cent of all revenues and 55 to 75 per cent of the total income tax. As to employment, the number reached 7,000 in 1955 but declined to about 5,000 in 1959.

6. The mining operations in Cyprus are carried on by a small number of companies at a relatively small number of locations. The Mavrovouni ore body was the largest discovery and contained over 15 million tons of high grade ore, including the disseminated ore surrounding it. The first ore from Mavrovouni was mined in 1929 and it has been the largest single source of metallic ore in Cyprus since 1934. The Mavrovouni ore body is a good illustration of the inevitable exhaustion of any ore deposit. In fact, it is now nearing the point where it soon will be completely depleted. Since mineral reserves are a wasting asset, any given operation has a limited life.

7. In terms of actual operations the various companies have had extremely varied records. One of them, the Cyprus Mines Corporation, after a long period of exploration and development, has proved to be a very successful operation and is an excellent example of the application of modern mining methods. Other companies have been less fortunate, and are so deeply in debt that their future is uncertain. The records of the various companies make it clear that there are four requirements for success in mining—successful discovery, adequate capital, competent management, and a good market. The last two factors are largely beyond the reach of government policy, but the first two can be substantially affected by actions by government.

Market prospects

8. In order to evaluate the prospects of the Cyprus mining industry, it will be necessary to analyse the market for the more important mineral products of Cyprus and the extent of ore reserves of its mines. The minerals to be considered are cupreous pyrites, cupreous concentrates, iron pyrites, asbestos, and chromium.

COPPER AND CUPREOUS CONCENTRATES

9. The copper market during recent years has been characterized by a more rapid increase in the capacity to produce copper than in its consumption. Not including the Soviet sphere, there has been some 1,000,000 tons of new capacity of production installed during the years 1955-1960. In 1950, the price of copper was £355 per ton. By 1959, the average price had dropped to £244 per ton. It appears that the era of big increases in copper production is over. Present prospects are that the rate of increase during the next 3 years will average 70,000 tons per year or 2 per cent *per annum*. Since copper consumption is growing much faster than that, the copper market promises to be firm, at least for a

few years. It is possible to foresee a fairly good market in the near future for the export of cupreiferous minerals from Cyprus.

IRON AND COPPER PYRITES

10. Besides Cyprus, the chief producers of iron pyrites are Spain, Italy, Canada, Norway, and the Union of South Africa. The pyrites are used mainly for the manufacture of sulphuric acid. About 80 per cent of the world consumption of sulphur goes to the manufacture of sulphuric acid in Europe and about 55 per cent of the sulphuric acid consumed goes into fertilizer production. The residue of iron pyrites is used in steel manufacture.

11. Sulphur produced in almost pure state from domes, mainly in areas near the Gulf of Mexico, has displaced the use of pyrites for the manufacture of sulphuric acid in most new factories. This sulphur is mined at very low cost by the hot-water technique. Another new source of sulphur has been found in France and Western Canada by extracting it from natural gas, and these countries get from this source all the sulphur they need.

12. In view of the competition from these new sources, the price of iron pyrites, that was high during the period 1952-1957, has declined sharply since 1958. It is probable that the market for iron pyrites will be limited to those older sulphuric acid plants which were built to use iron pyrites, although of course some new technological development might find some new use for the pyrites.

ASBESTOS

13. The asbestos market is dominated by Canada, which produced over 1,000,000 tons in 1959. Other producers are Southern Rhodesia, Australia, and lately the Soviet Union has been increasing its asbestos exports to Europe. Asbestos production capacity has been sufficient for the world demand but this demand is increasing very rapidly. New uses for asbestos are being discovered. For instance, the Johns-Manville Corporation has developed a new use for asbestos fibers as an ingredient in asphalt road-paving mixtures. It is claimed that by adding 2 or 3 per cent of asbestos fiber to paving, the life, performance, and maintenance characteristics of the road surface are improved. A potential market for 500,000 tons of fiber a year is foreseen by the company. There is increasing use of asbestos in pipe and, of course, it benefits from building construction and the expansion of the use of heating facilities.

14. As a whole, the outlook for the asbestos market appears stable with the possibility that demand will grow faster than supply.

CHROMIUM

15. The market for chromium is closely tied to steel production. An uncertain factor is the impact of a possible increase in the export of chromite from the Soviet Union. However, some other producers, such as Cuba, are diminishing their productive capacity.

16. The world reserves of chromite (Southern Africa, Rhodesia, Turkey) are not large, and it is possible that during the next ten years those reserves will be seriously depleted, resulting in a continual strengthening of the chromite demand.

Known ore reserves

17. Estimates of ore reserves can never be very exact. Not only is there uncertainty as to the limits of a particular ore body, but ore reserves which it would be profitable to move at one price will not be worth extracting at some lower price. Estimates in terms of years of life also depend upon the rate of operation.

18. Even if one makes the most optimistic allowances for these various factors, the long-term prospects of mining in Cyprus are not very bright, based upon the reserves which are now known to exist. So far as asbestos is concerned, there are reserves for more than 100 years of operation, but the copper and pyrites outlook is less favourable. The known reserves would indicate a probable future life for most of the companies of from two or three to ten years. Furthermore, these forecasts include the mining of somewhat lower grade ore than in the past. This suggests that even in the short run, both profits and taxes paid will diminish substantially, unless new deposits are discovered and developed.

Exploration and development

19. It is possible to arrive at the conclusion that the mining industry of Cyprus has passed its peak, and that in the future the export of minerals as well as the total revenue from mining activity will decline. Any such gloomy picture tells only part of the story. The trend of events can be changed by the discovery of new ore bodies, and the possibilities of Cyprus have not yet been fully explored.

20. Several of the mining companies are engaged in an intensive search for new ore deposits, sometimes within the area where they already have a concession and sometimes on the basis of prospecting permits. There appear to be promising cupreous pyrites deposits in the Troulli area. Several notable discoveries have been made by the use of modern methods. For example, at Agrokippia, there were no surface indicators, but the use of gravity measurement led to drilling which located an ore body 500 feet below the surface with an estimated total of 4.5 million tons of ore.

21. There is no reason to believe that extensive mineralization is concentrated only in the ore bodies which have already been discovered. Similar geological and geophysical conditions appear elsewhere and it is plausible to expect that other ore bodies may exist on the flanks of the Troodos Range under the pillow-lava now covered by the sedimentary rocks. This area covers about 400 square miles and almost one-half of it is under prospecting leases.

22. Under the Cyprus Mining Laws the mineral resources of the country belonged to the Crown and, presumably, now belong to the Government. Prospecting permits are granted for limited areas, with a maximum (but extendable) period of four years, an annual rent per square mile of £12, and an obligation to spend a minimum amount of £100 per square mile per year.

23. It seems clear that the Government should encourage the existing mining companies to carry on extensive exploration work on their mining claims. One way to accomplish this is to allow mining companies to charge against income the exploration expenses incurred during the year. Under present tax regulations

in Cyprus, exploration expenses are capitalized and then amortized over the entire life of the mine. If these exploration expenses were incurred in a venture which proved to be unproductive, the expenditure could be deducted from income only in the year in which the company abandoned its claim.

24. Since the corporate income tax bears a flat rate, the exact timing as to when a deduction can be taken would not affect the total tax payments over the period presently used for capitalization. However, if the corporation could take its tax deduction in the same period in which money was spent, the financial burden of carrying on exploration would be considerably eased.

25. An additional aid to discovery would be for the Government to strengthen the Geological Survey Department and to undertake a widespread geological and geophysical survey of the Island's mineral resources. This will be described in more detail at a later point.

26. If added aids and inducements are to be given to exploration, the Government should strengthen its own position in this respect. The principle should be clearly established in law that mineral substances of all kinds which may be found in the soil or subsoil are the property of the Republic of Cyprus. A National Reserve of Mineral Resources should include all areas not granted to someone under a concession. Prospecting permits would be readily granted but the mining legislation should be aimed at preventing inactivity on the part of the prospectors. There should be an obligation to reduce the exploration area after two years to fifty per cent of the original claim. The rent charged per square mile might be on a rising scale, perhaps to £30 in the fourth year. The obligation for expenditure for prospecting might be increased to £250 per square mile per year. And permits should be extended after four years, only if it is clear that a serious programme of exploration is being carried on. At present, there is little standardization among the various concessions which have been granted; for example, they vary as to the number of years allowed. It is hardly an orderly procedure to negotiate each arrangement separately, without any standards or limits set by law.

The attraction of capital

27. Mining operations require substantial sums of capital. At the start, during the stage of prospecting, any investment is highly speculative. Even after discovery, large sums must be spent to reach the ore body, either by pits and tunnels or by stripping away the over-burden. There also may be various processing steps such as crushing, grinding, acid leaching, separation, or concentrating in special plants built for the purpose. There must be transportation arrangements, perhaps railways, trucks, and port facilities. There also can be various types of auxiliary activities, from sulphuric acid plants to pit-prop preparation, and hospitals to housing.

28. The mining industry of Cyprus needs to be revitalized by the investment of additional capital in order to continue to be an important factor in the economy of the country. Without added investment the production of minerals will decline sharply during the next few years. In recent years, it has been profiting from investments made earlier and new capital investment has been relatively low.

29. The investment of capital in the mining industry must come mainly from the private companies now operating in Cyprus or possibly some newcomers. Any investment of public funds should be comparatively small and limited to exploration for new ore-bodies. It is very difficult to foresee the actual future investment of capital in mining, because this investment must come from such profits, reserves, or new capital as the mining companies are able to obtain and are willing to invest in Cyprus. The Government's task must be to create a favourable climate for investment in mining.

30. One of the most important factors in influencing investment is taxation. This is particularly true in connection with mining in Cyprus because so much of the activity is carried on by foreign companies which have alternative uses for their capital in other countries. Therefore, tax arrangements in Cyprus must take into account the treatment of mining investments under other jurisdictions. The problem of appropriate tax arrangements for mining companies is exceedingly complicated, and can only be touched upon very briefly in these pages.

31. The taxes now applied to mining companies in Cyprus take the form of the payment of royalties and an income tax. Royalties fixed before 1958 were applied in some cases on the basis of 25 mils per ton and in others at 1½ per cent of the value of the ore. In 1958, a schedule was established to apply to all licenses issued thereafter, based for most ores on value. The logical way to set royalties is in proportion to the value of the minerals produced, and the policy should be to obtain general application of the 1958 scale whenever adjustments are possible.

32. Much more important in its impact on investment is the corporation income tax which is set at 42.5 per cent of net profits. The severity of an income tax must be measured not only by looking at the rate but also at the nature of the deductions which are allowed in connection with the determination of net profits. The suggestion has already been made as to how to improve the treatment of exploration costs as a deduction. A similar approach should be adopted with respect to development costs. These also are now capitalized and prorated over the life of the mine. Under this formula, companies are encouraged to postpone exploration and development. The discovery of additional reserves may prolong the period over which past expenditures can be amortized and thus reduce the annual deduction. In fact, the economical programme would be to discover and develop new reserves equivalent to the amount annually extracted from the mine. If current deduction were permitted, the amount of capital which the company would have to invest would be somewhat smaller. The only danger in such a policy is that, if there suddenly were very large expenditures for exploration and development, government revenues might suffer a temporary fall. If such an unusual situation seems likely, a limit could be placed on the percentage by which net profits for tax purposes could be reduced in any one year by such deductions.

33. Another aspect of taxation which is important to mining companies is an allowance for depletion. A mine is a wasting asset. Every ton of ore extracted diminishes the ultimate life of the mine. When the mine is exhausted, the salvage value of the plant and machinery becomes negligible. In the case of an investor in a manufacturing plant, his depreciation charge is intended to balance the loss in value of his plant and equipment

so the value of his capital is maintained. Presumably he expects to continue operating indefinitely. In the case of a mine or oil well, the plant and equipment may be kept in good working condition or balanced by a depreciation account, but be worthless when the reserves are exhausted. Furthermore, the depreciation charge has not covered the capital which was in the resource itself. In most countries, this condition is covered by permitting a tax deduction for depletion.

34. There is no standard method for handling the depletion problem. It has logical difficulties because both the value of the resources and the time period for exploitation are uncertain. To summarize much too briefly, some countries determine the deduction as a percentage of gross income (United States, Turkey), or a percentage of net profits (Canada). Some other countries (Venezuela, Philippines) allocate the investment over all the expected units of the output. Still others (Israel) give the producers a choice. Where percentage depletion is used, there may be a schedule which varies according to the product. In the United States, the allowance for depletion is based on a percentage of gross income and is 27½ per cent for oil, 23 per cent for sulphur, 15 per cent for metallic mining, and 5 per cent for coal. An interesting principle recently adopted in the French Sahara Petroleum Law was to relate the depletion allowance in part to the amounts expended in exploration.

35. In view of the need of the mining industry for more capital and the fact that the taxation of mining profits in Cyprus was higher than in many other countries, the Government introduced a Depletion Allowance Law which was published 5 March 1959, in Supplement No. 5 of the *Cyprus Gazette* (No. 4217). No action was taken upon the proposal because of the approaching change of Government. The proposed bill provides a rather unusual formula for its calculation. The depletion allowance will be computed on a sliding scale from zero to 10 per cent of the net proceeds. The net proceeds are the gross income less royalty and delivery costs such as shipping and insurance. The sliding scale is related to the ratio of profits to net proceeds on the principle that the higher the ratio of profitability, the lower the allowance. In no case can the depletion allowance exceed twenty per cent of the profits.

36. It seems clear that some tax adjustment needs to be made to put Cyprus on a competitive basis with other countries to assure additional investment of capital in mining. The Mission made no attempt to delve deeply into the complexities of mining taxation. Probably no approach to the problem is entirely satisfactory. The projected law is probably as satisfactory a way of dealing with the depletion problem as any, although the more usual approaches of a percentage of gross income or of net profits are simpler and are less likely to discriminate against the more efficient producers.

37. A final method for bringing tax arrangements to bear upon the maintenance and development of the mining industry is to provide special arrangements to attract new mining companies to Cyprus. The Government might allow mining enterprises the possibility of amortizing during the first three years of mining operations as much of their mining investment as their profits would permit. This type of inducement has been effective in the Philippines, Northern Rhodesia, and other countries. It raises problems of capital transfer which lie in the foreign exchange field. In general, more

freedom for capital transfers would be helpful in attracting additional foreign investment by the old as well as new companies.

The special case of oil investment

38. Some prospecting for oil has been done in the past without success. Frequent reports of the discovery of natural gas turn out, on investigation, to be methane, which is not necessarily an indicator of the presence of petroleum. The exploration for and development of oil resources is a highly speculative activity requiring technical skill and large capital investments. There is the geological possibility that oil might be found in Cyprus in the sedimentary formations. Since it would be impractical for the Cyprus Government to spend large sums on such an uncertain enterprise, it is desirable that arrangements be made which will encourage private capital to carry on exploration development. However, if such concessions are granted, it is important that assurances be given which would provide for an extensive programme of exploration and would make sure that Cyprus would have a substantial share in the benefits if oil should be discovered.

39. It is important to have a clear knowledge of the geologic structure of the sedimentary rocks of the Island in order to explore for ground water. The deep drilling which would be done for oil would contribute to a better knowledge of the deep layers of the sedimentaries. This may disclose deep ground water deposits. Arrangements should be made to make certain that such information is contributed to the Government's records.

The efficiency of mining operations

40. Mineral products exported from Cyprus have to be sold in the market on a competitive basis with those from other countries. Therefore, it is logical that any step taken to reduce the cost of production of the mines in Cyprus will put the country in a stronger position in the world market. This process raises certain problems. In order to lower costs, it is often necessary to increase the output per man-shift through increased efficiency of labour and with the help of mechanization. This evolution usually requires the employment of a smaller number of workmen in the mines but a higher number of skilled men.

41. It must be recognized that requirements of maintenance of employment by the mining companies are likely to result in less efficiency in the mining works and higher costs. The unemployment may then come just the same as the result of the loss of markets.

42. There is one instance of a company which has not been able to carry out a programme of mechanization of its mining operations and the installation of a modern concentration plant because of labour difficulties, which apparently originated in the prospective reduction of workers as a result of the mechanization programme. Compared to the rest of the world, this is already a high-cost operation and the lower costs are essential.

43. Import duties can also raise costs. The mining companies in most of the countries of the world are free of import taxes for mining equipment and materials

required in their operations. This disposition exists also in Cyprus but is not always applied. One company, for instance, is paying £100 of import taxes per ton of ferrosilicon which it uses in the heavy medium separation process in its concentration plant. Exemption from import duties for mining equipment and materials should be consistently applied.

The small miner

44. In Cyprus, with the exception of Troulli Mines, there are no small miners. All the mining operations are done by large companies. It is unusual for a country to have so few nationals interested in mining, and it should not be forgotten that most of the big mines of the world have been started by small mining enterprises. Most of the larger mining countries have created institutions to help small miners. In Cyprus, technical advice and help in mining equipment could be provided by the Mines Department or the Geological Survey Department. It is also possible that the Projected Cyprus Development Bank might have a section devoted to mining operations. Any help provided to mining operations should be in the form of equipment and should operate closely with the Mines Department and Geological Survey Department.

Government agencies related to mining

45. There are two main agencies related to mining, the Mines Department and the Geological Survey Department.

(a) *Mines Department.* The Mines Department deals with all matters pertaining to prospecting, mining, quarrying, and explosives. It is responsible for the administration of the mining laws and therefore must inspect the mines and quarries and prospecting permit areas, and make the necessary enquiries in case of accidents. When called upon, the Inspector and his staff offer technical assistance to prospectors.

(b) *Geological Survey Department.* The Geological Survey Department began a programme of mapping in 1955 which was to be followed by geophysical work, and later by the drilling of selected areas. The preparation of the geological map of the igneous area, in which most of the minerals occur, was commenced but due to the complexity of the geology of this zone, the Department never reached the other stages in the programme. Up to now it has mapped 1,400 square miles, 40 per cent of the total area of Cyprus. The field work was adversely affected during the Emergency.

46. Cyprus is unusually dependent on underground resources. It is essential to look for new ore bodies in order that the mining industry continues as a source of strength in the economy of the country. In addition, there is great urgency to discover and develop all ground-water potentialities.

47. To find more ground water and minerals, it is necessary to drill in the promising areas carefully selected on the basis of geological studies and geophysical exploration. The search for ground water and the search for new ore bodies have the same technical background in geology, geophysics, and the techniques of drilling. In order to explore its underground resources effectively, Cyprus needs a well-organized Geological Survey

Department provided with first class laboratories and instruments in order to search for water and minerals using the most modern geophysical methods, followed up by intensive drilling.

48. The proposed Geological Survey Department would be composed of four sections: geological, geophysical, ground water, and mineral resources.

(a) The Geological Section would continue the geological mapping of the country and the search for copper deposits by geochemical methods.

(b) The Geophysical Sections would carry on geophysical exploration for ground water and mineral deposits. Sulphidic deposits such as those of Cyprus are specially suitable for exploration by electrical, electromagnetic, and gravimetric methods. The latter can detect ore bodies at depths greater than 400 feet.

(c) The Ground-water Section would operate a modern hydrological laboratory and would drill for ground water. It would carry out a programme developed jointly with the Water Development Department. Successful boreholes would pass to the jurisdiction of the Water Development Department.

(d) The Mineral Resources Section would drill in the areas most promising for the occurrence of mineral deposits. New ore bodies found would be leased by the Government to the highest bidder.

49. The Geological Survey Department would act in close co-operation with the exploration departments of the established mining companies. It would exchange information and data, and might offer its services to private clients charging moderate fees.

50. In order to organize such a modern Geological Survey Department, it is suggested that the Government of Cyprus request the co-operation of the United Nations Special Fund for assistance in the early stages, providing technicians, equipment, and training scholarships. If such assistance could be obtained for a period of five years, it should give sufficient time to develop Cypriot scientists and technicians who could carry on from there. The same purpose might be accomplished through technical assistance provided by some individual country interested in assisting in the development of Cyprus.

51. The total capital cost for the organization of the proposed Geological Survey Department and the operating costs during the first five years are calculated at £1,200,000. It is possible that the United Nations Special Fund or some other source might contribute about one-half of this amount in equipment, international experts, fellowships, etc. The one-half paid by the Governments of Cyprus would be mainly the buildings, the local expenses of the international experts, and the operating expenses in national currency. The regular operating expenses of the Geological Survey Department would increase from the first year of its organization, reaching the maximum during the fifth year with a total expense of £150,000 per year. The operating cost after the fifth year, when the external contribution would be completed, would have to be paid by the Government and, therefore, be included among the annual budgetary expenses. Part of those expenses are already budgeted as expenses for the existing Geological Survey and Exploration and Drilling Sections of the Water Department.

52. There are many competing applications made to the United Nations Special Fund. If this particular

project should not be granted, or no other source of aid be forthcoming, it still would be desirable for the Cyprus Government to proceed with such a development, even though it might have to be spread over a longer period of time.

Development Expenditures

53. New investment in mining is necessarily rather erratic, depending upon the stage of development in which particular mines happen to be. In recent years the record has been as follows:

Table 13

CAPITAL INVESTMENT IN MINING, 1953-59 (Thousands of Cyprus pounds)

1953	486	1957	793
1954	612	1958	739
1955	708	1959	751
1956	1,243		

Source: Cyprus Economic Review, 1959.

The above investment was made entirely by private companies. The decline after 1956 probably is to be explained chiefly by the pronounced fall in metal prices, though the disturbed conditions in Cyprus may also have played a part.

54. Although many factors can completely upset the rough estimates for the future given below, they are presented as some indication of prospective development expenditure in the mining industry over the five-

year period. They are based upon discussions with the various mining companies. Some 80 per cent of the total represents investments already planned. No figure has been included in connection with petroleum. It is to be hoped that perhaps £6,000,000 to £10,000,000 will go into the exploration for oil. Whether any funds for petroleum development will be required depends upon the success of the exploration.

Table 14

SUGGESTED DEVELOPMENT EXPENDITURES IN MINING, 1961-65 (Thousands of Cyprus pounds)

	<i>Private exploration</i>	<i>Private development</i>	<i>Public exploration</i>	<i>Total</i>
1961	380	3,350	150	3,880
1962	430	3,550	125	4,105
1963	430	1,650	125	2,205
1964	330	1,250	100	1,680
1965	330	1,200	100	1,630

55. The above table presents estimates of the amount of capital required to prolong the life of the mining industry during the next ten to fifteen years. At the moment, there is no basis for anticipating either an increase in employment or production except possibly at the Troulli Mines. Nevertheless, it can also be expected that with the intensive programme of exploration by the private companies and the Government, it will be possible to find important new ore bodies which can then be developed into large and important mines. The estimate for public expenditure represents one-half the amount contemplated in the programme for an expanded Geological Survey.

Chapter VI

MANUFACTURING

1. Manufacturing contributed £8,400,000 or 11.0 per cent of the gross national product in 1959, slightly more than its percentage during the previous three years. This is a relatively low figure when compared with other economies. In the so-called industrial countries, the manufacturing percentage usually runs above 30 per cent. In Greece, it is 20 per cent and in Turkey, 14 per cent. In fact, among the countries for which there are available records, it seldom is as low as Cyprus. Cyprus imports the manufactured goods which it consumes rather than produces them.

2. The record during the last decade shows some expansion in output, but nothing very startling.

Table 15

VALUE ADDED BY MANUFACTURE, 1950-59
(Thousands of Cyprus pounds)

	Current prices	Constant prices of 1950	Per cent of gross domestic product
1950	5,900	5,900	15.2
1951	6,400	5,900	13.9
1952	6,500	6,000	11.9
1953	7,000	6,400	11.7
1954	6,800	6,400	10.8
1955	7,700	6,500	11.7
1956	8,300	6,800	10.3
1957	8,600	7,000	10.2
1958	8,000	6,600	10.1
1959	8,400	6,900	11.0

Source: *Cyprus Economic Review*, 1959.

The column given in constant prices can be taken to represent changes in the physical output of manufacturing. The fact that it only rose 16 per cent over the decade and that there was a considerable decrease in the relative contribution to the total product requires very careful analysis. Using the current value basis, manufacturing production rose 42 per cent but imports in the manufacturing classification rose 83 per cent and miscellaneous manufactured articles rose 288 per cent.

3. A recent study by Professor H. B. Chenery based upon the state of industrial development in 48 countries¹ suggests that the development of manufacturing in a country is primarily a function of the country's size and its income level. Manufacturing is the one sector in the economy whose relative importance appears consistently to be related to size. The larger the size, measured by population, the more manufactured goods a country will produce *per capita* and the less it will import. Even more influence is exerted by the

income level, the relative importance of manufacturing rising more rapidly relative to *per capita* incomes than any other sector of the economy. Following Professor Chenery's econometric analysis, manufacturing for a country of the size and income level of Cyprus should contribute 15 per cent to the gross national product. Its relative importance would rise slowly with population increase and much more rapidly with any increase in average incomes. No country can be expected to conform to a "normal" pattern, but the data at least suggest that manufacturing in Cyprus is relatively under-developed.

4. Unfortunately, an examination of manufacturing is not an easy task since there has been no Industrial Census since 1954, and many changes have taken place since then. However, the fact that the increase in output since 1954 has been less than 10 per cent, suggests that the picture may not have changed greatly. Using gross output as the measure, the food (including beverages) and tobacco industries produced 61 per cent of all manufactured goods. Shoes and clothing added another 14 per cent to leave only 25 per cent for all other products.

5. The record corresponds rather closely to the behaviour of manufacturing sectors as analyzed by Professor Chenery. He suggests that manufacturing sectors not appreciably affected by the size of the country as to their relative importance in contributing to national income are food and beverages, tobacco, clothing, wood and wood products, and leather and leather products; and these are the leading manufacturing industries in Cyprus. According to the "normal" pattern, other industries all vary in importance to some degree in accordance with the size of the population, and therefore are handicapped by the smallness of Cyprus. All manufacturing industries except tobacco show a rate of expansion more than proportional to increases in *per capita* income.

6. According to the Industrial Census of 1954, total employment in manufacturing was 26,293, about two-thirds of which were men. There were 11,328 establishments of which 6,712 or 59.2 per cent were one-man businesses and another 3,823 or 33.7 per cent employed 2 to 4 persons. At the other end of the scale, only 27 establishments employed 50 or more persons. Of the 9 plants exceeding 100 employees, 3 were in the beverage industry, 1 in tobacco, 1 in textiles, 1 in printing, 2 in non-metallic mineral products, and 1 not specified. Much the largest number of establishments, about 60 per cent, were in the shoes and apparel group.

7. It should also be noted that the Cyprus manufacturing industry does not produce for export, except as it may process agricultural products for the export market. Dairy products, carob seed and gum, and alcoholic beverages are the leading industrial exports.

¹ Chenery, Hollis B., "Patterns of Industrial Growth", *American Economic Review*, (Evanston, Illinois), vol. 50, September 1960, p. 624. It should be noted in applying the formulae to Cyprus, that none of the countries providing the basic data is as small as Cyprus and that the analysis relies upon linear logarithmic regression equations. It may be that the impact of size follows some other principle at the extreme lower end of the scale.

The domestic market is, of course, limited to the 140,000 households scattered over the Island.

8. The picture seems rather clear. It is dominated by the nature of the raw materials available and the small size of the Cyprus market. It has no heavy industry such as iron and steel or a chemicals complex, and cannot look forward to that form of industrial development. In fact, manufacturing in Cyprus is essentially a very small-scale operation. It is largely confined to activities using Cyprus raw materials or supplying products to the consumer which do not require much capital in the making. In some establishments, modern production methods are in use, along with efficient business management. But often, the products are uneven if not poor in quality and the costs are so high that they have difficulty in competing with imported goods on a price and quality basis.

Excess capacity

9. It would not appear that the lack of growth in recent years can be attributed to failure to expand capacity. The following table shows industrial investment in recent years.

Table 16

GROSS CAPITAL FORMATION IN INDUSTRY, 1954-59^a
(Thousands of Cyprus pounds)

1954	2,600	1957	3,800
1955	3,400	1958	2,700
1956	4,300	1959	3,300

^a Excluding investment by the Military Authorities and the Electricity Authority.

While some of this investment went into new buildings, this has never been an important component, being only about £100,000 in each of the last two years. The figure does include replacement for old or obsolete machinery. Since nearly all machinery is imported, these investment figures are unusually reliable.

10. One might expect increases in output relative to investment on some ratio, such as that a unit of investment is related to an annual output of seven-tenths as much.² However, a comparison of the two tables of output and investment suggests that Cyprus has received little benefit, if any, from the new investment in industry since 1956.

11. A survey of the present situation has emphasized the fact that there is a substantial amount of unused capacity in Cyprus. That is not an unusual condition in developing countries. In Israel, excess capacity is estimated at 30 per cent of total productive capacity, it was the result of deliberate policy based on an assumption of market expansion greater than took place. In the United Arab Republic and Turkey, optimistic estimates of demand also contributed, but inadequate raw materials, either imported or domestic, were often the limiting factor. In all three countries some of the excess capacity of several years ago is now disappear-

ing because of improved markets or the elimination of other limiting factors.

12. Excess capacity represents a real cost to the economy. Idle capital raises fewer social implications than idle labour, but does represent a failure of the economy to use its resources efficiently. Furthermore, since costs per unit of product are increased if fewer units must support an entire plant, excess capacity leads either to lower profits or higher prices.

13. There are those who feel that the danger of developing excess capacity is so great as to require a licensing process for all new enterprises. However, the problem is important only when substantial investments are made in plant and machinery. If too many individuals enter an industry which requires little capital investment, the situation will correct itself and no great harm is done. However, if at the same moment, several different Cypriot business men should each decide to start a plant to produce superphosphate fertilizer, the result would be that none could be successful. That particular market can only support a single plant. In such case, the fact that Cyprus produces almost no machinery but that it must be imported, provides an exceptionally convenient means of control. If it were realized that import licenses for machinery would be reviewed in the light of the adequacy of existing capacity, those planning new plants or the expansion of old ones would clear the matter with the authorities before finally placing their orders. Such applications should be reviewed by the Economic Development Commission before any action is taken. In due course, when economic planning for Cyprus is more firmly established, special legislation may be needed to give additional authority to the Economic Development Commission so that it can prevent the wasteful development of excess capacity and encourage more promising uses of capital and other resources.

14. In case added capacity is desirable, there is usually an advantage in giving preference to the expansion of an existing plant rather than in the establishment of a new one. Not only are there likely to be economies of scale, but expansion avoids all the difficulties associated with the initiation of an enterprise.

Productivity

15. It is extremely difficult to evaluate the efficiency of Cyprus industry. There are a number of large establishments in which management appears to be fully capable of meeting its needs in the productivity field. Some business men have used private consultants from time to time; others have ties with parent organizations abroad which have their own systems of management training and specialized technical services.

16. At the other extreme are a large number of very small business men, many of whom have some technical skill but no knowledge of the rudiments of business management, particularly with respect to keeping proper accounts, cost records, budgeting, and the like. Those who may be successful and expand somewhat would not be likely to know much about the most efficient forms of organization, plant lay-out, office equipment, or the basic principles of marketing and pricing.

17. So far as employees and supervisory workers are concerned, it may be that this situation will improve

² In United Arab Republic (1950) ratio for all manufacturing was 0.70; in Israel (1953-54) for "approved enterprises" was 0.36; in Turkey (1950) ratio for all manufacturing was 0.73. *The Development of Manufacturing Industry in Egypt, Israel and Turkey*. United Nations publication, Sales No.: 1958.II.B.4. New York, 1958. The information in the following paragraph is from the same source.

as the graduates of the technical schools begin to reach the labour market. The fact that 250 workers already in employment have shown interest in adding to their skills by taking night courses at one of the technical schools is a most encouraging development. Similar desires for improvement are indicated by the response to the one week's "Appreciation Course for Supervisors", set up by the Cyprus Employers' Consultative Association in collaboration with the Ministry of Labour.

18. It is not at all clear that a full-scale productivity centre in Cyprus would justify itself under present conditions. Possibly, the technical schools can take on rather more general responsibility in this field. At the present time, they are concentrating on certain basic technical subjects. For example the Greek Technical College in Nicosia offers courses on motor mechanics, metal working, electricity, and the building trades. There is widespread agreement among employers and labour leaders that the skill level in Cyprus is generally low, and that such training in all the basic trades is needed. Actually, of course, one of the duties of the proposed Economic Development Commission will be to forecast the needs of the future with respect to worker skills. The danger is always present that some lines may become overcrowded.

19. It might be possible for the technical schools to accept a degree of responsibility for advising the small business man. If the staffs included a very few experts on the elements of business management, an important service might thus be performed. So far as providing much more advanced advisory assistance, this might be an area where the business organizations, working in collaboration with the Ministry of Commerce and Industry and the Ministry of Labour, might bring consultants to Cyprus who could meet with groups of business men or advise in special fields where technical problems needed attention. The trade unions also have a direct interest in improving the competitive position of Cyprus industry. A development of this kind would be a natural extension of some of the work already being done by these organizations. Technical advice should also be provided by the Cyprus Development Bank as a regular part of its activity.

Marketing

20. It has been suggested that excess capacity is merely another way of describing insufficient demand. In the case of Cypriot manufactured products, the problem is not quite as simple as that. The demand exists but it is being met by imported products. In some instances the foreign goods can be offered at lower prices than the Cypriot goods. It is usually not a matter of lower wages but of higher productivity, the economies of scale, and sometimes better quality control. In some cases, the foreign supplier is alleged to be more generous in giving credit than his Cypriot counterpart. But there are other cases where the Cypriot producers claim that they can compete in quality, price, and credit and still not be able to attract the customer away from the imported article.

21. There is no doubt but that foreign goods have a certain sort of snob appeal. But the problem is much deeper than that. Part of it is in the different emphasis upon the necessity to sell products as well as produce

them. Foreign items dominate the advertising field, for example. Apparently foreign products are much more standardized as to quality, while Cypriot manufacturers, often for understandable reasons, offer goods with much more variation from unit to unit.

22. The effort to establish Cypriot goods should start with the Government. The Government of Cyprus imported goods valued at £840,000 in 1959. More than half of these items are not produced on the Island, although substitutes are possible even for some of them, such as asbestos-cement pipe for iron and steel pipe. The Government might easily shift £100,000 or more of its purchases to domestically-produced goods. Under the circumstances, it should do this even if there is a difference in price of as much as 10 per cent.

23. In addition to actual government purchases, there is no reason why it should not undertake to inform the people of Cyprus about Cyprus products wherever the opportunity presents itself. Actually, very little product promotion is done. Such promotion may not only lead to the substitution of Cyprus goods for imports, but also to expansion of the total size of the market.

An experimental expansion programme

24. A quick review of the possibilities of expansion in those industries with assured markets is given in annex VI, based upon export and import data. In order to see what the more promising prospects for industrial expansion add up to, a number of them are listed and described below. Undoubtedly, some of them will turn out not to be so promising upon further investigation. There is often some limiting factor or new requirement which is the obstacle at present to the development of such a project. Some possibilities in the processing of agricultural materials are not included. Even more hazardous is the fact that each case has been given a suggested target, which represents the amount which sales ought to reach after the initial development period.

25. This approach disregards the many other existing enterprises which may compete more successfully, as time goes on, with their foreign competitors. There are undoubtedly many other prospects which are not included in the list. Nevertheless, the fact is that the prospective gross output of the industrial opportunities listed below totals £4,225,000 at manufacturers' prices. The most usual assumption is that value-added-by-manufacture is 50 per cent of gross value. In Cyprus, the last Census of Manufactures (1954) showed a ratio of less than 30 per cent, largely because of the weight in the total of food and tobacco processing where raw materials costs are so important. These two percentages would suggest that the value-added estimated from the gross value given above would probably fall between £1,300,000 and £2,100,000. This would mean an increase over the present level of activity of between 16 and 25 per cent, merely from developing these import substitutes.

26. MOST PROMISING CANDIDATES

(a) *Beer.* Imports of beer in 1959 were valued at £542,000, but £415,000 of this importation was done by Navy, Army and Air Force Institutes (NAAFI). It is possible for most of the remainder to be produced in the existing brewery. Adjustments should be made in customs duties or excise taxes so that the prices of im-

ported beer is substantially higher than the price of domestic beer including excise tax. No added plant investment is required. Suggested target is £100,000.

(b) *Cigarettes*. Imports of cigarettes in 1959 were worth £685,000, of which NAAFI imports were £389,000. In recent years, imported cigarettes have tended to replace those domestically produced. However, it should be possible for the domestic industry to recover its position, if a wide price range should be created between the domestic and foreign product. No added investment is required. Suggested target is £200,000.

(c) *Superphosphate fertilizer*. The present demand for imported superphosphate amounts to £300,000, but a new plant could be based on a considerable expansion in future demand. This will require the import of phosphate rock. No customs duty on import is required. Investment and working capital might be provided by a private company of Cypriot investors and by loan from equipment producers abroad. Suggested target is £350,000.

(d) *Cement*. The present cement plant should be expanded to replace the imported Portland cement valued at £275,000 and to meet the increased future demand. As all the raw materials are available within the country, and the production is needed for domestic use, it is impossible to find a project with higher priority than this. Cement should not be used as a bargaining item in barter agreements when it can be so readily produced at home. Suggested target is £300,000.

(e) *Cement-asbestos pipes*. A plant should be established to produce pipes for water purposes as a substitute for most of the current import of iron and steel pipe amounting to about £827,000. The market cannot all be taken away since iron and steel pipes and fittings are necessary for various purposes other than water projects. The project has to be studied in detail according to exact information on the need for different types of pipes. Information on costs can be obtained from firms in Europe and the United States where the machinery is manufactured. Suggested target is £550,000.

27. PROMISING CANDIDATES

The following enterprises are cases where there appears to be an industrial opportunity and a known market, though they must be ranked somewhat below the five cases given above. Some of them will be successful only if certain help is given them.

(a) *Biscuits including chocolate biscuits and bread*. It should be possible to produce half of the imports. Only two factories are required. The factories should be given the opportunity to purchase flour and raw materials of the same quality and at the same prices as the factories abroad with whom they compete. Suggested target is £100,000.

(b) *Bus bodies*. The imports cannot be sorted out, since in most cases the body comes on the chassis. Existing workshops (factories) should have technical assistance for rationalizing and making better bodies. No estimates of volume can be made.

(c) *Ceramics*. The imports of household articles of faience and porcelain are valued at £144,000. Some of the household articles of porcelain may be replaced by fine earthenware, if the design and quality can be improved. It should also be considered as an industry for tourists' souvenirs, as it is an old industry of Cyprus. This industry should be suitable for rural areas where

it is of importance to have more employment. No estimates of volume can be made.

(d) *Clothing*. Imports are valued at £1,538,000 including government imports amounting to £33,000. Here there is room for modernizing existing factories and the establishment of new factories. This is a very important labour-employing division which should be able to produce additional goods equalling £500,000.

(e) *Detergents*. Of the import of detergents amounting to £169,000, domestic production should be able to replace £80,000. No new factory is required. Target is £80,000.

(f) *Electric Batteries and Accumulators*. The imports amount to £82,000 and £70,000. One factory is required for production based on imported parts and might produce £75,000 worth. Target is £75,000.

(g) *Footwear*. Imports are valued at £363,000 including Government imports of £11,000. Existing factories need to be modernized and there may be room for one new factory. The suggested target is £100,000.

(h) *Furniture, metal*. Imports amount to £107,000. One new factory might be able to establish itself with sales of £25,000. Target is £25,000.

(i) *Furniture, wood*. Imports amount to £102,000. Existing producers should be given help for rationalizing their production. No new factory is needed, although producer groups or co-operatives could improve the situation. The suggested target is £25,000.

(j) *Ice cream*. The import amounts to about £30,000 and should be covered completely by the existing factories. No new factory is needed. It is necessary to find out why any ice cream is imported, since the local producer is at a great advantage. Target is £30,000.

(k) *Leather*. As Cyprus is exporting hides and skins of goats, sheep, and cattle at a value of £235,000, and at the same time is importing leather (dressed) made from similar hides and skins for £271,000, it seems appropriate to produce more of this leather domestically. At the same time, more sole leather should be produced from imported hides. No estimates of volume can be made.

(l) *Metal manufactures*. The level of imports is placed at £1,396,000. In many of the branches of metal manufactures production could be expanded (except drums, where it is necessary to have machinery for a much higher production). New factories should not be started in branches where production already is under way before it is proved that there is need for added capacity. The suggested target is £150,000.

(m) *Paints, ready mixed*. Of the present import amounting to £300,000 it should be possible to produce, domestically, at least £200,000. Only two factories are required. The target is £200,000.

(n) *Pharmaceutical products*. Of the total imports amounting to £455,000, it should be possible for domestic production to replace £50,000 worth. No additional plant is needed. Target is £50,000.

(o) *Plastics*. Imports amount to £100,000 and the market is expanding. Two factories might operate in this field, with an initial target of £50,000.

(p) *Printed matter on paper and cardboard for packing materials*. These industries might be expanded through the existing domestic firms. No estimates of volume can be made.

(q) *Refrigerators*. Imports are £315,000. One or two factories might engage in assembling, importing the more complicated units. The suggested target might be £50,000.

(r) *Rubber heels and soles and manufactured articles of rubber not specified*. The imports are £23,000 and £181,000. Of this it may be possible to produce £50,000-worth domestically. Only one factory is required. Target is £50,000.

(s) *Sugar confectionery and chocolate confectionery*. Of the present imports total £156,000 existing factories should be able to replace £100,000 worth. Target is £100,000.

(t) *Textiles*. The imports amount to £3,254,000. There are many possibilities of providing substitutes for imports and considerable employment could be achieved. Competition will be vigorous, but it might be possible to develop in a number of directions. Suggested target is £500,000.

(u) *Travel goods and handbags*. Imports are valued at £137,000. By modernizing some of the factories and putting more effort into the finish of the products, sales could be increased to £20,000.

(v) *Washing machines*. Imports add up to £97,000. One factory might engage in assembling, importing some of the parts and making others. Suggested target is £20,000.

(w) *Wood, sawn and planed; and wood and cork manufactures*. The imports amount to £960,000 and £526,000. There are at least four possibilities in this field: a chipboard factory, a parquet-floor factory, a timber extracts and distillates plant, and an expansion of the box shook industry. There might be the possibility of export. The figure for the domestic market is £500,000.

28. It has already been noted that the above selected list of promising candidates for industrial expansion adds up to £4,225,000, although there are several for which no estimate could be made and therefore are not included in this figure. Even if many of them prove not to be feasible, there are a number of other possible areas for development. The purpose of the tabulation was not so much to provide a blue print for the future as to see whether any possibilities do exist. It should be noted that expansion anywhere in the economy is likely to lead to additional employment beyond its own immediate requirements. For example, additional services would be required outside the manufacturing plants by the increased movement of raw materials and finished products. Added employment would be provided by such new construction as would be needed.

29. This hypothetical exercise is by no means all that should be expected of manufacturing. It looks only at a few areas of substantial imports and much of the growth should come in other areas. In 1950, manufacturing contributed 15.2 per cent of the gross national product, and this should not be an impossible target to attain. Such a percentage would have meant that the contribution of manufacturing to gross domestic product in 1959 would have been £11,600,000 instead of £8,400,000. If the industries specifically mentioned above had already reached their targets, they would have made up about one-half the difference. And the remainder would have had to come from scattered sources throughout the manufacturing field. The situations listed above were limited to import-substitutes and there are certainly many other possibilities for market development in

Cyprus. Obviously, the general target of 15 per cent will not be easy of achievement and emphasis must be given to encouraging industrial development. Furthermore, if the gross national product of Cyprus increases by 20 per cent over the next five years, this will push the manufacturing target correspondingly higher.

CRITERIA FOR ACTIVITY ENCOURAGING EXPANSION

30. In reviewing any economy, there are two situations where industrial development has certain natural advantages and these should be exploited to the full. They are priority cases. First are the industries which use domestic raw materials and where there are advantages in processing them near their source. For example, it is absurd for Cyprus citrus fruit to be shipped abroad for processing into marmalade and other citrus products. With careful study of the international market, there is no reason why Cyprus marmalade should not have the high standing throughout the world that Cyprus oranges have.

31. The second favourable situation is the one where production near the market can conform more closely to local needs and the special wishes of the customers. Service industries are the extreme case, but both food and clothing industries have special advantages of this kind.

32. If an industry is to be established without any government help of any kind, then there is no reason for creating any set of criteria to be used in evaluating it. However, in many instances, there is some sort of application to the Government such as one for an import license for machinery, protection from foreign competition, or financial assistance. In such cases, the Government is compelled to review the case and make comparisons among various applications.

33. It is impossible to list all the considerations which should go into determining the governmental attitude towards a specific proposal for the expansion of an old plant or the building of a new, but there are some criteria which can be applied to all cases.

(a) *Supply of Raw Materials*. Any new industrial development will create a new demand for raw materials. One of the chief causes for failure of new industries in less developed countries has been that the raw material supply proved to be inadequate.

(b) *Employment*. Since increased employment is one of the objectives of economic development, this should be given great weight. However, since various enterprises require different types of skill on the part of the employee, an adequate supply of the right kind of labour must be assured.

(c) *Capital*. The enterprise must have adequate capital in sight, both fixed capital and working capital, recognizing that any new enterprise is likely to have several lean years before it can begin to earn a profit. The important measure is the capital-labour ratio. In general, labour-intensive rather than capital-intensive industries are preferable, since capital is scarce and labour is plentiful in Cyprus. Of course, if foreign capital is involved, there need be little questioning about investment per worker since this is not capital which can be directed into other uses.

(d) *Market*. While it is seldom possible to forecast, exactly, the market demand for a specialized product, there are criteria which can be used in comparing industrial proposals. Not only is there the simple matter

of market accessibility, but also its stability. Prospective costs must be carefully examined to make sure that competitive prices can be obtained.

(e) *Existing capacity.* An earlier section has discussed the dangers and costs of excess capacity. It seems obvious that a prospective enterprise should not receive government aid, if it plans to operate in a field where existing capacity is more than adequate, unless it has something new to offer which will have an appreciable effect on either improving quality or lowering price. In such case, the modern plant might be encouraged, even though it might bring hardship to those already in the industry. Preference should be given usually to the expansion of existing plants rather than to the creation of new ones.

(f) *Balance of payments.* In view of the fact that the Cyprus balance of payments is based so much on fairly uncertain items—income from the Bases and from mining—some preference should be shown for import-reducing and export-expanding enterprises. It is not enough, however, to look merely at the final product in this respect. If raw materials will have to be imported and are merely to be processed on the Island on a small scale, the net result may be an actual loss to Cyprus in terms of higher consumer cost. Under present conditions, a sugar refinery in Cyprus, for example, would not only be a higher cost operation than the larger installations abroad, but is a case where little labour would be employed with a large capital investment.

(g) *Business management.* It would be unfortunate for the Government to make its decisions on the basis of the sponsor's personality, personal prestige, or political record. However, any proof of past financial irresponsibility should be given weight.

(h) *Government aid.* All of the above considerations must be weighed against the type and extent of assistance desired. A country can make itself poor by using its resources for developments of little benefit, or by encouraging high-cost operation behind a wall of protection. The result in the end can easily be fewer goods at higher prices for everyone in Cyprus. The problem of specific forms of government aid is discussed in the next section.

34. There should be some possibility of increased industrial exports from Cyprus in addition to processed agricultural goods. An export trade is always helpful to an economy, because of its contribution to the balance of payments and also because it depends upon market conditions in other countries and therefore may tend to counteract purely domestic fluctuations due to drought or other local causes. While the criteria used for evaluating government assistance do not differ greatly from those applying to industry producing for the domestic market, the market test is somewhat different and is more difficult to apply, since it requires a knowledge of conditions in other countries.

35. In the other direction, there are two types of situation which may attract foreign enterprises to Cyprus. The first is one in which some foreign enterprise will enter into a contractual arrangement with a Cyprus firm for the production of the parent firms' line of products in Cyprus. This is an excellent way of obtaining management and technical assistance, and should be encouraged. There is no reason why Cypriot business men should not benefit from the experience and achievements of these large international enterprises.

There is also the possibility that the location of Cyprus may make it an attractive place for manufacture or assembly of products for distribution throughout the eastern Mediterranean area. For this to happen, Cyprus must give every indication of security and stability, of a competent labour force, and of a general economic climate favourable to business enterprise. To bring such enterprises to Cyprus may require the giving of special concessions in the way of industrial sites or special tax arrangements. Such situations would have to be dealt with case by case.

COMPANY LAW

36. Not as a priority item, but as something calling for action sooner or later, the Government of Cyprus should undertake to develop new company legislation which would encourage investment. The existing law, based upon United Kingdom legislation of over fifty years ago, is somewhat unsuitable for a rapidly developing and independent country. The same problem is faced by a number of former United Kingdom colonies and there is an opportunity here for an exchange of ideas on the subject.

PROMOTION OF INDUSTRIAL DEVELOPMENT

37. It has already been suggested that the success of an enterprise depends in large part upon itself—the quality and price of the product and the nature of the marketing effort. Nevertheless, there are various ways in which the Government can encourage industrial development, in addition to the suggestions which have already been made.

38. Perhaps the most important contribution which the Government can make is to establish an institution to make long-term industrial loans. In Cyprus at present, capital must be obtained either from individuals or families which have private resources to invest, or from the commercial banks by short-term advances which are so regularly renewed as to become long-term in fact. Costs of capital are reported to be extremely high. There are apparently a number of firms which have plans for expansion or for modernizing, but find difficulty in obtaining financing.

39. In chapter X, the suggestion is made that an Economic Development Bank be established. Its primary function would be to assist in the expansion of existing enterprises and the establishment of new ones. It would have a small staff which would be competent to evaluate any proposals made and even to suggest improvements in plans for operation. It should be regarded as a source for both capital and technical assistance. It is hoped that, with such an institution established, the financial difficulties would disappear, at least in the case of the more promising industrial prospects. It might also be very helpful in the initiation of small pilot projects, which might grow in time into significant industrial operations.

40. The second broad area in which the Government can affect domestic industrial development is through the restrictions which are placed on imported goods. The assumption is made that if foreign goods are kept out, or if their prices in Cyprus are raised as a result of higher tariffs, domestic production will fill the vacuum created.

41. A Revised Customs Tariff was introduced in 1958 which was intended to reduce tariffs on raw ma-

terials entering Cyprus and to provide a certain measure of protection to a number of domestic industries. This is stated to have resulted in the establishment of some new enterprises and to explain the general rise in industrial net output in 1959, even though tobacco manufacturing declined.³ There is some basis for doubt concerning the general conclusion in view of the fact that imports, excluding tobacco, rose 12 per cent—slightly more if tobacco is included. The effect of the tariff therefore is not evident in the general figures. It is true that several small new industries were established such as tire retreading, wire netting, dry batteries, razor blades, detergents, and toilet soap.

42. There can be no doubt about the undesirability in general of placing restrictions on the imports of raw materials and semi-finished products or components used by industry in Cyprus. The only justification would be if they were used to make products which in themselves were undesirable for some reason, in which case actual prohibition would seem more desirable.

43. Methods of protection are discussed in Chapter IX. At this point, the problem is to consider when protection is justified in the interest of Cyprus. It must be recognized at once that protection in any form will probably raise the price of the imported goods on the Island and the purpose of the higher price is to encourage the production and sale of domestic products. Obviously, if domestic costs are so high that they can only meet the imported item at its higher price, the result of the protection is to increase the price to the consumers, as a kind of tax to support the domestic producers. This kind of development is difficult to justify and the net result is likely to be an actual lowering of the real level of living as a result of the higher prices.

44. There are three cases where protection is more clearly justified. The first is that of the new enterprise which needs a period of protected adolescence before it can undertake to meet foreign competition—the so-called “infant industry” situation. In such case, there is much to be said for protection on a temporary basis.

45. The second case is something like the first, but does not rest so much upon technical and organizational difficulty as upon marketing difficulty. New Cyprus products will always have difficulty breaking into the Cyprus market. The imported items have a prestige built on many years of standardized quality, habitual usage and advertising. While it is to be hoped that Cypriot producers can so improve and maintain quality as to establish their goods without any need of special marketing aid, a temporary hurdle placed in the way of imported goods may give the new producer a greater opportunity to demonstrate his wares. This again should not be a permanent crutch. If in the long run, the Cypriot producer cannot demonstrate that his goods are equal to the imported in quality and price, he should be given technical assistance rather than a protected market.

46. The third case includes the items which can be produced in Cyprus, and where the social sense is that if people wish imported products, they should be willing to pay a premium for them—and the Government should get the premium. This is as much a matter of revenue as of protection. Beer and cigarettes are two cases in point.

³ *Cyprus Economic Review*, 1959, p. 43.

47. The above comments do not imply that tariff protection should be removed from those Cypriot industries which have grown up behind trade barriers, but they refer rather to the applications for new levels of protection. However, as to the old established group, there should from time to time be a review to see that protection is not a price-supporting measure resulting in cost to the consumer without a corresponding benefit to industry. Undoubtedly, protection is one of the explanations for the high cost of living about which many complain.

48. The above discussion has been related largely to the possibility of expansion of old plants or the building of new ones through the provision of long-term capital or the granting of some degree of protection from competitive imports. Perhaps more important is the direct improvement of the operation of existing industry. It has already been said that productivity is excellent in some establishments but low in many others. The problem is to raise quality or lower costs or both. In most cases, costs will be lowered with fuller use of capacity. However, much more can be done through technical assistance and advice.

49. Such advisory services are not readily available to the small business man. The possibility of more activity in this direction by the technical schools and business organizations has already been mentioned. However, improved operation is so important that the Government must also take an active part in trying to facilitate more efficient business operation. It may be helpful to arrange for various industrial specialists to visit Cyprus from time to time to work for a period of a few months with particular industry groups—woodworking, clothing, textiles, etc. The fact that a visiting expert in such an old industry as olive-oil processing was able to make a series of constructive recommendations suggests that there may be many other areas where the methods used in Cyprus can be improved. Technical experts of this type can be brought to the Island under the United Nations Technical Assistance Programme or by arrangement with any of a number of countries which have programmes for making such experts available.

50. As a final note in discussing the encouragement of industry, mention must be made of the many basic conditions which provide a healthy environment for industrial activity. A literate population, adequate and convenient transportation, a reliable supply of electric power, planned industrial sites, and a trained and hard-working labour force are all important factors. The absence of statistical information is a serious handicap to industrial development in Cyprus. The import and export statistics are excellent and rather more prompt than in most countries, but there is no current information available concerning domestic production or employment, except for a few items involving excise taxes such as cigarettes and liquors. A detailed industrial census needs to be taken in order to have a basic inventory from which to work. Then, certain continuing statistical series might be developed to keep the information up-to-date. In planning the census, the experience of other countries should be most helpful.

FUTURE INVESTMENT

51. It is difficult to estimate the capital requirements of industry during the next five years. The investment

level has been relatively high in the previous period and today there is considerable excess capacity. The estimate as given is based upon the average of the last six years as suggesting a general level for the immediate future. So far as the indicated public investment is estimated, this is the Government's contribution to the Cyprus Development Bank which is described briefly in Chapter X.

Table 17

SUGGESTED DEVELOPMENT EXPENDITURES IN MANUFACTURING,
1961-65
(Thousands of Cyprus pounds)

	<i>Public</i>	<i>Private</i>	<i>Total</i>
1961	300	3,000	3,300
1962	300	3,200	3,500
1963	—	3,400	3,400
1964	—	3,600	3,600
1965	—	3,800	3,800

While the figures may seem low, and perhaps they are when compared with the high of £4,300,000 of 1956, the evidence for 1960, through September, shows that while the number of new private cars registered was above that for the same months of 1959, the total imports of machinery and transport equipment which includes motor cars was back down to the 1958 level and 15 per cent below 1959. Thus these estimates for the future suggest a slight recovery. If wisely utilized, such an investment in new machinery and equipment can contribute substantially to the Cypriot economy.

52. If one assumes that the Cyprus Development Bank and private investment will add from £15,000,000 to £20,000,000 to the capital engaged in manufacturing during the next five years, it is not difficult to assume a somewhat more rapid growth in product than in recent years. With sufficient technical assistance, the competitive position may gradually improve, so that the target of 15 per cent of gross national product can be reached.

Chapter VII

TOURISM AND THE BASES

Tourism

1. Among sources of employment and income, the return to Cyprus from the sale of goods and services to foreigners on the Island bulks large. The largest group is on the United Kingdom bases but there are also sizeable United States installations and, finally, "temporary visitors" who may be business men, vacationers, or travellers for pleasure. All these groups together contribute more to Cyprus' income than any other broad economic classification except agriculture.

2. There is limited scope for the Cyprus Government to affect the income earned from the Bases. However, if an effort is to be made to develop tourism in the conventional sense, there is much to be done. Therefore, it will be the first subject for examination.

TOURISM OVER THE LAST DECADE

3. The record of tourism in Cyprus since 1950 is subject to so many special conditions that it must be examined with considerable care if one wishes to draw any conclusions from it. The main streams of tourists during the last decade have been as follows:

Table 18

TOURIST ARRIVALS IN CYPRUS BY MAIN CLASSES, 1950-59

	Total	Service personnel and families on leave	United Kingdom tourists	Other tourists
1950	20,094	1,850	4,220	14,024
1951	28,820	5,907	3,443	19,470
1952	48,516	21,163	9,267	18,086
1953	46,061	19,139	10,761	16,161
1954	53,962	21,207	14,532	18,223
1955	37,823	5,674	14,705	17,444
1956	12,545	"	6,268	6,277
1957	11,387	"	4,839	6,548
1958	11,110	"	3,598	7,512
1959	21,076	"	3,055	18,021

* Not available.

Source: Ministry of Commerce and Industry. Other statistical records show slight differences, often due to variations in definition. The *Cyprus Economic Review*, 1959, presents revised figures for "temporary visitors" for 1954 to 1959 which show somewhat lower figures for each year except 1956.

4. It seems clear that the golden years for tourism in Cyprus were 1952-55, when the number of service men and British visitors reached very high levels. While it was true that many of the service men on leave stayed in the special leave camps in Troodos and Fama-gusta, they tended to stay much longer than average tourists, and their expenditures went into the Cyprus economy. During this period there was no expansion in non-British tourists, the peak having been reached in

1951. Nevertheless, the hotels and other tourist activities were busy enough with the British traffic to make it appear to the uninitiated that Cyprus had great tourist appeal and was participating in the general tourist boom.

5. The 1955 season saw a decline, chiefly as a result of the reduction of British forces in the Middle East and tourism virtually came to a standstill in 1956 to 1958 due to the Emergency. In these years, there was little except a hard core of visitors, many of whom were business men. In 1959, there was no revival in the number of British visitors but the number of non-British tourists recovered to about the pre-Emergency level. In the first eight months of 1960, the number of "temporary visitors" was 21 per cent above that for the same period of 1959.

6. While the number of British tourists was at its lowest point in the decade in 1959, the number of tourists from other areas has shown a strong come-back. Over the years, an appreciable change has taken place in the composition of the tourist trade. In the early years of the decade the outstanding shifts were the decline of tourists from the United Arab Republic and the rise of American. The following table compares the sources of tourists pre-Emergency with 1959:

Table 19

NON-BRITISH TOURIST ARRIVALS IN CYPRUS BY AREA OF ORIGIN, 1954-55 AND 1959

Origin	Annual average 1954-55	1959
Greece and Turkey	1,143	4,867
Middle East ^a	7,148	5,907
Western Europe ^b	943	1,424
United States and Canada	3,363	3,348
All other	5,236	2,475
Total	17,833	18,021

^a Iran, Iraq, Israel, Jordan, Lebanon, and United Arab Republic.

^b France, Federal Republic of Germany, and Italy.

Source: Ministry of Commerce and Industry.

7. It is quite possible that the unusual number of visitors in 1959 from both Greece and Turkey represents a kind of pent-up demand carried over from the low levels of the previous three years and may not be sustained. However, the other figures are of some significance. The number from the Middle East has dropped for every country except Israel. Western Europe shows a significant increase and the number of American tourists shows virtually no change.

8. So far as the totals are concerned, the decade ends about where it started. The tourist boom of 1952-55 was succeeded by a drought from 1956-58. Some recovery has taken place. In this case the past is certainly not a very helpful guide to the future.

9. While it appears that Cyprus did not make a good record in tourism during the last decade, the same cannot be said for most other countries. In Europe, the development of road and air travel, together with rising standards of living and more leisure time, led to great increases in mass travel. While Yugoslavia's tourist arrivals increased more than twenty times (41,221 to 833,541) from 1950 to 1959,¹ even such old tourism countries as Italy and Switzerland more than doubled the number of their visitors. Much of this was the result of automobile travel, with tourists making short visits to a number of countries; but planes and ships have made their contribution also. The number of tourists visiting Greece was 33,333 in 1950 and 301,830 in 1959, while the number coming to Israel in 1959 came close to 100,000 and Lebanon reported a large increase. Looking at developments from the departure end, the number of United States residents who travelled to Europe and the Mediterranean increased during the decade from 302,000 to 705,000 persons. It is interesting to note that Cypriots are themselves participating in tourism. The number who left to visit other countries in recent years has exceeded the number of foreign tourists coming to the Island.

10. There can be no doubt about the clear trend of rising tourism. A recent Organization for European Economic Co-operation report² concludes that this trend is likely to continue, although at a lower rate of increase than in the past. To be sure, individual countries have not all fared equally well, due to internal disturbances or external frictions. Other factors have caused variations, such as price shifts and other conditions which directly attract or discourage tourist traffic. The Near East has clearly participated in the expansion of the tourist trade, although so far it seems that Cyprus has for the most part been passed by. Nevertheless, the basic upward trend in travel is an encouraging factor, especially since Cyprus has not shared in the increases up to date. Whether or not Cyprus can break into tourism on a larger scale will depend upon the appeal which is presented to tourists in advance and the satisfaction which is given them on the Island.

11. If an appropriate effort is made in the form of promotion, and an improvement achieved in the provision of tourist satisfaction, Cyprus should be able to attract its share of the growing volume of tourists. It should be possible to expand the traffic from Greece and Turkey, and perhaps to win back some of the tourists from the Near Eastern countries. However, there is greater economic promise in increasing the number from Western Europe and the United States. Probably no great number of tourists from these areas will be willing to spend the sums required by an expedition exclusively to Cyprus. However, they will come to the Eastern Mediterranean, and Cyprus has the opportunity of being included in their itinerary. With these thoughts in mind, it seems possible for Cyprus to reach a level of from 50,000 to 60,000 tourists per year by the end of the five-year period. This would bring the number of foreigners visiting the Island to that reached in the peak year of 1954 or even above it.

¹European tourist statistics include all foreigners arriving and staying in the country more than 24 hours.

²Organization for European Economic Co-operation, Tourism Committee, *Tourism in Europe*, Paris, 1960.

12. At present, according to information provided by the Tourist Office, the average stay of tourists in Cyprus is about eight days. The trend in most countries is for tourist visits to grow shorter, as a result of the tendency for the tourist to visit a greater number of countries. In the case of Cyprus, this will also be likely to happen. However, assuming an average stay of one week and the current level of hotel prices, excursions, purchases and the like, it may be assumed that the average tourist will spend between £30 and £50 in Cyprus.³ Putting these rough estimates together suggests a possible total tourist income at the end of the five-year period of between £1,500,000 and £3,000,000. This income has a special value of being in the form of foreign exchange. However, there are gross figures and do not make allowance for the cost involved in terms of local food and materials used. There are certain foreign exchange costs as well, related to promotion expenditures and imported goods used or purchased by the tourists. There are certain indirect benefits from tourism, particularly that it is a labour-intensive industry, and its development would add to employment opportunities for a wide variety of skills.

13. It seems clear that increasing numbers of tourists exist and that tourism can be considerably expanded as a possible source of increased income and employment for Cyprus. This forecast is based upon the assumption that an appropriate effort will be made in the form of promotion, and a substantial improvement will be made in providing tourist satisfaction. These matters will now be discussed.

CYPRUS AS A TOURIST CENTER

14. For the Near Eastern tourist, Cyprus can offer cooler mountain resorts and excellent beaches. For the American and Western European it has varied scenery and a chequered history which is reflected in excavations, historical monuments, monasteries and old churches, and a composite of modern and ancient life. Unfortunately, its most attractive season in terms of climate is from February to May; and the summer period, when tourism is at its peak, is hot and dusty except in the mountain resort areas.

15. Tourism has become a matter of intense competition. In the Near East one of the primary attractions to the tourist is that of antiquities and monuments. Greece, Lebanon, Israel, and the United Arab Republic, each has its own special appeal. While Cyprus does not have a Parthenon, a Baalbek, a Holy City, or a Sphinx, it is not without its own particular elements of interest. It possesses monuments of Neolithic, Bronze Age, Classical, Roman, Byzantine, Latin medieval, and Turkish times. Excavations have brought various interesting classical sites to light although very little reconstruction has been possible. The Nicosia Museum has a fascinating collection of historical objects on permanent exhibition.

16. Much more can be done to enhance the appeal of the antiquities and monuments. From the point of view of tourist appeal, excavation and reconstruction probably should be given special priority. While foreign archaeological expeditions have made substantial con-

³Income from tourists is calculated in different ways in different countries. It is also affected by the proportion of camp rather than hotel tourists. The estimate for Greece in 1959 was £49 per tourist; for Turkey, £13 per tourist.

tributions in the past, there is no assurance of such activity in the future and, in any event, they must be rewarded by a share in any removable discoveries. Meanwhile, Cyprus has developed competent personnel in this field. There should be a continuing programme of excavation (perhaps as much as £8,000 per year) which would be concentrated on a very few sites such as Salamis where there is a possibility of important discoveries and considerable appeal to the average tourist.

17. The priority position suggested for excavation does not deny the importance of such other matters as preservation, access, and the maintenance of the excellent guide service on the sites. A small number of tourists will be interested in visiting many different places of historic interest. But, in spite of all this, the basic fact remains that the antiquities and monuments in Cyprus as of the present moment hold less appeal to the potential tourist than those in neighboring countries. However, the central location of Cyprus among these other tourist centres may make it possible to build up a traffic, not in competition but in co-operation, with the neighboring countries. To do this, Cyprus must make itself as attractive as possible to tourists in every possible way.

18. There has been some talk of the development of Cyprus as a health resort along the pattern of the European spa. Two points argue against this. First, the peak of this traffic was about fifty years ago and it has been steadily declining ever since. Second, the investment required is very large, since not only must appropriate hotels be built but special bath and treatment facilities, with a staff of doctors and nurses, must be developed. While it may be appropriate to point out such health advantages as there may be in the mountain resort area, this should be regarded as a supplementary appeal and not as the focal point for tourist expansion.

19. There also is optimism concerning the possibility of developing a winter season based on skiing on Mount Olympus. Such a development turns upon the certainty of snow conditions and the number of ski enthusiasts in the general area who cannot go to the more distant established ski centres. As to the first, it has not been possible to obtain any satisfactory record of normal snow conditions; the possible demand is of course a complete unknown. Recent records suggest that nearly three times as many temporary visitors may be expected in Cyprus in the summer (in 1960, about 110 per day) as in the winter months (40 per day). A winter season is a great help to any summer resort hotel and if Troodos can offer sufficient promise of good snow conditions for a sufficiently long period in the winter, this can be a helpful development.

20. In considering the potential expansion of tourism in Cyprus, one cannot consider it only in general terms. To build up tourist traffic, it is essential to concentrate attention on the hotels and other attractions in a few centres. While the main effort must be to attract tourists to these spots as a sort of headquarters, once there, they are likely to visit other parts of Cyprus. One cannot therefore disregard the other towns as contributing to and benefiting from such development as takes place.

21. The situation in Nicosia is of the greatest importance. To be sure, Nicosia has very little tourist attraction other than its excellent museum, which is visited by a surprisingly small number of tourists be-

cause no real effort is made to call it to their attention. The fact that Nicosia is the capital will bring officials and business people to it and they will get their impression of the country and the quality of its hotels from their experiences in Nicosia. Furthermore, its central location makes it particularly suitable for tourists who wish to explore the Island rather thoroughly. The fact that the airport is located nearby adds to the certainty that it will be an important centre. Good hotel conditions in Nicosia might make it a convention town for international organizations and groups of business representatives wishing to meet in the eastern Mediterranean area.

22. The two centres with the greatest tourist appeal are Kyrenia and Famagusta. Both have an interesting old-town character, unusual antiquities near by, and excellent beaches for swimming. St. Hilarion Castle and Bellapais Abbey, near Kyrenia, are the most popular spots in Cyprus for foreign tourists. Salamis, near Famagusta, promises to be a more extensive and interesting development from the archaeological point of view. The more distant sites in the Paphos neighborhood, the Palace at Vouni and many other points may serve to keep tourists on the Island for lengthier visits than otherwise.

23. Price is one of the elements influencing tourism. If the costs of visiting a country are far below those in other countries, it is certain to capture many tourists. Largely on a price basis, over 4,000,000 tourists visited Spain last year, and visitors to Majorca have grown from 32,000 in 1950 to 270,000 in 1959. However, the number of tourists in all countries in Europe has increased over the decade regardless of price level. So far as Cyprus is concerned, price may have some bearing on the Near East traffic but very little on the West European and American. Here the transportation cost will always make Cyprus a high-cost country, regardless of the prices on the spot. With the lowest round-trip rate scheduled by air from Paris or Frankfurt more than £100 (London is less), it is clear that the possibility of cheaper charter flights or package tours at reduced rates would be more important than any conceivable reduction in local costs. In actual fact, hotel and other charges appear reasonably in line with those in neighboring countries. While lower local prices are desirable in terms of encouraging traffic, they would seem to be relatively less important for Cyprus than for most countries. It is even unlikely that a 10 per cent reduction in local prices would result in the offsetting 11 per cent expansion in traffic needed in order to maintain gross income. Of course, any reduction in air fares would be helpful, but Cyprus has already had rather favourable treatment in this regard.

HOTEL CAPACITY

24. Tourist activity in any country centers about its hotels. Their quality and operation are crucial to the development of tourism. While the total number of hotels listed in all categories in Cyprus is slightly more than 100, with over 4,000 beds, many of them are in the low classifications and cannot be included in a discussion of tourism. Cyprus does not need de luxe hotels of international standards for tourists such as are found in Florida or Bermuda. Hotels of this type require large investments and expensive auxiliary activities such as golf courses and elaborate professional entertainment. On the other hand, tourists who have

spent the sums required to reach Cyprus are not likely to be interested in tent camps and very cheap hotels, although such may perform a very useful function for the local population. Thus, hotels presently classified in Cyprus as de luxe and first class are those which should be considered for handling the bulk of the tourist traffic. Their number and occupancy record for 1959 is as follows:

Table 20

CAPACITY AND OCCUPANCY OF CYPRUS DE LUXE AND FIRST CLASS HOTELS, 1959

	Number	Rooms	Beds	Occupancy	
				Nights	Per cent
Nicosia	6	304	426	61,622	37.0
Famagusta	4	150	249	31,182	34.8
Limassol	2	56	85	23,044	75.3
Other	6	399	682	34,727	14.1
Total	18	1,067	1,320	150,573	31.7

25. As a general measure, it is usually assumed that a hotel should operate at not less than 60 percent of capacity for survival and that 70 per cent is required to make a reasonable profit. Most Cyprus hotels are operating far below these figures. Another 20,000 tourists could easily be handled for an average stay of one week per person and still not bring these hotels above the 60 per cent level. Such an analysis based on averages assumes a distribution of traffic among centres and over the year which will make it possible to accommodate the larger traffic. It is relevant to note that the tremendous increases in tourism in Europe between 1950 and 1959 were accomplished with only a 40 per cent increase in the number of beds, thus suggesting that there also the occupancy ratio was low at the beginning of the period.

26. One handicap under which hotels must operate in Cyprus is that, because of the short distances on the Island, there is very little use of the hotels by the Cypriots themselves, other than the bars and restaurants. The exception to this situation is the hill resorts where many Cypriots spend their summer vacations, and families frequently remain even longer. However, this summer migration to the hills involves mostly low class hotels and camps and does not provide much support for hotels which aim to attract foreign tourists.

27. There is a considerable seasonal variation in the number of tourists coming to Cyprus and efforts should be made to lengthen the season, as is being done in many other countries. In 1960, the number of tourists in the second quarter was 50 per cent above the first quarter, and the third quarter was 50 per cent above the second. It is difficult to judge the prospects of the efforts to develop winter skiing on Mount Olympus, but this could help somewhat to even out tourist traffic over the year. If a hotel is full for only three or four weeks in the year, this does not give a very high occupancy rate so long as the other weeks are relatively inactive.

28. In the meantime, despite the past record the number of hotels is actually increasing. During 1960 in Nicosia five new hotels have opened or are under construction, which will add about 140 rooms and 270 guest beds. All the new hotels are modern, although three of them have only between ten and twenty rooms. While such small hotels tend to attract long-term visitors and cannot be of great importance in handling the short-visit traffic, they do help to take the pressure off the larger hotels.

29. It should be clear from the above description of the situation that the present problem is not one of insufficient capacity, but rather of increasing the number of tourists who come to the Island. If the operating ratios are improved, this may permit improvement in the standards of operation which have deteriorated badly with the small number of guests.

30. If traffic increases sufficiently to require added capacity, this can be done more efficiently by expanding existing hotels than by building new ones. In recent years, however, the under-utilization of most hotels has put many of them under financial strain. They have borrowed at 8-10 per cent interest rates, which has further limited their ability to maintain adequate service and make improvements. Some long-term capital will be needed for modernization, improvements, and re-decoration, and such expansion as may be called for. No exact estimate has been made of the necessary cost of such improvements. They should be paid for in part by private funds. As a rough estimate, an additional sum of £150,000 might be allocated from the funds of the proposed Cyprus Development Bank or government funds might be made available for use in such individual situations as can present a convincing programme for improvement and development.

31. It may be that traffic will increase sufficiently or become so concentrated in a few spots before the end of the five-year period as to make it necessary to build several new first-class hotels. These should have at least 100 rooms each, to provide a scale which would permit efficient operation, and to be able to accommodate tourist groups of as many as might come on a chartered plane (at least sixty persons) in addition to their other guests. In such case, three new hotels might be needed, possibly one of 200 rooms in Nicosia, one of 100 rooms in Troodos, and a 200-room bungalow hotel plus a central building in Famagusta. Thus 500 new hotel rooms would be added. Using the assumption of 60 per cent occupancy and an average stay of one week per tourist, they could accommodate more than 15,000 tourists per year. If the average length of visit were shorter, as it probably would be, they could handle an even larger number. If one assumes an average cost of £2,500 per room, this would mean an investment of £1,250,000. Assistance in providing long-term capital for these projects might come from foreign sources or the Cyprus Development Bank.

32. If the point is ever reached where such expansion seems desirable, the new hotel in Nicosia probably should be designed to meet the international standard of first-class, with bath or shower in every room and air-conditioning. Famagusta offers another possibility in the development of the Golden Sands area. Here there is an excellent beach. Formerly, this had been developed as a British Military Leave Centre and has concrete bases for tents for about 800 persons, with various auxiliary buildings. If continued as a tent camp, it might attract local tourists, but such facilities would not satisfy most of the tourists whom Cyprus wishes to attract. From the point of view of tourism, it might be possible to develop this as a bungalow area, using the main restaurant and lounge for a central building. The suggestion of using it as a mixed bungalow-tent camp will not work, since each caters to a different clientele. It may be that tent camps should be developed at other spots, but this particular area in Famagusta has unusual advantages for becoming a tourist centre.

33. So far as the mountain district is concerned, it has tended to become a centre for local vacationers rather than foreign tourists. At present, the season is short and very little has been done to extend it by the measures such as reduced rates and special attractions. It is possible that the best form of promotion for this area might be a new first-class hotel of international standard to act as a centre for the revival of the area. Since the chief attraction of the mountain district is its temperature in the summer and the possibility of skiing in the winter, it could attract tourists from the warmer countries in the eastern Mediterranean area. European and American tourists would not be likely to find much of interest in the mountains, unless they were actually living in the Near East. One new hotel in the area would act as a centre of attraction and should increase the number of visitors to the other hotels in the area as well.

34. Modern hotels require complicated designing and planning. This is a factor both in attracting guests and minimizing costs. Some of the newer hotels in Cyprus have shortcomings in their layout and any further building ought to be under the aegis of an experienced hotel designer and planner. It might be helpful to tourism on Cyprus if one new hotel could be part of a foreign chain. This would be of great promotional value, would set a high standard of operation, and would indirectly improve the traffic to the other hotels.

HOTEL OPERATION

35. There are certain minimum requirements for hotel construction and operation which must be assured to the tourist. These concern safe building construction, fire protection, and sanitary and health conditions. At present, there are two laws on the books which relate directly to hotels. The Hotels Law (Laws of Cyprus, Chapter 138) deals with licensing and classification of hotels. The Hotels, Lodging Houses and Public Buildings Law (Laws of Cyprus, Chapter 139) relates primarily to sanitation and health conditions. In both instances the laws give general authority, and the actual implementation is by subsequent regulation. In the interest of the tourist it is essential that all new construction and structural changes be approved by an official competent to evaluate all safety elements. Similarly, a medical or health officer must make frequent inspections of all matters relating to sanitation and health.

36. The satisfaction of tourists is probably less dependent upon the physical structure of the hotel building than upon its atmosphere and the quality of its operation. At present, the hotels in Cyprus are not up to the standards for foreign tourism both in regard to service and to cleanliness. To a considerable extent this may be explained in terms of financial pressures, but any marked success in tourist expansion will require decided improvement in operation. Many other countries concerned with tourism have much more elaborate controls over sanitary conditions (cleanliness, hygienic conditions, food handling, dish washing, etc.) along with continued hotel inspection and review of hotel classification. If a hotel is not kept up to its class, it is given a warning and the opportunity to improve. If this is not done, it is promptly de-classified. Of course, in such a situation there is also the opportunity to advance in grade.

37. Hotel operation is a skilled occupation. The hotelier must be an expert in many matters and the employees must each be competent in this part of the operation. Nothing influences the tourist's judgment more than the quality of the services provided. This suggests the importance of adequate training. So far as advanced education in hotel management is concerned, there are excellent centres in Lausanne, Switzerland, Heidelberg, Germany, and Ithaca, New York, U.S.A. (Cornell University). Cyprus does not lack experienced hoteliers but most of them have been operating on narrow budgets. Nevertheless, operations must be improved. Help might be provided by training courses in Cyprus for employees. In most countries interested in tourism such courses are given for waiters, cooks, and other members of the staff. Subjects usually covered are foreign languages (preferably English), arithmetic, organization of service, sanitary control and hygiene, dining-room operation, and customer satisfaction.

38. It is a matter of common interest to management and to workers' organizations to raise the standard of hotel personnel, and added emphasis should be placed on the further development of training courses in Cyprus. Excellent programmes are in operation in Greece and in Switzerland and Cyprus does not lack individuals who could be competent instructors. In order to direct the project, a small hotel-training board might be established with representatives of the Government, the hotel owners, and the hotel workers.

HOTEL CLASSIFICATION

39. There is no agreed international standard for rating hotels, but the main classifications have general acceptance and tourists have come to expect certain qualities from hotels in each class. Three elements should enter into the proper classification of a hotel. First is the physical structure including its location, the size and character of the rooms, the nature of the public rooms, the amount of external and internal noise, and the like. Second is the quality and taste of the interior decoration, furniture, and lighting. Third is the way the hotel is run in terms of cleanliness, quality of food, and various types of service. If certain price levels are established, as they are in Cyprus, they are necessarily related to tourist valuations, and this should also be given weight in the classification.

40. Cyprus has a hotel law under which a number of different categories are set up for regular hotels and special categories for pensions and hotel camps, apparently based primarily on the physical characteristics of the hotel building. Other countries usually have fewer categories and give more weight to various other factors.

41. At present, the hotels in Cyprus often seem to be classified above their actual grade, according to international standards. This is especially true when one considers the standards for service and cleanliness which apply in other countries. For example, the international standard of a hotel de luxe is higher than the local standard for a de luxe hotel used in Cyprus.

42. If the categories of hotels as publicly listed are misleading, this is injurious to foreign tourist traffic. As a general principle, it is preferable that hotels be rated too low rather than too high. Guests will then often be pleasantly surprised to find the hotel better than expected. Such under-valuation contributes to

creating an impression of a high level of self-assessment in Cyprus and an absence of intent to take advantage of temporary visitors.

43. If new classifications are used for the hotels in Cyprus, another improvement would be to determine that the name of "hotel" not be applied at all to those at present in classes 4 and 5. "Hotel" is an international term known all over the world. In many countries catering to tourists, the lowest categories are required to use another local name, such as pensions, boarding houses, and the like.

44. In accordance with the Hotels Law, as amended in 1952 (Chapter 138 of the Laws), the authority to classify hotels is in the hands of a Hotel Board, appointed by the then Governor and now by the Minister of Commerce and Industry. Such a board is not an expert group familiar either with international standards or with the relative quality of operation of each hotel on the Island. The classification and price-schedule problems should be in the hands of a professional officer, perhaps the Hotel Inspector, who would be connected with the Tourist Office. He should be a person with a knowledge of hotel standards in other countries. If an appeals board is desired, it might consist of the Tourist Officer as chairman, representatives of the Ministries of Health, Labour and Social Insurance, and Communications and Works, and two private citizens representing hotels and tourist agencies.

TRAVEL

45. Both external and internal transportation facilities are important for tourism. Visitors must be able to reach Cyprus easily and, once on the Island, they must be able to travel about comfortably without difficult problems of arrangement. Both these subjects are discussed in Chapter VIII, where possible improvements are described. At this point, it should be mentioned that airlines are important promoters of tourist travel and that, so far as tourism is concerned, access to Cyprus by a number of airlines is preferable to a monopoly arrangement. In addition, special charter flights are developing into a major form of tourism; therefore special promotional efforts should be directed to foreign travel agencies which specialize in making such arrangements.

46. The first impression which Cyprus will make on most of its visitors will be gained from the airport, since arrivals by air far outnumber those by sea. While the airport itself is excellent, the equipment modern, and the safety element high, the terminal building is small and out of date. If there is any unusual volume of traffic, there are irritating delays. The programme for constructing a new building is already under way but it may take three years to complete. In the meantime, it would be advisable to enlarge the waiting room for incoming passengers.

47. There are fairly regular connections by sea with Italy, Greece, and Israel, while ships from other ports frequently call at Cyprus. These are modern ships providing good passenger service, although their difficulties in Cyprus ports are important and described in chapter VIII. However, in spite of the short distance involved, there is no regular connexion by sea with Turkey. The short trip from Kyrenia to the mainland could be made easily by very rapid passenger hydrofoil boat or by automobile ferry-boat which would provide access to

Cyprus for those Europeans who take their vacations by automobile. Such service might be extended to other eastern Mediterranean ports and could greatly increase the tourist trade to Cyprus.

48. Note should also be taken of the rapidly increasing cruise traffic in the Mediterranean, particularly during the autumn, winter, and spring. While cruising tourists do not spend much time or money ashore, it is important to use their visits to demonstrate the attractiveness of the Island and to persuade them of the desirability of some future longer stay. This suggests that such pre-arranged excursions in Cyprus as time permits should be most carefully planned. Too often, an undue part of the time is spent in Nicosia. The Kyrenia or Famagusta areas have more to offer.

49. One further factor can make the arrival of tourists more or less pleasant, and that is their treatment by immigration and customs officers. The stories which circulate in travel circles about these matters tend to magnify any special difficulties into obstacles so great as to keep tourists away. In recent years, the trend in all countries which encourage tourism has been to reduce and expedite the formalities at the point of entry as much as possible. Despite reports of slow customs service and undue formalities in the past, the Cypriot officers at present appear to be eager to please. One further improvement can be made—the abolition of any visa requirement. Visas serve no useful purpose for the Government of Cyprus and will be administratively difficult because of the limited number of Cypriot embassies and consulates abroad.

50. The problem of inland transportation is discussed in detail in chapter VIII. It need not be emphasized that tourists are likely to wish to travel about the Island. The length of their stay and the satisfaction which they get may be considerably affected by their mobility. Of specialized value for tourism would be the further development of a good sight-seeing service. It is desirable that there be regular sight-seeing tours at fixed prices, for which reservations might be made at any travel agency or hotel. This should be provided by only a very few agencies, permitting the establishment of a regularly-scheduled service with good quality buses and competent guides.

51. More generally, the present chaotic state of highway transportation in Cyprus is not attractive to visitors. There are those who may not care or are unwilling to ride long distances in taxi-cabs but would like to find out easily and surely when buses are running and what they cost. While there will undoubtedly be many difficulties in bringing some degree of order out of the present situation, delay can only result in conditions becoming worse.

IMPROVED TOURIST SERVICES

52. At present, the tourist season is much too short to permit the running of many of the hotels at a profit, not to mention the labour problems created by seasonal operation. It is generally agreed that ways must be found to increase the tourist attractiveness of Cyprus, and particularly in the less busy seasons. An important contribution could be made by the provision of increased entertainment in the few tourist centres in Cyprus. There apparently is little co-operative effort among the hoteliers, the local authorities, and the tourist offices to meet the possible wishes of tourists. In Fama-

gusta, for example, a tourist would expect to find sailboats and canoes for hire, water skiing, and possible launch trips along the coast. When such services do exist, there is no information readily available as to how to find the entrepreneur or what the prices may be. There might be printed brochures available in all travel offices and hotels describing the activities and entertainment which is available, with location and price fixed.

53. At the mountain resorts, there is an even more serious lack of entertainment. At a place like Platres, in spite of the fact that it is a tourist centre, there is little facility for sport like tennis or swimming, nor are there marked and cleared mountain paths for those who like to walk. A good bed, a good meal, and a good view are not enough for today's tourists. If an organized effort were made, there could be community activities so that dance music and cinema might be available to all. Concerts and lectures could be arranged. Of course, in the towns, there are cinemas and cabarets, as good and as bad as in most other places in the world.

54. Festivals have been proposed for tourist entertainment. While this has proved successful in some countries, a high standard is required and this involves considerable expense. It is doubtful if the number of tourists in Cyprus at any one time could justify any great effort along this line. However, local sporting events might interest tourists. Folk dancing is always appealing. Cypriot costumes are attractive but the dancing needs further development.

55. Another aspect of tourism which is under-developed in Cyprus is the field of Cypriot souvenirs. Most tourists are eager to purchase souvenirs and their sale can be an economic benefit and an indirect form of tourism promotion. Souvenirs usually are decorative items for household use or personal wear. Their great significance is their association with the country involved. The souvenirs sold in Cyprus are mostly imported and are not unique to this country. Cypriot embroideries and crochet work are Cyprus products but their appeal is limited and the prices are high. Pottery work creates problem of transportation. (This can be overcome by having an expert packaging centre.)

56. With the rise in tourist traffic, a deliberate effort should be made to provide special Cyprus-made souvenirs. There are some excellent silversmiths on the Island. Interesting straw trays are woven in the villages. Fascinating designs are available on the amphorae and jars in the Nicasia Museum. It might even be that Cyprus, with its centuries of association with copper, might use the ancient designs and patterns to develop copper ash trays, candle holders, pitchers, coffee pots, and sugar bowls.

57. Any country which is emphasizing tourism must build up special machinery for helping the tourist to get the most out of his visit. This is particularly important for Cyprus, where the appeal is in large part historical and archaeological. While a small number of the visitors will have come because of their appreciation and interest, most of the visitors will have only a most superficial preparation and will need expert assistance in order to appreciate the things which they see. An important contribution might be made if there were a background historical lecture given fairly regularly at the Nicosia Museum during the tourist season. In addition, tourists usually have an interest in learning something about political, economic, and social condi-

tions in the country and a companion lecture covering these subjects might contribute to tourist orientation.

58. In addition, a competent group of professional guides is required who can accompany individuals and tourist groups. They must not only be fluent in foreign languages, but must be well-educated, being especially competent in matters relating to the places of archaeological and historical interest. In order to give some assurance concerning the calibre of guides and to raise the level of competence, many countries give special examinations which provide the basis on which individuals are authorized to act as guides. Travel agents and hotels are then required to recommend such guides. The charge for their services should be set by the Tourist Office and should be high enough to attract well-educated people. The authorization process most often creates a group of first-class guides, usually women.

TOURIST PROMOTION

59. Since the key requirement is to bring more tourists to Cyprus, promotion efforts are highly important. To be sure, it is essential that those who come are sufficiently pleased to wish to return and to advise their friends to visit Cyprus. However, with the level of tourism so low and the number of potential visitors so great, efforts must be made to interest a broader group. This is not so much a matter of a few great splashes as a steady flow of publicity.

60. There are many elements in a good promotion programme. Basic pamphlets and other literature must be widely distributed. Attractive posters must be hung in appropriate places. Such publicity material should be prepared under the direction of someone who is experienced in the particular market involved. Furthermore, literature from the Cyprus hotels should be standardized as to size so it can be easily enclosed with other material. As another facet of promotion, foreign journalists, broadcasters, and travel agents must be informed and perhaps even brought to the Island. The co-operation of ship and air lines must be sought. In most of the guide-books prepared for potential tourists, Cyprus is only briefly mentioned, if at all. They are influential, particularly in the United States, and this situation should be corrected as soon as possible.

61. Those responsible for promotion can also take the lead in working out various special arrangements for group charter flights and the like. Furthermore, in most tourist countries today, package tours are offered which combine hotel accommodations, meals, and sight-seeing excursions. Such arrangements are helpful to the tourist agency abroad in arranging the itinerary of the traveller and in suggesting to the prospective tourist what an interesting programme is available. When groups are involved, they often can be accommodated at a lower cost than would be incurred by an individual tourist. Such programmes should be made up for various lengths of stay and should cover all expenses, including tips but excluding souvenirs, from the time of arrival to departure. To compete with such arrangements in other countries, there must be first-class buses, good guides, excellent hotels and meals, and worthwhile sights to see. Such tours could be sold by foreign travel agencies at prices which would give them an attractive margin. Appropriate literature would need to be prepared and, for the convenience of foreign agencies,

the whole operation in Cyprus should be centralized in the hands of a single firm.

62. Still one other form of special arrangement might relate directly to the effort to extend the Cyprus tourist season. During periods of light traffic, it may be possible to work out special sea or air rates in combination with reduced hotel rates on the Island.

63. The amount which can be spent on the promotion of tourism is unlimited. However, a small country with a limited tourist traffic cannot possibly try to compete in the area of publicity with the great tourist countries. Other countries may open many offices and employ expensive newspaper advertising but Cyprus must limit its effort. In the Cypriot embassies, it may be possible to combine the duties of public relations and press officer with that of tourist promotion. The United States is the most desirable market from the economic point of view and the travel agents in New York are accustomed to ask for assistance from country representatives in planning tours for their clients. Therefore, it probably is advisable for a special Cyprus representative for tourism to maintain a small office in that city, although it might be possible to work out a co-operative arrangement with another country for a single person to represent both. A careful watch of trends may suggest later that special tourist representatives be placed in some other centres.

64. Both in the United States and Europe it is important that there be very close co-operation between the representatives of Cyprus and those representing neighboring countries. Many tourists will plan to visit the area or not, in accordance with the total appeal by all countries which they can visit. In particular, Americans seem to prefer to visit a number of countries in a single tour. Since Cyprus occupies a fairly central point, it has a great deal to gain from a co-operative effort.

65. Promotion activity along the lines outlined above will require a somewhat larger budget for publicity in future years. The tourist budget in 1960 is £15,000, with £9,000 dedicated to publicity. If the total sum were doubled, it still would not be a lavish amount to spend. This would not allow for a special representative in New York City, which would require an added sum between £20,000 and £50,000, depending upon the scale of the operation.

66. These expenditures cannot be judged in terms of immediate results, and any programme which is undertaken should be based upon a three to five year period. The ultimate judgment must rest upon the return on the money invested. If £30,000 were spent each year in the United States, and if the present number of American tourists should double as a result (an added 3,000), the promotion cost would be £10 per tourist. This would seem to be a rather high cost and can be justified only if the prospects for expansion are considerably greater. Of course, if the satisfaction of the tourists when they visited Cyprus were sufficient, that initial increment would lead to a still further increase in tourist traffic.

TRAVEL AGENCIES

67. Travel agencies are necessary links in international tourism today. Most tourists use them to plan trips and frequently to obtain tickets and make hotel

reservations. In general, the travel agencies in foreign countries have the initial contact with the tourist and they must be well-informed about hotel and tour conditions in order to give competent advice. In turn, some local agency will act as representative on the spot, actually making the necessary arrangements. In a sense, it should be responsible for the tourist's satisfaction while on the Island, and its performance is of great importance to the future of foreign tourism in Cyprus.

68. It is essential that travel agencies be competent and reliable. Payments are usually collected in advance and commitments are made to hotels and carriers. The agency must therefore be financially responsible. With the rapid growth in tourism, many new travel agencies have sprung up in European countries, sometimes without the necessary technical background or financial resources. The Tourist Committee of the Organization for European Economic Co-operation has taken the lead in urging that legislation on this subject be adopted.

69. Cyprus already has a large number of travel agencies and it is probably time that certain standards be established in order to make certain that only qualified agencies are permitted to operate. The law proposed by the OEEC limits travel agency activity to enterprises which have obtained a license. The license is issued on the basis of competence and experience, financial responsibility, and the provable need for the agency if it is a new one. (See outline of the Norwegian Law, annex VII.) The authority to issue licenses might be given to the Minister of Commerce and Industry, who would act on the basis of recommendations made by the Tourist Officer after consultation with the Executive Committee of the proposed Tourist Board.

ADMINISTRATION OF TOURIST MATTERS

70. The administration of tourist matters is in the Ministry of Commerce and Industry under the direct responsibility of the Tourist Officer. A Hotel Board, discussed above, has existed since 1952, but there is no general body as in other countries concerned with tourism matters. If a Tourist Board were appointed by the Minister of Commerce, it could act as an advisory group for the Tourist Office and could help to co-ordinate public and private efforts.

71. The number of members of the Board need not be limited, but it should include representatives of the Ministries of Commerce and Industry, Foreign Affairs, and Labour, of the several hotel owners groups, of the tourist agencies association, of sea and air transportation, and individuals from each of the main districts of tourist interest. The entire group should meet several times each year and an Executive Committee of five, as representative as possible, should have interim responsibility. If the proposal for the licensing of travel agents is adopted, this Executive Committee might act as an advisory board to the Minister of Commerce and Industry, if he were given the authority to issue licenses.

72. For the purpose of developing the general programme, establishing contacts abroad, and creating the administrative machinery, it might be of great value to utilize the services of an experienced foreign expert in the field of tourism for perhaps two years, after which it could be carried forward by Cypriots. Such an arrangement would help to obtain the most efficient use of the limited budget and give the programme a flying start.

The Bases

73. There remains to be discussed the subject of the sale of goods and services to foreigners who are stationed in Cyprus for one reason or another. The rapid development of the United Kingdom bases in Cyprus which began in 1952 has already been mentioned. If the amount spent by the Military Authorities in 1950 is taken as 100.0, the relative expenditures in subsequent years have been as follows:

Table 21

EXPENDITURES BY MILITARY AUTHORITIES, 1950-59

1950	100.0	1955	702.5
1951	109.6	1956	1,419.9
1952	305.9	1957	1,112.5
1953	314.7	1958	1,086.7
1954	449.3	1959	1,045.7

Source: *Cyprus Economic Review*, 1959, p. 72.

Some indication of the way in which this expenditure reached the Cyprus economy is given by the following rough allocation:

Table 22

APPROXIMATE DISTRIBUTION OF EXPENDITURES BY MILITARY AUTHORITIES

	Per cent
Direct service purchases (not works)	10
Works expenditure (local)	50
Civilian pay (not works)	15
Service pay (local spending)	25
Total	100

74. About one-half of the total evidently went into the local costs of construction of one sort or another and the balance to the purchase of local goods and services and payments to local employees. These expenditures made in Cyprus by the Military Authorities went very largely into consumption items, namely, goods such as food and services. There were, however, important contributions to capital formation, largely in the form of housing. Estimates by the Statistics and Research Department suggest that the amounts involved may have been as follows:

Table 23

CAPITAL FORMATION BY MILITARY AUTHORITIES, 1954-59 (Thousands of Cyprus pounds)

1954	1,500	1957	3,500
1955	2,900	1958	700
1956	4,600	1959	500

In the peak year of 1956 this was nearly one-third as much as all other capital formation on the Island and 5.8 per cent of gross national product. These figures do not take into account the expenditures made by Cypriots which were stimulated by the existence of the Bases such as increased construction of civilian housing planned for rental to British service families and the expansion in electric power facilities necessitated by the requirements of the Bases.

75. It has already been pointed out that the combined Military and Government expenditure from 1954 to 1957 put a tremendous strain on the available resources of the country and particularly on labour resources. Unemployment disappeared and the chronic

under-employment in the rural areas was reduced. Prices and wages both rose and the available purchasing power plus the optimism of all boom periods encouraged extravagance and inefficient production methods. The decline in expenditure on the Bases which set in after 1957 was not large but nevertheless is an important reason for the general decline in gross national product since then.

76. It is difficult to assess the value of the Bases to the Island's economy. In the past, no distinction was made for most statistical purposes between the Bases and the rest of Cyprus, except that military expenditures which did not involve the transfer of pounds sterling into Cyprus pounds, were not included in the Cyprus records. Thus items such as the import of military equipment or the payment of troops when made in pounds sterling were disregarded. However, housing and non-military construction in the Base areas were included as part of the Island's capital formation. If one wished to make an exact analysis, there probably also were situations where expenditures of the Colonial Government and the Military Authorities were not clearly distinguishable.

77. It is clear that the Bases will continue to be a very important element in the Island's economy. Relying upon balance of payments data, one may hazard the conclusion that the amount of Cyprus pounds expended on their account in 1959 was in the general neighborhood of £14,000,000. What will be their economic importance to the Island in the future depends upon three things:

(a) The number of individuals located at the Bases. Much of the expenditure is a direct function of the number of men and their dependents who are on the Island.

(b) The further development of the Base. The boom during the mid-fifties was related largely to the construction of new and expanded facilities.

(c) The self-sufficiency of the Bases. Will they tend more and more to become insulated and isolated, or will economic exchanges be encouraged?

78. On these matters, Sir Hugh Foot, then Governor of the Island, said on 2 August, 1960 (*The Times of Cyprus*) that "it will take six months or so for the big programme of Royal Air Force and military works to get into stride but then the work will go on at full pressure for five years at least." In another quotation, he said that "By February 1961, the work on completing the £80,000,000 British bases will be in full swing, offering good wages to thousands of Cypriots until the end of 1965." "Over and above the works programme, the steady spending of the services and the troops will continue... that will bring over £10,000,000 a year to the Island."

79. The above statement was one of intention and not a commitment. The estimate of troop spending appears to have been conservative, and everything should be done to encourage those on the Bases to use Cypriot goods and services, to explore the Island, and to encourage others to visit it. At the moment, there are few indications of any such massive construction programme as was suggested. If it does come, it may require a considerable adjustment in the economic programme of the Cyprus Government. The threat will then be one of serious inflation and a distortion of the economy

because of a short-run bonanza. The problem will be to prevent the proceeds from being frittered away in consumption or in higher prices, and to channel them into constructive uses of lasting value to the Island. It is important that the Government keep in close touch with expenditure programmes at the Bases in order to be able to adjust its policy so as to make the most out of any temporarily expanded demand for Cypriot goods and services.

Other Installations

80. While the United Kingdom bases are by far the most important installations in Cyprus, they are not the only resident operations which contribute foreign

exchange in return for Cypriot goods and services. The American radio installations bring in about £1,000,000 per year to the Island. The various embassies which are being established will not be negligible contributors to the economy, probably far out-balancing the Cypriot expenditures abroad on foreign representations. And there is always the possibility that regional conferences, regional centres of international agencies, or regional offices of international business concerns might find the location of Cyprus attractive. There is no systematic way whereby such possibilities can be pursued. It is more a matter of being on the alert, following up any opportunities which may appear, and then making certain that any foreign establishment which settles in Cyprus is so well treated that it not only will remain but will assist in encouraging others to come.

Chapter VIII

POWER, TRANSPORT, AND COMMUNICATIONS

Electric power development

1. Adequate electric power is one of the fundamental requirements for economic and social development. Not only is it important for family and community life, but it is needed to turn the motors and vitalize the many kinds of equipment which are used on the modern farm or in the factory.

2. Electricity generation and distribution in Cyprus is in the hands of the Electricity Authority of Cyprus which was established in 1952 under the Electricity Development Law (Statute Laws of Cyprus, No. 23 of 1952), amended on 3 December 1959 (No. 37 of 1959). It is an independent corporation whose capital has been obtained from the Government and whose members are government appointed. It operates a single generating station at Dhekelia, which has a total capacity of 70,000 KW and produced 193 million KWH in 1959. In addition, there are several diesel power stations which are maintained as stand-by, although that in Paphos produced nearly 2 million KWH in 1959 prior to the completion of a transmission line from Dhekelia. There are also some small independent power plants in Cyprus.

3. A power grid brings power to most of the central regions and coastal towns. However, the north-eastern peninsula as well as a large area of north-western Cyprus are not yet connected to the central system. Even within the area covered, there are a number of small villages not yet connected and many places where the supply of electricity is limited by the capacity of the transmission lines and the distribution system.

4. The cost of the electricity generated (193 million KWH) in 1959, not including an allowance for administrative overhead, was 3.72 mils per KWH. The average price per unit sold (162 million KWH) was 10.67 mils per KWH. The average for the highest domestic class was 25.04 mils and the industrial average was 5.75 mils.

5. The demand for electricity has been increasing at a rapid rate. Between 1954 and 1959, output increased from 3 million to 193 million KWH. Consumers numbered 72,921 at the end of 1959. During the last year electricity consumption increased by 29 per cent for irrigation purposes, 21 per cent for domestic consumers, and 9 per cent for commercial and industrial consumers. Electricity consumption in Cyprus is about 370 KWH *per capita per annum*, compared with 220 for Greece and 90 for Turkey.

6. Estimates of gross capital formation with respect to electricity for recent years prepared by the Statistics and Research Department are as follows:

Table 24

CAPITAL INVESTMENT IN ELECTRICITY, 1954-59
(Thousands of Cyprus pounds)

1954	700	1957	1,200
1955	1,000	1958	900
1956	1,500	1959	800

These figures include investment in generating capacity as well as in the distribution system.

GENERATING CAPACITY

7. The most urgent requirement at the present time in the area of power is the provision of additional generating capacity. The length of time between the approval of such a project and its completion is so long that the Mission has already indicated the urgent need for action. If one unit in the present Dhekelia plant is down for repairs or some other reason, the present firm capacity is then 56,000 KW. It is estimated that in the winter (the peak period in the year) of 1961-62, demand will about equal firm capacity and that one year later, severe curtailment in service will be threatened. The installation of an additional 14,000 KW generating set at Dhekelia is therefore imperative. Since it may take two years before it can begin to operate, there can be no delay in placing the necessary orders.

8. Even with this addition, demand will again dangerously exceed supply two years later. It is not recommended that further additions be made to the Dhekelia station but that a new power station be constructed at another site. In view of the location of the power load and shore conditions, this probably should be located on the south coast in the general neighborhood of Zygi. Generator sets for this station can be installed from time to time, but immediate plans should be made so that at least the first set will be commissioned in time to meet the 1964-65 winter peak. Along with this development must go the construction of new 132 KV overhead transmission lines.

9. The estimated costs of these new capital investments are as follows:

Table 25

SUGGESTED EXPENDITURES FOR ADDITIONAL ELECTRICITY CAPACITY,
1961-65
(Thousands of Cyprus pounds)

1961	1,900	1964	600
1962	1,900	1965	200
1963	1,800		

Presumably still another generating set will need to be ordered near the end of the period but its costs will fall in the last half of the decade.

10. This expenditure clearly comes under the Exchange of Letters (Appendix R, *Cyprus, United Kingdom Command Paper 1093*, p. 21) which states:

"...the Government of the United Kingdom shall...

"(b) (iv) on a request by the Government of the Republic for financial assistance towards an extension of the electricity supply on the Island of Cyprus, make a loan in an amount and on terms to be agreed between the two Governments, such terms to be comparable to those generally applicable at the time to loans being made by the Government of the United Kingdom to independent member countries of the Commonwealth."

11. In the past the expansion in plant and distribution system has been financed to a small degree from earnings and chiefly from borrowings. The total of such borrowings at the end of 1959 was £9,188,081, against which a redemption fund of £74,593 was held. The new facilities also should not be constructed as a charge against the Government budget but should be financed on a long-term basis, to be paid off in the future by the Authority out of earnings.

THE DISTRIBUTION SYSTEM

12. There is considerably more flexibility as to how rapidly electricity should be made available to areas not now reached and at what rate new customers should be added. There is of course the limitation set by the capacity to generate and the transmission lines. However, it is very clear that electric power is an important contributor to increasing productivity and modernizing life, and it is an important factor in keeping population in the villages by making existence more tolerable. It is possible to spend large sums in trying to speed up this process, but a more gradual rate seems more appropriate, so long as the goal of making electricity eventually available to everyone is clearly kept in mind.

13. Without making any effort to present an exact estimate, a financial pattern such as the following might seem reasonable for the next five years:

Table 26

SUGGESTED EXPENDITURES FOR THE ELECTRIC POWER DISTRIBUTION SYSTEM
(Thousands of Cyprus pounds)

	Total expenditure	EAC resources	New funds required
1961	500	300	200
1962	600	350	250
1963	650	400	250
1964	700	450	250
1965	750	500	250

This schedule involves a higher level of expenditure for the distribution system than in previous years. It allows for the reconstruction and reinforcement of the present system and its extension to additional villages and to customers in areas already served with power. It also assumes that there will be no appreciable reduction in electric rates. The use of the Authority's own funds suggests that the expansion in electric use will be financed in part by the consumers of electricity. Even at present, the rate structure is such that the high cost operation in rural areas probably does not bear its full share of the cost, but this is true of electricity operation everywhere.

14. While it is not recommended as a desirable action as long as capital is so scarce in Cyprus, if it should appear that funds for use by the Electricity Authority could easily be obtained in foreign capital markets, then a better policy might be to lower rates somewhat, decrease the contribution of the Authority to its own expansion, and increase the long-term debt of the Authority. In any event, the new funds required should be obtained on a long-term basis.

Telecommunications

15. The internal telephone and telegraph communications in Cyprus are maintained by the Cyprus Inland Telecommunications Authority (CITA) and the external ones by the Cable and Wireless Co. Ltd. CITA was established in 1955. It is a Government statutory body operating as a public utility. It is now proposed that, effective in the course of 1961, CITA will take over the Cyprus operations and assets of Cable and Wireless.

16. Telephone and telegraph facilities in Cyprus have expanded considerably in the nineteen fifties. At the end of 1957 there were 42.5 thousand miles of single wire, 25 telephone exchanges of which 16 were automatic, 160 public call telephone stations, and 12,922 private ones. In 1959, there was a net increase of 1,467 telephone subscribers. During that year capital outlays were of the order of £188,000, or about ten per cent of capital assets.

17. Perhaps because it is so compact, telephone service is more developed in Cyprus than in most of the neighboring countries. At the end of 1958, there was one telephone for every 33 persons, while in Greece, the ratio was one to 48, and in Turkey, one to 154.

18. As in most other countries the recent expansion of facilities has been inadequate to catch up with rising demand. Thus, by the end of 1959, there were 1,902 outstanding demands for telephone service for cities alone, and the number has increased since then. Out of 620 villages, 390 (or 63 per cent) do not have any telephone facilities at all.

19. The Cyprus Inland Telecommunications Authority is preparing a detailed five-year programme covering capital outlays (excluding maintenance but including staff expenses of normal personnel which would be involved in the carrying out of projects) of the order of £3,000,000. In this sum are slightly over £1,200,000 for external communications, which includes both the purchase of the assets of Cable and Wireless and the purchase of specialized equipment, in part to be used for the Flight Information Centre. The internal programme emphasizes village requirements contemplating that, by the end of the five-year period, every village would have at least a public telephone station. In the next phase of expansion, priority would revert once again to city needs.

20. There is no doubt that telecommunications are an important element of modern life and that in certain cases (e.g., for villages) they may have a great social value. But economic development is a matter of establishing the right priorities in a context of limited resources, and the extension of the telephone system to rural areas would not contribute to the increase of in-

comes as might other expenditures. For this reason, the cost of telephone extension should not be regarded as a charge against the current income of the Government.

21. The above comment is not intended to indicate that the development of the telephone system should come to a halt. In fact, two ways are open for it to obtain funds. The first is by self-financing. The Authority apparently does not plan to finance a large part of capital investment out of earnings or depreciation. However, it seems reasonable that a non-negligible part of financing the extension of telecommunications should rest on the capacity of the system to raise its own finance. If demand is so pressing, this may well mean that charges are too low. In fact, costs of rentals and calls in Cyprus appear to be below those in neighboring countries. An adjustment in the rate structure might be made which would provide additional revenue, especially since there must be several classes of customers to whom a telephone is an essential business or social requirement.

22. The second possibility is through additional borrowing in the form of long-term debt. The Authority already has a considerable debt. At the end of 1959, it owed the Government of Cyprus £2,099,914 as a long-term debt and had issued two short-term stock obligations of £100,000 each. The surplus from operations less depreciation during 1959 was £153,592 or about 6.7 per cent on the capital (borrowings plus accumulated surplus). It may be that capital can be raised on the capital market, particularly if it has a government guarantee. An increase in earnings would strengthen the borrowing position of the Authority.

23. Under all these circumstances, it is difficult to forecast what capital expenditures should be anticipated for the next five years. The Authority should take into account the fact that it must finance itself from its own surplus and from such funds as can be procured from the capital market rather than from current funds available to the Government. On this basis, the following schedule of expenditures over and above its own funds is suggested:

Table 27

SUGGESTED DEVELOPMENT EXPENDITURES FOR
TELECOMMUNICATIONS, 1961-65
(Thousands of Cyprus pounds)

1961	200	1964	250
1962	200	1965	300
1963	250		

This would represent a rate of expansion slightly above that in recent years and it should be possible to raise such sums on the capital market. This would be more certain if the Authority adopted a regular policy of using part of its earnings for investment purposes, thus building up some margin between its assets and its obligations.

Roads

24. Another essential prerequisite to economic development is an efficient, modern transportation system. Ease of movement from one place to another is essential for both people and goods. Cyprus possesses an elaborate network of public roads with a total of 3,657 miles, of which 1,022 miles were bituminous surfaced at the

end of 1959. There is access of a sort to every village by motor-car.

25. Public roads come under a number of different jurisdictions, although the central budget bears on them all. The main trunk roads are under the Public Works Department. There are municipality roads which are within the municipal limits of the towns. There are village roads which are controlled from the District Offices under the Department of Interior. Finally, there are the forestry roads all of which are within the national forest boundaries and are under the jurisdiction of the Forestry Department.

26. Estimates are available from the Statistics and Research Department concerning total expenditures for the building of roads and bridges from 1953 to 1959.

Table 28

GROSS CAPITAL FORMATION FOR ROADS AND BRIDGES, 1953-59
(Thousands of Cyprus pounds)

	By Military Authorities	By others	Total
1953	—	262	262
1954	146	132	278
1955	238	365	603
1956	86	581	667
1957	37	425	462
1958	21	272	293
1959	40	210	250

27. It is evident from the table that the Military Authorities were active in road building in the initial stages of expanding the Bases in 1954 and 1955. During the period from 1953 to 1959, about 100 miles were added to the bituminous-surfaced trunk roads and 70 miles of forestry roads were added. The problem today is not one of adding new links to the road system, except possibly for additional forest roads. What is needed is widening, straightening, surfacing, and bypassing the narrow and labyrinthine village streets.

28. From the point of view of economic development the most important road requirement has been met in Cyprus—that of access to all communities. The next stage is that of improvement, and here the problem becomes more difficult. Building roads is expensive and so is maintaining them. They can be built with wide variations in cost and serviceability. Decisions as to expenditure must be related to traffic density. It is more important to have a good road where 3,000 vehicles pass daily than where 100 use the road.

29. In considering the programme for the immediate future, it seems most important to put the major emphasis on the trunk roads, which are those which are now carrying, or are expected to carry within the next fifteen years, at least 500 vehicles per day on the average. These are obviously the roads on which there is an appreciable amount of travel. If they are in poor condition, they put the greatest strain on the drivers and do the greatest damage to the country's cars and trucks. They are the roads along which most of the agricultural and other products move and where bumping along with two wheels over the edge of the bituminous surface onto the cobble stones cannot help but do damage as well as delay the delivery. Therefore the immediate road programme should be drawn with a concentration on the trunk roads. From the point of view of economic development, much less attention needs to be paid to tourist and village roads.

30. Improvement in the highways is of some importance as an element of giving the tourist more satisfaction. In a few instances, this should be taken into account in planning the development programme. For example, the road from Bellapais to the Nicosia-Kyrenia road might well be improved and asphalted. Much has already been done to improve the access roads to the more important antiquities, but of course more might be done. In general, however, the highway improvement programme should rest upon general traffic requirements and take tourism into account only to a limited extent. Tourists will be willing to make short trips on poorer roads, if they are able to make the long trips between towns in comfort. One small item should be noted, and that is that road-markings are important and that, for the benefit of foreigners who may own or rent cars, Latin characters should also be used on all signs.

31. The above comments give only general help in formulating a highway programme. Not only was it impossible for the Mission to study the road network in detail but, in any event, an accurate estimate of the cost is impossible without much more preparatory survey and engineering work being done. However, very rough estimates of road requirements and costs made in 1959 by the Government Chief Engineer have proved very helpful. The following tabulation is based upon allowing the full estimates for work on trunk roads but reducing considerably the sums to be spent on tourist roads and village roads. It includes an allowance for the purchase of machinery.

Table 29

SUGGESTED DEVELOPMENT EXPENDITURES FOR ROADS AND BRIDGES, 1961-65

(Thousands of Cyprus pounds)

1961	700	1964	800
1962	700	1965	800
1963	800		

It should be noted that an expenditure of £200,000 for the Mia Milia-Engomi-Famagusta road in 1961 is being financed by a United Kingdom Government grant.

32. The estimates given above are considerably higher than the expenditures on roads and bridges during the period from 1953 to 1959 in recognition of the importance of inland transportation to economic development. Probably the figures would be doubled if an equal effort were made to develop and improve the various other so-called tourist and village roads.

33. The increasing expenditures for road construction and inevitably rising costs of highway maintenance raise the problem of relating at least some of the cost to the benefit received. There are three ways by which it can be done. First is by establishing toll roads, a suggestion which seems completely inappropriate for Cyprus; second is by taxing gasoline, thus relating tax payments more or less proportionately to mileage of road use; third is by taxing each vehicle by higher annual fees, possibly related to the weight of the vehicle. There are many variations possible in the tax pattern such as adjustments according to the chief use of the vehicle. None of the suggestions are to be regarded so much as a method of increasing taxes as a way of redistributing the tax burden so that the cost of roads is carried less by general taxes and more by the road-user. It has been suggested that the number of trucks and cars should be limited by restricting imports. If a control over

numbers is sought, it would seem much more sensible to do it by one of the above methods of increasing the operating cost.

34. As will be discussed in Chapter XII, road construction is one of the ways of providing additional employment when conditions are slack, and this should be taken into account in planning ahead. In other words, the volume of road construction should be reduced in years of good employment conditions and increased when employment is needed.

THE ORGANIZATION OF TRANSPORTATION

35. Inland transportation in Cyprus is in a state of chaos. Bus lines run irregularly and buses vary from relatively new to rare antique. The taxi service seems to be good but there is no control over prices and charges vary widely for the same trip. For safety purposes, if no other, taxi-cabs and taxi-drivers should be specially licensed, and either meters should be used or zone prices should be established. The difficulties of the present situation for tourists has been noted in Chapter VII.

36. Cyprus is most unusual in having so little control over inland transportation. It is virtually impossible for an operator to maintain high standards and regular service if anybody who can borrow money to purchase an old bus can start a bus line. In countries with much less traffic than Cyprus, buses and trucks are under elaborate control. The companies are thus given franchises, based either on tenders or the payment of an established fee, which gives them a whole or partial monopoly on the particular route. At the same time, the licensee is required to run its buses over fixed routes on a published schedule with prices approved by the government. Some buses should be limited to carrying passengers only and others might be used for mixed traffic of goods and passengers. Some might make many local stops and others might make express trips. By thus concentrating the traffic, it should be possible to operate a modern bus line between the main towns at reasonable prices. A later stage in the development might be the development of suburban buses, which would make it much easier for shoppers and others to come to the towns centres, and somewhat relieve the congestion of private cars in the urban areas.

37. No investigation has been made of the methods for moving goods about the Island, but here also control is necessary to protect both the shipper and the trucker. In an industry where entrance is easy and capital requirements are low, there is an inevitable tendency for service to deteriorate and for prices to vary widely. It may be that part of the spread between farm costs and retail prices is due to the inefficient character of the existing means of transportation.

38. To correct the present situation will be no easy task. Present operators will all feel that they have some kind of vested right in the continuation of their privileges of operating without any sort of control. Bringing order out of chaos will mean that various changes will need to be made. The longer the present unregulated situation is allowed to continue, the more difficult it will be to correct. It should not be difficult to arrange for an expert in this field to come to Cyprus to help lay out a programme of gradually building a modern system of transportation on the Island.

Harbours and Airports

39. To an island, its means of communication with the outside world are extremely important. In 1959, Cyprus imports amounted to half the gross national product, exports were more than 40 per cent, and all of this foreign trade had to be moved in or out by sea or air. In 1959 also, 66,841 persons arrived and 65,587 left Cyprus—again of course all by sea or air. These figures point up the importance of airports and sea-ports in the life of the Island.

40. Estimates are available from the Statistics and Research Department concerning the money spent on the development and improvement of harbours and airports since 1954, as follows:

Table 30

GROSS CAPITAL FORMATION FOR HARBOURS AND AIRPORTS, 1954-59
(Thousands of Cyprus pounds)

	By Military Authorities	By others	Total
1954	184	214	398
1955	862	295	1,157
1956	730	90	820
1957	290	32	322
1958	75	91	166
1959	40	110	150

It seems fair to say on the basis of those data that most of what was done in Cyprus in this field during this period was done by the Military Authorities.

THE NICOSIA AIRPORT

41. Connections by air to Cyprus are available by excellent airline from all part of the world via British European Airways and to neighboring countries by local and regional airlines. For purposes of assuring satisfactory service and promoting tourism, there should be a liberal policy in the matter of giving landing rights to other airlines. Given the number and excellence of existing airlines, there seems to be no necessity for Cyprus capital to be devoted to the development of an airline of its own. To some extent, national ownership of airlines has come to supplant the merchant marine as a meaningless symbol of national prestige. It has turned out that most countries with national airlines have found it necessary to subsidize them to keep them in competition with each other.

42. The civilian airport on the Island is at Nicosia. In 1955, the peak number of 4,278 aircraft landings was reached. It dropped to 2,839 in 1957 and has been rising slowly since then. Due to the increased size of aircraft more significant figures are those of passengers arriving by air, which figure has shown a greater increase (47,938 in 1959). It is worth noting that more than one-fourth of the arriving travellers still come to Cyprus by sea and the proportion of those departing that way is still higher.

43. There is no reason for discussing the Nicosia airport at any great length. The Military Authority spent substantial sums, possibly as much as £2,000,000, in developing the runways and installing modern equipment so that the airport can accommodate aircraft of all types. The terminal, however, is only temporary in character. Most of the expenditure contemplated in the

near future is related to the construction of a modern terminal. For this purpose, a commitment has been made by the United Kingdom as follows:

"the Government of the United Kingdom shall (i) pay to the Government of the Republic, by way of grant, the sum of £500,000 towards the construction of a new Civil Air Terminal at Nicosia Airport."¹

44. A new terminal building is important to Cyprus both because of the impression that it will make upon temporary visitors and also because it should greatly improve the handling of both passengers and freight. In view of the availability of funds, work should proceed as speedily as possible on the new building at the airport.

HARBOURS

45. Ports in Cyprus may be classified in several categories. First are the two relatively important ports of Famagusta and Limassol. Famagusta is an old port with some natural advantages. It handles about 40 per cent of import and 10 per cent of export tonnage. If one excludes oil, Famagusta is responsible for about two-thirds of imports; excluding the large tonnage of mineral ores exported through Karavostassi and Vassiliko, it handles about one-half of the remaining exports. Limassol, the natural terminal of a rapidly expanding area, handles about one-third as much import tonnage as Famagusta, but from one-half to almost as much exports.

46. In a second category is Larnaca which has little export trade, but whose importance as a port is primarily linked at present to oil imports directly discharged at the oil berth; though its imports of other items are not unimportant. In a third category are the smaller ports such as Paphos, Moni, and Kyrenia. Finally, a fourth category includes the special facilities at Karavostassi in the Morphou Bay and at Vassiliko-Zyvi on the south coast. These are privately-owned and operated facilities specializing in handling exports of mineral ores and are responsible for almost four-fifths of the total tonnage exported from Cyprus.

47. The need for better and extended port facilities has been stressed in many official reports.² As shown in Table 31, during the last ten years gross tonnage has more than doubled for imports and has increased by about 40 per cent for exports.

Table 31

CARGO IMPORTED AND EXPORTED BY PORTS
(Thousand tons)

A. Imports:	1950	1955	1958	Increase 1950-58
Total	304	701	710	397
(total excluding oil) (233)	(565)	(476)	(476)	(243)
Famagusta	141	335	292	151
Limassol	51	116	85	34
Larnaca	97	226	301	204
of which oil	(71)	(136)	(225)	(154)
Paphos-Latchi	0.5	12	10	—
Kyrenia	0.2	0.1	0	—
Karavostassi	14	8	12	—2
Vassiliko-Zyvi	—	3	—	—

¹ Appendix R, *Cyprus, United Kingdom Cmd. 1093*, p. 211.

² See for instance: *A Ten-Year Programme of Development for Cyprus*, Nicosia, 1946; P. E. Millbourn, *The Ports of Cyprus and Recommendations for their Improvement*, Nicosia, 1955; Messrs. Coode and Partners, *Cyprus Ports*, Nicosia, 1956.

B. Exports:

Total	1,016	1,310	1,434	418
(total excluding Karavostassi and Vassiliko)	(200)	(280)	(296)	(96)
Famagusta	79	115	129	50
Limassol	87	79	85	-2
Larnaca	19	20	5	-14
Paphos-Latchi	13	65	77	64
Kyrenia	1	2	—	-1
Karavostassi (mainly mineral ores)	589	644	783	194
Vassiliko-Zyyi (mainly mineral ores) ..	227	385	355	128

Source: *Cyprus, Statistical Abstract*, 1959, p. 197.

On a longer perspective, the number of steam vessels entering Famagusta was 105 in 1923, 273 in 1933, 339 in 1939, 648 in 1952, and is now close to 1,000. Compared with such an increase in traffic, port extensions have lagged behind. The last major extension of the port of Famagusta was undertaken in 1930 and completed in 1933. In Limassol the last major work undertaken was the construction of a lighter basin a few years ago.

48. None of these ports can be regarded as a good, deep-water harbour. Cargo is handled under great difficulties, frequently by lighter. Many of the ports have so little protection from rough weather that loading and unloading must stop whenever the winds are high. The ports have been in this same condition for centuries. The first question obviously is: how urgent is the need for port improvement and development. This raises questions of convenience, cost, and of possible gain or loss of traffic.

49. The most obvious difficulty is delay for a ship to obtain accommodation for berth or for being unloaded by lighters. For Famagusta available data on ship movements indicate that delays of one or two days take place regularly during the export season, although the proportion of delayed vessels to the total is relatively small, approximately 5 per cent.³ In spite of the normal capacity being only four ships, it is current practice in Famagusta to "double-bank" ships—a practice considered uneconomic and somewhat hazardous—and even increase the berth capacity to nine ships by an additional berth accommodation alongside a small pier despite poor shelter.

50. It is reported that the uncertainty as regards possible delay, as well as the many disadvantages in offloading by lighter, make foreign shippers reluctant to select any Cyprus port as a regular port of call. Congestion in harbours duplicated by congestion on quays and inadequate transport equipment and storage facilities are said to be responsible for an increase in landing costs, damages to shipments (especially for fragile or perishable goods), and loss of markets. An additional cause for high landing charges is the need for overtime work during the period of heavy traffic.

51. Another adverse factor at present affecting ports in Cyprus is the lack of adequate depth. At Famagusta only vessels having a draft no greater than 21' 6" may enter the inner port, while at Limassol they must un-

load by lighter. The result is that large ocean-going vessels do not call at Cyprus. Cyprus consignments often must be shipped to Port Said, Piraeus, or Beirut for reloading into larger vessels, and incoming consignments must follow the same procedure. All this means a considerable loss of time, extra expense, and perhaps worst of all, extra handling. The adverse effect of this routine is said to be far-reaching in preventing export consignments of perishables to the Far East, for example.

52. Tourist traffic will undoubtedly be assisted to some degree by harbour improvements which would permit foreign passenger ships to come alongside the pier. To be sure, most passengers who are so near to Cyprus will undergo the inconvenience of lighterage if necessary, but not all will do so. In any event it shortens the visit and provides an element of discomfort to the landing process. While this may not be a very important element for passengers who actually reach Cypriot harbours, port conditions undoubtedly are important in determining the degree to which cruise ships will include Cyprus in their itineraries.

53. To cope with these problems a number of detailed surveys on port improvement have been prepared in the past, the major ones with the help of port advisers from abroad. The present plan for port extension at Famagusta follows essentially the lines of a project of Messrs. Coode and Partners (the "shore" plan). Its purpose is roughly to double the present berthage which amounts to 1,770 feet. The main works would consist of constructing a breakwater for seaward protection, dredging to a depth of 32 feet, reclaiming some 80 acres of land, building a quay, installing handling equipment, and erecting appropriate storage sheds. Including the purchase of two tugs but excluding the cost of construction of a silo, the project is estimated to cost slightly more than £2,500,000. Land has already been purchased by the Government, cleared, and an access road has been built. The completion of the project would require at least two years.

54. There are two competing plans for the development of the Limassol port, the main difference being whether the harbour should have a circular shape thus enlarging in a major way the present facilities, or extent north-easterly along the shore. The advantage of the second approach is that it would make further extension possible and even relatively easy. The first stage of the plan would be to provide direct landing facilities for two or three steamers, including passenger ships. The cost for either plan, including the same type of auxiliary development as for Famagusta would be £4,000,000.

55. For Larnaca, there are also a number of projects ranging from the establishment of a deepwater harbour to a lighter basin. There is also a plan to set up a pier harbour at a location four miles north of Larnaca. Estimated costs vary between £1,000,000 and £4,000,000 depending upon the extent of the development. In Paphos, a substantial but relatively low-cost improvement could be done by extending the breakwater along the line of the old breakwater so as to afford a better protection against south-western gales.

56. Other projects which have been suggested include the construction of a shelter basin for fishing trawlers, small schooners, and yachts in Kyrenia for which a sum is already in the 1961 budget, and the

³ A spot check in the office of the Comptroller of Customs at Famagusta revealed that in October, 1959, five vessels had to wait from 27 to 56 hours before being accommodated for offloading.

construction of a breakwater and other facilities at Karavostassi. This last is subject first to improved mining prospects and second to an agreement between the mining companies on the use of the jetty of the Hellenic Mines Co.

57. There is intense competition among the various towns as to which should have priority in its port development. The decision to be made is not solely economic, and the Mission has not found any clear answer to the issue. There are, however, incidental comments which seem to be called for. The analysis above suggests that a major consideration in drawing up a detailed port programme should be the rapidity with which facilities, particularly quay space, will be able to relieve existing delays and prevent costly traffic diversions or trans-shipments. Other important economic considerations are relative costs and impact on employment.

58. Port development projects are the kind which pay off on the investment gradually over a period of years. The benefits are indirect in improving the conditions of foreign trade, lowering costs, and making entrance to the Island more attractive to the sea-going tourist. It would seem most undesirable to attempt to finance capital improvements of this kind out of current income. There have been statements concerning the interest of several different countries in contributing to the development of the ports of Cyprus. In fact, Sir Hugh Foot is said to have suggested that the United Kingdom might aid in the development of Famagusta to the extent of £2,000,000. Port development is also one of the areas in which the International Bank for Reconstruction and Development as well as other financial agencies have made a number of loans to other countries. Therefore, the estimates presented below will be listed in Chapter XIII as ones to be undertaken on the basis of their being financed by external grant or loan. In the meantime all preparatory work should be done, not only engineering preparation, but also a much better economic analysis of benefit and cost than is available at present. For this purpose, some very small amounts might be provided in the budget.

59. It does not appear feasible to embark in the immediate future upon major works in all existing or potential ports. Instead, possibly two major projects over a period of five years seem the maximum that can be hoped for in realistic terms. This clearly favours Famagusta and Limassol. Minor improvements, especially for Paphos and Larnaca, might also be envisaged.⁴ Further major or even important extensions would have to wait for appropriate financing and a revised assessment of new requirements.

60. To carry out such a programme, a sum in the neighborhood of £7,000,000 will be needed. It would represent the cost of major works in Famagusta and Limassol, some lesser works in Paphos, and comparatively minor improvements in Larnaca. The expenditure would be spread over a five-year period after allowance for the inevitable slow rate of work initially, since traffic should not be interrupted in both ports at the same time.

61. The estimate for the development of harbours and airports during the next five years is as follows:

Table 32

SUGGESTED DEVELOPMENT EXPENDITURES FOR HARBOURS
AND AIRPORTS, 1961-65
(Thousands of Cyprus pounds)

1961	1,200	1964	1,600
1962	1,900	1965	1,200
1963	1,700		

62. As stated earlier, these expenditures are based upon the assumption that they will be financed largely, if not entirely by grant or loan. This of course implies that the programme as outlined should be subject to such modification as may make it most acceptable to any prospective grantor or lender.

⁴In the case of Larnaca, any substantial development of the Troulli Mines may make port development a necessity. There is also apparently an urgent need to install a lighthouse at Cape Arnaudi.

Chapter IX

FOREIGN TRADE AND PAYMENTS

1. It already has been made abundantly clear that Cyprus cannot and should not aspire to economic isolation. The chapters of the Report dealing with agriculture, mining, manufacturing, and tourism all have devoted much of their attention to foreign supplies and foreign markets. These dispersed discussions are here brought together to examine their total impact on the economy.

2. Foreign economic relations have both a commodity interest and a financial interest. The first relates to physical imports and exports, the second to the balance of payments. Although they are closely interdependent, they are discussed separately in the following pages.

External trade

3. Some twenty years ago, Cyprus imports and exports were less than £5,000,000 each and they were often practically in balance. The dramatic change that has happened since then is illustrated by the fact that in 1959 imports (cif) were £41,100,000, export (fob) £19,000,000, and the commercial trade balance adverse by £22,100,000. This spectacular increase in the expansion of foreign trade is also reflected by the growing proportion of imports to the gross national product which stood at the exceptionally high figure of 51 per cent in 1959. From 1950 to 1959 imports trebled in value and rose by 170 per cent in volume. Exports rose only 72 per cent in value and 26 per cent in volume.

4. The expansion of imports and exports has not moved in parallel, but in alternating surges by one and then the other. The value of imports rose rapidly in 1946-48, thereafter declined, and began to move up again in 1950. From 1954 to 1957, the increase was spectacular. For exports, the period of rapid expansion was from 1948 to 1951 and again from 1953 to 1956 as the result of a large upswing in mineral exports. For exports and even more so for imports, 1958 was a relatively poor year. Both recovered somewhat in 1959. The first nine months of 1960 show imports down about two per cent and exports very slightly above the same period of 1959.

IMPORTS

5. With imports playing such an important part in the Cyprus economy, it is not surprising that there is some similarity between their behaviour and the general picture, although the near doubling of imports between 1954 and 1957 was accompanied by an increase in expenditure on gross national product of only 31.6 per cent. Clearly, Cyprus was unable to supply the added goods demanded by consumers with suddenly expanded purchasing power. The more detailed record is given in Table 33.

Table 33

IMPORTS BY ECONOMIC DESTINATION, 1954-59
(Millions of Cyprus pounds)

	1954	1956	1957	1958	1959
Consumer goods, nondurable..	5.4	10.1	11.5	10.2	11.4
Consumer goods, durable	2.7	4.5	5.9	5.0	6.1
Raw materials, etc.	5.1	7.1	8.5	6.8	8.0
Fuels and lubricants	2.1	3.9	4.7	4.1	3.8
Investment goods	8.2	13.5	14.7	10.6	11.7
Total	23.5	39.1	45.3	36.7	41.0

Source: *Cyprus Economic Review*, 1959.

6. As a general conclusion from the above data, it appears that imports of consumer goods increased at the highest rate, that raw materials and fuels maintained a fairly constant proportion, and that imports of investment goods fell relative to the other categories. Breaking the data down into more detail, it is worth noting that outstanding increases in imports were recorded for beverages and tobacco.

7. The increase in the total annual value of imports from 1954 to 1959 was about 75 per cent. This increase is the result of about an 8 per cent increase in prices and the balance an actual increase in physical quantities.

8. It is by no means certain that the present pattern of Cyprus imports will be left unchanged. The propensity to import in Cyprus has proved to be extremely high in the last few years and, given the sluggishness of exports, the balance of payments may make some reductions necessary in import activity. The high volume of imports has been a reflection of easy credit conditions and, as mentioned in Chapter X, the limit seems to have been already reached beyond which further expansion could not be afforded. The emphasis on economic development in Cyprus will sustain machinery and equipment imports, possibly even increase them. However, if the programmes suggested in Chapters IV and VI are carried out, reductions in the import of food and light manufactured products should be possible.

EXPORTS

9. The pattern of exports is relatively simple since it is so dominated by agricultural commodities and minerals. The record in recent years is as follows:

Table 34

EXPORTS BY COMMODITY GROUP, 1954-59
(Millions of Cyprus pounds)

	1954	1956	1957	1958	1959
Food	4.9	5.3	5.1	5.0	5.6
Beverages	0.6	0.8	0.9	1.3	0.9
Crude materials	10.2	14.6	11.1	9.6	10.2
Other	1.3	1.7	1.8	1.7	2.3
Total	17.0	22.4	18.9	17.6	19.0

Source: *Cyprus Economic Review*, 1959.

The commodities which make up the bulk of Cyprus exports have already been discussed in connection with agriculture and mining, being citrus, carobs, potatoes, wine, and minerals.

10. The increase in the total annual value of exports from 1954 to 1959 was about 12 per cent, the result of a slightly larger increase in volume and an actual fall in prices.

PREFERENTIAL TRADE AGREEMENTS

11. In the present commercial world there are three general systems for setting up a country's trading arrangements—bilateral, bloc, or multilateral. The first involves separate trade agreements or barter arrangements with each country with which one trades; the second is based upon membership in groups of nations which give preferential treatment to each other like the British Commonwealth or the European Common Market; the third operates without preference giving to other nations "most favoured nation" treatment.

Bilateral arrangements

12. A number of countries carry on trade on the basis of special agreements negotiated separately with each country. Sometimes they include firm commitments for the exchange of specific quantities of specific goods. More often, the trade agreements represent statements of best intentions and interest in trade, and provide some method for maintaining an approximate balance of such trade as is finally arranged. The greatest objection to bilateral trade is that the amount involved becomes that of the country willing to sell the least, since trade in both directions must necessarily balance. There is no method provided for settling accounts through third countries, thus enabling a country to sell in the best of several markets and to buy in the most favourable of several markets, so balancing the shortfall in one with the surplus in the other. In fact, the great efforts made to resume currency convertibility were in order to escape from the limitations of bilateral trade.

13. These limitations become even more serious when the effort is made to exchange goods through a barter agreement. All too often, one side or the other is forced to take something which really is not high on its list or which it might even produce itself, in order to complete the exchange. This is not to say that a good barter agreement cannot exist, merely that it is extremely unlikely.

Bloc membership

14. The problem of association with a group of nations is one faced by Cyprus in deciding whether or not to join the British Commonwealth. The main economic characteristic of Commonwealth membership, as distinct from membership in the sterling area, arises from the existence of a preferential system of tariffs according to which goods produced in and exported from a Commonwealth country are given a margin of preference in the markets of the other members. Cyprus has been and still is operating under this preferential arrangement. That this condition may be continued is at least implied in Appendix N (*Cyprus United Kingdom*

Cmd. 1093, p. 199.), which permits Cyprus to continue such preference without extending them to Greece and Turkey in accordance with the general most-favoured-nations commitment made to those two countries.

15. The record of Cyprus exports to various areas is shown in table 35.

Table 35

CYPRUS EXPORTS BY CURRENCY AREAS, 1954-59
(Per cent of total)

	1954	1956	1957	1958	1959
United Kingdom	31.3	25.2	27.8	33.3	33.8
Other sterling area	5.5	3.1	6.6	3.4	3.3
OEEC	49.8	55.2	51.0	51.6	48.1
Dollar	4.3	11.3	7.2	6.6	5.6
Other	9.1	5.2	7.4	5.1	9.2

Source: *Cyprus Economic Review, 1959.*

The proportion of exports absorbed by the sterling area was decreasing to 1956 owing to heavy exports of minerals to Germany. The United Kingdom figure is as large as it is primarily because of citrus, potatoes, and carobs, although the sterling area has usually taken close to one half the exports of wine and spirits. About two-thirds of the so-called food exports from Cyprus usually go to Commonwealth countries, mostly to the United Kingdom.

16. It has already been shown that Cyprus exports to the United Kingdom consist mainly of agricultural products. It is estimated that in 1958, the tariff reduction on such goods given by the United Kingdom because of the preferential margin was £817,000 on imports with a duty value of £5,622,000, or an average reduction of 14.5 per cent. As to imports of Commonwealth goods into Cyprus, the reduction in duty was £1,135,560 on £14,030,821 of imports or an average of 8.1 per cent.

17. The facts of the reduced duties are clear, but they do not show whether the markets would be lost without them or whether there are other alternative markets or suppliers who would step in if the preference were eliminated. Perhaps a careful study could give the answer. However, with the intense competition which is developing in the citrus market, the preference may be important in helping Cyprus to dispose of her most important agricultural export. Cyprus is not a strong exporter in the agricultural field and any steps which might cause a re-orientation in trade should be very carefully considered.

18. So far as Cyprus' giving a favoured position to United Kingdom products, this is the other side of the coin and the two preferences go together. It hardly seems necessary to say that Cyprus does not gain from giving preferences. It would be better off if all suppliers were to compete on an equal footing for the Cyprus market.

19. In actual fact there has been a decided reduction in the share of imports coming from the United Kingdom in recent years, its shipments to Cyprus having risen only about one-half as rapidly as the general average. It is somewhat surprising that the reduction was not greater in view of the fact that one of the elements in the Emergency was an attempt to boycott British goods. The record is shown in table 36.

Table 36

CYPRUS IMPORTS BY CURRENCY AREA, 1954-59
(Per cent of total)

	1954	1956	1957	1958	1959
United Kingdom	47.5	45.4	46.2	38.3	35.9
Other sterling area	10.0	7.3	5.6	9.7	8.5
OEEC	30.4	33.4	36.5	40.1	41.5
Dollar	4.5	5.2	3.8	3.8	4.6
Other	7.6	8.7	7.9	8.1	9.5

Source: *Cyprus Economic Review*, 1959.

20. In evaluating the trend, it is important to keep in mind that the conditions under which Cyprus traded with the sterling area did not change during this period, but that there was a progressive liberalization of trade among the OEEC countries which applied to Cyprus through its United Kingdom relationship.

21. In considering Commonwealth membership, there are various other facets in its operation which may be of some importance to Cyprus. It can be a helpful source of technical assistance of one sort or another. However, the problem is much more than an economic one and this report has served its purpose by pointing out the economic considerations.

Multilateral trade

22. Multilateral trade arrangements are best exemplified by a single column tariff which applies to specific goods regardless of their origin. The requirements for multilateral trade arrangements are set out by the General Agreement on Tariffs and Trade (GATT) to which most of the trading nations of the world belong. Its basic principles are non-discrimination and the gradual reduction in trade barriers. Such preferential arrangements as existed prior to its establishment are allowed to stand, and therefore it permits the continuation of the Commonwealth Preference System. GATT is particularly valuable to small nations who now have a place to which they can take their complaints of trade discrimination against them by other countries.

23. The underlying justification of this approach to trade is that the best exchanges are made if trade is carried on among the nations with a minimum of interference, much as it is within their own boundaries. Many still remember the thirties when trade retaliation became the practice and countries who put up barriers against others found themselves shut out in turn.

24. Cyprus is a trading country and has a real interest in the reduction of trade barriers, but the Cyprus balance of payments and trade structure are both too precarious for it to be able to give up such control over her trade as may be required. Luckily, GATT has two broad exceptions which should protect the requirements of Cyprus. One is the right to curtail imports by means of quota restrictions in case of balance-of-payments difficulty. The second is the privilege of establishing temporary forms of protection for infant industry situations. With these two provisions in mind, Cyprus should be able to accept the multilateral trade approach without difficulty.

TRADE RESTRICTION

25. The effort to encourage Cyprus manufacturing and the pressure to reduce imports as a burden on the

balance of payments, both raise problems of how to encourage such developments. One of the most frequent suggestions is to raise trade barriers, keeping the foreign producer more or less out of the Cyprus market. This is a rather negative approach, for it suggests that the thing to do is to create a shortage which hopefully will be filled by domestic products. In some cases this may be the best solution to the problem, but it must not be forgotten that it may be better to aid the domestic producer to meet competition in some other way rather than keep out the competitor.

26. There are many different ways by which trade can be controlled or restricted but the three most important are by the use of import licences, foreign exchange contracts, and tariffs. All three are in use in Cyprus.

27. Because of its limited time and resources, the mission was unable to examine these import controls in any detail. All goods enter under an open general license, but specific licenses are required for a limited number of commodities and there is differential treatment according to the country of export. The foreign exchange control parallels that of other countries in the sterling area and does not appear to be used for the purpose of controlling trade as such. The Customs Tariff was revised in April, 1958, and increased the level of protection for a number of domestic industries while reducing tariffs on various raw materials. About 40 per cent of imports enter Cyprus duty-free. The average tariff paid on dutiable commodities is about 25 per cent, although the rates vary considerably by commodity.

28. Like so many other aspects of life in Cyprus, these trade controls were operated by means of regulations issued under the authority of the Governor, with no standards, criteria, or procedures established in legislation. At the present time, the authority to act in these matters rests in the hands of the Minister of Commerce and Industry.

29. It is unreasonable to expect all legislative gaps to be filled at once, and trade legislation is never simple. Short of a complete overhaul of the situation in new legislative form, there might be a public declaration of policy by the Council of Ministers which, as a minimum, would establish appropriate procedures to be followed in dealing with any proposals to change the *status quo* in the trade field. This would involve such matters as public notice, an opportunity for all interested parties to be heard, and a written finding of fact and statement of policy in connexion with any administrative ruling. This would assure those involved in foreign trade and those considering new domestic investment that conditions would not be changed without the protection of due process and orderly procedure.

30. It may be worthy to note that a system of import licensing, when carried out with careful study and through investigations, requires a rather elaborate administrative machinery. It is carried out by fixing a quota of allowable imports and then allocating it among various individual applicants. No country has ever been able to design a method which assures equity in this process and does not tend to protect those already established in the importing business. The personal character of the applications opens the door to fraud and favouritism. Importers often favour it because it creates

shortages and gives them the profit created by the shortage.

31. On the other hand, control by quantitative restrictions can be started, modified, or stopped quickly. It gives more assurance than a tariff as to exactly what volume of the goods involved will enter the country. Restrictions of imports by license has proved to be an excellent instrument to use to meet balance-of-payments difficulties, when a specific reduction in imports is needed in a hurry to meet a payments situation and required probably for a limited period of time.

32. In Chapter VI, it was suggested that the process of issuing import licenses for machinery might be used as a way of preventing the development of excess capacity in an industry. This suggestion should not be regarded as a trade control. It was suggested because of the unusual opportunity which it provides for controlling domestic capital investment so as to prevent the development of excess plant capacity.

33. Import duties are the other device for restricting imports. They are impersonal, applying to all shipments regardless of who the importer may be. Tariffs set a limit on how high prices in the country can go but it sets only indirectly how much the quantity of imports may be. A tariff can be high enough to cause a complete embargo, but more often it curtails imports by some unknown amount. Tariffs are not usually changed very often but have some of the permanence which is associated with any tax.

34. For purposes of protection, the tariff has an advantage of setting a specific margin of difference between the foreign and the domestic producer, say 30 per cent. If the foreign producer, who usually pays much higher wages than the Cyprus producer, still can sell the product in Cyprus after transporting it and paying a 30 per cent tariff, then the question can be asked as to whether or not that Cyprus producer should get any larger subsidy from the consumer to keep him going. Perhaps he should be allowed 50 per cent, perhaps only 20. At least, if some imports come in over the tariff barrier one can already see the extent to which the consumer is paying more in order to have domestic products.

35. It is important to realize that both methods of restriction, import licenses or tariffs, will increase prices; although in the long run a domestic industry may develop which can operate at lower prices and will no longer need the protection. But restriction is for the purpose of reducing imports and creating a shortage with higher prices which will encourage domestic business. In most instances the tariff is a better instrument to use if protection is the object.

36. The conditions under which industries may be given protection have been outlined in Chapter VI. All that needs further to be said at this point is that demands for protection are usually plausible and insistent. The producer involved has a great deal at stake in being protected from foreign competition. It is of course ultimately the consumer who pays but consumers are many, not organized, and each is only slightly affected by the added cost in any specific case. There is always danger that protection will be granted too readily to industries involving influential groups, even though the total economy may be no better off as a result. In fact, the danger is that too many people will be engaged in

high-cost activity, either because of subsidies or protection. A country can make itself poor producing high-cost goods for itself.

The balance of payments

37. The sum total of a country's foreign receipts and payments are summarized in its balance of payments. It includes not only the obvious items of commodity imports and exports, but so-called invisible items such as interest on foreign investments, payments by tourists, and the cost of transport and insurance when not provided by nationals. Such items as those listed above are regarded as constituting the current account. In addition there are donations, including private remittances and governmental grants. Finally there are capital movements, which may be either long-term foreign investment or transfers of capital in the form of shifts in bank deposits or security holdings from one country to another.

38. The balance of payments thus is a composite of many elements just as is any summary of economic transactions on the part of a person or a business. The individual categories in the total have their own interest, but the key problem is always how the totals are behaving. In a sense, there will always be a balance, but the question is whether or not this is being achieved by dependence upon an uncertain item like official donations or by drawing upon bank deposits in foreign countries or, on the other hand, by excess deposits piling up in foreign banks which might better be put to work in domestic economic development. Of particular concern must be any continuing situation where earnings are falling behind obligations so that the country finds itself in balance-of-payments difficulty. There can be temporary assistance such as advances from the International Monetary Fund, but sooner or later, some adjustment must be made which will bring payments and receipts into balance.

39. This whole process is intimately linked with the domestic economy. If there is an excess of imports and it becomes necessary to use reserves to make foreign payments, this will reduce the money supply and tighten the financial condition within the country, tending to curtail activity, reduce employment, and lower incomes. In the last analysis, the adjustment in the foreign accounts may come as a result of there being a sufficient domestic curtailment to reduce purchasing power and thus reduce imports. Since exports depend primarily upon foreign purchasing power, they will tend to be maintained. Thus, falling imports and steady exports will bring the accounts once more into balance. There are other ways in which the adjustment can be made but usually the process of adjustment is not a happy one. Therefore it is wise to watch the behaviour of the balance of payments carefully in order to take appropriate steps before the situation becomes too serious. After this brief and over-simplified analysis, it may be helpful to look at the record of Cyprus.

THE CYPRUS BALANCE OF PAYMENTS

40. The Cyprus goods and services account showed continuous deficits during the last decade but the position became sharply worse after 1956, due largely to a

tremendous increase in imports reflecting the domestic boom. (See table 37.) In 1957, the deficit on current account reached £15,800,000, being 18 per cent of gross national product. In 1958, the value of imports of manufactured items dropped sharply and the balance was considerably improved. In 1959, the current balance worsened again, the deficit being £14,000,000 or 17 per cent of gross national product.

Table 37

BALANCE OF PAYMENTS OF CYPRUS, 1953-59*
(Millions of Cyprus pounds)

	1953	1954	1955	1956	1957	1958	1959 (provisional)
Commodity trade balance	-2.9	-3.7	-7.9	-12.0	-20.1	-13.6	-17.2
Balance on invisibles ..	-1.1	1.1	3.0	7.4	4.3	6.8	3.2
of which:							
Government transactions	4.3	6.7	10.1	20.3	16.0	15.7	13.8
Investment income ...	-2.9	-2.9	-3.6	-8.4	-5.9	-4.1	-5.2
Foreign travel	0.5	1.0	0.8	0.2	-0.4	-0.3	-0.7
Transport and Insurance	-2.8	-2.9	-3.4	-4.3	-5.4	-4.4	-4.8
Balance on goods and services	-4.0	-2.6	-4.9	-4.6	-15.8	-6.8	-14.0
Donations, total	1.2	2.2	1.9	3.4	8.1	9.4	8.6
Donations, private	0.7	1.6	1.8	2.6	3.3	2.6	2.7
Donations, official	0.5	0.6	0.1	0.8	4.8	6.8	5.9
Capital, total	-0.9	-0.3	2.2	-1.6	3.9	-2.2	3.6
Capital, private	—	1.0	1.3	-0.1	0.3	-0.3	-4.8
Capital, official and banking	-0.9	-1.4	0.8	-1.4	3.6	-1.9	8.4
Errors and omissions ..	3.7	0.8	0.7	2.8	3.7	-0.4	1.9

* For capital investment no sign shows an inflow and a minus sign shown an outflow (i.e., an increase in foreign assets or a reduction in foreign liabilities). Because of rounding there may be slight differences between the totals and the sum of components.

Source: *Cyprus Economic Review*, 1959.

41. The deficits were the direct result of an adverse commodity trade position. Over the decade imports grew much more rapidly than exports. It is important also to note that, apart from the very substantial contribution of current government receipts, other invisibles also showed an unfavourable balance. This is true of returns to capital which represented net outgoing payments of some £33,000,000 from 1953 to 1959. These were essentially remittances of foreign companies, particularly mining, established in Cyprus. Yet, such out-payments are small compared with the export earnings which arose from the employment of foreign capital in the mining field. The other large adverse invisible item is the payment of transport and insurance to foreign carriers.

42. Since 1956, current government payments into Cyprus from foreign funds, largely in the form of troop expenditure and United Kingdom official purchases of local materials and other supplies, have represented an amount which was almost equal to export receipts in some years. In 1959, such receipts netted £13,800,000 as compared with export receipts of £19,400,000.

43. So long as the credit was relatively moderate, i.e., until 1957, its financing was taken care of by a small amount of private donations, representing largely remittances from emigrants, official donations, and capital inflow. In fact, the banks were able to build up

substantial balances abroad in some of the years. Beginning in 1957, however, matters changed drastically. As already noted, the underlying situation became badly out of balance. Official donations in the form of special emergency budgetary grants by the United Kingdom rose considerably, totalling £17,500,000 in the three years 1957-1959, but these were not enough. Both in 1957 and again in 1959, a depletion of foreign assets occurred. In 1959, the official donations and the reduction in the holding of foreign balances by banks were made necessary not only to finance the goods and services account, but also to offset a recorded private capital outflow of £4,800,000.

44. The experience of the last decade shows clearly the areas of weakness of the Cyprus balance of payments and therefore suggests the lines of possible improvement. Some of them bear directly on the directions which should be followed in the development programme. First efforts should concentrate on reducing the wide gap in the commodity balance of trade, an objective requiring both the expanding of exports and the holding down of imports through the production of import substitutes and the restriction of too easy credit for importers. In an emergency situation, it may be necessary to curtail the import of non-essential import items. Second, a measurable improvement of the invisible account should be the objective. Tourism constitutes an item for which an increase appears quite feasible. The importance of the Bases for the Cyprus balance of payments looms too large in the figures shown in the table to require attention to be called to it. This subject has already been discussed in Chapter VII. The line of improvement in this sector for the trade balance would seem to be to encourage the use on the Bases of as many Cyprus goods and services as possible.

45. As to capital movements it appears that the withdrawal which bulks so large in the 1959 record has come to an end, and that, at least in the mining field, the additional investment of foreign capital or the reduced outflow of profits, will be helpful in the payments accounts during the next several years. However, capital is a sensitive commodity and it will move in or out, depending upon the maintenance of a strong and stable currency, a constructive economic policy, and a harmonious political environment. Any efforts to freeze capital in Cyprus through foreign exchange control will contain such capital as is here and cannot find some means of escape, but also will completely discourage any flight capital from returning or new capital from being invested in Cyprus.

46. The fact that imports on current account exceed exports is not in itself an undesirable position for a developing country. In the whole eastern Mediterranean area this is the condition of every country except Iraq. The balances are made up of donations and loans, private and public, and of some increases in credit to banks. A developing country should try to keep its financial resources busily at work and to supplement them from foreign sources so far as possible. The area of judgment is to find the point where there is the maximum utilization of funds and, at the same time, a reserve which will be sufficient to support confidence in the country's financial integrity.

Chapter X

MONEY, BANKING, AND THE PROBLEM OF LONG-TERM FINANCE

1. A striking feature of the institutional financial set-up of Cyprus is the lack of detailed legislative or regulatory arrangements with regard to the monetary and the banking system. The currency system is governed by the Currency Law, the last edition of which dates back to March 31, 1949. (The Statute Laws of Cyprus, No. 13 of 1949.) There is hardly any banking legislation, the main law being the Banking Business (Temporary Restrictions) Law of September 6, 1939 (Statute Laws of Cyprus, Chapter 46), under which a Controller of Banks may be appointed and under which a licence is required to carry on banking business. Otherwise, the general corporation law applies. This paucity of legislation is in marked contrast with developments in other countries where the growing importance and special features of banking activity have been recognized as requiring a strong institutional framework to maintain confidence in the currency, to protect depositors, and to adjust credit policy to general government objectives.

2. In the light of its recently-gained independence, Cyprus now must face the problem of determining upon appropriate regulation in the field of money and banking, and assess to what extent new institutional arrangements are required to allow the monetary and banking mechanism to play its part in the policy of development upon which the Government is about to embark. This problem divides into four parts: currency, banking practices, general credit policy, and long-term finance. These are examined successively below.

Currency

3. The present currency system is based on the sterling exchange standard. Under this system the issue of Cyprus notes is made upon the authority of a Commissioner of Currency who is the Accountant-General. The Commissioner of Currency is authorized to issue Cyprus notes on condition that the equivalent amount in sterling is lodged with the Crown Agents in London and carried in a separate account known as the Note Security Fund. Actually the operations are carried out by the Ottoman Bank acting on behalf of the Commissioner. Cyprus notes are convertible on demand into sterling in London and conversely they may be obtained on demand against pounds sterling. The rate of exchange between the Cyprus and sterling pound varies within very small limits.

4. Under this system all Cyprus notes were covered by an equivalent amount of sterling in London. Statute Laws of Cyprus, No. 17 of 1958, permits the Commissioner of Currency to issue Cyprus notes against securities of the Government of Cyprus to a maximum

of £3,000,000. At 30 June 1960, Cyprus notes in circulation were £8,200,000. The investments of the Note Security Fund were £8,600,000 of which £4,800,000 were in United Kingdom and Commonwealth stocks, £1,100,000 in sterling deposits and £2,700,000 in Cyprus Government securities.

5. The currency system under which Cyprus operates now is technically the same as the one established during the previous administration. There is, however, an important difference arising from the changeover to independence. The Commissioner of Currency is an independent Cyprus Government official, whereas previously the Commissioner of Currency was under the authority of the Governor, and through him, of the Secretary of State for the Colonies. The Constitution (Article 118) requires the establishment of an Issuing Bank but does not define the nature of the currency system to be adopted.

6. The main advantage of a currency system based on a sterling exchange standard is that it assures confidence in the currency and facilitates the financing of external trade. A distinction has to be made between the advantages derived from the fact that the system operates on a rigid sterling backing and those resulting from membership in the sterling area. As members of the sterling area, most countries of the Commonwealth with Dominion status have an independent monetary system which does not completely prevent occasional changes in the exchange rates of the country in relation to sterling, although this is a most exceptional development (Australia in 1931 and Pakistan in 1949).

7. Since Cyprus pounds and pounds sterling are readily interchangeable, the money supply of Cyprus pounds is directly affected by the demand for and supply of British pounds resulting from the behaviour of the balance of payments. Money supply in Cyprus therefore may not necessarily adjust itself to the domestic needs of the economy. But this disadvantage results from the rules of the currency system itself and thus the disadvantage may be circumvented by introducing some degree of flexibility in the system. Thus, most newly-independent countries in the Commonwealth have tended to adopt a more flexible currency system than that prevailing before independence.

8. There are at present important reasons for Cyprus to continue in the sterling area. One of the most compelling ones is the ready access thus provided to the London money and capital market. It is therefore assumed that Government policy will take account of the advantages and accept the responsibilities attached to participation in the sterling area.

9. The major problem concerning currency remains therefore to evaluate the need for more flexibility in

the issue of currency. This revolves around the question of what should be the policy of the Government with regard to external reserves. There are clearly two conflicting factors at stake. On the one hand, external reserves may be considered as relatively unproductive assets, since earning of interest is no substitute for potential long-term benefits resulting from domestic productive investments. On the other hand, an adequate amount of reserves is needed to smooth out fluctuations in the balance of payments and carry the country through any period of temporary stress.

10. On June 30, 1960 Cyprus official reserves, as determined by the amount held by the Note Security Fund, totalled some £5,900,000. Related to imports (£41,000,000 in 1959) the proportion places Cyprus among the countries with relatively low official foreign exchange reserves. In the case of an emergency and assuming the absence of complete financial irresponsibility, Cyprus could undoubtedly obtain temporary aid from the sterling pool. Furthermore, the prospective membership of Cyprus in the International Monetary Fund would supply the Island with a third line of exchange reserves, and to that extent would reduce the need for a policy primarily oriented toward building up monetary reserves. But even allowing for all these circumstances, it would seem that, under the prevailing uncertainties, Cyprus should pursue a policy of caution with regard to the ability to defend its balance of payments. In the last eighteen months there was a substantial capital flight which seems to be halted now. But the psychological climate is still affected by uncertainties which make it necessary to promote a policy designed to strengthen confidence in the currency.

11. It is therefore open to question whether at this stage it would be advisable to change radically the rule according to which the cover of currency is 100 per cent sterling backing except for £3,000,000 of Cyprus securities. With currency circulation at £8,500,000 at the end of September, the minimum amount of sterling cover required under the present currency arrangements is only £5,500,000 as against £6,200,000 at present available. Thus there is room for an increase of local currency to be issued if required to meet local requirements.

12. Sooner or later, it will be necessary to carry out Article 118 of the Constitution and set up an Issuing Bank to substitute for the Commissioner of Currency.¹ The opportunity may be taken to revise the system when the financial aspects of independent Cyprus are somewhat clearer. The present rules of cover have the disadvantage of being made of two unconnected and mathematically unrelated elements: 100 per cent backing on the one hand and a fixed limit within the total of £3,000,000 of Government of Cyprus securities on the other. It might be more practical to substitute for this a fixed percentage, say 60 or 70 per cent (of currency circulation) for sterling cover. This would apply during a "transitional period" of, perhaps, a few years during which the principle would be to continue on a monetary system somewhat more flexible but still on the lines

¹ Article 118 of the Constitution provides for the establishment of an "Issuing Bank" designed to administer the Currency Laws and implement such policies as are devised by the Council of Ministers and, more specifically, the Minister of Finance. The Governor and the Deputy Governor of the "Issuing Bank" would report directly to the President and Vice-President. The Constitution adds that "nothing in the Law should preclude the Issuing Bank from becoming a Central Bank".

of the present one. The next step might be taken when the final programme for credit control is also to be enacted. At that time, it may be that considerably less currency cover will appear necessary, or more likely it may be combined with the credit situation in such a way as to provide for reserves against the total money supply, which includes bank deposits, rather than merely reserves against the currency issue.

13. The main argument in favour of allowing some time to elapse before taking a decision on making any great modification in the monetary system is that considerable insight should be derived from the experience of the Issuing Bank in the immediate future. Thus it would gradually become clear whether, in the light of the new development policy and the behaviour of trade, the system allows for a non-inflationary growth of the money supply irrespective of temporary fluctuations in the balance of payments. Furthermore, the maintenance of relatively strict currency issue rules would guarantee a large degree of monetary stability which is required to strengthen confidence and encourage saving.

Banking legislation

14. At present Cyprus banking legislation is scanty. The office of the Controller of Banks in the Ministry of Finance is responsible for granting or revoking licences under which banking business can be carried on. Licences may specify certain obligations to be observed by banks. In the past the Financial Secretary called meetings of bankers on questions relating both to the organization of the profession and credit policy. But control by exhortation was never very effective. Also occasionally there were agreements among certain banks based on voluntary co-operation, e.g., to work out a uniform interest rate policy. These also proved difficult to carry out in practice.

15. In order to strengthen the banking system and to protect depositors, appropriate banking legislation should be formulated. The main areas to be covered are the establishment of banks and the control of bank lending operations.

ESTABLISHMENT OF BANKS

16. Mere licensing of banks does not provide a fool-proof guarantee that only establishments meeting certain strict standards will operate. The banking framework must be defined in detail by legislation. Of special importance is the laying down of rules regarding minimum capital, adequate publicity of formalities and initial operations, government right to investigate, drawing up of the balance sheet, and minimum standards which the founders and managers must meet. In many newly-independent countries special banking legislation of this type has generally been evolved soon after independence.²

² The framework for such legislation may be found, for instance, in Annexes V and VI of the *Report by Mr. J. B. Loyne on the Establishment of a Nigerian Central Bank, the Introduction of a Nigerian Currency and Other Associated Matters* (Lagos, Federal Government Printer, 1957) and Annexes F and G of the *Report on the Establishment of a Central Bank in Malaya* by Mr. G. M. Watson and Sir Sydney Caine, Kuala Lumpur, 1956. Various institutions, national or international (in the latter case the International Monetary Fund) have acquired special experience in this field and are available for assistance.

17. A matter which needs special attention is the definition of "banks" as there are many categories of such establishments. In Cyprus there are at present eight so-called commercial banks of which five (the Ottoman Bank, Barclays Bank D.C.O., the Chartered Bank, the National Bank of Greece, and the Turkiye Ish Bankasi) are incorporated overseas and three (the Bank of Cyprus, the Banque Populaire de Limassol, Ltd., and the Turkish Bank of Nicosia Ltd.) are local banks. In addition there are two Cooperative Central Banks and the Agricultural Bank of Cyprus Limited. The main problem for the future is to draw a clear distinction between commercial banking, investment banking, and finance companies. The latter probably require separate legislation.

CONTROL OF LENDING OPERATIONS

18. The objective is to establish such standards of banking behaviour as will maintain confidence in banks, attract savings, and allow the banking system to contribute to economic growth. The following list is presented more to suggest the type of regulation to be considered than to be a full description of appropriate legislation. In such legislation the banks should be prevented from making loans and advances which are not adequately secured or might cast doubt on the independent management of the institution. There should be a maximum amount (e.g., a given percentage of capital and reserves) for loans allowed to be made to a given borrower. There should be strict limitations on loans to bank directors and officers. It might be required that loans be distributed in various categories in order to spread the risk. The practice of keeping defaulted debts at full value on the balance sheet should be revised. The strict auditing of accounts by an independent bank supervisor should be established. Much more detailed and frequent reports should be required.

19. Another possible way of strengthening each bank might be to require the maintenance of a minimum liquidity ratio (this is not the same as a reserve requirement) so as to prevent excessive freezing of the asset structure. The actual enforcement of these various responsibilities might be entrusted to the auditor or supervisor of banks mentioned above.

20. As another way to create confidence in the operations of the banks, the technique of an insurance scheme for small deposits may be investigated.

Credit policy

21. It is now recognized throughout the world that it is a normal exercise of responsibility for government to concern itself with general credit policy in accordance with the requirements of the economy. The degree of government interference varies quite widely according to countries. In many cases the role of government is limited to actions which may expand or contract the money supply while not interfering with specific transactions so as to preserve a maximum flexibility for banks.

22. The problem of credit control has a twofold aspect: quantitative (i.e., the amount of credit to be made available to the economy) and qualitative (the composition of credit by sectors). In Cyprus improve-

ments seem to be possible in both fields. At present there is no effective machinery to control either the amount or the type of credit granted.

23. In the last few years there are clear evidences of an over-extension of credit. Loans and discounts rose by £7,200,000 in 1959, or almost one-third, and by £2,400,000 in the first three quarters of 1960, a further 10 per cent. This was not offset by a reduction in other bank investments and since total deposits did not change greatly, the result was a sharp decline in bank liquid assets, particularly foreign assets.

24. The decline of foreign assets was thus the combined result of the capital flight and of the increase in imports (the latter permitted by the increase in loans). The only specific measures which can check a capital flight which is due to fear of depreciation or other uncertainties are strict exchange controls or a very great rise in interest rates. But policy action that tends to dissipate the climate of uncertainty and also to bring about the strengthening of reserves (which may also result from the assistance of international organizations) is generally very effective in combating and even reversing the trend. How to check an unduly large increase in imports is partly a problem of credit and partly a foreign trade problem. Among the devices belonging to the credit sphere are: restrictions on the use of credit in general and requirement of advance deposits on imports.

25. A detailed analysis of the main changes in bank assets shows that the behaviour of individual banks was very different and that, consequently, the decline in the liquidity ratio was much sharper for some than for the others. At present there is neither authority nor machinery for preventing over-extension so that liquid reserves will be sufficient to provide adequate protection against the withdrawal of deposits.

26. The experience of the last two years suggests that, in order to strengthen the banking system, steps should be taken which would better control the supply of credit. The question of credit control is inevitably connected with that of a Central Bank.

27. In a fully-developed economy, the central bank can influence the supply of credit in three ways: it may act as a bankers' bank, standing ready to rediscount for the private bank. It can then influence the supply of credit by changing its degree of willingness to rediscount or by altering the interest rate for rediscounted paper. This form of control can operate only when the banks are in so tight a position that they need added liquidity and come to the central bank.

28. A more usual method of influencing the situation is through open-market operations. If the central bank wishes to make credit easier, it buys securities and thus puts funds into the sellers' hands, which funds inevitably flow into the banks. If it wishes to tighten the situation, it sells securities and draws cash away from the banks.

29. The third form of control is the reserve requirement. This permits the central bank, or some other financial authority, to change from time to time the reserves which each bank must hold against its deposits. An increase in the requirement will reduce the ability of the banks to expand while a reduction will give them greater expansibility. The reserves would presumably be either deposits in the central bank or some carefully defined category of liquid assets.

30. With the above summary of central banking techniques in mind, it seems clear that at present, credit control in Cyprus would probably have to be exercised through the third device, that of fixing flexible reserve requirements. The first two techniques depend upon a type of capital market which does not yet exist. Furthermore, they would not be effective in view of the foreign relations of the majority of the banks.

31. In the case of Cyprus the arguments seem stronger against the immediate establishment of a central bank than in its favour. Cyprus is of very small size. A central bank would be costly to operate both in terms of money and skilled personnel. It would result in adding a new institution to a country which is already "overbanked". And its main form of control could be exercised for the time being by a credit policy board which might set reserve requirements.

32. The suggested approach to this problem, therefore, is a gradual one. The fact that an issuing bank will be set up provides a framework which might gradually be enlarged as experience accumulates. During this "transitional period" the major attention should be put on establishing the prerequisites for effective central bank operation, establishing the technical conditions for a market for government bills and even commercial paper.

33. By contrast to the problem of the establishment of the institution of a central bank for which no urgent decision is required, rapid action seems needed for setting up machinery which can deal with the over-extension of credit. As has already been stated, the best monetary instrument available at present seems to be the establishment of variable reserve requirements. Reserve requirements against deposits are used in a great many countries and their use may take a great variety of forms. In the case of Cyprus, in the absence of a central bank, it might be desirable to allow required reserves to be held both abroad and at home. It would probably be necessary at the start to give a substantial grace period to banks which might find it difficult to undertake the obligations immediately.

34. The authority responsible for determining the initial reserve requirements and subsequent changes might be a Credit Policy Board under the chairmanship of the Ministry of Finance and consisting of four other officials: the Governor and the Vice-Governor of the Issuing Bank, the Manager of the Cyprus Development Bank, and the chairman of the Development Board. The Credit Policy Board would have at its disposal a small staff dealing with preparatory research work for improvements in bank organization and techniques, bank reporting of statistics, and "centralization of bank risks". The latter technique seems needed in Cyprus as there is at present no machinery for banks to evaluate total bank indebtedness (and therefore credit worthiness) of borrowers. The staff of the Committee might also undertake a survey of private indebtedness including farmers, and, in co-operation with the Cooperative Central Banks, suggest solutions for this difficult problem.

A development bank

35. Cyprus is sometimes said to have too many banks, yet there is no institution to which a business man may turn for long-term credit. Short-term credit is important for trade transactions and for emergencies,

but the construction or modernization of a plant needs financing based on a longer period.

36. In Cyprus in 1958 and 1959, roughly three-quarters of the additional capital assets purchased in the private sector were financed from internal sources, i.e., the enterprises' own funds, and much of the remainder was equity financing from overseas sources, or undistributed profits of branches or subsidiaries.³ Commercial banking data are not adequate to measure the amount contributed by the banks to industrial productive investment. Banks in Cyprus have been reluctant to enter the field of industrial finance and have favoured trade, importing, and real estate rather than industry.⁴ Their loans and advances are primarily short-term.

37. Bank credit advances to industry increased by £2,318,000 from 1957 to 1959. Some of this may have gone for capital purposes but none of it was really long-term financing. Through the technique of renewable overdrafts or through the ingenious redirecting of the ultimate use of funds loaned them for short-term purposes, industrial firms have been able to raise some amount of medium-term finance. This could be done only, however, at the cost of inordinately high interest rates when related to long-term projects. In addition, the uncertainties arising from the even slight possibility of non-extension of short-term advances makes this financing technique unsuitable for investment projects. Furthermore, the degree of co-operation for project investigation and general assistance was practically non-existent.

38. Illuminating evidence of the state of affairs was shown in a Survey conducted in 1956 by the Association of Cyprus Industries.⁵ Out of 22 firms employing more than 10 workers which were surveyed, 16 indicated that they had been unable to finance a desirable extension project through self-finance. Only 1 of the 16 firms found easy finance from the banking system, 7 obtained funds with great difficulty and were charged a very high interest rate, and 8 had to abandon their plans. In the 8 cases where bank finance actually was arranged, all loans were short-term, 6 being for less than one year, 1 for one year, and another for five years. Of the 6 firms which did not approach banks, 5 arranged external finance, 3 of them in London, and 1 curtailed its plans extensively.

39. It is clear that in Cyprus, facilities for long-term financing are seriously deficient. The demand is primarily for long-term loans at reasonable interest rates to be covered by appropriate security. There may also be need for long-term second or lower priority mortgage loans to supplement bank loans for special types of industry if there is some particularly important economic or social consideration involved.⁶ In addition to actual funds an added service which often goes along with long-term credit is the provision of appropriate assistance in setting up new ventures, including technical and commercial advice.

³ *Cyprus Economic Review*, 1959, p. 25.

⁴ Thus Barclays Development Corporation, initially constituted to extend medium-term credit for industry, has been led to concentrate increasingly, if not exclusively, on real estate.

⁵ See *Capital for Industry*, a Report of the Association of the Trade and Industry Advisory Board, Nicosia, 1956.

⁶ This type of finance is not considered here in detail. Perhaps it might best be taken care of by the enlargement and a partial re-arrangement of the Public Loan Fund.

40. These considerations suggest that the setting up of an institution dealing with industrial long-term finance and technical industrial assistance would be of great value to Cyprus. Most developing countries have found it beneficial to do so. The new institutions have served to mobilize savings which otherwise might have been used in less productive channels in the long run, and which contributed in many instances to supplying long-term capital not otherwise available to individual enterprises. Another benefit from the establishment of a development bank is that such an institution increases the confidence of investors in individual ventures. This was the case, for instance, in Turkey, Mexico, India, and Pakistan.⁷

41. In developing countries development banks have taken different forms according to the degree of state participation. At one extreme one finds institutions largely financed by public funds and managed or closely controlled by the state. This is the case, for instance, of the Bank Industri Negara in Indonesia, the Nacional Financiera in Mexico, and the recently-established Organization for Industrial Development in Greece. At the other extreme one finds development banks with a predominantly private character, such as the case of the Industrial Development Bank in Turkey. Between these two extremes there are many intermediate situations, such as the Industrial Finance Corporation in India and Pakistan.

42. For Cyprus it is suggested that a development bank be established. It should be predominantly a private institution, but with government participation and government support. It should be private to assure that it will be operated on an economic and not a political basis. It should be private so that it can attract private capital and thus not put any appreciable added burden on the Treasury. It should also be able to attract foreign capital and obtain some support from international institutions.

43. Although the proposed Cyprus Development Bank would thus be primarily of a private character, its statute might embody certain provisions (such as possibly a government guarantee for a certain amount of the Bank's commitments, government participation in capital subscription, etc.) which would make it possible for Government to participate to some degree in the ownership, but not direct management, of the bank.

44. The Cyprus Development Bank would never be a large institution. It would have a small but high-level staff, which would call in special experts as needed. The initial capital of the bank might be of the order of £1,000,000 to £2,000,000. It would consist of subscriptions by individuals, firms, and banks, an interest-free government subscription of say 25 per cent of the

initial capital, and foreign grants and loans from such institutions as the International Bank or the International Development Association.⁸ There is also the possibility of using counterpart funds from foreign assistance.

45. There should be a determined effort from the start to obtain a participation of foreign interests, primarily in Greece, Turkey, and the United Kingdom. Once a minimum capital would be secured, the basic principle would be to build it up through (initially small) capital issues. The response of private capital to the flotation of bonds or shares by development banks has been, in most cases, very successful. This was particularly true in the cases of Pakistan and Turkey.

46. The resources of the Bank would be used to a major degree to provide long-term loans at comparatively low rates and to a minor degree to participate in equity financing, subject to certain qualifications, and even to construct pilot plants if that seemed the best approach. It would also provide technical, managerial, and administrative advice to its clients. It presumably would not engage in direct agricultural loans, but would be concerned with industrial projects and some service enterprises such as hotels and bus lines. There would be a fairly clear distinction between its function and that of the Government's Development Fund. The Cyprus Development Bank would develop and lend to enterprises which were expected to be profitable while the Development Fund would be used for broader objectives strengthening the whole economy.

47. A basic objective governing the use of assets would be to establish a revolving fund so far as possible. The bank might underwrite or purchase equity securities and debentures, with the ultimate purpose of releasing them as soon as practicable to private investors, both with a view to increasing the funds available for new investment and to spreading ownership of industrial shares in Cyprus. A close collaboration between the Cyprus Development Bank and the banking system should be possible with ventures financed jointly by banks and the new institution. A loan might be divided into short-term and long-term maturities, the Cyprus Development Bank financing the long-term portion of the loan, leaving banks to take up the short-term paper. There may also develop a collaboration through underwriting, guarantees, etc.

48. It is suggested that the general idea of the establishment of a Cyprus Development Bank be approved and that assistance be requested from the International Bank for Reconstruction and Development or some other experienced institution to prepare a specific detailed proposal.

⁷ *Processes and Problems of Industrialization in Under-developed Countries* (United Nations publication, Sales No.: 1955.II.B.1), p. 35.

⁸ The role of the International Bank for Reconstruction and Development has been very important in setting up development banks. Note, for instance, the cases of Turkey, Ethiopia, Mexico, India, etc.

Chapter XI

PUBLIC FINANCE AND FISCAL POLICY

1. Fiscal policy, i.e., policy concerned with government expenditure and revenue and the management of public funds and debt, has an important part to play in a development programme. The level and structure of government expenditure are bound to influence the rate of development. The level of revenue in combination with the level of government consumption determines the amount of public saving which adds to private saving and external loans and grants to provide the necessary finance for capital formation. Finally fiscal policy has a role to play in maintaining internal balance. This chapter reviews the recent experience of Cyprus in the field of public finance and fiscal policy and analyzes the major problems ahead with specific reference to the Five-Year Programme.¹

The institutional set-up

2. Public finance in Cyprus is organized through several instruments, the most important of which are the Annual Budget, the Treasury Accounts, and the Special Funds. One also might include the operations of the public utilities (the Electricity Authority of Cyprus and the Cyprus Inland Telecommunications Authority) which have quasi-autonomous budgets but rely to a large degree on government borrowing to meet their development expenditure.² While there is a continual flow of funds in and out of the various funds and other agencies such as the post-office, the main operations of the Treasury concern the budget (which comprises the "ordinary budget" and the Development Fund,³ the making of loans and advances, and the management of Special Funds and of the public debt. The total amount of loans and advances which have been granted by the Treasury to various borrowers outstanding as at the end of 1959 is shown in Table 38. Table 39 describes the public debt of the Government of Cyprus, outstanding at the end of 1959.

Table 38

OUTSTANDING LOANS BY THE TREASURY, 31 DECEMBER, 1959
(Millions of Cyprus pounds)

Total amount outstanding	18.4
Electricity Authority of Cyprus (1946-59)	8.3
Public Loan Fund (1948-59)	4.9
Cyprus Inland Telecommunications Authority (1955-59)	2.2
Grain Commission (1954-55)	1.5

¹ Since a separate chapter of the Report deals with the problem of inflationary pressures, this chapter puts the emphasis on problems of public capital formation.

² For details on the public utilities, see chapter VIII.

³ The Development Fund is financed in part or all from the surplus on ordinary budget, Colonial Development and Welfare Grants, and development loans raised by the Treasury. For details see below.

Agricultural Bank (1946-58)	0.7
Municipalities—loans for housing (1948-58)	0.4
SODAP (Wine Cooperative)	0.2
Cyprus Broadcasting Corporation (CBC)	0.2

Source: *The Cyprus Financial Report, 1959*, Nicosia, 1960, p. 9.

Table 39

PUBLIC DEBT, 31 DECEMBER 1959
(Millions of Cyprus pounds)

<i>Funded debt</i>	
Gross amount of loans*	12.3
Net amount raised	11.3
Funds accumulated in sinking funds	3.1
<i>Unfunded debt</i>	
Amount outstanding	1.6

* Includes £7.8 million for 1950-55—3½ per cent inscribed loan, £2.0 million for 1958—5¾ per cent Development Loan, and £1.0 million for 1959 Development Loan—proceeds of all of which were lent to the Electricity Authority of Cyprus or Cyprus Inland Telecommunications Authority.

Source: *The Cyprus Financial Report, 1959*, Nicosia, 1960, p. 57.

3. There are 17 Special Funds, of which the most important are the Note Security Fund, the Public Loan Fund, the Social Insurance Fund, and the Development Fund. By the end of 1959 the Special Funds had assets of £14,600,000 entrusted to the Treasury, of which £11,900,000 were held in the form of securities and the remaining £2,700,000 in the form of cash.

4. The Note Security Fund deals with the issuance of Cyprus currency (see chapter X). Currency issues (less currency demonetized) constitute its main liabilities. Its main assets are investments, essentially sterling. The Note Security Fund (more exactly the Currency Note Income Account of the Note Security Fund) earned interest of £389,000 in 1959. This revenue is divided into three parts: one part (£7,000) is absorbed by operating expenses; another (£288,000) is transferred to "General Revenue", i.e., the Treasury; and the last part (£94,000), in principle 1 per cent of the assets of the Fund, is added as a kind of general reserve. As a result the assets of the Note Security Fund are normally in excess of currency notes in circulation.

5. The Public Loan Fund was instituted to set aside certain funds, particularly Treasury advances, for financing loans to lower public authorities, generally under the condition that these bodies would contribute a given percentage of total expenditure. By the end of 1959 the Public Loan Fund had assets of £5,700,000, of which £1,300,000 were held with the Treasury and £4,300,000 consisted of outstanding loans, particularly for town and village water supplies and school buildings.

6. By the end of 1959 the Social Insurance Fund, whose operation began in 1957, had assets of £1,300,000, £167,000 of which consisted of cash with the Treasury.

Public finance in the fifties

THE SITUATION PRIOR TO THE EMERGENCY

7. In the first year of the nineteen-fifties the fiscal policy of the Cyprus Government followed a clear-cut pattern. The ordinary budget was not only balanced but provided a surplus, employed together with periodic Colonial Development and Welfare grants to finance the Development Fund. In addition the local capital market was tapped occasionally. Outside this the Treasury borrowed in London to finance the expansion of the electric power and the telecommunication companies. An illustration of those developments is seen in table 40 below relating to the period 1950-55.

Table 40

PUBLIC FINANCE DATA, 1950-55
(Millions of Cyprus pounds)

	1950	1951	1952	1953	1954	1955
Ordinary expenditure	5.2	6.4	6.8	8.7	10.6	11.0
Revenue	6.0	7.2	8.3	9.6	10.6	11.6
Budget surplus	0.8	0.8	1.5	0.9	—	0.6
Transfer to Development Fund ..	0.2	1.4	0.9	0.7	0.3	0.3
Receipts from Colonial Development and Welfare Schemes ...	0.2	0.2	0.1	0.4	0.1	0.1
Other receipts of Development Fund (including loans)	0.1	0.1	0.1	0.1	0.1	0.1
Expenditure of Development Fund	0.6	0.7	0.7	0.6	0.7	0.9

Source: *Cyprus, Statistical Abstract*, 1958, p. 208.

In addition, during this period, £7,800,000 was borrowed and released to the Electricity Authority of Cyprus.

8. It is seen that despite rising expenditures budget surpluses were relatively high until 1953. In terms of public revenue, the surplus was over 13 per cent in 1950 and 18 per cent in 1952. It was from 2 to 3 per cent of gross national product in the period 1950-1953. But in 1954 the surplus disappeared and in 1955 it was less than 1 per cent of gross national product. Over the 6-year period, budget surpluses totalled about £4,600,000, of which £3,700,000 were transferred to the Development Fund.

9. Development Fund expenditure represents only one part, although a substantial part, of total public capital formation. Other sources of public capital formation are: the ordinary budget to the extent that it includes expenditure for new physical assets or actual replacements as opposed to maintenance, local budgets, the Public Loan Fund, and the Public authorities, EAC and CITA. It is therefore not possible to infer from the level or trend of expenditure of the Development Fund the actual movement of public capital formation. In fact, not all expenditure of the Fund can be considered as real capital formation (e.g., subsidies and some maintenance works). It is, however, of some significance that the ordinary budget contributed 70 per cent of total receipts of the Development Fund while Colonial Development and Welfare grants made up only £1,100,000 or some 20 per cent during this period.

THE EMERGENCY

10. In the three years 1956-58 and also continuing in some degree into 1959, the economic situation in Cyprus was dominated by the Emergency. The fiscal impact of Emergency was to raise expenditure sharply. It rose by more than 30 per cent in 1956, another 41 per cent in 1957, and by 1958 was nearly three times the level

of five years before, though a small part of the increase was due to price increases. The composition of expenditure altered markedly. The increase in real terms in budgetary expenditure was primarily due to military or related expenditure, including imports of various supplies and construction and pay for auxiliary local civilian services and police. These various developments are illustrated in Table 41.

11. Although revenue rose over the period, and Cyprus received "grants-in-aid",⁴ the budget accounts ended with deficits: £1,200,000 in 1958 and £700,000 in 1959. The expenditure of the Development Fund after reaching a peak of £3,600,000 in 1957 declined to £1,700,000 in 1959, partly as a result of depleted funds, although it was also affected by fear of destruction and the shift of labour to military projects. This reduction was not offset by other types of public capital formation. For instance the capital formation component of the ordinary budget (as crudely measured by expenditure administratively classified as "non-recurrent" in public works, housing, and similar categories) declined from £1,900,000 in 1955, to £700,000 in 1956, £400,000 in 1957, and £200,000 in 1958. In 1959 it stood at £500,000. It is estimated that total public capital formation (excluding investment by the Military Authorities) declined from 6 per cent of gross national product and 28 per cent of total gross capital formation in 1954 to 3 and 20 per cent respectively in 1959.

Table 41

DATA ON PUBLIC FINANCE, 1956-59
(Millions of Cyprus pounds)

	1956	1957	1958	1959
Total expenditure	14.8	21.0	23.0	23.8
of which ordinary	11.2	12.7	12.5	14.2
and emergency	3.6	8.4	10.5	9.6
Total revenue	15.1	22.4	21.8	23.1
of which taxes and other receipts ..	14.4	17.6	15.0	17.2
and emergency grants-in-aid ...	0.7	4.8	6.8	5.9
Surplus or deficit (—)	0.3	1.3	—1.2	—0.7
<i>Development Fund</i>				
Receipts: Transfer from budget ..	0.8	—	—	—
Colonial development and welfare schemes	—	—	—	0.5
Other (including loans)	—	0.2	0.1	1.2
Expenditure	2.8	3.6	2.4	1.7
Balance at end of year	6.4	2.9	0.6	0.6

Source: *The Cyprus Financial Report*, 1959, Nicosia, 1960, p. 4.

Fiscal policy in 1960 and prospects for 1961

12. The dominating fact behind the 1960 budget and the 1961 proposals is that they reflect the transitional character of the period of the political change-over. Independence was effective only in the second half of 1960. The 1961 proposals are characterized by a relatively cautious approach to fiscal problems, partly on the ground that the basic policy lines underlying the development programme for the next few years have not yet been formulated.

13. Comparing the pre-independence budget of 1959 and the proposals for 1961, the major fact is the sharp drop in expenditure from £23,800,000 to £18,500,000. Revenue, excluding aid, is expected to decline only from £17,200,000 to £15,600,000, and there may be some under-estimation of receipts for 1961. Grants-in-aid are scheduled to be reduced from £5,900,000 to £3,500,-

⁴ Grants-in-aid totalled £18,300,000 and Emergency expenditure £32,000,000.

000. But as the decrease in total receipts of £4,000,000 is expected to be less than the £5,300,000 anticipated reduction in expenditure, the deficit incurred in 1959 is to be replaced by a surplus of £600,000 in 1961. These changes developed primarily in 1960 when the structure of the budget began to reflect the elimination of Emergency expenditure and the totals involved in 1961 are little different from those in 1960. The developments in the area of expenditures are presented in Table 42.

Table 42

ACTUAL AND PROPOSED EXPENDITURE, 1959-61
(Thousands of Cyprus pounds)

	1959 Actual	1960 Revised estimates	1961 Propo- sals	Difference 1959-60
Presidency	—	54	209	154
Defence	—	410	1,006	1,006
Foreign Affairs	—	143	328	328
Governor and related offices	220	401	—	—220
(sub-total)	(220)	(1,008)	(1,543)	(1,268)
Ministry of Finance	5,810	6,779	9,075	3,265
of which:				
Public debt	866	1,111	1,062	196
Pensions and separation pay	2,122	2,060	901	—1,221
Subsidies	199	42	435	236
Grants to Communal Cham- bers	—	—	2,000	2,000
Transfer to Development Fund	—	950	2,500	2,500
Welfare, Education, and Co- operatives	1,822	1,995	—	—1,822
Agriculture	856	911	1,020	164
Communications and Works	1,432	1,095	1,053	379
Interior	3,141	2,230	1,878	—1,263
Miscellaneous emergency ex- penditure	6,686	—	—	—6,686
Total expenditure	23,763	18,943	18,509	—5,254

Source: Cyprus, *Ordinary Estimates of Revenue and Expenditure, 1961*.

14. The 1960 budgetary results and the 1961 proposals show the elimination of the previously large amount of emergency expenditure and its partial replacement by either new types of expenditure including new administrative and similar services, the Army, increases in various types of ordinary expenditure and a transfer of £2,500,000 to the Development Fund. The new social and political structure whereby the two Communal Chambers take over responsibility for welfare, education, sports, and co-operatives, is shown by a shift of about £2,000,000 between headings in the table. Thus total spending is curtailed by £5,300,000 from 1959 to 1961 and the composition of expenditure is markedly changed. The increased appropriation to the Development Fund is particularly to be noted.

Table 43

DATA ON THE DEVELOPMENT FUND, 1956-61
(Millions of Cyprus pounds)

	1956	1957	1958	1959	1960 (esti- mates)	1961 (preli- minary)
Balance beginning of year	1.9	6.4	2.9	0.6	0.6	0.4
Annual additions	7.3	0.2	0.1	1.7	1.4	2.5
Total resources (two above items)	9.2	6.6	3.0	2.3	2.0	2.9
Expenditure	2.8	3.6	2.4	1.7	1.6	2.5
Balance at end of year	6.4	2.9	0.6	0.6	0.4	0.4
Increase in balances during year (de- crease —)	4.5	—3.4	—2.3	0	—0.2	0.4

Source: Annual Reports of the Six-Year Development Programme (1956-1961). For 1960 and 1961: Revised Draft Development Estimates for 1961.

It should again be remarked that not all development expenditures are made from the Development Fund, and that not all expenditures from the Development Fund are for development.

15. This difficulty in analysis is related to the fact that the budget is not a document which accords with latest practice. Improved budget classification would be most helpful in providing a functional analysis and permitting an appropriate allocation of costs. Governmental accounting is a field in which great advances have recently been made and the Government of Cyprus might gain substantially by requesting technical assistance from the United Nations in modern budgetary practice and analysis.

The structure of revenue

16. Compared with the change in expenditure the revenue structure has shown little alteration since 1959. Changes in both totals and detailed items reflect fluctuations in economic activity. It may well be that the revenue estimates for 1961 are slightly underestimated, especially if national income starts to rise in response to the carrying out of the first phase of the Development Programme. No effort has been made by the mission to evaluate government revenues in terms of their economic impact except as to their adequacy for financing expenditures.

17. In Cyprus it has been current practice in recent years to include direct grants from the United Kingdom in ordinary receipts. Hence total receipts of the ordinary budget have included taxes, non-tax receipts such as fees, interest earnings, etc., and grants. The proportion of these various categories since 1950 is shown in Table 44.

Table 44

STRUCTURE OF TOTAL RECEIPTS OF THE ORDINARY BUDGET, 1950-60
(Percentage)

	Taxes	Other receipts	Loans and aid
1950	83	17	0
1951	88	12	0
1952	90	10	0
1953	87	13	0
1954	80	15	5
1955	85	15	0
1956	78	17	5
1957	67	12	21
1958	59	10	31
1959 (provisional)	62	13	25
1960 (estimates)	66	13	21

Source: *Statistical Abstract*, p. 205; 1959 (provisional results): *The Cyprus Financial Report*; 1960 (estimates): *Estimates of Revenue and Expenditure 1960*.

In 1960 and in the proposals for 1961 the practice of including grants in the ordinary budget has been continued. Direct United Kingdom grants under the Zurich Agreement have been included in revenue for the amount of £2,000,000 in 1960 and £3,500,000 in 1961.⁵

18. Other types of external assistance (e.g., loans for Colonial Development and Welfare schemes) were generally allocated to the Development Fund. In 1961

⁵ For 1960 an amount of £4,227,000 is shown in revenue but only £2,000,000 corresponds to the United Kingdom grant mentioned in appendix R of the Agreements. For details on the financial arrangements between the Government of Cyprus and the United Kingdom, see annex VIII.

an amount of £280,000 is put in the Development Fund budget, this sum corresponding, for the first phase of work, to pledges set in the Zurich Agreements for United Kingdom financing of the Ayios Nikolaos bypass and the Nicosia Terminal. It is not yet known how other financial aid (e.g., part of the counterpart funds of United States aid under Public Law 480) will be channelled in the various public accounts.

19. The structure of taxes is shown in table 45. The dominant fact is the large proportion of customs duties in total tax receipts. It was never lower than 40 per cent during the fifties. Half the revenue collected in 1960 came from this source, and the same proportion is anticipated in 1961. Customs revenue is traditionally

an important revenue in less-developed countries. In the case of Cyprus it further reflects the exceptionally large amount of imports in the economy. Any important changes in import volume or any substantial changes in tariff levels would therefore have a very important effect on total revenue.⁶

⁶ It is estimated that roughly 60 per cent of imports into Cyprus are dutiable. In 1958 out of imports of £35,500,000, £19,900,000 were charged customs duties totalling £5,100,000, or 26 per cent of value. Tariffs vary widely by commodity. "Luxury" goods (e.g., jewellery, caviar, furs, etc.) pay from 40 to 60 per cent. Motor cars pay from 30 (preferential rate) to 45 per cent (general rate). Raw materials, construction materials, and basic foodstuffs are either subject to low rates or exempt from duty.

Table 45
STRUCTURE OF TAXES, 1950-60
(Percentages)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959 (preliminary)	1960 (estimate)
Income tax	23	31	37	40	33	33	39	37	35	26	27
Custom duties	48	43	39	40	45	48	44	48	44	53	50
Excise and licenses	21	19	17	17	18	17	16	13	20	16	20
Immovable property tax	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Registration fees	2	1.5	1.5	0.5	"	—	—	—	—	—	—
Estate duties	0.5	1	0.5	0.5	0.5	0.5	0.5	1	1	1	1
Stamp duties	3	3	2.5	3	3	1	0.5	0.5	1	2	1.5

^a Since 1954 this item has been transferred to non-tax receipts ("miscellaneous fees").

Source: See table 44.

20. Next in importance is the income tax⁷ which at present accounts for roughly one-fourth of the total, after having reached a higher proportion in the mid-fifties. The important fact about the income tax in Cyprus is the very high proportion of corporate tax payments in the total, as opposed to individual contributions. To a large degree this reflects the high share of tax payments of mining companies, which is between 50 and 75 per cent. In 1959, income tax receipts were £3,600,000, of which £1,900,000 was paid by the mining companies, £700,000 by other companies, and private individuals paid £900,000.⁸

21. Excise and duties make up about 20 per cent of total tax receipts. The main item is the tobacco tax; next in importance are the taxes on spirits and beer, and matches. Other taxes or similar receipts include stamp duties, estate duties⁹ and registration fees (pri-

marily on motor vehicles and radios). Altogether these receipts make up 3 to 4 per cent of total tax receipts. The tax on animals provided some £50,000 in 1959.

22. Non-tax receipts (see table 44) represent a wide variety of operations. The most important of them is the earning of interest on government loans and the profits of the Note Security Fund (£756,000 in 1958). Payments of various office fees (e.g., Land Registry) and reimbursements to the budget for government services or advances (e.g., for sale of seeds, refunds of the Social Insurance Fund), made up altogether half a million pounds in 1958. Other items are: revenues of the Forest Division (£76,000), Post Office (£252,000), rents and royalties (£96,000), Civil Aviation fees, and land sales.

TRENDS IN TAXATION IN THE FIFTIES

23. From 1950 to 1959 revenue (excluding aid) rose from roughly £6,000,000 to £17,200,000. Despite wide differences during the decade, it is interesting to note that the increase in receipts from income tax and from customs duties end up at levels largely similar, that is, a 200 per cent increase (see table 46). Furthermore, the increase was considerably larger than that of the domestic product at current prices, which by the end of 1959 had roughly doubled in value.

24. As a result, the share of tax receipts in the net national income rose considerably, from some 14 per cent in 1950 (the preliminary estimate for 1960 is 19 per cent).¹⁰ In absolute terms, tax receipts per head of population also rose from approximately £10 in 1950

⁷ Income tax was introduced in 1941. The tax is assessed on income arising from trade or business and all other types of income. The rate for companies and other bodies is 42.5 per cent. The rate for individuals varies progressively with income (above £400). The tax ranges from 50 mils for every pound in excess of £300 (except that if an individual's chargeable income falls below £400, no tax is leviable) to 750 mils for every pound in excess of £6,000. Thus the rate is 6.4 per cent for a taxable income of £1,000, 14.5 per cent for a taxable income of £2,000, 25.5 per cent for one taxable income of £3,000, etc. The rates are increased by 33.3 per cent for unmarried persons to a maximum of £500. For corporations, both initial and annual depreciation allowances are provided for. Special tax legislation applies to mines and is discussed in chapter V.

⁸ Data on assessments for 1958 indicate that 14,894 individuals were assessed, each to pay less than £100 income tax. Their tax payments amounted to £265,000. There were 1,835 individuals who were assessed, each to pay more than £100, for tax payments amounting to £675,000.

⁹ The rates of estate duty introduced in 1942 vary from 2 per cent for an estate valued at £2,000 (if the net value of the estate is lower than that, there is no tax) to 30 per cent. An estate of which the net value would be £100,000 would be charged £23,600.

¹⁰ In these comparisons local and communal taxes are excluded. It may be estimated that local taxes (fees and tolls, licenses and permits, etc.) amount to less than £1,000,000. For some data on local budgets see *Cyprus Report, 1958*, Nicosia, 1959, p. 134. It is reported that taxes and fees raised by the two Communal Chambers will amount to approximately £1,300,000 in 1961.

to £19 in 1955 and £26 in 1959. In that year the amount of taxation *per capita* was £6.5 on account of the income tax, although most of this was paid by the mining companies, and the part of the income tax paid by in-

dividuals averaged £1.8 *per capita*. Similarly, the average tax was £12.8 on account of customs, £4.0 on account of excise duties, and £2.5 on account of other duties and licences.

Table 46

INDICES OF TAX PAYMENTS AND OTHER ECONOMIC INDICATORS
(1950 = 100)

	1951	1952	1953	1954	1955	1956	1957	1958	1959 (preliminary)	1960 (estimates)
Total taxes	127	150	166	170	198	233	299	256	247	267
Income tax	168	238	282	236	272	375	470	373	300	304
Customs duties	116	122	134	160	198	214	300	233	317 ^a	278
Excise and licences ..	115	125	137	149	166	184	186	249	250 ^a	262
Retail prices	112	118	122	127	135	145	155	162	165	—
GDP at current factor cost	119	141	155	163	173	209	218	208	198	—
GDP at constant factor cost	101	111	122	123	125	142	152	144	142	—

^a Estimates are made for the two items because of differences in breakdown as compared with classification retained in the Statistical Abstract.

Source: *Cyprus, Statistical Abstract*, p. 205, and *Cyprus, Economic Report, 1959*, p. 74. 1959 data based on *The Cyprus Financial Report*, p. 4; 1960 data based on budget estimates.

Fiscal policy and the Development Programme

25. In a developing economy fiscal policy must be oriented toward the achievement of the goals set in the Development Programme, together with other traditional requirements.¹¹ In this section an attempt is therefore made to set forth principles which might guide the Government in its effort to adjust the public sector operations to the requirements of the Development Programme.

BUDGETARY CONTRIBUTION TO GROSS CAPITAL FORMATION

26. The contribution of public finance to development can be set against certain yardsticks, of which the most important are the size of total public expenditure in national income, the amount of public saving available, and the size of various types of expenditure. In addition, public sector operations have to take account of the overall economic conditions of the moment such as the monetary and employment situations and the implications of government expenditure on the balance of payments.

27. There is no definite rule for what might be the most appropriate size of budgetary or public capital formation expenditure in relation to national income. In the first place this depends too much on the institutional framework, in particular on the degree of activity by the state in the economic operations of the country;

second, serious limitations in statistical measurements make it extremely difficult to derive meaningful conclusions from the data for other countries.

28. The general government share in gross national expenditure for eleven industrially-advanced countries of Western Europe¹² ranged between 12 and 21 per cent in 1957, while for five developing countries of Southern Europe the percentage ranged from roughly 10 per cent (Spain) to 27 per cent (Yugoslavia). Excluding Yugoslavia which is something of an exception in this group on account of the greater degree of government activity, the average for the southern group was strikingly lower than for the other European group. As a general rule the percentage of government expenditure in gross national income seems to be definitely smaller in low-income as compared with high-income countries. Indeed, on the basis of historical trends and recent data, there is little doubt that the size of the general government sector is in some way significantly connected with the level of income per head.¹³

29. In Cyprus in the nineteen-fifties total general government expenditure, including Emergency and Development, has varied between 12 and 32 per cent of gross national product. Excluding Emergency, the percentages have fluctuated from 12 to 20 per cent (see table 47). Perhaps the more striking development is not so much the high level of expenditure by international standards as the rising trend of budgetary expenditure up to 1960, even independent of Emergency expenditure. In 1960 and in the proposed budget for 1961 the size of total budgetary expenditure including the Development Fund relative to gross national product will no doubt decrease—probably settling at some 22 per cent of gross national product if the 1961 estimates are any criteria. This remains, however, a high figure; hence, there seems to be little scope for additional increases relative to gross national product in budgetary expenditure for the next few years.

¹¹ As set out in a recent study of the public sector, *Economic Survey of Europe in 1959* (United Nations publication, Sales No.: 1960.II.E.1), part III, chapter V, "Here are four major aspects of the impact of public sector operations on the economy: first, the micro-economic effects of specific fiscal measures on the economic behaviour of households and enterprises in particular markets; second, the welfare implications arising from public activity, including questions of income distribution as affected by the pattern of public expenditure and taxation; third, public sector influence on the allocation of resources, on long-term structural development, and on economic growth; and finally, the largely short-term effects of public sector operations on macro-economic variables such as employment, production and prices." In this section the emphasis is put on the third point.

¹² See *Economic Survey of Europe in 1959* (United Nations publication, Sales No.: 1960.II.E.1), chapter V, p. 3. In these calculations "general government" excludes all public-enterprise activities.

¹³ *Ibid.*, chapter V, p. 5 and following and chapter VIII, p. 25.

Table 47

SHARE OF BUDGETARY EXPENDITURE AND GROSS CAPITAL FORMATION IN GROSS NATIONAL PRODUCT
(Per cent of gross national product)

	1951	1952	1953	1954	1955	1956	1957	1958	1959
<i>A. Budgetary expenditure:</i>									
Total expenditure (including Emergency and Development Fund expenditure)	12	12	14	17	16	22	28	31	32
of which:									
Emergency expenditure ...	—	—	—	—	—	4	9	13	12
Development expenditure ..	2	2	1	1	1	3	4	3	2
<i>B. Capital formation (including investment of Military Authorities):</i>									
Gross fixed capital formation	14	14	14	20	24	25	23	17	16
Public capital formation*	n.a.	n.a.	n.a.	8	9	10	8	5	4
<i>C. Capital formation (excluding investment by Military Authorities):</i>									
Gross fixed capital formation	n.a.	n.a.	n.a.	18	20	19	19	16	15
Public capital formation*	n.a.	n.a.	n.a.	6	5	4	5	4	3

* Excluding investment of public utilities. Figures are based on national income estimates and not on budgetary data.

30. It is of interest to note that the large increase in total budgetary expenditure, which resulted in more than doubling its share in gross national product over a period of five years, was not entirely due to the appearance of Emergency expenditure. From 1955 to 1959, the share of total public expenditure in gross national product rose from 16 to 32 per cent, or by 16 percentage points, of which Emergency expenditure was responsible for three-fourths, 12 percentage points, and other expenditure for the remainder. Detailed data on public capital formation are not available. But since both public capital formation and Development Fund expenditure followed a similar downward trend, it follows that the composition of budgetary expenditure was being altered in favour of government consumption to the detriment of government capital formation. This may, of course, have been inevitable under the circumstances, but was not conducive to sustained development.

31. It is true that during this period rather substantial capital formation was incurred in the sector of public utilities, financed outside the various budgets. But even after allowance for this it would seem that, at least until recently, public capital formation has followed a downward trend. Thus, since the mid-fifties not only has gross fixed civilian capital formation declined relatively but the share of public capital formation to total (civilian) fixed capital formation has itself deteriorated from 28 per cent in 1954 to 20 per cent in 1959, based on source of funds data.

32. If it is assumed that in the next few years the rate of gross fixed capital formation should increase as part of the five-year programme, an important question is whether the effort to raise investment should come primarily from the public or the private sector. This point is examined below, but the preceding analysis suggests that the trend with respect to public capital formation should be reversed and a higher rate obtained.

THE IMPACT OF CURRENT DEVELOPMENTS

33. The short-run formulation of fiscal policy cannot be made without relating it to the over-all monetary

situation and the behaviour of the balance of payments. At present and from a technical standpoint, the position of the Treasury does not call for special comments. By the end of 1959, the Treasury held balances and various deposits of £3,600,000, of which £1,900,000 were frozen in advances¹⁴ and the remainder held in cash. Thus Treasury liquid assets were equal to almost 10 per cent of budgetary expenditure for the year ahead. But it is true that in Cyprus the lack of a money market makes it necessary for the Treasury to maintain relatively large balances. The most recent data seem to show that, if anything, the Treasury position has improved in 1960.

34. The public debt in Cyprus is primarily medium- or long-term and its main component is debt raised abroad to finance the development of the Electricity Authority of Cyprus. EAC expenditure is largely outside the budget and the Development Fund, and thus in the past the size of the public debt has not been formally related to budgetary developments. The size of the public debt itself, roughly £10,000,000 or 12 per cent of gross national product in 1959, is relatively low by international standards.

35. The previous discussion therefore suggests that neither lack of funds nor the size of the public debt hamper at present the formation of a dynamic fiscal policy. But the need to maintain a strong currency, revive confidence, and stimulate a reversal in private capital flow, and to prevent the emergence of inflationary pressures made it advisable for the Government to follow a cautious fiscal policy. Such a policy should be directed toward comparative austerity for government consumption expenditure so as gradually to release public funds for public capital formation purposes.

PRINCIPLES OF FISCAL POLICY FOR THE NEXT FIVE YEARS

36. The preceding remarks may be summarized thus:

(a) The level of total government revenue and expenditure is comparatively high and raising it further

¹⁴ These advances were £900,000 to the Controller of Vine Products, £600,000 to various district and government units, £200,000 to the EAC and the Grain Commission, and £200,000 to miscellaneous agencies.

does not seem practicable at present, except as it may react to economic growth.

(b) Effort should be made to obtain the maximum yield out of the present tax system so as to permit the maximum government contribution to economic development.

(c) The division of expenditure between consumption and capital formation appears to give too much weight to the former at present. Since total government expenditure cannot be easily stretched further, the guide line for the next few years should be energetically and steadily to prune down costs of current routine, administration, and other unproductive expenditure (including prestige and subsidy), so as to release funds for development. In this respect, there are in the proposed budget for 1961 various appropriations, quite legitimate, especially in view of constitutional commitments, which might however be somewhat curtailed. Possibly this can in part be done by spreading the proposed spending over a longer period of time or by reducing the scale of the organization proposed.

(d) Public capital formation expenditure should be an integral part of the Development Programme.

37. If no changes are made in the pattern of government expenditures and if revenues remain fairly constant, there will be no source for increased emphasis on economic development other than external assistance. But if external assistance is not forthcoming at the rate required to sustain the projected Development Programme and, if, despite this, it is still government policy to continue with the Programme as planned, then there would be no other alternative than to push up the rate of public contribution to development either through increased taxation or through a strict curtailment of ordinary expenditure. To the extent that this is done under any circumstances, it will accelerate the processes of development.

38. That a high level of taxation may and often does help development is no longer seriously denied. There are many historical examples in different contexts—Japan in the 1870's, the Scandinavian countries and Austria recently, and Israel, more recently¹⁵—showing that a high rate of public capital expenditures financed by a high level of public saving is a definite asset in a resolute policy for development. But a high and increasing level of taxation does raise a great number of difficult problems—political, institutional, technical, and economic—the solution of which requires a very determined spirit of national solidarity and even sacrifice.

39. In any case the problem of taxation should never be divorced from the context of development. Taxation should therefore be integrated into the whole development framework. Special attention should also be paid to the impact on incentives, since little economic progress may be expected in the long run of a system that reduces incentives too sharply. The whole question of the most appropriate tax structure to encourage economic development has not been examined by the Mission, but should be carefully studied at some time in the future.

40. The curtailment of ordinary government expenditure which may be associated with additional funds

¹⁵ For these countries the rate of tax receipts to gross national product was more than or close to 30 per cent of gross national product in the period mentioned.

for development also raises delicate problems, in part political and institutional and in part technical and economic. Without going into detail it may be indicated that the key concepts of productivity, organization, and incentives apply in the government in almost the same manner as in the private sector. The setting up of efficient government services and the building up of an adequately paid civil service are essential prerequisites to proper functioning of any administration. The appropriate policy with regard to ordinary expenditure is therefore one of great selectiveness based on stringent austerity in all the fields that do not appear of crucial importance, while a more liberal policy applies to priority sectors including the building up of an efficient civil service.

PUBLIC CAPITAL FORMATION AND THE FIVE-YEAR PROGRAMME

41. In the past five years public capital formation (excluding investment by the Military Authorities and the Electricity Authority of Cyprus) ranged from 3 to 5 per cent of gross national product. Assuming that, in the context of a policy of development, 5 per cent should be considered as the minimum future rate, and assuming further that the gross national product in 1961 will average £80,000,000, an approximate objective for public capital formation in 1961 would be of the order of £4,000,000.

42. To this amount, which may appear large compared with the abnormally low level of £2,500,000 in 1959 and 1960, but is hardly higher than £3,800,000 in 1957 and £3,700,000 in 1958, should be added capital expenditure financed from external assistance in addition to the direct United Kingdom grant which is already included in the estimate. There is an added commitment for £280,000 which represents United Kingdom financing of the Nicosia Terminal and the Ayios Nikolaos By-Pass. In addition, there is an unknown amount of counterpart funds to become available from the United States grant of grains which may be applied to development projects. There is no doubt that some additional assistance will also become available in the course of 1961 for purposes within the Development Programme but not identified in chapter XIII as those for which foreign assistance should be sought. Taking this into consideration, the amount of public capital formation which it seems financially possible to undertake in 1961 appears to be at least £5,000,000.

43. It should be clear from the above discussion that the Government of Cyprus may contemplate external assistance in 1961 applicable to current budgetary expenditures of more than £4,000,000. While a small part of this total is earmarked for specific development projects, most of it is merged with other revenues in the regular operations of the Treasury. The central problem for fiscal planning is to allocate to economic development at least £5,000,000 of the total funds available, which may well reach £20,000,000. Some of the expenditures may pass through the Development Fund but others may either be covered in the regular budget or may require special appropriation. A general pattern of suggested development expenditure is included in chapter XIII.

44. Should external assistance be larger than these figures suggest, either public capital formation could be raised above the £5,000,000 mark or the government

surplus could be enlarged. Unless there were technical difficulties in the way of undertaking added capital works, such as delays in engineering investigation and preparation of projects, it is doubtful that it would be wise government policy to attempt to build up financial assets. Cyprus needs development and can neither afford to consume nor to hoard. At the same time government policy would have to pay some attention to the problems of inflationary pressures which would inevitably arise from the increase in money incomes and resulting increased demand for consumer and imported goods.

45. For the following years covered by the five-year programme it would seem that effort should be made to see that public capital expenditure should increase at least in parallel with the increase in national product. Since it is already known that assistance from the United Kingdom will decline regularly by £1,000,000 per year and stabilize at £1,500,000 per year in 1963-64, the effort must be made to achieve an offsetting increase in expenditure on development from some other source.

46. Whether it will be possible to increase the rate of public saving from domestic revenues in the next few years will depend on the outcome among several conflicting factors. As suggested above, there seems to be room for gradually reducing government ordinary expenditure relative to gross national product by energetic action. This may include, for instance, the scaling down of the project to set up a Cyprus Army, cutting certain subsidies, and trimming administrative expenditure in general except salaries. The increase in population, and even of incomes, will tend to exert an upward pressure on government spending for schools, police, etc. On the revenue side, the increase in incomes which should derive from carrying out the five-year programme should also produce an increase in tax yields. On the other hand, taxable income of the mining companies may well be reduced over the next few years as a result of changes in their allowed deductions for development as well as a decline in copper content, thus reducing the value of the tonnage exported. Finally, while the presence of a surplus in the budget for 1961 is evidence of the careful and conservative financial

policy of the new Government, there is no reason why this needs to be a regular characteristic of the budget. One might say that a country with ambitions for economic development cannot afford the luxury of a surplus and should put all of its funds to work.

47. It is certainly not impossible that public funds available for development might increase in the next few years, but not in a spectacular way. At least, it should be possible to raise public saving to the amount needed to offset the gradual reduction of direct United Kingdom grants up to 1964. If this is done, public capital expenditure might then be maintained at £5,000,000 at least; this figure would be automatically raised by any amount of added assistance forthcoming from abroad. The development policy up to 1965 should, therefore, be visualized as made up of a minimum programme to be carried out on the basis of present United Kingdom commitments and a rising rate of public saving. This minimum programme should represent public capital formation of some 5 to 6 per cent of gross national product, not including the borrowed funds discussed elsewhere for power and ports.

48. There is a further possibility which should be kept in mind and that is that the Government might be able to encourage and also make use of some of the private savings of its citizens by the sale of Government bonds. When one is considering a five-year period, it is not at all impossible for a new capital market to develop and an additional source of funds to become available.

49. In chapter XIII, the possibility will be discussed of obtaining help for the development programme in the form of foreign assistance, either direct government loans or assistance from international institutions, or both. Cyprus does not now have a large foreign debt, but such obligations can become a heavy burden upon the means of making foreign payments. Having in mind that interest and amortization will have to be paid, it behooves the Government to use such opportunities as may appear in the way of foreign assistance to accelerate the process of economic development and not for purposes of a low priority. This issue can best be reviewed in the light of chapter XIII, where the rough costs of an economic development programme are suggested and problems of finance are further discussed.

Chapter XII

PRICES, EMPLOYMENT, AND SOCIAL LEGISLATION

1. There are certain indicators which give notice when an economy is not in equilibrium. Individual prices may change according to the supply and demand for the individual commodity, but general price-level changes reflect a much broader situation where the supply of purchasing power and the supply of goods and services are not in balance. Unemployment reflects a condition where the demand for labour and the supply of labour are not in balance at prevailing wage rates. Both of these situations have appeared in Cyprus during the last decade. They bear directly on the economic well-being of the population. While it could be argued that they are short-run phenomena and therefore should not be considered in the context of economic development, this is not necessarily so. Inflation or unemployment or both can greatly deter the achievement of cumulative economic growth. And substantial increases in the production of goods and services make both of these conditions much easier to deal with.

Cost of living

2. The cost of living and the price level are not identical concepts. The first is based upon family expenditures and gives considerable weight to the necessities: food, clothing, and shelter. The price level relates to everything for which payments are made, including goods purchased by business men such as supplies, machinery, and equipment. The items which are so important to the average consumer are considerably less important if one looks at all goods and services produced by the economy.

3. Since 1950, it appears that the general level of prices (best measured by what is known as the gross national product deflator) rose about 51 per cent in Cyprus while the cost of living rose 65 per cent (1959 average). This gap is related to the fact that rents had risen by 1959 to 234 per cent of the 1950 level. This advanced more than any other element in the cost of living. Rents are relatively much more important in the calculation of cost of living than in the broader measure of the general price level and are largely, though not completely, responsible for the difference.

4. The cost of living continued to advance throughout the decade. In no year were prices ever lower than the preceding year. After a sharp advance in the first year, reflecting the impact of the Korean War on prices everywhere, the rise was about 5 per cent per year until the end of 1954 when the pace quickened and the cost of living rose more rapidly—especially during 1956. Since then the tempo has gradually slackened and the average for 1959 was only 2.0 per cent above that for 1958; while the first ten months of 1960 have been on a level equal to that for the same period in 1959. In the last half of 1960, however, the index has risen some-

what as the result of an increase in the cost of food, although no other group in the index has advanced at all and rents have even fallen noticeably.

5. A rise in the cost of living during this decade has not been an unusual phenomenon throughout the world. While the Cyprus cost of living was rising 65 per cent, living costs in Greece advanced by almost an identical amount, and those in Turkey and Israel rose much more. The cost of living in the United Kingdom, an important export market for Cyprus products, rose 48 per cent.

6. The rising prices in other countries were one of the causes of the rise in the price level in Cyprus, but not to the extent that might be expected. The price index of imports into Cyprus, based upon 1950, shows an increase to a peak of 23.6 per cent in 1957, but import prices declined, and in 1959 were only 15.6 per cent above 1950. This general record of the price of Cyprus imports is somewhat verified by the fact that United Kingdom export prices to all destinations (and Cyprus may of course not have been representative) rose during the same period by about the same amount.

7. If, therefore, one is endeavouring to explain the general price level rise in Cyprus of some 50 per cent over the decade, about one-third of it was imported along with the commodities which entered Cyprus. These increases in costs of goods, particularly from 1954 to 1957, which were so large a part of the Island's consumption, encouraged demands for higher wages or incomes—which in turn pushed up the costs and prices for goods and services produced on the Island.

8. Cyprus will always be susceptible to changes in prices in the countries from which it purchases goods. At the present time, a considerable amount of price stability appears to have been achieved throughout the world, although there are a few countries which seem to be unable to check inflationary pressure. It should be noted that a period of stable import prices may serve to hold down increases in Cyprus prices, although if it leads to any further expansion of imports, this might have serious consequences for the balance of payments.

9. After allowing for the influence of rising import prices, the rest of the price advance in Cyprus during the fifties is almost a classic illustration of demand-induced inflation. The development of the Bases and the expenditures of the Military Authorities have already been described in Chapters II and VII. This demand for goods and services exceeded the available supply and prices rose. Workers had to be attracted away from other activities and wages advanced. Once wages rose, the increased purchasing power available pushed the prices of goods up still further and a price-wage spiral had been created whereby prices rose because wages rose and wages rose in turn to meet the higher cost of living. The process was aided and abetted by

the commercial banks which added to the purchasing power by increasing loans and advances substantially.

10. This inflationary process tended to encourage imports, which served to some degree to damp down the rise in prices by increasing the available supply of goods. So far as exports were concerned, since their prices are made in the purchasing countries, the effect of higher prices in Cyprus was chiefly to increase costs, reduce the net earnings of the producers, and discourage further expansion.

11. With the reduction in spending by the Military Authorities and the depressing influence of the Emergency, the inflation slowly came to a stop. While the higher level of wages and incomes tended to offset the higher level of prices for many persons, the inflation left many inequalities in the process of adjustment. One serious problem is that of foreign trade, where the greater increase in Cyprus prices relative to those in the industrial countries, makes it more difficult to bring foreign claims and payments into balance. Similarly, domestic manufacturing has been somewhat handicapped by the fact that wages in Cyprus rose more over the decade than in most of the countries which supply competing imports and in which productivity probably increased more.

12. Having these developments in mind, it may be fair to say that the new level of wages and prices is in considerable degree responsible for the unemployment situation. In a sense, the present unemployment represents the inherent forces in the economy trying to bring about a reduction in both wages and prices so that more individuals will be employed and more goods will be sold. However, such flexibility for downward adjustments does not exist in most economies today. Wages and prices can rise but seldom fall, the one general exception being agricultural prices.

13. There are almost no cases in recent times where wage rates or even average earnings in a country have been generally reduced. The wages trend is bound to be upward because of increase in productivity, reinforced by adjustments to rising prices. In extreme cases of inflation, adjustment to the rest of the world is done by adjusting the rate of foreign exchange. More often, the correcting takes place gradually by holding wages and prices fairly stable while they move upward in other areas. Where it is possible to make great advances in productivity, it may be possible for prices to be reduced and the real purchasing power in the country thus to be increased. Improvements can also be made in the marketing process. The Mission was unable to examine this in any detail, although some comments are made in Chapter IV. Although wholesale and retail trade include only about 10 per cent of the gross national product and have not increased even at the average rate over the last decade, there seems to be various specific areas where there is substantial room for improvement.

14. Efforts to deal directly with the prices of a large number of commodities by some form of price control have seldom proved effective. Too many transactions are involved through too many channels to make enforcement possible outside of a police state. Nor can the authorities ever feel confident as to the proper level at which prices should be set to be equitable to both producer and consumer. So far as the general level of prices is concerned, the appropriate points of control are credit and fiscal policy.

15. Looking ahead, it must be recognized that economic development can be a disturbing force leading to inflation. In the early stages, payments are made to workers and suppliers in connection with capital projects while no added consumers goods are coming into the market. This creates an upward pressure on prices. If wage rates rise more than the rate justified by improved productivity, this will further add to the inflationary pressures. Of course, eventually, the new capital investments will result in an increased supply of goods and services, but by that time the wage-price spiral may be in full operation.

16. Inflation can be limited to relatively small proportions by appropriate measures to restrict expansion in the money supply (currency in circulation plus demand deposits in banks). There must be an offsetting curtailment in purchasing power so that the demand is not greater than the supply of goods. Now that there no longer is a Colonial Government which could add to the money supply through obtaining Cyprus pounds for expenditure in return for pounds sterling whose source was outside Cyprus, the chief factors creating changes in the money supply will be either the banking system or the Treasury. Another possible but less likely source might be a change in hoarding practices by individuals and business enterprises.

17. The lack of any method for controlling credit expansion has already been discussed in Chapter X. The use of fiscal controls is primarily a matter of the degree to which the Government puts funds into the spending stream in relationship to those which it takes out; although it can also curtail spending by higher income tax rates with exemptions for savings, or by a sales tax aimed at reducing consumption. The operation of fiscal policy for this purpose is to be viewed not as a matter of budgeted revenue and expenditure but in terms of total cash flow, including the various Funds. Beyond these two forms of financial adjustment intended to hold down excessive increases in purchasing power, any long-run consideration of the problem must conclude that improvements in productivity represent the best way to keep the price level relatively below the wage level, and thus increase real incomes. Prices can also be held down by keeping the Cypriot market relatively open to imports. It already has been pointed out that protective measures which encourage domestic industry may be effective only if they lead to the higher prices which are needed to produce higher-cost domestic products. Again, the best way to solve this dilemma is by improving productivity and thus reducing costs.

Employment situation

UNEMPLOYMENT

18. There is no satisfactory measure of the extent of unemployment in Cyprus. Some indication of the change from year to year can be obtained from the records of registration at Labour Exchanges. According to the registration, unemployment fell to abnormally low levels in 1956 and 1957. The shortage in the labour market began to ease in 1958 and the number on the registration rolls suddenly mounted rapidly near the end of the year, reaching a peak in February, 1959, of 5,662 persons or 4.3 per cent of the number estimated to be in non-agricultural employment. From that point the number declined substantially until November, but rose

again during the winter months. During 1960, the registration figure has varied above and below 6,000.

19. It is generally recognized that the registration figures probably underestimate the actual situation during periods of considerable unemployment, and that the number of unemployed may be double that figure. As a slight offset to this observation, it should be noted that on the one hand the rosters probably include some permanently casual labour like stevedores. On the other hand some persons feel attached to particular enterprises and expect soon to be rehired so do not seek other work; others know that the vacancies to be filled are far fewer than the number of applicants and feel hopeless about the situation. Still others do not live in the towns where the offices are and find it difficult to register.

20. Before discussing the problem itself, it should be noted that steps should be taken to improve the information available about the employment situation and to make the labour market more effective. The employment service should produce market information concerning labour supply and demand and the factors influencing the employment market, to guide the Government, the planning and development authorities, the vocational and technical education administrations, and the employer and worker organizations. There need to be regular contacts with employers. There should be improved applicant interviewing and testing. All these matters should be developed with the aid of a technical assistance expert from the International Labour Office.

21. As to the substantive problem, unemployment can be the result of many causes. Because of the importance of agriculture some seasonal variation is to be expected. Basically, however, unemployment in Cyprus is likely to be the result either of structural difficulties or of a depressed condition of business. Structural difficulties are responsible in large part for the present level of unemployment. This is to be attributed largely to the temporarily high level of the construction industry beginning in 1954. This was not merely the result of construction on the Bases, though that was extensive. There also was a strong tendency for the public to invest in building, not only because there appeared to be a demand for houses but also because of the lack of an organized money market and the confidence which there was in the security of real estate. In 1950, the number employed in building and construction was 8,830. This number increased to about 16,000 in 1954, and during 1956-1958 it is estimated to have exceeded 20,000. In 1959, it fell back to 16,000 or less.¹

22. This great increase in the number of construction workers drew persons from many sources, but primarily from the villages. Since the boom lasted for several years, many of the older workers cut their village ties and sold their land. The young workers never settled down in the villages at all. The problem now is one of absorption into other occupations.

23. The Mission has not been able to use the employment dimension as a test of the various programmes which it has suggested, but the absorption of labour should be examined early in the more detailed planning which is to be done by the Development Commission suggested in Chapter XIII. The fact of labour surplus suggests that projects which involve high labour content should be favoured over those in which capital is the chief component. One of the arguments in favour

of accelerating economic growth is that situations of this kind can be corrected more easily in an expanding economy. Structural imbalances cannot be corrected overnight but they can be corrected over time as the economy develops new requirements for labour.

24. Unemployment due to poor business conditions, drought, or difficulties in the world market can be regarded as a temporary phenomenon and can be dealt with much more easily. Once adequate measures of unemployment are available, the Government can set some amount of unemployment which it regards as a minimum which cannot be avoided in a dynamic economy where persons and plants should not be static. Whenever it is determined that unemployment is too high, useful projects should be initiated. These projects can be of many kinds. There is always work to do in the forests or on the roads. Considerable employment could be given in the towns in the simple process of house-keeping; clearing away barbed wire, cleaning up empty lots, raking stones and dead leaves from public property, repairing and painting public buildings, replacing street signs, and doing the many things which make a town attractive. In general, it is better to put a person to work than to support him through unemployment benefits or other forms of assistance. Presumably, expenditures aimed specially at providing employment are temporary in character and are the type for which most governments sometimes even run a deficit, if necessary, on the assumption that there can be an offsetting surplus in more prosperous years.

25. It is always true that some of the unemployed, especially those with special skills, will not be willing to accept the particular form of employment offered, but it is impossible for the Government to provide employment which will match specialized skills. It should always be clear that employment provided under those general circumstances in Government projects is temporary in nature and should be in the form of specific projects which are for limited periods of time.

26. One of the difficulties concerning efforts to deal with unemployment in Cyprus is that the injection of purchasing power into the system may not have the same stimulating effect that it has in most economies. The reason for this lies in the importance of imports in the Island's expenditures. In the more usual case, added money paid out for special employment projects will be spent by the recipients largely for consumer goods produced in the country, thus increasing activity elsewhere in the economy. These added funds continue to move about in the economy, leading to increased activity at many points by what is known as the "multiplier" process. In Cyprus, since half of all income is spent for imports, additions to purchasing power are likely to spend much of their force in stimulating economic activity in other countries. There should be a corresponding increase in exports from Cyprus; but for a number of reasons this is more theoretical than real. The above analysis suggests that employment projects should be evaluated in terms of the needs of the moment and the usefulness of the project, but not be regarded as a general instrument for controlling the general level of economic activity.

EMIGRATION

27. A further adjustment to the labour situation in Cyprus takes place through emigration. There appears

¹ Cyprus, *Economic Review*, 1959; p. 43.

always to have been a flow of Cypriots to Britain and their remittances back to Cyprus have become an important element in the balance of payments, as much as £3,000,000 per year. Data are available only since 1955 concerning the number of emigrants. In the lowest year (1958), the number of emigrating was 5,273. The rate ran even lower for the first half of the following year (1959) but then began slowly to accelerate so that the year ended with a total of 6,250, less than 1956 but above the totals for 1955, 1957, and 1958. For the first nine months of 1960, emigration has sky-rocketed. In 1959, the number of emigrants for the same period in the year was 3,588; in 1960 it was 9,954. Of this number, 9,228 went to the United Kingdom. Of the total, 80 per cent were Greeks, 14.6 per cent were Turks, 3.3 per cent were British or American, and 2 per cent were Armenians. An examination of the sex and age distribution indicates that much of the migration is by family, either leaving as a group or completing a family of which some members have already emigrated. Only 22 per cent of the emigrants are men between the ages of 20 and 35.

28. Emigration reflects conditions in both countries concerned. The labour situation in the United Kingdom has been very favourable for a number of years. Unemployment there rose somewhat in 1959 to average 2.3 per cent of the labour force, but dropped in 1960 to 1.5 per cent in June, the latest figure available. Wage rates have been rising for many years. Furthermore, the expansion of commerce and industry has tended to draw workers away from the service industries to which Cypriots tend to gravitate. In spite of all this, the rise in emigration from Cyprus in 1960 is more likely to be a reflection of the level of unemployment and uncertainty concerning the future in Cyprus. From the point of view of the social and economic situation, it is a kind of safety valve but like all safety valves which go into action, it is an indication of something wrong. It certainly would be unwise to take any action directly to check the emigration. It is rather to be hoped that constructive actions by the Government and an active development programme will make the future sufficiently attractive so that emigration will fall back to its former levels.

Social legislation

29. The present Government of Cyprus has inherited a wide range of social legislation covering working conditions, minimum wages, workmen's compensation, child labour, and social security. Much of the legislation is of such recent date that its impact on either the economy or the social fabric of the country cannot yet be estimated. It becomes important for a number of reasons—the type of security which it provides the population, the burden which it may become on the Treasury, and the extent to which it may encourage or discourage investment.

30. That the legislation will have to be studied and revised drastically is readily apparent. As enacted, crucial determinations lay within the discretion of the Governor. To reserve such opportunities for caprice on the part of the executive is hardly consistent with modern concepts of good government.

31. In general, it appears that most of the topics usually covered by such legislation need not be discussed

in this Report. They have not been called frequently to the attention of the Mission as either being too lenient to provide decent protection or so severe as to restrict investment and employment. To be sure, one might raise questions such as the problem of improving welfare activity, especially since the Welfare Department's very limited budget must now be divided between the two communities, thus creating in effect two departments with duplication of personnel and facilities and reducing still further the effective funds available.

32. The most important legislation in this general field is the Social Insurance Law (Statute Laws of Cyprus (No. 16 of 1956)) which was enacted in 1956 and became effective in 1957. To persons in certain occupations who have met certain conditions and made certain payments, it provides marriage grants, maternity grants, sickness and unemployment benefits, old-age pensions, death grants, and survivors' pensions.

33. Social insurance payments are financed by a trust fund which is managed by the Accountant-General on instruction of the Minister of Finance. Nothing in the law indicates any restrictions or instructions concerning management of the Fund. The law does indicate that it envisages an actuarially sound Fund, contributions to which will be increased or decreased on actuarial principles, after quinquennial actuarial reports. Because the original actuarial report was based on assumed rather than precise data, no conclusions can be drawn concerning the soundness of the Fund. This is of importance because there is at present nothing in the law which makes the obligations of the Fund to the beneficiaries an obligation of the Government or even requires the Government to underwrite them. The first actuarial report is due in 1961, presumably after 1960 census data are available.

34. Contributions to the Fund are made by employees, employers, and the Government in equal amounts: 60 mils per week for males and 30 mils for females. Voluntary contributors (e.g., self-employed) pay double contributions, while workers under 18 years of age, those over 65, married women, and widows entitled to widows' pensions do not contribute at all, although their employers must.

35. Benefits for sickness, old age, or unemployment are 1,200 mils per week; if the worker has one dependent 1,800 mils; if there are two or more dependents 2,100, with additional allowances for certain special cases. The level of these benefits may be considered in the light of the fact that the cost of living has risen 15 per cent since they were determined, and that the current weekly range of wages is 4,500-8,500 mils for men and 1,500-4,500 mils for women. Death and marriage have almost equal pecuniary value, namely, £10, while maternity grants are £5 per child. Qualification for the latter may be through insurance by either the father or mother.

36. Conditions precedent to collecting old-age or widows' pensions or marriage grants are (a) beneficiary must have made 156 actual contributions and (b) have a yearly average of 50 contributions. Sickness and unemployment benefits require (a) 26 actual contributions paid and (b) last contribution year before year of collection must have had 50 contributions. However, in the latter case if there were fewer than 50 but not less than 20, the beneficiary might collect at a lower rate. There is no means test but contributors collect as a

matter of right. Unemployment and sickness benefits are payable on the basis of one day for every contribution, up to a maximum of 156 days. If, however, a beneficiary has received 156 days' benefit, he will, after thirteen more contributions, be again entitled to benefits for a further 156 days.

37. Out of a total industrial labour force estimated at 126,800 plus 9,500 government workers, there are now 120,000 employees covered by the Social Insurance Law. Of these, perhaps 5,000 are agricultural workers and some 20,000-30,000 are occasional workers. This latter group makes little contribution and is unlikely to qualify for full-scale benefits from the Fund.

38. Numerous suggestions have been made for amending the Social Insurance Law. Among them are proposals to consider the extension of benefits to agricultural workers and to members of the Armed Forces, to equalize the contributions and benefits for men and women, to substitute maternity allowances before and after confinement for maternity grants, to increase general benefits and contributions, and to make more substantial the penalty for non-compliance with the law. There are no studies estimating the additional costs to the Government of these suggestions, nor is even the present cost known. It seems clear that revisions must await accurate data. Then there will have to be a deci-

sion as to the degree of priority which social insurance should have among the many claims being made upon government resources.

39. At the present time, the operation of the law is so new that the in-payments, estimated at £250,000 *per annum*, far exceed the benefits, £45,000, paid out. This is a temporary condition and it is important that either the Government undertake to guarantee the Fund, in which case its actuarial soundness does not matter, or that its actuarial soundness be assured as soon as possible.

40. The fundamental point to keep in mind is that, in the long run, to the extent that social security represents a kind of transfer operation between contributors and beneficiaries, it has only limited economic significance, though its social importance may be high. Of course, if in the short run, the in- and out-payments are not in balance, the net surplus or shortage can have a deflationary or inflationary effect. At the present time, the larger in-payments may prove to be a help to the Government's programme. However, if the various costs are not met in the long run by contributors, but become heavy burdens on the general revenues of the government, to that extent the government loses its capacity to allocate its resources between government consumption and economic development.

Chapter XIII

THE PROSPECTS FOR DEVELOPMENT

1. Early in the report it was suggested that economic development is a process of assembling resources and using them efficiently. Various types of resources and their use have now been discussed through many chapters. The time has now come to summarize the various findings to determine how much Cyprus can do with its own resources and to what extent foreign assistance may be needed.

The resources

2. Before looking at the summary table, it should be noted that there are three items in the tabulation which have not been discussed earlier in the Report. Comments on one of these, government buildings, will appear later in this chapter. The most important of the other two is health and education, which is included at the figure of £600,000 per year. Only a very small part of this is for education in view of the fact that this field is no longer within the scope of the central Government.

The estimate for health is appreciably above the level for recent years, when it has been as low as £100,000. The result of such curtailment has been a failure in the development of new facilities and even a deterioration in those already existing. The estimate includes an allowance of £1,500,000 for a project for sewage disposal in Nicosia. The balance is intended to provide extensions and improvements to the existing hospitals and to erect some additional health units in the rural areas.

3. The item listed as "other" is based upon an examination of the budgets of the last two years, and a summation of the many small projects contained therein, ranging from additional fire equipment to a small village improvement, from some new equipment for the airport to the installation of a traffic light. It is truly a miscellaneous item, but it represents government investment rather than maintenance. Like all the other figures in the table, it is only a rough estimate.

4. A suggested public development expenditure budget for the next five years is presented in table 48:

Table 48

SUGGESTED PUBLIC DEVELOPMENT EXPENDITURE, 1961-65
(Thousands of Cyprus pounds)

Group A:	1961	1962	1963	1964	1965
Water	1,500	1,700	2,150	2,150	2,150
Agriculture	1,000	1,000	1,000	1,000	1,000
Forestry	100	100	100	100	100
Mining	150	125	125	100	100
Roads	700	700	800	800	800
Development Bank	300	300	—	—	—
Health and education	600	600	600	600	600
Government buildings	50	75	100	100	100
Other	350	350	350	350	350
Sub-total Group A	4,750	4,950	5,225	5,200	5,200
Group B:					
Electric power generation	1,900	1,900	1,800	600	200
Electric power distribution	200	250	250	250	250
Telecommunications	200	200	250	250	300
Harbours and airports	1,200	1,900	1,700	1,600	1,200
Agricultural institute project	50	50	50	50	—
Geophysical survey project	150	125	125	100	100
Sub-total Group B	3,700	4,425	4,175	2,850	2,050
Grand total	8,450	9,375	9,400	8,050	7,250

5. These figures represent a capital budget for economic development. In addition, there will be various regular budgetary expenditures which will need to be increased. For example, there is little value in agricultural research if there is not an adequate extension service to see that the findings are put into practice. Better roads will involve better road maintenance. Hospitals usually operate at a deficit. In addition, while the salaries of the various technical experts will probably

be paid externally their local expenses will be borne in part or in whole by the Government of Cyprus.

6. The detailed figures in Table 48 must not be taken too seriously. Programmes can easily be made larger or smaller than the forecasts, which are tentative at best. The allocation among the years is often fairly arbitrary. Nevertheless, the whole exercise serves a useful purpose in measuring in broad terms the essential needs for economic development so that they can

be set against the resources available. It also gives some idea of the suggested areas of emphasis during the next five years.

7. So far as direct spending by the Government is concerned, it is suggested that much the largest single share go to water development. This is a fundamental need. In chapter III it was made clear that a great deal can be done in the field by the use of modern methods. Agriculture (chapter IV) also comes in for strong support on the expectation that there is room for considerable development in this area. The other point deserving special mention is the Cyprus Development Bank, a new institution making long-term advances to private industrial projects and service operations like hotels or buslines. The amount listed under this head in Table 48 is only the Government's contribution to its capital and, as discussed in chapter X, the bulk of its lending power should come from private capital or funds raised abroad. The Cyprus Development Bank will therefore play a much larger role in the process of economic development than the figures in the table indicate.

8. For those who have read the report up to this point, it should be apparent that the Group A items in Table 48 are those items of public expenditure which may be expected to be financed from government revenues. In chapter XI the conclusion was reached that by strong determination the Government of Cyprus should be able to devote about £5,000,000 per year to economic development. Unbelievable as it may seem, this figure was developed independently of the various requirements figures in Table 48. The conclusion is apparent that the various programmes outlined in earlier chapters are within the power of the Cyprus economy to carry out, if it has sufficient urge to do so. There is little room for waste.

9. Group B includes those proposals which it was suggested at earlier points in the report be externally financed. They are all long-term development projects. In some instances, such as electric-power generation or the Famagusta port, there already are more or less firm commitments for foreign assistance. The five-year programme involves £17,200,000 to be raised abroad, more than doubling the present external debt. The items included are all of types with which international capital is thoroughly familiar. Since a number of countries have expressed a special interest in contributing to the economic development of Cyprus and since there are several international agencies active in the business of lending money to help provide the basic facilities needed by a growing economy, the figures involved do not seem excessive or impractical, especially when related to a five-year period.

10. There is one desirable programme for which no provision has been made which would contribute greatly to economic development and that is some approach to land consolidation. There can be no doubt but that the present fragmented land holdings are a strong deterrent to agricultural progress. However, the Mission was unable to find any proposal on which it could pin its hopes. One cannot set aside funds without some idea as to how they will be spent or what can be achieved. Furthermore, if the process should turn out to be one of purchase or condemnation and then resale, the government's share would only be the difference between the two prices. And if it is true that six pieces of land are worth more together than separately, then perhaps it might not be necessary for the government to take a

loss on the transactions. Therefore, no allocation for such a programme has been included in the estimates, although some action in this field is highly desirable.

Feasibility of the suggested programme

11. Over the five-year period 1961-65, the suggested public development outlays amount to £42,500,000 (\$120,000,000). Outlays to be financed by budgets (group A) total £25,300,000 (\$71,000,000) and the remainder (group B), to be financed by external means, £17,200,000 (\$49,000,000) as shown in Table 48. The prospects for financing such sums are discussed below.

GROUP A

12. The amount of £25,300,000 (\$71,000,000) is to be financed in part from regular government income and in part by direct United Kingdom aid already scheduled. To the latter should be added some additional sums such as the United Kingdom financing of roads (Famagusta By-Pass), and counterpart funds of the United States grant of wheat in 1960, used to finance water and agricultural development. For the five-year period, the contribution of aid passing through the regular budget can be estimated at £13,000,000 (\$36,000,000). This is roughly half of financing required for group A.

13. The rest must be financed by governmental saving and investment, i.e., part of government receipts other than aid will have to be devoted to development. In 1961, such public saving will be small, of the order of £1,000,000. It must increase substantially over the rest of the period so as to total some £12,300,000 for the five years cumulated. One could imagine a progression something like £1,800,000 in 1962, £2,200,000 in 1963, £2,800,000 in 1964, and £3,500,000 in 1965. The problem is to evaluate whether or not the latter figure is realistic in the light of the analysis of chapter XI.

14. An increase in public saving of the order of £2,500,000 (compared with 1961) appears quite feasible, although not easy. Because the national income will rise, over a five-year period, by perhaps 20 per cent (in real terms), the present tax system should yield something like £3,000,000 more. However, from this should be deducted a certain amount corresponding to the expectation that receipts from mining incomes and from import duties cannot be expected to rise over the period in line with increased gross national product. On the other hand, some revisions in the system of taxation might increase the yield, offsetting the losses mentioned above. As to current expenditure, the report suggests that its amount might well be stabilized over the next few years, as savings on some items will release funds for that part of expenditure which grows automatically with the rise in national income and population. It is thus seen that it is within reach to raise public saving by the amount needed to finance group A. What is required is a limited fiscal effort in the latter part of the Programme, and selective and energetic action in holding down public administrative expenditure.

GROUP B

15. This is the part of development expenditure to be financed through negotiations. One may distinguish three categories according to the technique of financing.

First, a certain amount may be considered to be practically pledged or almost certainly ensured. This amount totals £6,000,000, of which £2,000,000 represent United Kingdom financing of Famagusta harbour, £3,000,000 London financing of the Electric Power Authority, and £1,000,000, an amount which it is realistic to believe that the United Nations Special Fund might finance (the two projects relating to the Agricultural Institute and the Geophysical Survey). A second sub-group is financing which it appears, *prima facie*, reasonable to expect from the International Bank, the International Development Association, or other regular sources for development loans, especially for projects such as the Limassol port extension and the electric power projects. This is assumed to be at least another £3,000,000. There remains a third sub-group totalling £8,200,000, which represents really the "gap" to be financed by private capital and aid or loans negotiated by the Cyprus Government with foreign countries, such as the United Kingdom, the United States, the Common Market countries, especially the Federal Republic of Germany, Greece and Turkey, or other interested countries. The probability that such financing can be obtained appears quite high.

PRIVATE CAPITAL FOR DEVELOPMENT

16. The mission has not attempted to prepare a complete forecast of private investment for the five-year period. Such estimates would be very difficult to make because they do not represent a "plan" but rather the decisions of thousands of individuals. The farmer makes an improvement in his farm; the business man adds a new machine; the father of the bride builds a new house. These investments have been substantial in the past and will continue in the future. Furthermore, there is a cumulative interaction here, so that economic growth provides the psychological environment for investment and expanded incomes which make the process of savings much easier. As to the possibility of private foreign funds being invested in Cyprus, this is even more dependent upon the environment which is created.

17. In the chapters on water, agriculture, mining, electric power, and industry, rough estimates for private investment were made which ranged from totals of £8,500,000 to £10,200,000 per year. If some £3,000,000 is allowed for other areas such as housing and transport, the private capital needed to meet the growth requirements can be estimated at something like £12,500,000 per year.

18. The total development expenditure outlays in Cyprus for development purposes, public and private, foreign and domestic, would come to about £21,000,000 in 1961. In the past, the highest levels reached were in 1956 and 1957 at nearly £20,000,000 with the aid of the Military Authorities, but the investment level has dropped sharply since then. Excluding expenditures attributable to the Military Authorities, it fell as low as £13,600,000 in 1958 and £12,200,000 in 1959. However, the gap is by no means as wide as it appears. The figure of £21,000,000 includes £3,700,000 in group B which should be raised abroad. The estimate for private investment includes another £3,000,000 of foreign capital in mining and industry. Therefore, the savings required from domestic sources (including under that heading the United Kingdom scheduled payments) will be less than £15,000,000 in 1961, though it will increase slightly

thereafter. This target figure is certainly not out of range, though it may take considerable power to hit it.

19. One other aspect should be noted and that is that the development programme is designed directly to increase or improve production. One-quarter of the development expenditures will be devoted to water development and agriculture, another quarter to manufacturing and electric power, and about one-fifth to mining. As compared with recent years, the share to be devoted to agriculture and industry is much higher whereas that of housing and such services as roads and transport is lower. The proposed pattern of investment should provide a dynamic force to the Cypriot economy, checking the decline in gross national product and starting the process of economic growth again.

20. Certain problems may be created by the stepping up of domestic investment, and particularly the injection of foreign capital may start another inflationary movement of prices and wages. The figure of £15,000,000 given above is a figure of Cyprus domestic capital formation, although it does include the United Kingdom grant. So far as measuring the pressure upon the productive resources on the Island, we must add a considerable part of the £3,700,000 of foreign assistance sponsored by the Government and at least another £3,000,000 of private foreign capital resulting either from new investment or reinvestment earnings. Much of this added foreign capital will be in the form of imported materials and machinery but some of it will go to pay for Cyprus products and labour.

21. Certain special difficulties can arise from too rapid a shift to investment projects, especially in the Cyprus case. The lesson from the experience of the Bases is clear. The increased employment on various construction or installation activity can result in added purchasing power for which no equivalent supply of goods is coming on the market. Unless the domestic consumer-goods industries expand rapidly, the result is likely to be increased imports. Thus the shift in the domestic structure might lead to the necessity of out-payments at the very time when every effort is being made to mobilize resources for domestic development. There is no way to prevent the process of structural change, but if it is recognized, various counteracting steps can be taken. The problem of inflation has already been discussed in Chapter XII, where various ways were pointed out for holding it within limits. There are ways to check inflation and they should be sufficient to meet the rather limited pressures which this programme would create.

Efficient use

22. The limitation on economic progress in Cyprus may turn out to be not so much a lack of resources as a failure to use them efficiently or a lack of personnel competent to carry out the programme. Throughout the Report countless suggestions have been made as to ways in which the resources already available in Cyprus can be used more efficiently and effectively. This is as much a form of economic growth as the actual addition of new resources. Probably much more genius is being devoted today throughout the world to the problem of improving present methods of doing things, than to discovering completely new products and processes.

23. Two major projects have been suggested in the Report which would bring modern technology to Cyprus

in important areas, the establishment of an Agricultural Research Institute and of a Geological and Geophysical Survey. In addition, at countless points in the Report, it has been pointed out that various specific conditions or situations could benefit by being brought up to date in terms of modern knowledge and experience. Sometimes this may require the bringing of an expert to Cyprus; other times it may be that the Cypriot can benefit most from observing foreign operations. In still other cases, foreign training may be necessary to build up the level of expertness in Cyprus.

24. It is difficult to imagine any good reason why Cyprus should not take advantage of knowledge and experience which already exists anywhere else in the world. To do this will require considerable organization and foresight. With a vigorous effort to take advantage of the availability of knowledge, Cyprus might gradually put itself in the forefront in the application of modern skill and technology to its problems. In some fields it might become a demonstration centre for other countries.

25. One of the problems in this area is that the knowledge of the local expert all too soon becomes out of date. One specific suggestion for strengthening the Cypriot economy is the creation and development of a Central Government Library. This is not a simple project. There would have to be a continuous programme for the accumulation of books, reports, reference works, technical periodicals, documents of the United Nations and various governments, and the like. Then this material would have to be organized in accordance with the latest library science, so that it could be readily available to those who wished to use it. Members of the Legislature and Government officials would not then be dependent on limited and personal libraries, but could draw upon the much broader collection in the Central Government Library.

26. The present scattered system of book purchasing not only involves considerable duplication but does not make generally available the books which are purchased. These many publications represent the accumulated knowledge and wisdom of mankind and constitute one means by which those in any one country can keep abreast of past experience and new discoveries throughout the rest of the world. Exposure to the latest publications is one method for keeping up to date those who have had past professional and technical training. And the recorded experience of other countries is often very helpful in judging legislative proposals.

27. The first project in developing such a programme might be to bring to Cyprus as a technical assistance expert, an individual experienced in central-library operation. He would review the present situation and make suggestions for the development of an adequate library service. Some publications might undoubtedly be obtained on an exchange basis for Cyprus Government documents, but much would have to be purchased and therefore the Library would eventually become a permanent budget item. While its contribution to the economy would be intangible, there can be no question but that it would be of tremendous benefit to Cyprus and its people.

Government buildings

28. The buildings which have been inherited by the Government of Cyprus represent a special problem.

One of the impressive resources of Cyprus is the quality of its government officials, and visitors frequently comment on this fact. They also speak less favourably about the unsatisfactory nature of the offices in which these officials work. Numerous psychological studies have demonstrated the effect of physical surroundings on efficiency and on morale. This is as true of high-level professional workers as of manual workers.

29. The problem is not one so much of comfort as of actual efficiency. Officials are scattered over a vast area in a collection of buildings, many of which were never intended for office use. There are few cases where secretaries are able to assure privacy to their superiors, and many officials have no insulation from visitors or from noise in the vicinity. Lighting is very poor and equipment often in poor repair. There seems to be a spirit of self-denial among public officials which is praiseworthy but costly in productivity, if not in terms of the immediate budget.

30. The dignity and efficiency of the Government and its representatives require a complete reorientation to the problem of adequate government buildings. To that end, the suggested development budget includes £50,000 in 1961, £75,000 in 1962, and £100,000 in each following year for government buildings, most of which would be in Nicosia. It is suggested that a competition be held for a general building plan for the Government of Cyprus. This is a programme worth starting. Once an overall design has been approved, it can be filled in gradually year by year.

The role of the Government

31. It is obvious from what has gone before that the pace of economic development in Cyprus will depend to a large extent upon the policies and practices of the Government of Cyprus. Something like 40 per cent of the suggested total investment to be made will be carried out under its aegis. And at point after point, the Government's initiative or direction will be crucial to economic growth.

32. No government is any better than the individuals of whom it is composed; therefore it is a matter of great importance that public officials be selected on the basis of education, experience, and competence. The new responsibilities of the Government require dedication to public service. Much larger staffs will be required at various points to carry out the proposed programme, for example, in the Water Development Department, and the appointments must be given the careful consideration commensurate with the importance of the work to be done. In fact, the greatest obstacle to carrying out the Development Programme may prove to be the shortage of competent persons to direct and put into effect its many phases.

33. Assuming that there are competent officials to carry out the detailed suggestions outlined in the Report and that if not, the vacant spots will be filled by the temporary appointment of individuals from outside the government—or even the Island—who are competent, there still remain two important aspects of government organization to make sure that economic development is accelerated. The first arises because many of the projects require co-operative action between Ministries. The water programme involves the Geological Survey, the Land-Use experts in Agriculture, and the Water De-

velopment Department itself. At times Interior may also be involved, not to mention Justice and the Attorney-General. The tourist programme, while located in the Ministry of Commerce and Industry, also may include activity for Labour, Communications and Works, Health, and the new Cyprus Development Bank. In other words, economic development is a many-sided effort and will call for a high degree of co-operation among agencies within the government.

34. Equally important is the establishment of a continuing planning agency and central point for co-ordinating the programme. It must be associated with the center of government authority and therefore should be an agency set up by, and reporting directly to, the Council of Ministers. Such an agency might take the form of an Economic Development Commission with three members and a small staff, who would devote full time to the work of the Commission. As an immediate step, it is suggested that the Commission be set up administratively with experienced civil servants as members. It would be helpful if the Chairman were someone not only trained as an economist, but also thoroughly familiar with the operation of the Government of Cyprus. At a later time not to be greatly delayed, the Commission should be established by appropriate legislation.

35. The work of the Commission would be to analyse economic developments and trends and to design policy measures to encourage economic growth. It could start with this Report and develop its suggestions or alternative courses of action in terms of their impact on employment and incomes to a much greater extent than has been possible in the short time of the Mission's life. It would locate the points of difficulty in the immediate programmes of action and would look ahead in an effort to minimize difficulties in the future. It would furnish a consistent basis for detailed studies by the various Ministries so that their work would be directed towards common goals. It would watch the measures of imbalance—cost of living, unemployment, and payments deficits—and be prepared with programmes to deal with the circumstances which may have caused such trouble as was indicated. It would play an active part in arranging for technical experts to come to Cyprus as well as for fellowships for Cypriots to study abroad.

36. In terms of immediate operations it should work closely with the Ministry of Finance on government expenditure, with the Cyprus Development Bank on loan projects, with the Ministry of Commerce and Industry on trade controls, particularly those relating to machinery imports, with the Ministry of Foreign Affairs in arranging for foreign capital and technical assistance, and the other Ministries in connection with various development programmes.

Additional Inquiries

37. The Report has touched on a number of the key aspects of the economy of Cyprus but the limitations of time and energy have meant that many important subjects and problems remain to be considered. Housing, for example, has played an important part in capital formation in Cyprus in recent years. If one excludes expenditures by the Military Authorities, it has ranged from £3,700,000 in 1954 to £2,000,000 in 1959. The quality of housing varies from elaborate

apartment buildings in the new suburbs of Nicosia to the mud-brick homes in mountain villages. There have been a few government housing projects and some governmental housing assistance. Here is one important area in which economic policy needs to be formulated and steps of encouragement or restriction may be called for. Closely associated with housing is the whole subject of town planning involving the development of programmes of urban-land use. The construction industry as an industry is important enough to be the subject of economic review.

38. Another area needing much further examination is that of wholesale and retail trade, including the activity of exporters and importers. Not only do these enterprises involve some 10 per cent of the total gross national product, but they are in a very strong strategic position to influence production and consumption, and imports versus domestic goods. The Mission has been able to give this field only slight attention.

39. In the public finance area, the discussion in the Report is focused on the question of the ability of the Government to finance economic development. However, there are many other problems in this field which need study, such as the incidence of various forms of revenue on the economy and the relative cost and efficiency of particular forms of expenditure. The power to tax and to spend is not only important in its total effect but also in the particular impacts on the various sectors of the economy and groups within the population.

40. In view of the importance of foreign trade in the economy of Cyprus and the fact that efforts to stimulate the economy may lead in large part to increased imports, and, conversely, weakness in the balance of payments may produce deflationary results, much more needs to be known about the structure of imports, their essentiality and their elasticity.

41. Even if all the sectors in the economy had been examined, there would still be further work to do. A coherent plan needs to be constructed out of the many suggestions. The various elements in an economy are interlocking. Agriculture depends on water. Industry requires power. Roads affect distribution. Food and manufactured goods both depend upon purchasing power being created to buy them. A total plan must try to balance the many parts so that they are mutually supporting. It must estimate the effect of the various steps on each other and on employment, prices, and the balance of payments. Only through such an integrated programme can one be sure that the resources which are available are being used most effectively.

Conclusion

42. This is essentially an economic report. Its attention has been concentrated on economic growth and economic development. It is not a full-fledged plan but a series of suggestions which are offered for serious consideration. They must be considered not only as economic proposals but also with respect to their social and political implications.

43. The future economic development of Cyprus will not be achieved by some brilliant invention or some master stroke of policy. It will come from the increased production of goods and services on the farms, in the

villages, and in the towns. Increased production can be taken to mean more goods and services, or higher quality goods and services, or goods and services at lower cost. Any of these will mean progress, and all of these are possible.

44. Cyprus today is at a crucial stage of its political and economic development. No longer is its future subject to the planning of some outside power. The Government of Cyprus, an independent government, is the

responsible agent for both policy and programme from now onward. Cyprus has the potential for substantial economic progress, but it will not happen automatically. A carefully-planned programme of economic development will have to be vigorously and steadily prosecuted. It will undoubtedly record some failures but it should have many more successes. In the last analysis, success in the economic field is an essential part of demonstrating the ability of Cyprus to govern itself.

ANNEXES

Annex I

SUGGESTED AREAS FOR GEOLOGICAL AND GEOPHYSICAL SURVEYS FOR WATER

Suggested areas for geological surveys are as follows:

(a) *The Famagusta-Dhekelia-Cape Greco triangular area.* Here some water-bearing limestone outcrops can be seen. As this is one of the most important areas of Cyprus where the ground-water problem is very acute, a detailed geological survey should be started immediately.

(b) *The Polis-Pomos coastal plain* (particularly the contacts). This is a recent formation of pliocene-pleistocene-volcanic rocks. There is an aquifer, the survey of which is not yet advanced. In this area some successful boreholes could be sunk.

(c) *The extremity of eastern Mesaoria and the Karpas Peninsula.* This area (especially that between Lefkoniko and Cape Andreas) looks promising for possible water discovery but the geology is so complex that detailed investigation must first be carried out. The success of Ayios Andronikos aquifer should be borne in mind.

(d) *West-central and eastern Mesaoria.* The prospects for water are more uncertain in this important area. This is particularly so with regard to the problematic possibility of finding deep ground water. But in order to dissipate uncertainties, geophysical surveys and exploratory drilling might be undertaken.

Suggested areas for geophysical surveys are as follows:

(a) *Mesaoria plain.* This area is the one with the most acute water problem in all of Cyprus. Exploration should be conducted in two different phases. The electric-resistivity method should be used to a depth of at least 500 feet for the location of possible local phreatic aquifers contained in porous miocene and pleistocene soils or buried valleys. Localized aquifers have already been discovered in this area. The electric-resistivity and seismic methods should be used to a depth of at least 12,000 feet for the evaluation of the thickness of the miocene formation (and, consequently the depth of the limestone or igneous bed-rock). Results should then be interpreted by geologists in terms of possibilities for water, minerals, and oil exploration.

(b) *Eastern end of Mesaoria and Karpas Peninsula.* A

series of geophysical surveys, mainly by means of electric resistivity, should be concentrated on the region between Lefkoniko and Cape Andreas. From the geological viewpoint it seems that some aquifers comparable to Ayios Andronikos must exist in this area. The isolated porous formation, sandstone and limestone, might be delimited geophysically before any exploration drilling starts.

(c) *Kyrenia range (from Dhiorios to Ephtakomi).* It has been suggested by the Water Development Department that a geophysical survey should cover this area for the location of possibly existing natural ground reservoirs in the limestone. Electric resistivity should be applied. The suggestion is very attractive if resistivity diagrams can be established for limestone and water. A geophysical survey should be started from known points such as natural springs—Kythrea, Lapithos, etc., and existing boreholes. Moreover, in combination with geophysics, the use of tracers would be very useful for the location and study of the Kyrenia ground-water reservoirs.

(d) *Reef-limestone formation at the toe of Troodos northern slope and in the Famagusta-Cape Greco-Dhekelia triangle.* As regards the Troodos northern slope, reef-limestone outcrops have been located and mapped on geological sheets. Through geophysics it would be useful to check whether the reef limestone (the outcrops of which were seen at the three above-mentioned points) extends underneath between these three points; this point, if answered in the affirmative, could be of vital importance for the southern part of the Famagusta district.

(e) *Polis-Pomos coastal range.* This area seems to have been neglected in the past and a resistivity-seismic survey along the coast from the sea to the volcanic rocks would be extremely useful. There is a phreatic aquifer in gravel and sand but the bed-rock depth and profile are not known.

(f) *Lower reaches of the Troodos streams.* In 1958 a first seismic survey of 14 stream beds was carried out and should be completed. The results obtained are very encouraging because natural ground reservoirs could thus be located. Details of this should be completed. Furthermore some 20 stream beds have still to be investigated through geophysical methods.

Annex II

SUGGESTIONS FOR DRILLING PROGRAMME FOR WATER

A preliminary (and tentative) outline of areas where future drilling for ground water appears most appropriate is given below. It has to be emphasized that most of these areas should be previously investigated and explored by geologists and geophysicists, and adequate drilling equipment should be used.

(a) LOWER REACHES OF THE TROODOS STREAMS

In this area a number of successful boreholes can be drilled in stream beds, their sites being fixed in accordance with the 1958 geophysical survey results. Areas where immediate drilling can be started are: Larnaca, Limassol, Paphos, and Limnitis-Xeros. Extrapolation of geophysical results in river beds is quite difficult and may be very expensive but not very successful. It is recommended that new or complementary geo-

physical measurements should be carried out before new sites for drilling are selected.

(b) REEF-LIMESTONE FORMATIONS

(i) *Toe of Troodos range northern slope* (see geological map at end of volume): Exploration and even final boreholes could be drilled with the present equipment. Due to the high runoff on igneous and pillow lava, percolation is likely to be very important in the limestone there because of great porosity; thus good aquifers can be expected. However, geophysical surveys and rotation or rotary drilling would yield better results.

(ii) *Famagusta-Cape Greco-Dhekelia triangle area:* Some exploratory boreholes should be started as soon as possible

in the Cape Greco area. If, as hoped, reef limestone proves to be an excellent aquifer, some more boreholes should be drilled at Paralimni, Liopetri, and Xylophagou. A geophysical survey would be the best approach, but direct-drilling exploration can be started at any time in this area if systematic and careful movements of rigs are geologically planned. Successful boreholes in that area would relieve the Famagusta town-water supply and would increase the irrigation possibilities.

(c) **POLIS-POMIS COASTAL RANGE**

In this area geophysics should take precedence over drilling. However, as the area is not too vast, some exploratory boreholes could be sunk between the sea and the igneous formation. The present available drilling equipment can be used in the area of recent coastal-plain formation (boulders, gravel, sand) and even through the apparent sandstone and calcareous-sandstone layers.

(d) **EASTERN END OF MESAORIA AND KARPAS PENINSULA**

Some successful aquifers, comparable to Ayios Andronikos, should exist at many points in this area. It is recommended, however, that geology and geophysics should be utilized before any extensive and expensive drilling operations are begun. Present drilling equipment could be efficiently used in the localized pliocene formations—mainly shelly limestone and some sandstone.

(e) **KYRENIA RANGE**

Except for some emergency cases, such as town (Kyrenia) and village domestic supply, drilling should be avoided as

much as possible with the present percussion drilling equipment because of its low efficiency and its high cost. Furthermore, geophysical surveys and use of tracers for natural underground reservoirs location should first be conducted.

(f) **MESAORIA PLAIN**

Drilling in this area has to be carefully planned and studied before execution. After a geological preparation followed by geophysical exploration to a depth of 500 feet on average, but not exceeding 1,000 feet, some small-diameter exploration boreholes might be drilled for water investigation and qualities estimation in the miocene and pliocene soils and possibly existing buried valleys or stream beds.

The second stage of drilling in Mesaoria is more difficult and will involve great expense. Recent geological reports mentioned that the miocene formation (marls and clays, hence impermeable) may have a thickness of 12,000 feet. To drill boreholes to such a depth, special rotary equipment is necessary. This equipment is not presently available in Cyprus and would have to be imported. Ground-water exploration at such a depth cannot be economically justified if investigation for some other natural resources is not required. Hence, only combined exploration (water, minerals, and oil) can justify a rotary exploration. This might be implemented when the new Geological Survey Department is organized and after the required geophysical survey by a specialized international firm is completed. Since this particular operation of deep drilling will be one of the most delicate technical problems in Cyprus a long-term and cautious approach is recommended.

Annex III

OBSERVATIONS CONCERNING WATER PROBLEMS BY AREA

The following is a summary of observations regarding the most important problems in the areas which it was possible to survey during the time available to the Mission. The summary includes various suggestions for action. The general observations in Chapter III concerning the need for scientific surveys, engineered designs, and economic cost and benefit calculations apply to the detailed analyses presented but are not repeated in each case.

Northern part of Mesaoria plain and Kyrenia range

MESAORIA PLAIN

The most important requirement for this area is to increase the supply of water for irrigation. At present water is supplied from three main sources: natural springs, ground water, and surface water.

(a) *Natural springs.* All existing springs on the southern slope of the Kyrenia range are located at the geologic contact between the Kyrenia range limestone and Mesaoria clays and marls and are used for domestic water supply and irrigation. A potential expansion of the irrigation area might result from greater use of the Kythrea spring, the largest spring on the Island. The basis of the project would be to store Kythrea winter water in an earth dam on the Neo Khorio stream. Water from the spring would be channelled to the dam-reservoir through a gravity pipeline over a distance of approximately one mile. This would divert approximately 70 million cubic feet of water between November and March. To this supply would be added about 6.3 million cubic feet, which is the annual discharge of the Neo Khorio stream. This could supply water for a gravity (seasonal) irrigation scheme in the plain covering some 4,000 donums. This project would provide the opportunity to follow modern design and irrigation methods for the first time in Cyprus.

(b) *Ground water.* This subject is covered in the main part of the report.

(c) *Surface water.* Some spate irrigation is already being done, and there is a possibility of greatly increasing the supply of water for irrigation. Approximately 62 stream basins might be developed by means of storage earth dams to be used

for combined spate and seasonal irrigation. It is estimated that with average rainfall some 560 million cubic feet would be available for irrigation, both spate and seasonal, which could supply some 17,000 donums.

A pilot scheme utilizing an earth dam is already under construction at Mia Millia stream close to Nicosia, for grazing and cattle watering. This project is being carried out jointly by the Agriculture and Water Development Departments. If successful, the technique could be applied to many streams of the Mesaoria plain.

KYRENIA RANGE

Domestic water supply and irrigation are the two main problems to be solved. However, in the Kyrenia range area itself only domestic supply has to be considered. Its appropriate development requires the preparation of a geophysical, drilling, and surface-dams programme. In addition, some irrigation problems exist in the northern coastal plain.

(a) *Kyrenia town-water supply.* The present town requirements in summer are estimated at more than 100,000 gallons per day. The present daily supply from boreholes in summer is approximately 90,000 gallons. By 1966, it is estimated that the requirements allowing for an increase in *per capita* consumption will be 200,000 gallons per day. Thus the present shortage threatens to become increasingly serious. The immediate solution is to drill a supplementary borehole but there is little chance that this will solve the problem. Given the urgency of the situation, however, a borehole site has been selected in the stream, just above Kyrenia (close to the feeding pipe lines, below the Kyrenia-Nicosia road). Whether or not this borehole is successful, some geophysical survey work is required in the hope of finding a natural ground reservoir in the limestone. If no additional ground water is found in the range within a short distance from Kyrenia, it will be necessary to bring water from the Lapithos and Karavas springs.

(b) *Halefka station.* Geophysical investigation is required and should precede the sinking of new exploratory boreholes.

(c) *Kantara resort station.* In this area there is an acute water shortage. A water tank of several thousand cubic feet

capacity is already installed and there is also a good domestic distribution network. However, the discharge of the spring into the present supply system cannot be increased. Consequently it is important to find additional ground water. Some possibilities exist but the siting of prospective boreholes is made particularly difficult on account of the intricate geology. A geophysical survey would be useful in finding the most promising locations.

NORTHERN COASTAL PLAIN—IRRIGATION PROBLEMS

There are some natural springs, the most important being at Lapithos and Karavas. There are also some 66 small streams, the water of which is lost every year into the sea. Recent estimates show that the average annual discharge of these streams amounts to 300 million cubic feet.

(a) *Lapithos spring and irrigation scheme.* The only possible improvement in this project is channel lining for a better use of water. In addition improved irrigation methods can reduce the amount of water used per unit of product.

(b) *Ayios Amvrosios.* This area needs more water for irrigation. Construction of dam reservoirs is rather difficult. However, many check dams for soil conservation and water percolation can be built.

The area should be included in the geophysical drilling and surface-dams development programme for the Kyrenia range. There might be some possibility of ground water in the limestone rocks.

Morphou Bay basin

Since 1950 the water table of the Morphou aquifer has been dropping at an exceptionally high rate, as much as several feet per year. The main reasons for such an alarming situation are: (a) increasing water demand, particularly for citrus trees, which has led to over-pumping; and (b) lack of normal rainfall over the last three years (a particularly adverse development in the case of Morphou since the aquifer is primarily replenished by natural percolation). The magnitude of the problem is increased by the fact that the situation is likely to deteriorate substantially when pumping starts for the Great Nicosia water supply scheme.

To re-establish the hydrological balance of this aquifer, which is the most important of Cyprus and which supplies one of the most prosperous irrigation areas, various measures must be taken, some of which have already been started. Such measures are as follows:

(a) Completion of an inventory and hydrological map of the aquifer so as to assess the local water balance. Action in this field has already been initiated by Water Development Department survey teams.

(b) Control over ground-water development. One important step is the transformation of the Morphou Bay basin into a water-conservation area, thus giving the Government control over new drilling. Government action has already been taken to this end and it is reported that the sinking of new wells or boreholes is now controlled in this area.

A second more difficult step would be the revision of the water legislation so as to provide for (i) filling some of the existing 650 boreholes; (ii) control of borehole discharge by introduction of water meters; (iii) prohibition of unrestricted selling of water by borehole owners to land owners, since some borehole owners have at their disposal more water than land. Unfortunately, such new water legislation and controls require a long time to become effective.

(c) Creation of a recharge scheme. The problem is really one of a competition between the supply of fresh water (threatened by the constant depletion of the aquifer) and the encroachment of sea water (as discussed in connection with Famagusta). The only possible immediate solution appears to be to set up an artificial-recharge scheme. This must be considered a top priority project.

Fortunately for the aquifer of the Morphou Bay basin there are at least two streams, the Serakis and Ovgos, which can be used for recharge. They have an average annual discharge of approximately 300 million cubic feet which is wasted into the sea. Although the hydrological data are seriously inadequate,

an examination of the situation leads to the following conclusions:

(i) At least two earth dams, with great storage capacity, can be constructed on the Serakis stream just upstream of the Morphou basin.

(ii) One earth dam, with quite important storage capacity, can be constructed on the Ovgos stream.

(iii) Direct and substantial percolation (through the gravel beds of these three reservoirs) may be expected to take place.

(iv) From the three reservoirs some surface irrigation for the Morphou basin could be obtained. It is estimated that all the wasted water (300 million cubic feet per year) can be thus put to use either for recharge of the aquifer or for direct surface irrigation in the Morphou basin. Should more water for recharge still be required after completion of these three schemes, the same type of scheme could be applied to the Elea stream where a site for an earth dam exists upstream of the Elea village.

(v) The introduction of improvements in irrigation methods, especially in water-use consumption. It is probable that present irrigation practices involve a higher application of water than is required, although part of such excess reverts to the aquifer by direct percolation.

In relation to the Morphou basin scheme it has been suggested that concrete lining be provided for 138,000 feet of earth channel in the irrigated area at a cost of about £150,000. This project appears to be much less productive than the recharge schemes. If funds are limited, channel lining should be considered as a late stage in this development programme, because it does not deal with the core of the problem. It is helpful only to the extent that it leads to better water use and is part of a general programme of water economy. The urgent problems are preventing water wastage into the sea and recharging the aquifer.

Morphou town-water supply. Because there is no shortage of water for town supply, the only problem is to improve and extend the distribution system.

Lefka area

Water for irrigation of orchards and orange trees is the main requirement. In order to save the plantations which are drying up, construction of the Lefka dam on the Marathasa stream began many months ago. This particular project is open to criticism on several grounds, the discussion of which may be helpful in pointing out considerations to be kept in mind in future dam designing:

(a) The dam site is not appropriate for this type of structure, particularly for a mass-concrete gravity dam. There is a geological fault crossing the dam site and cracks and fissures can be seen on the abutments. The left abutment is composed of sand, silt, gravel, and boulders, making it an unsuitable dam site from the viewpoint of geology and engineering as well as seepage and leakage. Very deep, therefore costly, foundations had to be provided.

(b) The ratio of the volume of water stored to the height of the dam is too low. The first stage calls for a height of 60 feet. At that height the storage capacity will be only 4.5 million cubic feet.

(c) The cost is high. The total cost of the dam when finished will be over £100,000 and a rough estimate indicates that its water cost per unit will be at least £0.250 per 1,000 gallons, a cost that is difficult to justify. The cost of construction is high for reasons given in (1) and (2) and also because a very wide dam cross-section was provided, requiring the use of an enormous quantity of concrete.

(d) The area to be irrigated will only be 70 donums of citrus trees. The estimated storage of 4.5 million cubic feet should be sufficient to put a much wider area into irrigation.

These deficiencies in the scheme are due to a lack of adequate geological investigation and exploration by test pits in the river bed and by drilling on the abutments. Furthermore, there was no adequate economic survey to measure the cost against the benefits. The other dam supplying the Lefka area, the

Kafizes dam, built in 1952, also cannot be considered to be a success when the record is examined carefully.

The Lefka irrigation problem, after ten years involving considerable expenditure, has therefore still to be solved. The water requirements of orchards and trees will have to be met by additional means. The most promising possibility is to investigate the lower reaches of the nearby Kafizes stream bed. The 1958 geophysical survey results show that downstream of the Kafizes dam, a deep gravel bed exists. Thus a possible solution would be to start a field investigation immediately, looking towards the possibility of sinking boreholes in the stream bed and pumping from the underground reservoir. This possibility gives every indication of being quite important. In summer several hundred thousand cubic feet of water might thus be made available. If successful, these boreholes should be connected by means of a pipe to the gravity canal or pipe coming from the Kafizes dam. Of course the relevant design for the entire project should be carried out on an economic as well as an engineering basis.

Famagusta district

Water problems in this district are among the most acute in Cyprus and particular attention has been devoted to them.

(a) FAMAGUSTA AREA

Supplying of water to the Famagusta area involves a complicated plan for accumulating and moving surface water, associated with an artificial-recharge scheme for ground-water irrigation. The treatment of surface water, that is, drainage, canals, tunnel, and spillway from the Kouklia reservoir to the Ayios Lucas reservoir may be considered as relatively satisfactory. The increase of the height of the earth dam and spillway crest for Ayios Lucas reservoir is now under construction and will increase the capacity from 10 to 15 million cubic feet.

Some technical matters should be reviewed in connexion with the Ayios Nicolaos reservoir and ancillary works—the water balance of the reservoir, the tunnel discharge capacity, evaporation losses, and the impermeability of the reservoir which should be checked by test pits.

The chief problem in the Famagusta programme is the artificial-recharge scheme started in 1954. There was then considerable uncertainty concerning the danger of clogging the aquifer with suspended silt and clay carried by surface water and introduced directly underground through the recharge gallery. There is clear evidence today that the bottom and side walls of the gallery, which were dug in soft sandstone, have become clogged with silt and clay layer. This phenomenon is the result of introduction into the gallery of turbid water. The capacity absorption of the gallery, which is reported to decrease every year, is estimated to be at the moment only 160,000 cubic feet per day.

It should be noted that nowhere in the world is a gallery used for the recharge of ground-water aquifer where surface and turbid water is put directly into an underground aquifer. This is because there is a risk of clogging of the gallery and aquifer, and the possibility of a gradual destruction of the natural aquifer and its entire loss through bacteria pollution.

In the light of these considerations, the following programme is suggested:

(i) The programme to double the length of the existing recharge gallery at a cost of £40,000 should be abandoned.

(ii) An inventory of the irrigation scheme now supplied by the gallery should be made. A cultivation map should be prepared showing the various irrigation plots and their requirements.

(iii) The examination of the possibility of supplying the cultivated area by means of a surface-irrigation scheme using direct pumping from Ayios Lucas reservoir should be undertaken.

(iv) An alternative recharge scheme should be considered which appears to be both economic and efficient, namely, to increase the percolation rate in the Ayios Lucas reservoir directly to the aquifer. This might be done by digging pits and shafts at the bottom of the reservoir, in direct communication

with the water table. Of course such pits and shafts would have to be filled up to ground level with fine, clean sand and each covered with a cap of gravel. This gravel and sand natural filter would stop any sediment or solid transport or suspension in the water and clean water would reach the aquifer. As already designed and used in many areas of the United States, this type of scheme has proved to be most efficient for artificial recharge of ground water.

A part of the Famagusta artificial-recharge scheme for ground water also includes the Paralimni Lake which is connected by tunnel with the Ayios Lucas reservoir. The lake's hydrological records show that in a good year it can supply 10.8 million cubic feet, but in a bad year there is not a drop of water. Furthermore, the residents of the Paralimni Lake area are opposed to diversion of their water to the Famagusta scheme. Another difficulty is the fact that the Ministry of Agriculture plans to introduce a land reclamation pilot scheme over the lake area.

One can easily call into question any land-reclamation scheme in this area. Already, there is more good land available than water and it seems obvious that the Paralimni Lake water should be used either to supply the local residents or for the Famagusta scheme. Priority in this area, where there is plenty of good land, should be given to water development and only thereafter to land reclamation.

(b) FAMAGUSTA-CAPE GRECO-DHEKELIA AREA

As previously mentioned in chapter III, possibilities of greater depth drilling up to a maximum of 1,000 feet should be investigated.

(c) CAPE GRECO-PANAYIA AREA

The most serious problem at the moment in this area is the ineffectiveness of water legislation. Since February 1960, 36 illegal boreholes were drilled by private contractors for farmers. Pumping is going on day and night without any control. Pipe-lines of all sizes have been laid down, some for substantial distances. The result is the lowering of the water table. Until October 1959, there was an artesian spring which supplied Famagusta through an aqueduct; by September 1960, the spring had dried up. The static-water level of the aquifer had dropped to 55 feet below ground level; the working-water level of the pump 80 feet below ground level. Water from this area is supplied to Famagusta. There is a great risk of drying up the whole area and as a result the Famagusta water-supply system is in great danger.

This anarchic situation can be cured only by vigorous government action:

(i) Existing water laws must be enforced by the Government and the Famagusta district authorities.

(ii) Contractors as well as farmers who drill illegal boreholes should be punished.

(iii) Farmers should be invited to form an Irrigation Division (as provided by existing law).

(iv) An immediate hydrological survey of the basin by the Water Development Department should be started in order to fix the amount of water to be extracted (that is to say, setting the number of boreholes to be operated).

(v) The present supply to Famagusta should be maintained. At present it is assured by a private illegal borehole, the owner of which is selling water to the Famagusta Water Board.

The above proposals are aimed at making the most possible out of the present situation. However, there is an opportunity here for an outstanding water development. It appears that some deeper and artesian water should exist under a vast area of the peninsula. If this geological condition, which may be considered as almost certain, is proved by average depth drilling (not more than 1,000 feet), it would provide the answer to the Famagusta water-supply problem as well as to the southern part of the Famagusta district.

(d) KARPAS PENINSULA

The main requirements of this part of Cyprus are village water supplies and water for irrigation purposes. For geological reasons it appears that from Lefkoniko to Cape Andreas the

water resources potential should be ground water. In the discussion of "Specific Problems for the Inventory and Development of Water Resources" in chapter III a detailed approach to this situation has been described. It is expected that other aquifers similar to that already located in Ayios Andronikos may exist and can be developed.

The main characteristic of this part of the Peninsula is that a geophysical survey has to be carried out in order to locate possibilities of local aquifers which may be located in the limestone, sandstone, and gravel beds.

(e) VILLAGE WATER SUPPLIES

Tribomo village area (eastern Mesaoria, from Boghaz to Ardhana). This area may be considered as one of the poorest in water prospects of all Cyprus. Neither surface nor ground-water possibilities can be ascertained. The problems relate to village domestic water supply and small seasonal irrigation schemes.

Suggestions which may prove helpful are:

(i) The use of geophysical survey techniques to locate shallow and small aquifers followed by small-diameter and cheap exploratory drilling (rotation rig mounted on truck); and

(ii) Complete flood control and water conservation of the few and small existing streams by means of earth-dam construction.

Mandres and Platani village areas (eastern Kyrenia range). The flow of streams and possible dam sites in the hills should be investigated.

Eptagomi village. There are two boreholes where one would have been enough. Regional planning for village water supplies appears to be necessary.

Galatia village. There are two boreholes and two water tanks (and one dry borehole) for the water supply of only two villages. Regional planning is necessary.

Larnaca district

The district's water problems relate to Larnaca town water supply, the Pendaskynos stream irrigation schemes, the construction of a dam on the Tremithos stream for irrigation purposes, and the multi-purpose schemes on the Archangelos stream (for flood protection, water conservation, Livathia village water supply and irrigation projects), and the irrigation projects on the Vassilikos and Pouzis streams.

Suggestions relating to these various situations are as follows:

(a) LARNACA TOWN-WATER SUPPLY

The water supply of Larnaca comes from an old chain of wells, constructed in 1745, and from two boreholes drilled in 1959. The present daily supply *per capita* is only 28 gallons and the local authorities as well as the population demand action which will increase the supply of water.* The present daily supply for the town is 550,000 gallons and at least 700,000 to 800,000 gallons are needed.

In Larnaca district old privileges and water rights exist along the present main supplying pipe: water for irrigation, free of charge, is drawn from the town's main supply line. In 1959, the daily discharge of the old chain of wells had become very low and two boreholes were successfully drilled by the Water Development Department, a few hundred yards upstream of the chain of wells.

Investigation led to the not surprising conclusion that the old chain of wells is not a reliable source for the town water supply. A water scheme designed and built in 1745 is likely to be out of date and its maintenance has become uneconomic after two centuries of operation. Furthermore, its daily output (presently 190,000 gallons) cannot be increased. In fact, the water table has dropped due to the drought of the last few years. Thus additional water resources had to be found and the two first boreholes drilled by the Water Development De-

partment appear to be the correct solution. Since one of the boreholes interferes with the discharge of the chain of wells, artificial recharge has to be provided in any new scheme.

In 1954 the former administration prepared a £200,000 (at 1959 cost) design for the improvement of the chain of wells and the distribution system. It appears that, even if carried out, this scheme would not increase the present *per capita* supply. The plan also suggested that a dam be built ten miles away with a complementary pipeline. This was based on the belief that no suitable sources of additional water existed near the city.

Recent investigation has shown that there are additional sources of water near Larnaca upstream of the chain of wells, where the two boreholes are now functioning. Between the two existing boreholes there is an excellent dam site for earth-dam construction on the Tremithos stream. Every year, through this stream, at least 75 million cubic feet (more than 450 million gallons) of water are lost into the sea.

Consequently, rather than pursue the 1954 programme, it is proposed to construct an earth dam, the height of which should not exceed 25 or 30 feet, at the cross section of the boreholes and the stream; a natural improved escape spillway can be provided on the left abutment; a sizeable natural storage capacity lies above the dam site. This construction would yield the following advantages:

(i) It would retain a substantial amount of the water at present wasted into the sea.

(ii) It would replenish the two boreholes as well as the chain of wells. It is doubtful whether the chain of wells discharge will be increased, but its present output would be maintained.

(iii) It would provide surface water for irrigation on either bank of the dam and reservoir.

The present two-centuries-old system of pipes and distribution cannot be considered satisfactory. Many complaints are made against it. Nevertheless, this system must be used for some years to come until a modern scheme is constructed. Investigation and design for a modern water supply and distribution system should not be long delayed.

(b) PENDASKYNOS STREAM BASIN DEVELOPMENT PROJECT

The preliminary investigation and the relevant report prepared by the Water Development Department provide a programme for the complete development of this stream basin, including the construction of three dams. At this stage, it would be most helpful if the Agricultural Department could provide an inventory and recommended land-use pattern for the land, which is an essential part in evaluating any river basin development project.

The next steps in investigation and preparation of relevant designs should be as follows:

(i) A more efficient and accurate flood-discharge gauging should be carried out at the gauging stations. Improvements are required in the operation of the water-level recorder. Compilation of hydrographs and records with adjacent basins or catchment areas should be done. More sediment transport samples should be taken and silting up forecasts made for future dams.

(ii) As discussed above, a gravity dam is necessary at Lefkara on the volcanic rocks, but greater water-storage capacity earth dams should be built at (or close to) Skarinou for downstream irrigation. This, however, presupposes that geological conditions are as favourable as they appear to be on existing geological maps. Agriculture irrigation specialists should also be consulted on the availability of irrigation land between Skarinou and the coastline.

(c) DAMS FOR IRRIGATION ON THE TREMITHOS STREAM

The first dam to be designed and built for water supply and irrigation purposes should be the earth dam near Larnaca at the site of the Water Development Department boreholes, as discussed above. Additional earth dams should then be built in the lower reaches. Finally, a gravity dam could be constructed at Psevdas.

*It might be mentioned that the Village Water Supply Section of the Water Development Department provides, in some of its projects, 100 gallons per day per consumer.

(d) **MULTIPURPOSE PROJECTS ON THE ARCHANGELOS, VASSILIKOS, AND POUZIS STREAMS**

These projects are related to flood protection, water conservation, domestic water supply, and irrigation. Suggestions made under paragraphs "Stream basin development" and "Stream basin irrigation" in chapter III should be applied.

Limassol district

(a) **LIMASSOL TOWN-WATER SUPPLY**

The present supply is adequate. If necessary in the future additional water can be obtained from Yermasoyia stream bed where ground water is abundant.

(b) **IRRIGATION PROBLEM OF THE DISTRICT**

The main water problem in the district appears to be irrigation. Steps which are needed for irrigation development are:

(i) Investigation, survey, and design of the four main streams of the district; and

(ii) Improved water use which now is impeded by inadequate water laws and difficulties associated with local rights.

A beginning has been made in that the Irrigation Engineer of the Water Development Department has prepared a list of projects for this area although they have not undergone technical and economic evaluation. The approach to the problem is based upon the entire control of the stream and would stop any wastage of water into the sea. The list of projects submitted for examination relates to the Kouris-Goryllis, Yermasoyia, and Moni streams and a part of the Vassilikos stream which also flows into Paphos district.

These streams or catchments must be subjected to investigation and study which may lead to as many as twelve dam-reservoirs. The development of the upper reaches of the streams may include the following water works: diversion works, weirs, check dams, diversion canals, intake pipes, etc. Although the total capacity of these reservoirs is not yet known, the available water for storage would be over one billion cubic feet and the estimated land for irrigation would be over 15,000 donums. These figures are rough estimates carried out with only the help of local topographical maps.

Briefly the present requirements for these projects are as follows:

(i) The exact surface water available from each stream has to be known. This involves investigation and studies dealing with water-gauging stations and records of peak flood per second, and sediment transport.

(ii) Studies must be made to determine the feasibility and storage capacity of dams and if the dams are to be gravity or earth. For this purpose there must be a survey of dam sites, reservoirs, gravity and overflow, possible rock-fill dams, natural spillway sites, side-escape canal, earth dam. Competent engineering must be applied both to dams and to ancillary structures such as intake canal, sluice gates, and outlet works.

It has been suggested that silting up of dams might be a serious problem in this area. Unfortunately, no sediment transport records are available for these streams. The consensus of opinion is that the estimated life of a storage dam for the Limassol area is approximately fifty years.

The problems in this area are not solely those of water supply. One may question the use of land and water as regards the type of crops grown as well as the actual water use by the farmer. It is important to keep in mind that in this area preparation of land for irrigation can be as expensive as the dam itself. It is difficult to form a judgment as land-use survey data are incomplete. Further, no accurate figure for the quantity of irrigation water required per donum is known. It is important that studies be made including one of a cultivated areas inventory, of possible areas to be irrigated, an irrigation or soil survey, and a land-use survey.

Of particular relevance for the Yermasoyia stream valley, from which more than 275 million cubic feet of water (gauging station records) are lost every year into the sea, are the following considerations:

(i) The first scheme to be implemented in the valley is irrigation from boreholes to be sunk in the gravel bed. The 1958 geophysical survey has shown that a very important natural underground water reservoir exists in the lower reaches of the stream. Good alluvial land can be seen on either bank and irrigation by pumping would not present any technical difficulty. If necessary in the future, 300,000 cubic feet per day could be pumped for the extension of the Limassol water supply.

(ii) Studies should be made of possible surface irrigation and water diversion into another valley or around Limassol. Although the water potential of the Yermasoyia stream valley is much greater than the supply of usable land, modern irrigation schemes are advisable there and the final results should be positive.

(iii) If replenishment of the natural aquifer becomes necessary, or additional irrigation schemes are feasible, at least two good dam sites for earth structures can be developed. One dam site at the small bridge a few miles upstream from the sea can be an earth-dam type with escape-tunnel spillway through the left abutment which is composed of sufficiently hard calcareous sandstone.

(c) **VILLAGE-WATER SUPPLY IN THE DISTRICT**

The water supply of many villages is not satisfactory. Schemes are ready for execution in 18 villages. There are 9 villages without an engineered design but which need some improvement, and six villages which have no running water at all. These six villages are supplied in spring and winter by very poor wells and in summer by water tankers from Limassol.

An important policy issue arises in connection with the water programme for these villages. That is whether they should be treated as completely separate units on the "village scale" or should they be within an overall scheme. It would seem likely that it would be technically more efficient to undertake the project on a regional basis, i.e. set up one single scheme for a group of villages rather than a separate scheme for each village.

Paphos district

As far as water and land potential are concerned, the Paphos district offers the most important possibilities for future development in both quantity and quality. The district has been neglected in the past as to its water development; no dam was ever built, no series of boreholes drilled, and no important irrigation schemes undertaken. There are only a few obsolete chain-of-wells or infiltration galleries for localized irrigation. This area should not be a dry farming area since there are both a potential of water and good land appropriate for irrigation. This is a clear demonstration of the value which could result from the creation of a regional district office which would concentrate upon these potentialities.

The activities of a regional water engineer should include the following: (a) working out the annual hydrological balance of the stream valleys; (b) surveying existing dam sites and determining where earth dams appear most suitable; (c) overseeing the sinking of testing boreholes and carrying out of pumping tests for ground-water storage; (d) setting up of one or more irrigation divisions for local farmers.

At present every year through the three main streams—Xeros, Ezuza, Dhiarizos—more than 2,050 million cubic feet of surface water are lost into the sea. There are, at the present time, excellent dam sites in the lower reaches of the streams and land in the valleys, especially in the coastal plain which is rich, abundant, and very suitable for irrigation. Some preliminary comments concerning a water-development programme for the town-water supply and for these three streams and the surrounding areas are as follows:

(a) **PAPHOS-KTIMA TOWN-WATER SUPPLY**

The municipal authorities complain that the town suffers from a water-supply shortage. An increase can be obtained in several ways. A first step might be to sink a new borehole in the well field from which the present town supply is obtained. If this borehole were not successful, wells could be sunk in the Xeros stream bed where abundant ground water is available. This would then require the installation of an 8-mile pipeline.

(b) XEROS, EZUZA, AND DHIAKIZOS STREAMS

These streams are grouped together because their water development affects the land in the coastal plain along the sea. They offer excellent dam sites for high dams with great storage capacity. For instance, on the Xeros stream, at the lowest hill one mile upstream from the road, there is a dam site with a natural basin reservoir where all the stream's surface-water annual discharge totalling 436 million cubic feet might be stored. A scheme putting at least 10,000 donums under permanent irrigation would be possible. This project could be the most modern and efficient irrigation scheme in Cyprus because a modern distribution canal pattern could be provided and modern irrigation methods applied. The same sort of development is possible for Ezuzza and Dhiairizos streams.

The lower reach beds of these three streams contain huge natural underground reservoirs, the water of which could easily be developed by tube-wells, and would supplement if necessary gravity-surface-irrigation water. The exact amount of ground water available cannot be ascertained, but it can be expected that several million cubic feet of water are available.

(c) STREAMS BETWEEN POLIS AND POMOS

(i) *Ayia Marina stream*. There are several wells dug into the shallow aquifer but the water is contaminated by animal and human excrements. There is a great need for added water for irrigation. Approximately two miles upstream a dam site has been chosen and the preliminary field investigation is being carried out along the lines of the 1959 programme. Moreover two steel pipelines of 6 inches diameter for irrigation and water supply have already been installed at a cost of £14,000.

Important objections have been made to the site of the prospected dam. Several unsatisfactory conditions or adverse factors can be observed on the spot:

- The storage capacity in relation to the height of the dam is only 300,000 cubic feet for a height of 60 feet;
- The wide crest is to be extremely high: 274 feet;
- The geological conditions for foundations do not appear entirely safe;
- An access road two miles long would have to be constructed.

With a storage capacity of 300,000 cubic feet it is estimated that for a seasonal irrigation (150 days) 188 donums could be irrigated (the Cyprus standard is 1,000 gallons per day per donum). No inventory or land-use survey has been carried out but it is apparent that more than 188 donums of good land are available in the terraces and coastal plain.

A careful study of the local conditions has not located any suitable dam site other than the one previously chosen. What is therefore required is a very careful geological, engineering, and economic investigation of the project to ensure its final success. On the basis of the present plans, the economic aspect of this project presents the following figures:

Pipelines already installed	£14,000
Cost of dam (1957 estimate)	30,000
Revision of cost (1960)	2,000
Access road	1,000
Total	£47,000

This shows an investment cost of £252 per donum. In Cyprus, and particularly in this area, for vegetables and fruit irrigation the investment cost per donum would be economically acceptable up to £300 per donum. Thus it appears that this scheme is economic but the technical difficulties should not be underrated.

The intention of the Water Development Department is to increase the height of the projected dam up to 100 feet if possible. This would require a careful geological investigation with exploratory drilling as well as skilled civil engineering design. If this can be done, it would increase the water storage and the possible area to be irrigated and probably would make the economic calculations even more favourable.

(ii) *Yialia stream (Paphos district)*. This is an even more difficult project to evaluate than the previous one. The area is

characterized by high surface runoff, explained by the proximity of the Troodos mountains and in igneous rocky bed. Two dam sites are available but neither of them can be considered as fully satisfactory for the following reasons:

- The superficial geological conditions are not very good.
- Storage capacity would be small.
- The dam sites require difficult investigation for foundation, exploration, and design.
- Actual construction would be difficult and would require specialized engineering and equipment.
- Account should be taken of the existence of a downstream village and cultivation area.

Despite these limitations, since there is an acute water shortage, it is suggested that a preliminary investigation of this stream be started.

(d) KHRYSOKHOU STREAM VALLEY

The existing water-gauging station records of this stream show that at least 224 million cubic feet of surface water are lost every year into the sea. Moreover, in the lower reaches of the stream, there is a permanent surface flow which percolates into the gravel bed a few miles upstream from the sea. The records of the 1958 geophysical survey show that the stream bed is very thick and several million cubic feet of ground water should be available all year round. In addition, good and abundant land for irrigation is available on the banks along the stream. As far as engineering technique is concerned, this land is perfect for irrigation schemes, but unfortunately practically no development has been implemented. A comprehensive development programme should be prepared with respect to both water and agriculture for this valley.

Nicosia area

(a) NICOSIA TOWN-WATER SUPPLY

The development of an adequate water supply for Nicosia is based upon the Morphou Bay scheme, at present under construction. It is designed to supply in 1961 some 2 million gallons per day and, in 1966, some 4 million gallons per day of water. The source consists of 14 boreholes already sunk in the Morphou Bay basin. The supply is to be carried in the first stage by a 24-mile 16 inch and 18 inch pipeline already laid down and in the second stage by a 24-mile similar pipeline yet to be laid. In the town, distribution is to be through the existing network and through new pipe distribution to be developed according to future requirements.

The main question about this project is whether the supply of 2 million gallons per day can be assured from the existing 14 boreholes. These 14 boreholes were sunk in 1956 and it is not clear whether or not pumping tests for the above-mentioned quantities were carried out. In the years from 1956 to 1960 the water table in the Morphou Basin aquifer has dropped by 12 feet due to heavy over-pumping for irrigation purposes. At present the water table is about sea level.

The immediate question is whether the added quantities of fresh water required in June 1961 can be pumped without inducing the encroachment of sea water. On this uncertainty, depends the feasibility of Nicosia being supplied from this aquifer. The pumping area (14 boreholes) should be considered as a coastal aquifer; thus it has to be protected against the threat of saline-water intrusion. A careful and systematic exploration must be made as follows:

(i) By pumping tests the interface fresh water-saline water has to be defined (application of Ghyben-Herzberg relation) and the shape, underneath length, and structure of the area should be sketched.

(ii) Methods of prevention and control of sea intrusion (modification of pumping, pumping through, pressure ridge, etc.) have to be undertaken and first priority should be given to the artificial-recharge scheme for the aquifer, already discussed in connection with the Morphou Bay basin.

The importance of this situation cannot be over-emphasized. The present irrigation scheme in Morphou is at stake as well as the future Nicosia water-supply development. The signi-

ficance of these two operations is obvious enough to call for urgent decisions and drastic measures by the Government.

(b) VILLAGE-WATER SUPPLY

Limnitis is a village of 300 or 400 inhabitants whose main activity is irrigated agriculture in the lower reaches of the Limnitis stream. The requirement is to assure the domestic water supply and encourage river conservation and land reclamation. As far as irrigation is concerned, five boreholes have been drilled in the past with a daily output of 2 to 3 million gallons. In Limnitis valley there is more water than land and the main concern of the local population is to reclaim more cultivable land either in the alluvia bed of the stream or in the adjacent hills. There is a farmer co-operative and an irrigation division in accordance with the present laws.

Last year a scheme was developed to supply the Limnitis population and nearby villages. This scheme, presently under construction, provides for laying down a 2½ inch pipeline approximately 20 miles long. The laying of the pipeline is being carried out without any engineering supervision. The local population which undertakes the work have decided to follow the forestry road instead of either contour level or flat ground in the bed stream. This is because there is very hard soil to be excavated along the road and several hundreds of bends, thus providing more employment. However, the hydraulic efficiency of this scheme is very doubtful. The summer-spring discharge of this line would only be 42,000 gallons per day, 20,000 of which could be diverted for the supply of three new villages (population 800 inhabitants). This would provide approximately 25 gallons *per capita* per day exclusive of animal and other requirements.

Less than half a mile from Limnitis village there is a borehole in a stream bed belonging to the farmers' Irrigation Division, the daily discharge of which is at least 20,000 gallons per hour of good water. However, local farmers show a marked preference for gravity water.

This is a clear case where a comparative survey of the two alternative schemes (ground reservoir and borehole against spring plus pipeline) should have been carried out. If the pipeline were decided upon, it should have been laid out on a proper engineering basis.

(c) RIVER CONSERVANCY

There are many streams flowing through the Nicosia district for which some river-conservancy works both for flood protection and land reclamation would be very useful. Improvements of this kind can be made in the Limnitis stream valley. Along the Pedeios stream some flood protection measures have to be taken (especially in Nicosia), where the stream banks should be protected by means of chanellization groynes and gabions works. Downstream of Nicosia, in the Mesaoria plain, stream-bed control and stabilization for flood protection and land reclamation should also be provided. Co-operation between the Water Development Department (for investigation and design) and the Public Works Department (for construction of protection works) would be very useful.

(d) ATHALASSA EXPERIMENTAL FARM—FLOOD PROTECTION AND IRRIGATION PROJECT

Last year exceptional floods caused much damage on the Athalassa experimental farm to the land as well as to the farm buildings and there was a serious loss of poultry and crops. It is proposed that an earth dam across the local stream be constructed in order to control the stream as well as to provide spate and seasonal irrigation. The dam site appears to be satisfactory. The proposed dam would be an earth embankment approximately 1,500 feet long and 20 feet high. The storage capacity has not been estimated but is expected to be considerable. On the rock hills which are considered as abutments of the dam one natural escape spillway could be improved on either bank.

This scheme is very interesting and the necessary investigation and study should be pressed. The plan has special importance because it may be considered as a pilot scheme for possible application all over the eastern Mesaoria. Its proximity to Nicosia will make it possible to be designed and executed by the Water Development Department engineers.

(e) NICOSIA DISTRICT—GROUND- AND SURFACE-WATER DEVELOPMENT

This subject has already been discussed under the headings of Mesaoria plain and Kyrenia range.

Annex IV

THE WATER DEVELOPMENT DEPARTMENT

During the period of the former administration the authority for water resources was vested in the Department for Water Supply and Irrigation which became the Water Development Department in 1954. According to a report of the Department in 1958 its staff was then composed of 176 persons, among whom were 15 engineers, 82 technical assistants, inspectors of works, and clerks, and 79 foremen of works. Activities such as prospecting, drilling, and construction of waterworks were carried out by the Department. The organization had two important weaknesses: the capacity of the staff and its budget were such that only one concrete dam per year could be erected, and there was an excess of centralization.

Since then another weakness has appeared as the result of the mass resignation of the senior staff, leaving a number of vacancies in the positions of greatest responsibility. While several new young engineers have been appointed who have good academic qualifications, they have little field experience.

The proposal outlined in chapter III will require a substantial strengthening of the Department and its reorganization so as to include the establishment of a regional headquarters. As to the strengthening of the Department, the most important requirement is the appointment of a Director. He should be a highly qualified engineer with extensive experience in the water problems of semi-arid countries. If no Cypriot engineer can qualify at present, and this seems likely, the post should be filled for a period of several years by a foreign expert. (The United Nations OPEX programme might be helpful.)

It will probably be necessary to recruit some additional senior engineers and executive engineers from abroad, with the expectation that they can be replaced after a time with qualified Cypriots. Having in mind that the demand for water engineers in many areas has pushed salary levels up to well above Cypriot standards, it may be that the best way to obtain experienced foreign engineers is to take advantage of some of the offers for technical assistance. The main tasks of these engineers would be to help in designing projects which call for priority action and in field training the younger Cypriot engineers. Requests have already been included in the 1961-62 United Nations Technical Assistance Programme for an expert dam designer, a senior hydrologist, and a water-law expert.

In the meantime, the engineering staff should concentrate on the completion of the Lefka dam; investigation, survey, design, and construction for the Morphou Bay basin recharge scheme; and the design and improvement of the Famagusta recharge scheme. These are the most urgent field works.

The second main task is to reorganize the Water Development Department itself. It has already been suggested that the Drilling Section should be transferred to the proposed expanded Geological Survey Department so that all survey and drilling activity for water and minerals can be properly co-ordinated. That Department would have three other sections, Geological, Geophysical, and Hydrogeological, all of which would co-operate closely with the Water Development Department. For ground-water investigation, exploration, and development, the

sections in the Geological Survey Department would carry out the planned programme in consultation and agreement with the Water Development Department. It would carry on until the completion of the borehole or well, at which time the Water Development Department would take it over, either for direct use or cession to a public service or private user.

The Water Development Department itself would require four sections at headquarters: a Hydrologic Section to build up adequate records and analyses; a Projects Section which would deal largely with surface-water projects; an Irrigation Section, and a Domestic Water Supply Section. In addition, regional headquarters should be set up in each district. The number and variety of local projects and the planning and control of local water use require that operations be decentralized. The present procedure of sending experts and technicians out from Nicosia by car each day is inefficient and wasteful. Water engineers must not only keep close to their projects, but they must keep in close contact with various local authori-

ties and the larger water users. In most advanced countries, dam or irrigation projects costing £25,000 or more have daily supervision by a resident engineer, who may of course be in charge of several other schemes in the immediate region as well. A regional headquarters would include a regional engineer as well as the necessary technicians, works supervisors, foremen, etc.

In addition to direct matters of personnel, the Geological Survey Department and Water Development Department must be able to utilize the latest scientific knowledge and recorded experience. For this purpose, the newest technical books and publications should be available. The literature relating to recharge schemes, for example, would undoubtedly contribute to improving the Cyprus schemes. It is therefore important that in either a special or a general library, efforts be made to establish a collection of technical books and periodicals bearing upon water development.

Annex V

BRIEF DESCRIPTION OF GEOLOGY AND MINERAL DEPOSITS

The main physical features of the Republic of Cyprus are the appearance in the south-west of large igneous rocks that form the Troodos range. On the northern part of the Island there is another range of mountains, the Kyrenia anticline formed of limestone. Between the Troodos and Kyrenia mountains extends the great Mesaoria plain formed of recent sediments, whose geological significance is that they may possibly contain petroleum.

The backbone of the Troodos range is formed by a fine-grained volcanic rock, the diabase, which has been intruded by a differentiated suite of serpentines, peridotites, and gabros. The flanks of that Troodos range are covered by volcanic rocks that have the appearance of pillows. For this reason they are called pillow-lavas.

All the known mineral resources of Cyprus are associated with the Troodos igneous massif, the copper and iron pyrites being the most important, followed by asbestos, chromium, magnesite, manganese, nickel, gold and silver, and finally gypsum and pigments.

Copper and iron pyrites

Although some small cupreous pyrite veins occur in places in the diabase further from the sedimentary boundary and were worked in ancient times, all the deposits now being mined are in the volcanic rocks or pillow-lavas and not far from the contact with the miocene sediments.

According to F. T. Ingham, former director of the Cyprus Geological Survey, it is now agreed that the mineralization took place before the sedimentary rocks were deposited. The emanations from the deeper part of the still-molten magma have passed through the fractures within the pillow-lavas and have replaced the more open-textured pillow-lavas. Partial replacement of lava can frequently be seen near the boundary of the ore bodies. The mineralization first took place between the pillows and later along cracks in the pillows themselves until finally the whole lava was replaced. The intrusion in the depth of a certain batholith and the penetration of the dykes which were connected with the extrusion of the pillow-lavas, created a large number of fractures and cracks through which the metalliferous agents have passed and wherever the physico-chemical conditions were favourable they formed deposits of ore. It is most probable that the location of deposits bears some relationship to the fault pattern of the area, the faults having acted as channels through which the ore solutions could penetrate.

The mineralization has taken place in the form of solid-ore bodies or as disseminations of ore in country rock. Frequently there is a combination of both the solid-ore body and a periph-

eral zone of disseminated pyritic material which may or may not be economically workable. In other areas like Troulli only disseminated ore has so far been found.

The known ore bodies are generally small, perhaps 2,000,000 to 3,000,000 long tons. The largest ever discovered is Mavrovouni which originally contained 15,000,000 tons of ore. Deposits of less than 40,000 tons are generally not exploitable unless they contain appreciable copper values.

Most of the mineral ore bodies now being mined have been worked out or at least explored in ancient times, but the possibility is open that new important ore bodies might be located in the pillow-lavas covered by the sediments. There is no reason to conclude that extended mineralization such as appears in Mavrovouni or Skouriotissa would be found only near the surface. It is reasonable to expect that similar mineralizations may exist elsewhere under the pillow-lavas and at greater depths where no surface indications exist. An illustration of such a situation is the discovery of the Agrokippia "B" ore body by Hellenic Mines, located 175 to 300 metres below ground level where there is no sign of outcropping. Similar possibilities deserve careful exploration through modern methods like geophysics.

Asbestos

Asbestos has been known in Cyprus since the time of the Greeks and Romans who used this mineral to make burial sheets for retaining the bones at cremations. They evidently mined the long fiber variety which occurs at Vikla and Vassa. At present only short fiber asbestos is being mined and is exported for the manufacture of cement asbestos sheets and pipes.

The occurrences of asbestos are confined to an area of about 5 square miles in ultra-basic rocks of the Troodos massif in the neighbourhood of Amiandos village. The asbestos veins occur in serpentine which has resulted from the alteration of the olivinite rock. In view of the similar chemical composition of both the fiber and host rock, it is thought that the fiber crystallized in open cracks in the rock without intervention of external mineralizing solutions.

Chromium

Chromite appears as an accessory mineral associated with serpentine. The ore occurs in veins and lenses on the north part of Troodos at a height of about 6,000 feet.

The chrome ore bodies are lenticular in shape. The biggest known pocket, about 50 metres underground, is about 70 metres in length, 2 to 8 metres in width, and about 300 metres in depth. The grade of the ore is 40 to 45 per cent chromite (Cr 203). The mineralized zone is clearly defined with no area of low-grade ore surrounding the ore pockets.

Besides the leased area at Troodos some chromite is being obtained from prospecting permits nearby and also near Louveras. Formerly ore was also mined near Apsiou. Other chrome occurrences are known near Konia, between Varvara and Nata, Trooditissa, and near Neokhorio in the Akamas peninsula.

Magnesite

Magnesite is found in different parts of the country, but it has commercial possibilities only in the Akamas peninsula. The magnesite is associated with serpentine as narrow veins and lenses near its contact with the sedimentary rocks. Some magnesite mining was done ten or more years ago. However, in order to know today if those deposits are suitable for mining on a large scale, it will be necessary to do more development work, probably extracting some ore at the same time.

Manganese

Manganese has been found as nodules of oxides of manganese, and associated sporadically with dark and black umbers. The known manganese deposits are unimportant at present but deserve further exploration.

Nickel

Nickel veins occur in serpentine on the Troodos massif (Parreklissia and Dhierona). It would be necessary to prospect further in order to determine if those deposits could have a commercial value. Present indications are that the veins are of limited extent.

Gold and Silver

Gold and silver have been found in colloidal form in what is called "devil's mud", a soft material which appears in the weathered portion of the sulphur deposits. "Devil's mud" is found only near the surface and rarely extends to depths below 30 metres. During the mining depression of 1931-1932, when the

market for cupreous pyrites was very low, an intensive prospecting for gold was carried out in Cyprus. The ratio of gold to silver was usually between 1 to 8 and 1 to 10 and the amounts found were of the order of 0.025 oz. Au and 0.25 oz. Ag per ton. The maximum production was in 1938 when 30,000 ounces of gold and 200,000 ounces of silver were exported. Today the production of gold and silver is negligible.

Gypsum

Gypsum deposits are widely spread in Cyprus. There are two well-defined systems of deposits. The first follows a narrow zone parallel to the Kyrenia range. The second group of deposits is parallel to the Troodos igneous massif. The distance of those deposits from the igneous rocks varies considerably, but it can be seen that there is a definite regional relationship between them and the central massif. Gypsum production dropped sharply in 1956 but began to recover somewhat in 1959.

Pigments

The pigments present are mainly terra umber, yellow ochre, and terre verde. Terra umber occurs in the sedimentary beds near the contact with the volcanic rocks and in thickness of 3 to 5 metres, but in a few places is as much as 12 metres thick. The colour is derived from the high proportion of oxides of iron and manganese present. The umber may be exported as crude-powder material or calcined. Mixtures of raw and calcine umber are made to obtain the shades required. The umbers of Cyprus are well known for their permanent colour. Unfortunately the export of umber faces strong competition from synthetic materials. The bulk of the umber is mined in Troulli and transported to Larnaca to the crushing and calcine plants.

Yellow ochre is mined in Skouriotissa and terre verde occurs in rare cracks in certain volcanic rocks in the pillow-lavas. Only a few tons of yellow ochre and terre verde are exported annually.

Annex VI

ANALYSIS OF EXPORTS AND IMPORTS BY INDUSTRY

This annex is based upon an examination of the export and import statistics for 1959. The figures are given by products with occasional comments concerning the possibility of increasing domestic production. The figures given are the amounts of exports or imports.

Export Industries

AGRICULTURAL PRODUCTS

Most agricultural products have been discussed in chapter IV with the exception of hides and skins and textile fibres.

Hides and skins, £235,000; textile fibres, £167,000.

(a) Hides and skins

This item consists of hides of cattle 5,200 cwt., value £34,000; sheep skins 5,400 cwt., value £100,000; and goat skins 4,700 cwt., value £100,000. At the same time the import of leather from such raw materials is 3,500 cwt., value £270,000.

This item is examined below under section 6(a).

(b) Textile fibres

This item includes wool 12,500 cwt., value £166,000; wool yarn 1,600 cwt., value £77,000; woollen and worsted fabrics value £720,000. The possibility of using local wool for yarn and woollen fabrics should be examined. Further comments are made under section 6(d) below.

MINING PRODUCTS

(1) Gypsum	£ 53,000
(2) Asbestos, crude	852,000
(3) Terra umber	50,000
(4) Pyrites, iron	1,900,000
(5) Copper ore and concentrates	6,460,000
(6) Chromium ore and concentrates	140,000

(a) Gypsum

More might be calcined before export to raise the value.

(b) Asbestos

Some should be used within the country to make cement-asbestos pipes to substitute for the import of iron pipes. This case will be examined under section 6(g) below.

(c) Terra umber

Terra umber, raw and burnt, not powdered and powdered. If more could be exported burnt and powdered the value would increase.

(d) Pyrites

Some of these should be used for production of sulphuric acid and superphosphate. See section 5(f) below.

(e) Copper ore and concentrates

	Tons Copper
Of this 123,000 tons are cupreous concentrates of about 25 per cent copper	30,000
Copper cement is 3,700 tons with 80 per cent	3,000
Cupreous pyrites 307,000 tons with 3 per cent copper. If this could be concentrated it would yield, besides the pure pyrites, a concentrate with a content of	9,000
Total	42,000

No suggestions for industrial use.

(f) Chromium ore

No suggestions for industrial use.

Domestic demand shown by import statistics

The present extent of the demand for manufactured goods not covered by domestic production is shown in the import

statistics. The import statistics for 1959 fall in these general categories, using the standard import classification:

Section	Millions of Cyprus pounds
0 Food	6.0
1 Beverages and tobacco	1.8
2 Crude materials	1.3
3 Mineral Fuels	3.8
4 Animal and vegetable oils	0.7
5 Chemicals	3.3
6 Manufactured goods classified by materials	10.2
7 Machinery and transport equipment	7.8
8 Miscellaneous manufactured articles	5.6
9 Miscellaneous transactions and commodities ...	0.6
	<u>41.1</u>

In addition, there are imports by the Government of many different products totalling £840,000 and £1,950,000 of imports by NAAFI (the stores selling to troops in the British forces).

SECTION 0—FOOD £6,000,000

(a) <i>Meat, canned and meat preparations</i> See chapter IV.	430,000
(b) <i>Butter, cheese, dairy products and ice cream</i> See chapter IV, except for import of ice cream £33,000. This could be covered by domestic production.	175,000
(c) <i>Biscuits, bread and biscuits chocolate</i> More biscuits could be produced locally.	213,000
(d) <i>Fruits preserved and fruit preparations</i> See chapter IV.	145,000
(e) <i>Vegetables preserved and vegetable preparations</i> See chapter IV.	100,000
(f) <i>Sugar and syrup</i>	475,000
As raw sugar and auxiliary materials must be imported, a sugar refinery large enough to cover domestic demand should have no priority as it would not be able to produce sugar cheaper than imported and would need protection. Sugar should be available at low prices.	
(g) <i>Sugar confectionery and chocolate confectionery</i> More of this demand should be covered by existing plants.	156,000
(h) <i>Oilseed cake and meal</i> See chapter IV.	160,000
(i) <i>Margarine</i>	126,000

Most of the fats and oils needed as raw materials must be imported. It may not be advisable to try to protect this by customs duties which clearly would result in higher prices.

SECTION 1—BEVERAGES AND TOBACCO £1,752,000

(a) <i>Beveages</i>	718,000
Whiskey, gin, bandy, etc.	£148,000
Beer	542,000
Included in this is beer which is imported by NAAFI amounting to £415,000.	
Production of beer should be encouraged by the right means. Should have high priority and can be produced without additional capital investment.	
(b) <i>Tobacco and tobacco manufactures</i>	1,034,000
Cigarettes	£685,000
Included in this are NAAFI imports .. 390,000	
The remainder is mainly leaf tobacco .. 324,000	

Domestic produced cigarettes should have a much larger share of the market and can be produced by the unused capacity in the existing factories. It should have high priority. No investments are required.

SECTION 2—CRUDE MATERIALS £1,320,000

(a) <i>Oil seed, oil nuts and oil kernels</i> See chapter IV.	114,000
(b) <i>Wood, sawn, planed, poles, etc.</i>	960,000
The development of the forests should increase domestic production. The possibility of some process for rapid wood seasoning should be examined. Also see under section 6(c), Wood manufactures.	
(c) <i>Rubber and textile fibres</i> are insignificant.	

SECTION 3—MINERAL FUELS, ETC. 3,833,000

No comments.

SECTION 4—ANIMAL AND VEGETABLE OILS AND FATS £682,000

(a) Edible soyabean, £31,000; groundnut, £252,000; olive oil, £11,000; maize oil, £20,000; rape-seed oil, £121,000; sunflower oil, £155,000; nigerseed oil, £30,000.	520,000
(b) <i>Linseed oil</i> (inedible raw material for paint) is only £9,000.	

SECTION 5—CHEMICALS £3,278,000

(a) <i>Chemical elements and compounds</i>	214,000
These consist of a great number of different goods. Very little can be done at present in this field.	
(b) <i>Mineral tar and crude chemicals from coal, etc.</i> Insignificant.	
(d) <i>Dyeing, tanning and colouring materials</i>	400,000
This consists of dyestuffs, pigments, paints, varnishes and related materials .. £ 60,000	
Paints, ready mixed	300,000
These ready-mixed paints could be produced within the country by importing linseed oil and the pigments mentioned above.	
(d) <i>Medicinal and pharmaceutical products</i>	455,000
Included in this Government imports are £63,000. For some products it should be possible to have production within the country based on imported raw materials.	
(e) <i>Essential oils, toilet cleansing preparations</i>	788,000
The main items are:	
(1) Detergents	£169,000
(2) Laundry soap	16,000
(3) Perfumed soap	26,000
(4) Detergents for further process	67,000
(5) Other	30,000
(6) Cleansing powder	34,000
(7) Boot cream and polishes	27,000
(8) Other polishes	30,000
Total	£469,000

The remainder is mainly essences and perfumery. It should be possible to produce more detergents. There should also be possibilities for small factories producing some of the other items (Nos. 6, 7 and 8). Success is to a high degree dependent on advertising and quality. Competition from large foreign companies is intense.

(f) <i>Fertilizers, manufactured</i>	986,000
The main items are:	
(1) Nitrogenous fertilizezrs	£226,000
(2) Sulphate of ammonia	239,000
(3) Phosphatic fertilizers (including superphosphates)	310,000
(4) Other fertilizers	212,000

Superphosphates should be produced within the country on the basis of sulphuric acid from pyrites and imported raw phosphate. This should have a

very high priority. There would need to be established a sulphuric acid plant for this purpose, which also could supply other chemical industries with this raw material in the future. There is only room for one factory. It does not seem profitable to produce any of the other fertilizers.

(g) *Explosives and miscellaneous chemical products* 443,000

It might be worth while to investigate further possibilities in the chemical section, taking into consideration the use of salt from the salt lakes and the use of sulphuric acid from the superphosphate plant.

SECTION 6—MANUFACTURED GOODS CLASSIFIED BY MATERIAL £10,240,000

(a) *Leather and leather manufactures* 412,000

Main items are:

- (1) Leather, dressed £271,000
- (2) Leather sole 65,000
- (3) Rubber heels, soles 23,000

The possibility of producing more dressed leather (1) and using more hides and skins of domestic origin should be examined. It may be that the customs duties should be revised on these products.

(b) *Rubber manufactures* 590,000

Rubber tyres and tubes £410,000

Other manufactured articles of rubber not specified 180,000

There may be some possibility for a rubber products plant to produce some of the not specified articles (2) together with rubber heels and soles mentioned under (a) (3) above.

(c) *Wood and cork manufactures* 526,000

This item includes plywood, fibre boards, timber ready cut, boxes etc. The import of sawn and planed wood (£940,000) has already been mentioned (section 2(b)). There are good possibilities in this area. The question of rationalizing the small sawmills, the establishment of a chip board factory, possible expansion of parquet floor industry and the box shoo industry and the use of wood waste such as sawdust should be examined by an adviser, expert in the field.

He might also look into the wood furniture industry (section 8(b)).

(d) *Paper, paperboard and manufactures thereof* 748,000

Paper and paperboard will have to be imported because of the necessary scale of their manufacture, but some of the manufactures made from them should be made domestically, especially paper bags and cardboard boxes which amount to £145,000.

(e) *Textile yarn, fabrics, made up articles* 3,254,000

The most important items are:

- Yarn, wool £129,000
- Yarn, cotton 88,000
- Cotton fabrics 930,000
- Woollen fabrics 727,000
- Fabrics of synthetic fibres 512,000
- Bags and sacks 157,000
- Blankets, etc. 90,000
- Bed linen 66,000
- Carpets 110,000

The textile industry in Europe is in a somewhat unstable position and conditions are changing. Competition is hard and it is very difficult to judge regarding the possibilities in this branch in the future. This division counts for great amounts and it is a field where much can be gained in employment and in saving of currency if production can be expanded in the right way. Expansion should be encouraged in cases where the firms now producing

or new firms can show that they will be able to work with profit. It is necessary to have a textile expert to advise on these matters as large investments and detailed technical judgments may be involved.

(f) *Non metallic mineral manufactures* 1,075,000

Main items are:

- (1) Portland cement £257,000
- (2) White cement 70,000
- (3) Wall tiles and floor tiles 66,000
- (4) Asbestos tubes and pipes 60,000
- (5) Sheet (window) glass 63,000
- (6) Bottles, etc., of glass 150,000
- (7) Glass tableware 96,000
- (8) Household articles of porcelain 144,000

(1) and (2) Cement. It should be a matter of course to expand cement production to equal imports and to cover the increased demand in the future. It should have high priority, as the raw materials, i.e., limestone, clay, and gypsum are available in large quantities and already there is a plant with capable and experienced people.

(3) Imported wall tiles and floor tiles ought to some extent be replaced by locally made tiles, for example, mosaic tiles.

(4) Asbestos tubes and pipes will be commented on later. See (g) below.

(5) Sheet glass. No possibilities as the demand is too small.

(6) and (7) Bottles, etc. of glass and glass tableware. As most of the raw materials have to be imported and as the consumption is small it is not likely that production of these commodities should be considered.

(8) Household articles of porcelain. As most of the raw materials for faience and porcelain have to be imported and the demand is small a factory in this field should not be considered at present. Some of these products may perhaps be replaced by fine earthenware from the existing potteries. The pottery industry is suited for rural districts and should be encouraged.

(g) *Base metals* 2,166,000

Main items are iron and steel, copper, nickel, lead, zinc, tin, etc. in sheets, rounds and bars, etc. which should not be thought of being produced in Cyprus. The value is about £1,340,000.

There is a large import of iron and steel piping amounting to £827,000. Included in this are Government imports of £310,000. Careful attention should be paid to the establishment of a plant for asbestos-cement pipes to produce pipes for water purposes. In many countries the asbestos-cement pipes have replaced iron and steel pipes for water transmission. As nearly all the raw materials are available within the country and the cement factory can easily be expanded, a great saving in currency can be achieved and employment will also be substantial. If the domestic demand for pipes is not high enough to justify a plant of economical size, export possibilities should be examined in order to permit the establishment of a plant of sufficient size. The import of cement-asbestos pipes and iron and steel pipes might then be restricted.

(h) *Manufactures of metals* 1,396,000

Main items are:

- (1) Finished structural parts of iron and steel £120,000
- (2) Wire netting, etc. 40,000
- (3) Bolts and nuts 45,000
- (4) Hand tools for different purposes, also agriculture 150,000
- (5) Household utensils of iron and steel 25,000
- (6) Household utensils of aluminium .. 48,000

(7) Household utensils of other metals	68,000
(8) Table and kitchen knives, etc.	68,000
(9) Cutlery	62,000
(10) Hardware of metal	162,000
(11) Drums	127,000
(12) Cooking and heating stoves	157,000
(13) Others	172,000

For most of these commodities there is already some production within the country. Expansion should be encouraged by adequate means. For aluminium utensils three new factories were built recently whereas one is enough. Such over-capacity must be avoided wherever possible. A technical center giving advice on metal-working techniques is necessary.

SECTION 7—MACHINERY AND TRANSPORT EQUIPMENT £7,846,000

(a) Machinery other than electric 2,988,000

There is no possibility at present for producing machinery except water pumps, whose import is £210,000, and certain forms of agricultural machinery such as harrows and ploughs with imports of £89,000. Factories for water pumps and small enterprises making appliances especially suited for the soil in Cyprus should be encouraged.

(b) Electric machinery, etc. 1,698,000

Main items are:

(1) Electric generators and motors	£146,000
(2) Electric batteries	82,000
(3) Bulbs for lighting	35,000
(4) Radio receivers (11,000 in number)	105,000
(5) Television receivers (1,100 in number)	50,000
(6) Broadcasting equipment	304,000
(7) Apparatus for telegraphy and telephones	124,000
(8) Electrothermic apparatus as cooking and heating stoves, irons and fans, etc.	169,000
(9) Accumulators	70,000
(10) Washing machines	97,000

(1) Electric generators and motors should not be produced in Cyprus at present, but good repair shops should be established. One of them may later develop some production, possibly importing most of the parts for assembling at first.

(2) Electric batteries can be made on small scale. There is room for only one factory.

(3) Bulbs for lighting should not be produced locally as the demand is too small.

(4) and (5) Good repair shops may be the start of an industry. Production of radio receivers and television receivers could begin with assembling of imported parts in collaboration with factories abroad which might give knowhow and supply parts.

(6) and (7) Broadcasting equipment and apparatus for telegraphy and telephones have an insufficient market.

(8) Of the electrothermic apparatus some could be produced in Cyprus, starting with assembling in collaboration with factories abroad.

(9) Accumulators can be made on a small scale. There is room for only one factory.

(10) Washing machines could also be produced on a repair and assembly basis.

A technical center giving advice and training will be useful for this division.

(c) Transport equipment 3,160,000

This section consists almost entirely of motor cars, buses, motor cycles, chassis and bodies for motor cars and buses.

The only item which could be made at present in Cyprus is bodies for buses, lorries and trucks. Much

handwork is required so the capital investment will be low in relation to employment.

SECTION 8—MISCELLANEOUS MANUFACTURED ARTICLES £5,600,000

(a) Sanitary, plumbing, heating and lighting fixtures and prefabricated buildings 341,000

Main items are:

(1) Sinks, washbasins, etc., of ceramic materials	£ 82,000
(2) Sinks, washbasins, etc., of metal ..	118,000
(3) Lighting fixtures, etc.	103,000
(4) Prefabricated buildings	29,000

Of these items, the only possibility is the production of lighting fixtures in small enterprises. The other items require large presses and other equipment justified only by large output.

(b) Furniture and fixtures 285,000

Main items are:

(1) Wood furniture	£102,000
(2) Metal furniture	107,000
(3) Mattresses and other articles	25,000

There is room here for modernizing and expansion of the existing factories.

(c) Travel goods, handbags, etc. 137,000

Main items are:

(1) Travel goods (trunks, suitcases, etc.)	£67,000
(2) Handbags, wallets, purses, etc.	70,000

Expansion and modernizing of some of the existing factories should be considered with special emphasis put on improving the quality of the products.

(d) Clothing 1,538,000

Included in this are Government imports £ 33,000

Main items are:

(1) Stockings and hose of rayon, wool, and cotton	£217,000
(2) Knitted outerwear as jerseys and pull-overs	275,000
(3) Underwear, etc. of different kinds ..	218,000
(4) Shirts	168,000
(5) Outerwear, not knitted	420,000
(6) Raincoats	46,000
(7) Other clothing or ties, handkerchiefs, scarves, etc.	160,000

For all these items there should be great possibilities for increased production and the replacement of imports. Moreover many people can be employed as the capital investment per worker is almost the lowest of all industries.

(e) Footwear 363,000

Included in this Government imports .. £ 12,000

Main items are:

(1) Footwear mainly of leather	£212,000
Included in this Government imports	(£11,000)
(2) Footwear mainly of textile materials	68,000
(3) Footwear mainly of rubber	55,000

For these items there should be great possibilities for increased production and the replacement of imports.

(f) Scientific and measuring instruments, photographic apparatus, watches, etc. 451,000

Not many possibilities at present.

(g) Miscellaneous manufactured articles, n.e.s. 2,486,000

Main items are:

(1) Musical instruments	£ 191,000
(2) Printed matter—	
a. Books, etc.	234,000
b. Paper and cardboard	74,000
Included in this Government imports	(£33,000)

(3) Watches	48,000
(4) Table and household articles of plastics	36,000
(5) Other articles of plastics	67,000
(6) Refrigerators	315,000
(7) Brooms and brushes	56,000
(8) Sports goods	40,000
(9) Toys and games (including baby carriages)	250,000
(10) Fountain pens	43,000
(11) Office supplies (not paper)	53,000
(12) Cigarette lighters	30,000
(13) Other	1,049,000

(2) Printed matter on paper and cardboard for packing material could be done to a greater extent by the existing firms.

(4) and (5) Plastic articles could be produced to a greater extent. This is also a branch which is expanding into many articles previously made from other materials. There should at present be room for two factories.

(6) Refrigerators. Some could be produced in Cyprus starting with assembling in collaboration with a factory abroad.

(7) Brooms and brushes. The existing factories may be able to expand their sales and production.

Annex VII

EXTRACTS FROM THE NORWEGIAN LAW ON TRAVEL AGENCIES

The term "Travel Agency" is defined as an enterprise which can undertake the following functions:

(a) To give information about travel conditions at home and abroad;

(b) To sell tickets for all means of transportation, with special tickets such as those for sleepers, seat reservations, transfers, etc.;

(c) To reserve rooms in hotels, to arrange for room and board, and to issue the necessary meal and hotel coupons;

(d) To arrange group trips, cruises with excursions, inclusive tours, etc.

The travel agency must have a license issued by the Ministry of Transport. Separate licenses must be obtained for branch offices.

The names "Travel Agency", "Travel Office", "Tourist Bureau" and compositions or translations of these words must only be used by businesses or enterprises that have obtained an appropriate license.

A license can be granted if:

(a) It is proved that the person in charge of the daily operation of the enterprise has the following qualifications:

Is 25 years of age or over and can show proof of honest dealing as well as economic reliability;

Has gone through at least a commercial school or other higher education according to the conditions of the country;

Has been employed in the trade for five years and during this period has received an all-round education with regard to the functions of a travel agency;

(b) It is proved that the owner or owners are solvent;

(c) There is a provable demand for a new agency.

In addition to the above conditions, it is necessary for the travel agency to provide security for contracts with hotels, restaurants, carriers and other such firms in an amount fixed by the Ministry. This security can be given in the form of a bank guarantee, insurance policy, or capital placed in the enterprise.

A foreigner can be given a license to run a travel agency if he represents a foreign travel agency, that is running a bona-fide travel bureau in his home country, and if this travel bureau can be of importance for the development of tourism to the country from abroad. The other general conditions must be fulfilled.

A license fee should be paid each year.

Exempted from the law are:

(a) Transport companies issuing tickets on their own means of transportation;

(b) National and official tourist organizations which however are not allowed to undertake the activities of a travel agency except in special cases which must be approved by the Ministry of Transport.

Annex VIII

SPECIAL FINANCIAL ARRANGEMENTS BETWEEN THE UNITED KINGDOM AND THE GOVERNMENT OF CYPRUS

Financial aid to Cyprus pledged by the United Kingdom in accordance with the provisions of the Zurich Agreement (Cyprus, United Kingdom Cmnd. 1093, London) can be classified in five different categories.

I. GENERAL GRANTS

These are included in Appendix R and total £12,000,000 for the period ending 31 March 1965. The breakdown is as follows:

	up to 31.3.61	: £4,000,000
31.4.61	" " 31.3.62	: £3,000,000
1.4.62	" " 31.3.63	: £2,000,000
1.4.63	" " 31.3.64	: £1,500,000
1.4.64	" " 31.3.65	: £1,500,000

In the Cyprus budget (calendar year) 1960, a provision of £4,227,000 is included but of this £2,227,000 is a grant-in-aid corresponding to expenditure arising out of the transfer of

sovereignty until the date of independence (e.g., £436,000 are provided for personal emoluments and repatriation of United Kingdom residents, see Cyprus Estimates 1960, p. 177, and the remainder corresponds to operations mentioned in Appendix 5 of the Agreements). The balance (£2,000,000) is the first instalment of the 1960-61 United Kingdom grant. Normally another instalment (£2,000,000) should be received before March 31, 1961. In the 1961 budget estimates a provision of £3,500,000 is made. £2,000,000 represents the second instalment of the £4,000,000 allocation up to March 31, 1961, and the balance £1,500,000 represents half the amount due by the United Kingdom for the fiscal year April 1, 1961-March 31, 1962.

II. SPECIFIC GRANTS

These are covered in Appendix R and are broken down as follows:

Air Terminal Nicosia : £500,000.

Of this amount, £200,000 are provided in the Development Fund estimates for 1961.

Akrotiri Resettlement Scheme : £500,000 (max.).

Not shown in budget. Amount likely to be allocated in the Communal Chamber budgets.

Ayios Nikolaos By-Pass : £340,000 (max.).

£80,000 provided in Development Fund estimates for 1961.

III. LOANS OR GRANTS REQUIRING FURTHER NEGOTIATION

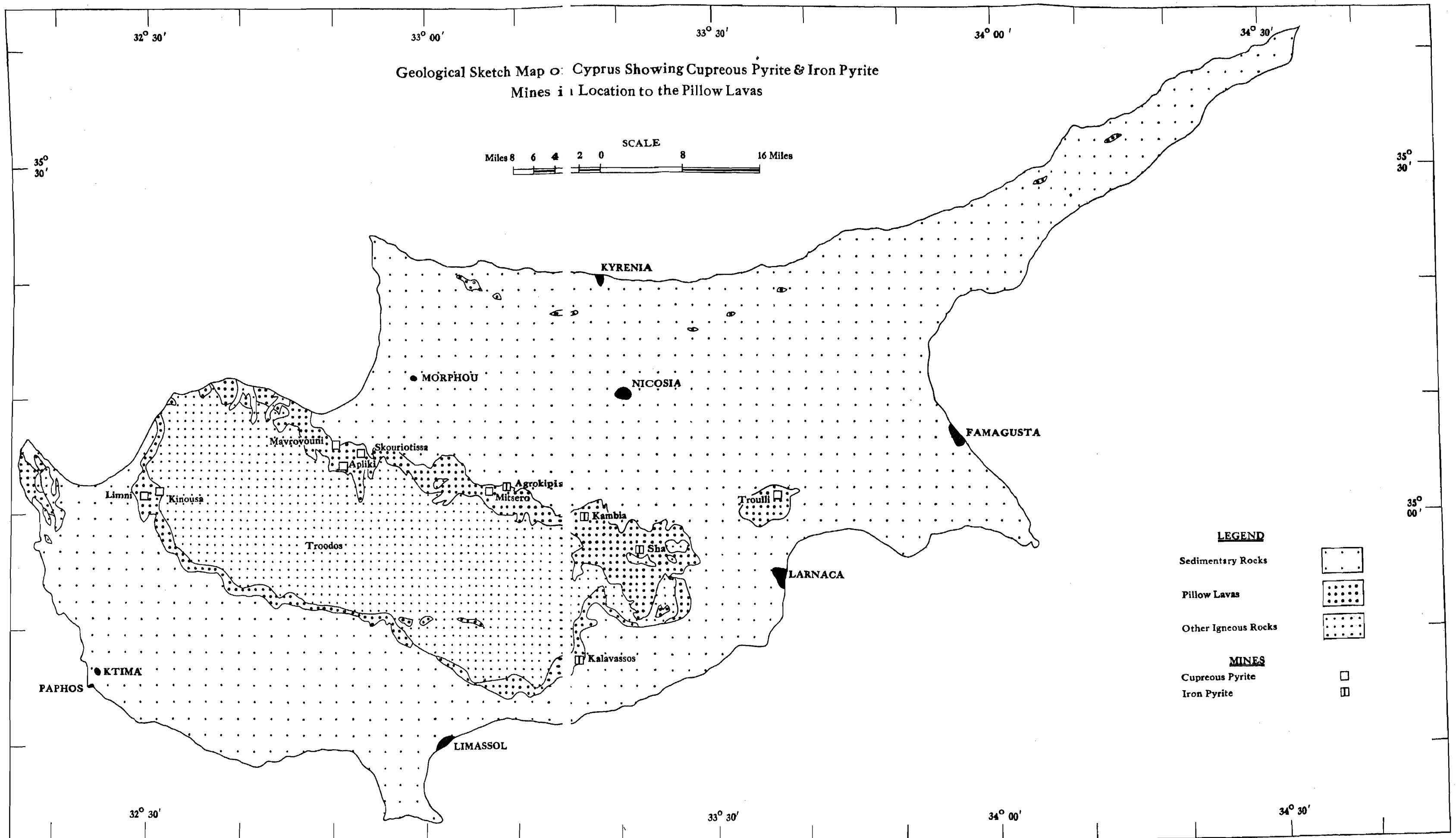
Mention is made in Appendix R that the United Kingdom authorities are ready to enter into negotiation with the Cyprus authorities to survey the financing needs for the expansion of the Electricity Power Authority.

IV. SPECIAL GRANT TO THE TURKISH COMMUNAL CHAMBER

This is contained in Appendix U. The amount involved is £1,500,000 of which £500,000 is to be disbursed immediately to the account of the Turkish Communal Chamber in the Turkish Bank of Nicosia and £1,000,000 is to be disbursed later. These funds should be used for such purposes as financing the religious foundations, school buildings, and a site for a hotel in Kyrenia.

V. POSSIBLE AID

In addition, as was mentioned in Chapter VIII, the Governor of Cyprus indicated in July 1960 the willingness of the United Kingdom authorities to finance, up to an amount of £2,000,000, the extension of the port of Famagusta.



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