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Country Studies of the Rural Poor

TAIWAN

TUNISIA

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on
Foreign Assistance and Rural Poverty

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PREFACE

This document is intended for the internal use of the Agency for International Development.

The information included herein is summarized from a number of sources including original A.I.D. file documents and A.I.D. publications. The most useful source material was found in several books which described the history, economic, organization, and other characteristics of each country.

In condensing this material, we have frequently used, without specific reference, the original language from these sources as the clearest and most accurate expression of a point. However, these studies were not prepared with a study of the rural poor in mind. Inevitably, some of the information drawn from them is used out of context, and it has been necessary to combine information from several sources to deal with the purpose of this review. Readers are therefore advised to return to the original published material for further analysis.

The following are the principal sources of the material presented herein.

Taiwan

Chinese-American Joint Commission on Rural Reconstruction, General Reports, Number 2-17, 1951-1966, Taipei, Taiwan.

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Tunisia

Duwaji, Ghazi, Economic Development in Tunisia, Frederick A. Praeger, Publishers, New York, 1967.

Grissa, Abdessatar, Agricultural Policies and Employment: Case Study of Tunisia, Development Center Studies, Employment Series: No. 9, Development Centre of the Organization for Economic Cooperation and Development, Paris, 1973.

International Bank for Reconstruction and Development, The Economic Development of Tunisia, Main Volume Marco-Economic Aspects, Report No. 274-TUN, December 27, 1974 (not for public use).

Johnson, William A., Agricultural Sector Paper: Annex to Agricultural Development Loan Paper, Fiscal Year 1972, U. S. Agency for International Development, Tunis, Tunisia, February 18, 1972.

I. INTRODUCTION

The objectives of the Administrator's Review on Foreign Assistance and Rural Poverty are (1) to determine what forms of assistance have been directed towards this problem, (2) to evaluate their degree of success and (3) to adduce the reasons for this success, or its lack. One effort to provide information which may help to meet these objectives is the preparation of case studies on the development experience of four countries, as this experience has affected the rural poor. This paper summarizes two of those cases: Taiwan and Tunisia.

Case studies of such complex subjects are inherently difficult, but in this case doubly so. These studies had to be developed from document research, in A.I.D. files or libraries, without visiting the countries. We received excellent cooperation in locating material, but the source material available in Washington was incomplete.

For both countries, we were able to find competent analyses which provided considerable information on their general situation, development prospects and changes over some period. However, none of these studies was done with the rural poor in mind. Consequently, it was difficult to separate the impact of the development experience on the rural poor from that of the general population. Even where the basic data appears to have permitted such segregation, as in Taiwan, the way it was presented in secondary source material effectively limited analysis, while much of the Tunisian data has been extrapolated from very limited bases.

We conducted two parallel lines of investigation in the study of each country. On the one hand, we collected information on the volume and composition of the A.I.D. program. We also obtained information on aid provided by other assistance donors

to the national investment program to get some idea of gross relationships. We reclassified the A.I.D. input by sectors and into the broad categories of economic growth, productivity, welfare services and integrated rural development programs although these categories are not mutually exclusive. We also sought to identify projects which were "directly related to the well-being of the rural poor."

On a parallel line we sought information on what had happened to the rural poor during our period of intervention. In this part of the investigation we were not interested in what should have happened according to national plans or A.I.D. programs but in finding data which would show what did happen.

In trying to determine what happened to the rural poor, we found it convenient to organize the information around six themes:

- o Land Resources
- o Employment Opportunities
- o Income and Consumption
- o Technology
- o Organization
- o Social Services

Land is the basic resource required for farming and associated rural occupations. Its natural endowments, the way in which it has been improved and who owns it determine the well-being of those who work it or derive their livelihood from those who do. We have looked particularly at the availability of land, its distribution among the rural population by size class, the arrangements for renting or buying land, and public investments in improving its usefulness.

Labor is the primary resource of the poor man, whether employed on his own property or on the property or in the business of others. The rural poor are workers who almost by definition

are surplus to requirements and hence earn a meager return from their endeavors. Even as land owners they control little power to leverage their effort and are constrained by the maximum they can till at peak periods. Thus they are underemployed during much of the year and must seek alternative employment. The availability or non-availability of such employment is a most significant factor in their well-being.

Income levels are the ultimate determinant of economic well-being and the quantitative measure of poverty or wealth. Unfortunately, rural incomes are difficult to measure since they include both cash and kind income and expenditure, and farm and non-farm sources and outlays. Small farmers seldom keep reliable accounts. We also tried to find out what use was made of income, particularly the dietary adequacy of nutrients procured.

Organization is here construed to be the way in which the poor participate in formal organizations through which they may receive services and make their needs felt. We were not interested in political parties or local government associations or social clubs, but in those organizations specificially created to incorporate the small farmer into the economy. It is evident that small farmers must be organized in order to achieve any of the economies of scale possible in agriculture. If they are not so organized, delivery of government services is uneconomic and the farmers have little influence in the market place of goods, services, programs and policies.

Technology is the resultant of the technology establishment (education, research, extension), productive inputs (fertilizer, water, seed), and cultural practices and management. Together they determine yield or agricultural productivity. Leveraged by capital, credit and energy they determine human productivity.

Social Services are here taken to be the things which the larger society provides to its people to improve their well-being and to enable them to take advantage of opportunities for advancement. We looked principally at education and health services since both represent a significant application of public resources to individuals.

As we accumulated this information we began to relate it to the de facto national policy and investment program, using both the U.S. A.I.D. mission's country program submissions and national plans to help interpret intent. In this process we are also deeply indebted to several published studies which had already analyzed this period in each country's development from broader perspectives.

In the process, we tried to relate any part of the A.I.D. program to the changes we found in the condition of the rural poor. This was extremely difficult. In most cases the rural poor were neither directly nor indirectly targeted. A.I.D. records seldom include analyses which indicate either the condition of the poor or the impact of the A.I.D. programs thereon. A.I.D. influence was a minor voice in most of the programs and policies to which the noted changes could be traced. This in no way indicates that A.I.D. resources were not important -- even vital -- in national development. It was just not possible to trace their impact on the status of the rural poor without straining credulity.

The problem of attribution is shown in two prorams which successfully reached the rural poor and in which A.I.D.'s input was clearly important: Taiwan's Joint Commission on Rural Reconstruction and Tunisia's Food-for-Work program (see Appendix). These programs could not have gone forward without A.I.D. resources and ideas, but the planning, management and operations

were in the hands of nationals, and national financial investments far exceeded that of A.I.D. Other equally valuable projects, e.g., strenghtening technological institutions, have no discernible impact on the rural poor in the short run, and can only be traced through the use of heroic assumptions.

Finally, after separate study of each country, we have attempted to draw some conclusions about the transferrability of the experience. In this regard, we have tried to identify the salient conditions in each country and the related characteristics of the development process during the period of assistance, which affected the rural poor. We have also tried to draw some conclusions about the ways in which certain types of program emphases have affected the rural poor. In both countries, overall economic development was an important national goal, pursued with some success. Agricultural production was a necessity, and both countries sought to maintain or improve agricultural productivity. Concern with the rural people, most of whom were poor, led to various types of welfare programs, while each sought with various degrees of success to achieve integrated rural development.

II. FOREIGN ASSISTANCE CHARACTERISTICS

A. LEVEL AND TYPE OF ASSISTANCE

U.S. assistance was provided to both Taiwan and Tunisia for approximately the same span of years, but at different times. For the purposes of this study, foreign assistance to Taiwan began in 1949 when the government relocated itself in Taipei and terminated in mid-1965. The assistance period for Tunisia began in 1957 and includes FY-1973. Both countries thus received assistance for 17 years.

The pattern and amount of assistance received by the two countries was markedly different (Table II-1):

- Taiwan received $2450 millions in military assistance; Tunisia received only $47 million. Defense support amounted to about $220 million in Taiwan, but there was none in Tunisia.*
- The U.S. was Taiwan's only significant donor, with international agencies contributing only 2 percent of total assistance. the U.S. provided major support to Tunisia, but this amounted to only 75 percent of the total received.
- U.S. economic assistance to Taiwan was 2 1/4 times the amount provided Tunisia, but, on a per capita basis, the annual contributions were similar.

The differences in the patterns of economic assistance undoubtedly reflect differences in absorptive capacity, considerations of national interest and development prospects. They also reflect changes in the assistance process. In the twenty-plus years between initiation of assistance to Taiwan and 1973, aid granting conditions have changed materially, as have both the requirements for development and our understanding of those requirements. Between 1949 and 1972, the Marshall Plan, the Mutual Security Act, and the Foreign Assistance Act successively changed funding criteria and characteristics , while the situational requirements of each country were significantly different. China, a war-time ally of shrunken power, fronted on the Communist dominated mainland, and maintained a relatively huge standing army for defense and against a possible return to the mainland. Tunisia,

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* Defense support is little different in ultimate destination from other types of program support and is included as a part of economic support.

Table II.1

Total Economic and Military Assistance

(Millions of Dollars)

Class of Assistance	Less Developed Country TAIWAN (1949-1965)	TUNISIA (1957-1973)
U. S. Economic	1710	763
Loans	313	347
Grants	1398	417
U. S. Military	2450	47
Loans	-	5
Grants	2450	42
U. S. Total (Econ & Mil)	4160	810
Loans	313	352
Grants	3848	458
International Organizations	68	273
IBRD	40	156
IFC	-	17
UNDP	10	31
Other UN	5	7
IDA	13	59
AfDB	-	4
TOTAL ALL SOURCES	4228	1073

Source: "U.S. Overseas Loans and Grants and Assistance from International Organizations", Statistics and Reports Division, Office of Financial Management, Agency for International Development, May 1974.

recently independent politically, was in the throes of achieving economic independence and building a nation, while suffering from economic, managerial and technical losses as Europeans departed.

Economic assistance to these countries took several forms:

- o Development loans, which include both project funding and commodity programs designed to stimulate economic development.
- o Development grants (DG) and technical cooperation (TC), which provide technical assistance (TA) and related material support to develop economic or institutional resources.
- o Supporting assistance, to meet urgent political or military requirements.
- o Defense support (or security support), a category of assistance used early in the US economic assistance program to improve the general development and strength of the host country.
- o Agricultural commodities distributed under the Agriculture Development Trade and Assistance Act of 1954 (PL-480), known as the Food for Peace program. The Act provided four avenues for distribution:

Title I - Sale of commodities for local country currencies, with such currency then made available for economic development programs.

Title II - Grants of surplus commodities for emergency relief or for payment in kind for work performed.

Title III - Surplus commodities used by US voluntary agencies for humanitarian assistance.

Title IV - Long-term credit sales of surplus commodities for U.S. dollars.

Old Title IV and I of PL-480 now form a new Title I, (sales of commodities), and Titles II and III form a new Title II (distribution of commodities for relief purposes).

The amounts of AID-related economic assistance over the period of interest for Taiwan (1949-1965) and Tunisia (1957-1973) is shown in Tables II-2 and II-3. Marked differences in aid levels between the two countries with respect to the source and kind of assistance are apparent, in part because of the difference in time frame over which support was extended, and differing aid policy, and in part because of differences in the perceived areas of need for assistance in the two countries.

Table II.2

AID-RELATED ECONOMIC ASSISTANCE TO TAIWAN

Program	Loans and Grants Authorization			
	Marshall Plan Period (1949-1952)	Mutual Security Act Period (1953-1961)	Foreign Assistance Act Period (1962-1965)	TOTALS (1949-1965)
AID & Predecessor Agencies - Total	467.4	882.7	69.6	1419.7
Loans	--	175.2	61.8	237.0
Grants	467.4	707.5	7.8	1182.7
Food for Peace (PL-480)- Totals	0.4	96.1	193.6	(290.1)
Title I - Total	--	39.6	141.8	181.4
Repayable in US$ (Old Title IV)	--	--	(28.6)	
Payable in foreign currency (Old Title I)	--	(39.6)	(113.2)	
Title II - Total	0.4	56.5	51.8	108.7
Emergency Relief (Old Title II)	--	(2.9)	(22.9)	
Voluntary Relief Agencies (Old Title III)	(0.4)	(53.6)	(28.9)	
Total Economic Assistance	467.8	978.8	263.2	1709.8
Loans	--	185.5	128.2	313.7
Grants	467.8	795.3	135.2	1398.3

Source: "Overseas Loans and Grants", AID.

Table II.3

AID-RELATED ECONOMIC ASSISTANCE TO TUNISIA

Program	Loans and Grants Authorization			
	Mutual Security Act Period (1953-1961)	Foreign Assistance Act Period (1962-1965)	Foreign Assistance Act Period (1966-1973)	TOTALS (1957-1973)
Economic Assistance Total	240.9	204.0	318.3	963.2
Loans	56.1	101.9	195.9	353.6
Grants	184.8	102.2	122.4	409.6
AID & Predecessor Agencies	138.2	102.9	113.6	354.7
Loans	45.6	73.8	87.7	207.1
Grants	92.6	29.1	25.9	147.6
Food for Peace (PL-480)	102.7	98.2	197.2	398.1
Title I - Total	10.5	28.1	108.4	147.0
Repayable in US$ (Old Title IV)	--	--	(75.2)	
Payable in foreign currency (Old Title I)	(10.5)	(28.1)	(33.2)	
Title II - Total	92.2	70.1	88.8	251.1
Emergency Relief (Old Title II)	(90.3)	(64.0)	(72.1)	
Voluntary Relief Agencies (Old Title III)	(1.9)	(6.1)	(16.7)	

Source: "Overseas Loans and Grants", AID.

Differing trends in loan and grant policies are evident in comparing loan and grant totals for AID. Grants dominated loans as a funding category before 1962. Most assistance to Taiwan was made before 1962, so substantially more funds went the grant route. For Tunisia, the proportions are reversed, with more in loans than in grants. This carries with it other implications related both to subtle difference in the administration of loans versus grants and interest charges, although the latter are not significant during the aid period

Levels of Assistance

The total economic assistance from AID appropriations and Food for Peace is roughly 2 1/4 times larger for Taiwan than Tunisia. When the amount of assistance is reduced to a per capita basis, global differences in economic assistance disappear, but significant differences are apparent in kind of assistance given. Assuming a median Taiwan population of 10 million over the period 1949 to 1965 (17 years) and a median Tunisian population of 4 million over the years 1957 to 1973 (17 years), the per capita assistance per year is estimated to have been:

	TAIWAN	TUNISIA
U.S. Economic	$10.06	$11.22
AID and predecessor organizations	8.35	5.22
Food for Peace	1.71	5.85
Title II	1.07	2.16
Title II	.64	3.69
U.S. Military	14.41	.69
Total U.S.	24.47	11.91
Total, All Sources	24.87	15.78

Although both countries received the same per capita level of US economic aid, in Tunisia more than half of this was in Food for Peace commodities, with a third of total economic aid for relief activity. Taiwan received over 80 percent in dollar assistance, and only 6 percent for relief.

B. DISTRIBUTION OF ASSISTANCE

Successive attempts were made to find techniques for describing the composition of the assistance program of the two countries in other than qualitative terms, so that quantitative comparisons could be made. In these attempts we concentrated on project assistance as the best expression of intent. Our efforts were only partially successful and were complicated by the lack of project information for the first six years of the Taiwan program. However, the techniques used do highlight the differences between the two programs.

Table II-4 is the official allocation of project aid by fields of activity. Given the disparity in the period for which project assistance was available (11 years vs. 17) we reduced this information to a project year basis (number of projects times the years each project was in operation).

The immediate observation is the heavy concentration on the industry and mining (including power) sector in Taiwan, and the heavy investment in this field per median project year. A second level of concentration included food and agriculture, transportation, health and sanitation and education, with most other activities at minor levels. Project year medians are higher than those of the Tunisian program. In Tunisia, the primary concentration was on food and agriculture. Industry and mining trailed by half, and the remaining sectors lagged agriculture by fifty percent or more.

We interpret the higher median project year value, the industry and infrastructure orientation and the general development orientation of the Taiwan program as reflections of the capability of the Chinese to plan and execute projects. Certainly, Taiwan enjoyed a tremendous advantage in number of professionals, and results demonstrated their managerial capacity.

We next attempted to allocate project assistance within the study categories of agricultural productivity, economic development, welfare of the rural poor, and integrated rural development. This step also proved difficult. We wished to develop a matrix in which the study categories

Table II-4

Distribution of Project Funds Among Fields of Activity
($ Thousands)

Fields of Activity	TAIWAN				TUNISIA			
	Total all Projects	No. of Projects	No. of Project Years	Median per Project Year	Total all Projects	No. of Projects	No. of Project Years	Median per Project Year
Food and Agriculture	$12,293	38	75	75	$28,132	67	132	53
Industry and Mining (incl. Power)	154,931	106	220	150	19,825	36	66	41
Transportation	31,355	32	62	89	19,605	16	29	80
Labor	31	4	8	6	1,315	12	23	37
Health and Sanitation	8,672	33	82	45	5,508	10	16	213
Education	9,602	23	75	79	4,487	18	35	38
Public Safety	10	1	2	5	2,577	7	19	76
Public Administration	3,806	25	47	23	2,393	17	29	74
Community Development, Social Welfare, and Housing	569	7	13	14	80	5	7	13
Private Enterprise Promotion	966	3	7	84	133	3	4	20
General and Miscellaneous	18,412	24	56	67	765	13	30	20
Technical Support	2,541	1	11	255	8,066	3	16	522
Direct Military Support	6,054	35	39	46	--	--	--	--
TOTAL	249.5				92.9			

were arrayed against traditional field of activity. By assigning projects to the resulting cells we hoped to refine the expression of program character. In the process of making these assignments we occasionally found situations in which the initial assignment to a field of activity did not accurately express the function of the project, and had to make a reassignment. Similarly, we found several cases in which a project's functions could not be assigned to a single cell, but had to be allocated to the several cells it cut across.

Despite these difficulties, we made the assignments and found the results useful. (Tables II-5 and II-6). Salient points can be observed under each of the study sectors:

Agricultural Productivity

When converted to a per capita year basis, Taiwan received about $.28 per capita year and Tunisia about $.52, or nearly twice as much for agricultural productivity projects. When only the TC portions of this are considered the disparity becomes greater - $.06 to $.28 per capita. Most of the differences between the two are at three intersections of Tables II-4 and II-5.

Food and Agriculture	-	Agricultural Productivity
Industry and Mining	-	Agricultural Productivity
Education	-	Agricultural Productivity

Looking back at the projects lodging in these cells differences in kinds of projects and pattern of funding can be seen.

Food and Agriculture - Agricultural Productivity.

For Taiwan, there were fewer projects, tending to be supported at a higher level per year. Typical of those in Taiwan were such things as:

- Logging Operations
- Ocean Fisheries Improvement
- Land and Water Resources Improvement
- Coop and Livestock Imporvement
- Forestry
- Tuna Long Lines and
- Tractors-Taiwan Sugar Corporation

Table II-5

AID Assistance to TAIWAN through Project Funding, 1955-1965[a] ($ Millions)

Field of Activity	Projects	Study Sector				Total
		Agricultural Productivity	Economic Developm	Welfare of Rural Poor	Rural Developm	
Food and Agriculture	All	10.5	--	--	1.1	11.7
	TC[b]	2.9	--	--	.7	3.6
Industry and Mining	All	14.8	155.0	--	1.1	171.0
	TC	--	5.4	--	.3	5.7
Transportation	All	.2	31.8	--	.1	32.0
	TC	--	.6	--	--	.6
Labor	All	--	< .1	--	--	< .1
	TC	--	< .1	--	--	< .1
Health and Sanitation	All	--	--	8.7	--	8.7
	TC	--	--	2.5	--	2.5
Education and Training	All	3.4	4.2	3.4	.2	11.3
	TC	3.0	3.7	2.9	.1	9.7
Public Safety	All	--	--	< .1	--	< .1
	TC	--	--	< .1	--	< .1
Public Administration and Management	All	.8	.9	.7	2.0	4.4
	TC	.6	.8	.6	.6	2.7
Community Development, Soc. Welfare, Housing	All	--	--	--	3.9	3.9
	TC	--	--	--	2.3	2.3
Private Enterprise Promotion	All	--	--	--	--	--
	TC	--	--	--	--	--
General and Miscellaneous including Tech. Support	All	.7	.7	.7	.7	2.9
	TC	.5	.5	.5	.5	2.1
Totals[c]	All	30.4	192.6	13.6	9.1	245.7
	TC	7.1	11.1	6.6	4.7	29.4

(a) Does not include Sec. 402 or PL-480 funds.
(b) TC includes Technical Cooperation, Development Grants, and Technical Assistance.
(c) Total does not include $3.3 million that was completely defense-related.

Table II-6

AID Assistance to TUNISIA through Project Funding,
1957-1972[a] ($ Millions)

Field of Activity	Projects	Study Sector				Total
		Agricultural Productivity	Economic Developm	Welfare of Rural Poor	Rural Developm	
Food and Agriculture	All	24.0	--	--	.3	24.3
	TC[b]	11.2	--	--	.3	11.5
Industry and Mining	All	.6	17.4	--	--	17.9
	TC	<.1	2.4	--	--	2.5
Transportation	All	--	19.4	.1	--	19.5
	TC	--	.7	--	--	.7
Labor	All	.2	.3	.2	.1	.8
	TC	.2	.3	.1	.1	.8
Health and Sanitation	All	--	--	5.5	--	5.5
	TC	--	--	3.6	--	3.6
Education and Training	All	6.4	3.3	1.7	.2	11.6
	TC	4.0	3.2	1.7	.2	9.1
Public Safety	All	--	--	2.6	--	2.6
	TC	--	--	1.2	--	1.2
Public Administration and Management	All	<.1	1.3	<.1	.1	1.4
	TC	<.1	1.2	<.1	.1	1.2
Community Development, Soc. Welfare, Housing	All	<.1	<.1	.1	.1	.2
	TC	<.1	<.1	.1	.1	.2
Private Enterprise Promotion	All	--	.1	--	--	.1
	TC	--	.1	--	--	.1
General and Miscellaneous including Tech. Support	All	2.2	2.2	2.2	2.2	8.7
	TC	2.1	2.1	2.1	2.1	8.4
T o t a l s	All	33.6	43.9	12.3	2.9	92.7
	TC	17.7	10.1	8.8	2.9	39.6

(a) Does not include Food-for-Peace
(b) TC includes Technical Cooperation, Technical Assistance Development Grants and Population Grants.

In Tunisia, these kinds of projects are typical:

- Agricultural Economic Research and Planning
- Agricultural Production – Cereals, Poultry, Livestock
- Watershed Planning and Management
- Water Development
- Agricultural Equipment and
- Grassland Improvement

A full range of agricultural practice was covered in both countries. However, in Tunisia more than a fifth of agricultural productivity funding went to improvements of water resources and irrigation. Most of the Taiwan TC projects were administered by the JCRR; most non-TC projects were defense support category projects falling in the agriculture domain.

Industry and Mining - Agricultural Productivity

Only a small portion of Tunisian assistance fell in this cell. In Taiwan the heavy industrial investment program included a varietv of projects with a direct effect on agricultural productivity or which provided market incentives for such productivity:

- Urea Plant Development
- Nitrophosphate Plants
- Sugar Refining
- Sugar Cane Transport
- Pineapple Canning
- Logging Operations, and so on.

Education - Agricultural Productivity

Tunisia has about twice as much in the wav of project funds lodging in this cell, but this is somewhat illusory. In both countries, significant amounts went to agricultural education and extension work. However, in Taiwan much more of vocational agriculture education appeared to be directed toward the rural population generally, so that the education assignment was spread more evenly across all study sectors. In Tunisia, about $4 million were allocated to the development and expansion of Chott Maria College.

Economic Development

Project assistance to Taiwan totaled $192 million in this study sector (about $1.75 per capita year) and only about $44 ($.69 per capita year) for Tunisia. Principal differences are found in two cells:

Industry and Mining - Economic Development

Transportation - Economic Development

Great infusions of project funds designed to provide the infrastructure for economic growth went into Taiwan. Projects included development of hydroelectric power, telecommunications, transportation, development and exploitation of the island's natural resources of coal and other minerals, and manufacturing and processing capabilities for agricultural products and a wide variety of other products (cement, window glass, fertilizer, sulphuric acid, electric motors, building board, industrial dynamite, and so on). The economy, social structure, government, and the motivations of the citizenry was in a configuration where such funds could be used appropriately. The opportunity was not so clear in Tunisia. Although some project funds were used for a desalinization plant, and a pulp factory, most industry and mining projects were for surveys and planning, manpower and management training and services. Except for two large development loans for procurement of electrical power and equipment, projects were fewer and much smaller in scale than in Taiwan.

This same trend carried over to the transportation sector. In Tunisia, most funding went to the improvement of the Tunis/Carthage airport, for purchase of highway equipment and for highway maintenance. In Taiwan, expansion of railroad facilities used more than two-thirds of all transportation project funds; much of the remainder went to harbor and shipyard development and management.

Welfare of Rural Poor

A relatively small proportion of total project funds can be assigned directly to the welfare of the rural poor. The absolute amounts turn out to be about $13 million for each country. On a per capita year basis, this is somewhat more for Tunisia. Differences in project funds allocated are seen in two cells:

Health and Education - Welfare of the Rural Poor
Education - Welfare of the Rural Poor

In health and sanitation, the amounts are essentially the same when considered in terms of the size of the population. Projects were much more numerous and smaller in Taiwan, however, where the median dollar value per project was $45,000 as contrasted with $213,000 in Tunisia (refer to Table II-4). In Tunisia, major effort went to water supply improvement in Tunis and Sfax, food fortification and nutrition, and family planning. Taiwanese projects were of much greater variety, ranging from water works rehabilitation, malaria control, improvement of nursing practices, to construction of rural clinics and hospitals.

Relative to population, project totals in the education-welfare of rural poor intersection is similar for both. The nature of the projects is somewhat different, however. Taiwan education efforts were concentrated more in vocational, trade, and home economics courses, both at the local school and higher education levels, while much more attention is paid to higher education and teacher training in Tunisia, where the first task is to develop the professional cadre.

Rural Development

The entire JCRR program might be considered to be an integrated rural development program. However, for this allocation exercise, we used a more traditional definition. Activities such as community development, farmer organization, and resettlement or area development activities which sought to focus or facilitate the provision of multiple services on a target group were included. Taiwan had a much larger per capita allocation to these types of projects, but it was not a large portion of the total project assistance. The difference aggregates from several intersections, most notably the community development-rural development cell. This difference is largely the result of the Taiwan RETSER program, a vocational assistance program for retired servicemen. In this program, older servicemen were retired, and then aided in establishing themselves in civilian life through provision of housing, jobs, and a small plot of land to farm.

C. TECHNICAL COOPERATION

We looked particularly at technical cooperation* projects as a part of total project assistance which might have critical managerial implications for technical assistance. Roughly half of TC/DG/TA grant funds pays for salaries and expenses of U.S. nationals - administrators and professionals - who work in the field with host country personnel. Another fourth goes toward participant training of host country citizens.

Assistance categorized as technical cooperation by AID has been essentially the same for the two countries. between $35 and $40 million for each over the span of years assistance was furnished. In the case of Taiwan, this amounted to 3 percent of AID support; for Tunisia, it is about 10 percent. What would appear to be critical is the way in which technical cooperation funds are distributed among sectors of activity, as this is where it might be expected that impact on the wellbeing of the rural poor could be seen.

Technical cooperation allocations did not appear to be as reliable an indicator of program content as total project assistance. (Table I.-7). For the most part they followed similar trends for both study sector and fields of activity, but with less sensitivity. Two factors appear responsible: (1) A minimum staff is needed to administer the Mission and to handle any field of activity, even if the project funding is minimal. (2) The traditional ways of providing technical advisory services to the various fields of activity influences the TC requirement.

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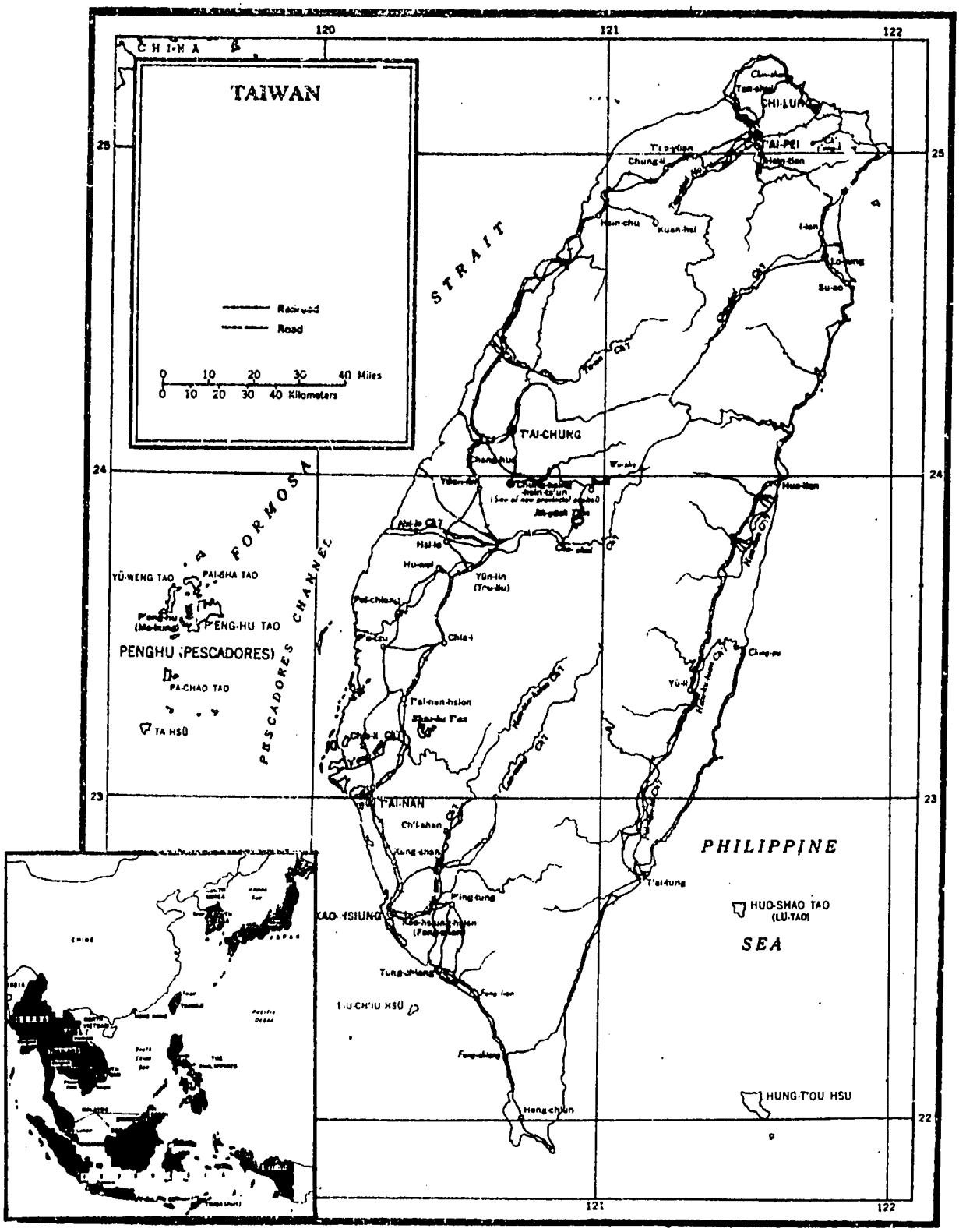
* Including development grant and technical assistance.

Table II-7

Comparison of Distribution of Total Project Assistance and Technical Cooperation Funding
(Percent)

	TAIWAN		TUNISIA	
Study Sector	Total Project	TC	Total Project	TC
Agricultural Production	12	24	36	45
Economic Development	78	38	47	26
Welfare Activities	6	22	13	22
Rural Development	4	16	3	7
Field of Activity	Total Project	TC	Total Project	TC
Food and Agriculture	5	12	26	29
Industry and Mining	70	19	19	6
Transportation	13	2	21	2
Labor	T	T	1	2
Health and Sanitation	4	9	6	9
Education and Training	5	33	14	23
Public Safety	T	T	3	3
Public Administration	1	10	1	3
Community Development and Social Welfare	1	8	T	1
Private Enterprise Promotion	--	--	T	T
General and Miscellaneous	1	7	9	22

TAIWAN


TAIWAN
Railroad
Road
0 10 20 30 40 Miles
0 10 20 30 40 Kilometers
CHINA
STRAIT
FORMOSA
PESCADORES CHANNEL
PENGHU (PESCADORES)
YÜ-WENG TAO
PAI-SHA TAO
PENG-HU TAO
PA-CHAO TAO
TA HSÜ
T'AI-CHUNG
T'AI-NAN
KAO-HSIUNG
LIU-CH'IU HSÜ
PHILIPPINE SEA
HUO-SHAO TAO (LÜ-TAO)
HUNG-T'OU HSU
120
121
122
25
24
23
22

TAIWAN. CONVERSION RATES

US$ 1.00	=	NT$ 10.00 thru FY-51
US$ 1.00	=	NT$ 10.30, FY-52 and FY-53
US$ 1.00	=	NT$ 15.65, FY-54 and FY-55
US$ 1.00	=	NT$ 24.78, FY-56-57-58
US$ 1.00	=	NT$ 36.38, FY-59 and FY-60
US$ 1.00	=	NT$ 40.00, FY-61 and FY-65

III. TAIWAN

COUNTRY CHARACTERISTICS

Taiwan is an island of 13,800 square miles, 250 miles long and 80 miles wide at its broadest, located 115 miles east of the southern coast of mainland China and centered on the Tropic of Cancer. It is mountainous with the main chain running north-south. Only one third of Taiwan's total land area is cultivable. The slopes of the foothills are extensively cultivated but most of the island's cultivable land lies on the western coastal plains.

The island's climate is predominantly subtropical, grading to tropical in the extreme south, with a mean annual rainfall of just over 100 inches (2600 mm). Most of the rain is from the northeast monsoon (usually November through March) and the southwest monsoon (normally May through September).

The western part, which is the chief agricultural region, has frequent winter droughts because the central mountains cut off the northeast monsoon rains. Irrigation is needed for production of more than one rice crop per year. Melting snow from the higher mountains and the heavy rainfall provide ample water for hydroelectric power and enough irrigation for land of suitable configuration. Frequent destructive flooding required construction of protective works.

Demography

The total population of Taiwan was 13,157,000 in 1966. Between 1952 and 1965 it grew at an average annual rate of 3.3 percent. During this same period the already low death rate declined from 9.8 per thousand in 1952 to 5.5 per thousand in 1965. The birthrate, though high, has gradually declined from 46.6 per thousand in 1952 to 32.7 per thousand in 1965. This may be due partly to the gradual acceptance of birth control programs. Traditionally, large families have been desirable, particularly among farm families. As a result of these factors, the population under age 15 made up almost 45 percent of Taiwan total population, while those age 65 and above were 2.6 percent of the total.

Population density in 1966 was 980 persons per square mile, However, most of the population live on the alluvial plains or the small marginal tablelands, which together comprise 36.5 percent of the total land area. The average density in these areas reaches about 2,700 persons per square mile.

Urbanization increased rapidly in the study period. In 1920 approximately 4 percent of Taiwan's population lived in cities of more than 100,000 people; by 1952 the number had increased to 21 percent and by 1965 to 27 percent. Although the majority of Taiwan's population still live in small towns and villages, most of the county seats have expanded to cities with populations over 100,000. In early 1967 the capital city, Taipei, had a population of 1.2 million.

Recent History

The Taiwan development experience can be understood only in the context of the Japanese occupation. Imperial Japan acquired Taiwan in 1895 and converted it to a productive agricultural colony of the empire. The U.S. foreign assistance program, which began in 1950, was a continuing phase in a development process which had already been in progress for 55 years.

The Taiwan which Japan acquired in 1895 was a classic traditional society. To this society, Japan applied the basic formula which it had used in its own development. After establishing civil order the government initiated a series of land reforms. A cadastral survey provided a rational basis for property identification, taxation, and rental. Absentee landlords were required to exchange their hereditary land and rental rights for bonds, the land titles of resident farmers and landlords were confirmed and the rentals for land were fixed. These initial steps provided the agrarian security needed for further agricultural development.

As the land reform began to take effect, the Japanese organized farmers into associations which were an extension of the colonial administration, using these associations as the interface with the farmers. They established a network of research stations whose output was disseminated through the

farmer's association. These associations became the principal marketing channel as well.

The third step in the process was the construction of basic infrastructure, including rail, highway, postal and telecommunications systems, irrigation and flood control works, hydroelectric plants and harbors. The school system was expanded, and the agricultural processing industry (primarily sugar, jute and pineapple) was founded.

Japanese investment in the first decade was heavy, but later the colony was required by circumstances to become self-financing. Heavy consumer taxes funded extraordinarily high investment budgets which contributed to further agricultural and industrial growth.

These efforts were clearly successful in achieving overall growth and some measure of social progress as well. Agriculture exported an average of more than 12 percent of net domestic production between 1911 and 1940, making Taiwan a highly profitable colony. Growth rates, dominated by agriculture, started slowly, but grew at an average rate of 3 percent per year between 1924 and 1938.

This slow growth of agriculture is worth noting in light of the purposes of this seminar. Nearly a quarter century elapsed before new farming technology was in wide use throughout Taiwan. Between 1910 when records were started and 1924 farm production grew only 1.2 percent per year.

World War II brought severe neglect and destruction to the island's economy. Agricultural production dropped back to the levels of the early thirties, flood control and irrigations works were damaged by natural causes and lack of maintenance, while other capital stock was destroyed by bombing.

Immediate post war reconstruction was an extension of the worst aspects of colonial rule as the Japanese administrators and technicians left, and the mainland military occupied the island. This initial military

government was incompetent and corrupt. Its primary concern was obtaining agricultural products to support the war on the mainland. The Japanese market no longer existed.

Reconstruction began with the appointment of Chen Cheng as Provincial Governor in 1949 and the relocation of the Republic in Taipei following the Communist conquest of the mainland. More than 600,000 Chinese were relocated from the mainland, including a great many professionals and administrators. Between 1945 and 1951 much of the physical infrastructure of the island was rehabilitated, and the first phases of the agrarian reform were underway. At the same time foreign exchange reserves were exhausted, and inflation was rampant. The situation was not materially different from that for which the Marshall Plan was developed in Europe.

Economic Growth

Throughout the assistance period, Nationalist Chinese policies were directed towards support of a large armed force for protection and eventual return to the mainland. The U.S., unwilling to support an armed invasion, but committed to Taiwan's defense, sought with some success to encourage the acceptance of development as a national purpose. The combination of pressures of necessity and from the U.S., and the manifest easing of the burden of the military as the economy improved led to acceptance of the basic consistency between political and economic goals.

Over time, and with U.S. encouragement, the development policies which emerged included a liberalization of economic policies to permit regulation by market forces, and an expansion of the role of the private sector. On their own initiative, the Chinese prepared a series of four-year plans which provided direction to their development effort and provided a means of assesing and coordinating availability and use of resources. Both fiscal and monetary policy continued to be expansionary, despite strong U.S. discouragement.

The first two years after the Republic moved to Taiwan can be considered as a settling in and reconstruction period. Between 1951 and 1965, GNP grew at 4.2 percent. Agriculture's share of GNP declined from 37 to 24 percent while industry and mining increased from 24 to 33 percent and service industries went from 16 to 19 percent. Both private and government consumption declined while gross capital formation increased from 14 to 18 percent. Table III. 1. provides some additional indicators of economic progress.

The private sector emerged as a dominant force in industry, rising from 45 percent of industrial output in 1952 to 62 percent in 1963. Both private industrial output and private capital formation far outstripped their public counterparts.

The forces of economic growth were widely diffused throughout Taiwan. Output and productivity rose in nearly all branches of agriculture and industry. All economic groups benefited with marked increases in levels of living. Fragmentary evidence indicates that farmers (!) and industrial workers benefited more than military and civil service personnel.

Table III-1

Indicators of Economic Progress of Taiwan, 1951-64
(In millions of U.S. dollars except where otherwise stated)

	1951	1953	1955	1957	1959	1961	1963	1964
GNP in constant 1964 prices	879	1,093	1,273	1,416	1,621	1,887	2.140	2,357
GNP in constant 1964 prices per capita	106	124	134	140	150	164	175	187
Gross fixed investment in constant 1964 prices	106	131	159	188	282	334	351	372
GFI as percent of GNP	12.1	12.0	12.5	13.3	17.4	17.7	16.4	15.8
Agricultural production index (1951=100)	100.0	121.7	126.0	147.7	159.9	175.4	181.8	200.5
Industrial production index (1951=100)	100.0	156.7	186.7	222.9	271.3	341.3	423.9	533.3
Gross domestic saving (in constant 1964 prices)	105	116	116	131	169	265	396	489
Government current revenue (net)(in constant prices prices)	153	174	235	284	316	328	396	414
Exports as percent of GNP (in constant 1964 prices)	9.8	8.3	9.2	10.0	11.0	12.0	16.8	20.4
Imports as percent of GNP (in constant 1964 prices)	14.4	14.3	15.4	17.2	20.1	19.9	17.5	20.5

Source: Jacoby, Heil H. U.S. Aid to Taiwan. Praeger. 1966.

Foreign aid totalling $1.5 billion dollars in fifteen years (about 34 percent of Taiwan's total gross investment) exerted singularly powerful effects. Calculations with a No-Aid Growth Model indicate that aid more than doubled GNP growth rates, quadrupled growth of GNP per capita and had a 2.0 multiplier effect on Taiwan's investment. Although aid averaged only 6.4 percent of GNP while Chinese military expenditures averaged 10 percent, elimination of both military burden and aid would have meant a serious net loss to the economy. There was such a strong redundancy of manpower on the island and the foreign exchange costs of a standing army were so small that the negative impact of the military was less than might have been expected.

The primary reason for the importance of aid in Taiwanese economic growth was the fact that it eliminated a critical foreign exchange bottleneck. Without aid China would have had to use most of the nationally generated foreign exchange to buy consumer goods and industrial materials. With aid, it could afford to import additional machinery and equipment to complement domestic labor and materials.

The importance of resource transfer, rather than technical assistance to the economic planning process, should be emphasized. Americans were able to persuade the Chinese of the desirability of growth, the liberalization of economic policies and the desirability of energizing the private sector. The U.S. also sought to influence the Chinese to reduce military expenditures, raise revenue levels, curtail the government deficit and limit increases in monetary supply, all without notable success except in the negative sense that without persuasion the situation might have been worse. The Chinese did the planning with little U.S. involvement and, over three four-year plans, came close to the targets they projected. (Table III-2)

Other features of aid helped to steer this growth or helped firms, families and governments take advantage of it, but the transfer of foreign exchange resources was the major factor in aid-assisted growth in the Chinese situation.

Table III-2

Actual and Planned Gross Capital Formation by Sectors and by Planning Period, 1953-68
(In Per Cent)

	Total GNP	Agriculture	Industry	Infrastructure	Resources
1953-1956					
Planned	100	33.7	36.8	29.5	0
Actual	100	18.6	49.1	18.3	14.0
1957-1960					
Planned	100	26.4	28.9	25.3	9.4
Actual	100	16.9	41.0	25.0	17.1
1961-1964					
Planned	100	18.7	34.2	32.5	14.6
Actual	100	13.7	46.9	24.3	15.1
1965-1968					
Planned	100	12.9	45.8	21.1	20.2

Source: Jacoby, Neil H. U.S. Aid to Taiwan. Praeger. 1966.

The massive transfers of financial resources to Taiwan were closely related to the success of all other programs, since they facilitated the development of industry and exports, the earning and saving of foreign exchange and permitted the shift from consumption to investment. Economic growth generated the domestic revenues to fund social services and established the climate of stability and prosperity which encouraged private domestic and foreign investment. Without aid, the 1964 GNP would not have been reached until 1980 and the 1964 per capita GNP would not have been reached until 1995.

It is not possible to segregate the specific impact of economic growth from all other factors which impinged on the rural poor. At the very least it financed industrial growth which provided off-farm employment that removed

some population pressure on the land. This same off-farm employment was a significant income supplement for many rural families. It also financed government programs of economic and social services and promotion of agricultural exports, both of which contributed to the wellbeing of rural residents.

FACTORS AFFECTING THE RURAL POOR

A. LAND RESOURCES

The area in farms in Taiwan is only 29.5 percent of total land area, or an average of only 0.09 hectares per inahbitant in 1962:

Table III-3. Land Utilization

	1000 Hectares	%
Total Land Area	3,571	100.0
Non agricultural	281	7.9
Urban/industrial	228	6.4
Water	53	1.5
Agricultural	3,290	92.1
Forests	1,937	54.2
Grassland	300	8.4
Farms	1,053	29.5
Paddy	560	15.7
Other crops	454	12.7
Farm woodland	39	1.1

Source: Area Handbook for the Republic of China, 1969.

This translates to about 1.4 hectares per farm family. And on this resource the Chinese built an agriculture which fed a nation of 13 million, provided employment for over half the labor force, contributed between 25 and 30% of the GNP, and exported $264 million of agricultural products.

Land Reform

Land reform was the cornerstone on which the edifice of modern Chinese agriculture was built. It is safe to say that without land reform, no comparable improvement in the wellbeing of the rural poor would have been possible. However, in interpreting this experience, the following conditions should be noted:

- The existant tenure system was extremely onerous as well as unjust. Tenant farmers, who were about 40% of the population, occupied about 40% of the land under tenancy conditions which included exhorbitant rents of 50 to 60% of the crops, advance deposit of 2 years rent just for tenancy rights, and no written agreement. Land distribution was badly skewed; owners with less than one hectare comprised 65% of total owners.
- The tenant farmer managed his farm with the help of his family and was totally responsible for all inputs of technology and capital. He was not a laborer, devoid of technical and managerial skills. In fact, only 7 percent of rural families were classed as farm labor. The Taiwanese farmer had accumulated a great deal of agricultural technology and management skill under fifty years of Japanese occupation.

An effective, comprehensive land law was passed in 1946 which, among other things, limited rents to 8% of land prices and authorized compulsory purchase, and established progressive taxes on both land price (limited to 5%) and land value increment (up to 80%!). Using this law as a base, land reform was carried out in three steps:

Step 1 - Rent Reform. Rents were reduced to 37.5% of average major crop yield under a six-year lease with no advance payment. The "average major crop yield" was fixed, giving the tenant an incentive to exceed it. A principal impact of this law was to reduce the price of tenant-farmed land to about two-thirds of the price of owner-farmed land. Tenants were given first right to purchase. This, combined with an increase in tenant income resulted in four years in the purchase by 78,000 tenants of 41,3000 hectares of land directly from their landlords with their own savings.

Step 2 - 1948-1958. Sale of Public Lands. Shortly after the rent reform 70,000 hectares were sold to 139,600 families, the bulk in two sales of 46,000 hectares. New owners paid a price fixed at 2.5 times the annual yield of main crops, payable in 20 installments over 10 years at four percent interest. Acreage was limited to 0.5 to 2 chias* of paddy land or 1 to 4 chias or dry land.

Step 3 - 1953. Land-to-the-Tiller Program. All tenanted land in excess of three hectares of paddy land or the equivalent of medium grade dryland were subject to expropriation by the government and resale to tenants or farm hands. Owners were paid the same price. Landlords received thirty percent in participation shares in

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* One chia = 0.97 hectares

government enterprises and seventy percent in land bonds. The land bonds were denominated as rice or sweet potatoes, paid four percent interest, and were redeemable in 20 equal installments over ten years at the price of rice or sweet potatoes at the time of redemption. Government enterprise shares conferred ownership in Taiwanese industries expropriated from the Japanese after World War II and were generally in good shape.

The gross changes in agrarian structure brough about by these three acts were remarkable:

Table III.4. Impact of Agrarian Reform

	Families Benefitted	Hectares Affected
Step 1 - Rent Reform		
= Leases signed	300,057	252,000
= Direct purchases	78,000	42,600
Step 2 - Public Land Sales	139,600	70,000
Step 3 - Land-to-the-Tiller	194,900	143,000
Total Land Sales	412,500	255,600
Total Prior Tenanted Land		360,000
Percentage Redistribution Achieved		71%

By 1956, the tenure pattern was fairly well set:

Table III.5. Land Distribution in Taiwan

Farm Size Classes	Households	%
Total households	743,928	100.0
Landless	5.288	0.7
Under 0.5 chias	254.038	34.1
0.5 - 1.0 "	209,987	28.3
1.0 - 1.5 "	121,427	16.3
1.5 - 2.0 "	67,177	9.0
2.0 + "	86,011	11.6

Source: T.H.Shen. Agricultural Development in Taiwan since World War II Cornell University. 1964.

More precise information can be found in the records of four townships from 1948 to 1963:

Table III.6 (a)

Changes in Number of Farmers of Different Tenure Groups in Four Townships in Taiwan*. 1948, 1953, 1958 and 1963**

	1948		1953		1958		1963	
	No.	%	No.	%	No.	%	No.	%
Landlord	1,947	9.8	241	1.3	196	1.0	196	0.9
Owner	5,040	25.2	11,394	59.7	13,668	66.6	15,099	69.7
Part Owner	3,066	15.4	3,860	20.2	3,709	18.1	3,548	16.5
Tenant	9,125	45.7	3,229	16.9	2,305	11.2	2.203	10.2
Farm Hand	792	4.0	365	1.9	650	3.2	576	2.8
Total	19,970	100.0	19,089	100.0	20,528	100.0	21,522	100.0

* The four townships are Tayuan Hsiang in Taoyuan, Tsaotun Chen in Nautou, Hsilo Chen and Erhlun Hsiang in Yunlin.

** 1948 was the year immediately before the launching of Rent Reduction, 1953 was the year when Land-to-the-Tiller Program was enforced, 1958 was the year when land reform reached its 10th year, and 1963 was the year the entire program was completed.

Table III.6 (b)

Changes in Owner-Cultivated and Tenant-Cultivated Areas in Four Townships in Taiwan, 1948,1953, 1958 and 1963.

	Total Area		Owner-Cultivated		Tenant-Cultivated	
	ha.	%	ha.	%	ha.	%
1948	10,111.0	100.0	4,732.0	46.8	5,379.0	53.2
1953	10.027.6	100.0	8,587.9	85.6	1,439.7	14.4
1958	11,089.7	100.0	9,852.2	88.8	1,237.5	11.2
1963	10.150.8	100.0	8,997.4	88.6	1,153.4	11.4

Source: Yen-tien Chang. Land Reform and its Impact on Economic and Social Progress in Taiwan. 1965.

The following changes which JCRR monitored in the 1950-55 period must in large measure be attributed to the land reform:

- The share of farm income for family labor increased 9 percent, while farm rentals were cut 14 percent.
- Total investment in agriculture doubled while net farm income quadrupled. The farmers' share of total agricultural investment declined from 51 percent to 32 percent in order to pay off the land. Public investment rose from 18 percent to 25 in the same period.
- Personal consumption rose about 4 percent as a result of the larger incomes, and the saving ratio declined from 14 percent to 10.
- Total production increased about 21 percent in the five years, the result of a 15 percent increase in crops and 92 percent increase in livestock.
- Agricultural inputs rose by 8 percent for labor, 25 percent for fixed capital, and yield increasing inputs by a whopping 75 percent, spent mainly for fertilizers, feeds and pesticides.

The persistent benefits to the tenant were demonstrated in a 1969 study of landlord-tenant relationships. The landlord receives about NT$ 6,548 per tenanted hectare out of which he pays a land tax of NT$ 1,500 for a net of NT$ 5,048 per hectare. The tenant receives a net income of NT$ 14,747.

The subsidiary changes which flowed out of land reform are more difficult to measure. Some authorities attribute to the agrarian reform improvements in agricultural productivity, industrial investment, health, education and other social infrastructure. While many of these improvements would not have taken place without agrarian reform, agrarian reform alone would not have caused all the improvement.

The only monetary outlay for this entire program consisted of administrative expenses of NT$ 265 million, of which JCRR contributed less than ten percent. However, the JCRR also conducted the cadastral survey which made the reform possible, trained personnel and assisted in the planning.

B. EMPLOYMENT OPPORTUNITIES

The total population increased at an average rate of 3.3% between 1949 and 1965 when it stood at 12.7 million. Direct causes were a high birth rate a rapidly declining death rate, and the migration from the mainland which accounted for 14 percent of Taiwan's population by 1964. By 1962, the population load had reached 10.9 people per arable hectare.

Approximately two thirds of the population were rural, but proportions had begun to shift rapidly by 1960. For example, between 1956 and 1962, urban population had grown at an annual rate of 4.6 percent, while the rural population grew 2.9 percent. This trend towards urbanization has continued with better educational and job opportunities and with continuing pressure on the land. In 1962, the rural population stood at 7.2 people per cultivated hectare and would double in 25 years at the 2.9 percent annual growth rate.

The increased life expectancy from about 48 years in 1941 to 63 years in 1957, was due to reduced deaths in the younger population. By 1960, 45 percent of the population was under 14 years, and poised to enter the labor force.

The labor force during most of the development period grew at a rate of about 3.0 percent. Table III.7 provides data on employment distribution in 1956 and 1962. Private employment was around 68 percent of the total active work force. Public service stood at 23 percent, but this included a military establishment of better than 600,000 troops. Within the private sector, agriculture accounted for around two-thirds, but was shifting strongly towards non-agricultural pursuits. Between 1949 and 1962, the proportion of the non-military labor force engaged in agriculture declined from 63 percent to 55 percent.

Unemployment was running at an 8 to 10 percent level throughout most of the developmental period and would have been triple this in the absence of the large standing army. However, few families were without at least one employed member, and the traditional family responsibility for most social welfare functions remained strong, so the impact was less than is usually associated with such rates.

Table III. 7

Trends in Population and Employment

Population	1956 Number	%	1962 Number	%	Annual Increase	Persons Per arable Hectare
Urban	2,988	32	3,909	34	4.6	
Rural	6,402	68	7,603	66	2.9	7.2
	9.390	100	11,512	100		10.9
Labor Force						
12-64 years	6,188	65.9	7,250	63.0		
Inactive	2,261	36.5	2,789	38.5		
Active	3,927	100	4,461	100		
Unemployed	334	8.5	455	10.2		
Employed	3,593	91.5	4,006	89.8		
Public	921	23.4	983	22.0		
Government	142	3.6	204	4.6	6.2	
Govt Enterprise	138	3.5	172	3.9	3.7	
Military	641	16.3	607	13.6	- 0.9	0.6
Private	2,672	68.1	3,023	67.8	2.1	
Agriculture	1,806	46.0	1,936	43.4	1.2	1.8
Non-Agriculture	866	22.1	1,087	24.4	3.9	

Taiwanese agriculture has a high level of underemployment, part of which results from seasonality and part from high ratios of labor to capital and labor to land. The average farm family in 1960 included 7.26 persons, of whom only 1.71 were classed as main operators.

Table III. 8

Agricultural Population Classified by Type of Work

	1 9 5 5		1 9 6 0	
	Total Number	Average per Household	Total Number	Average per Household
Operator	1,161,829	1.56	1,384,035	1.71
Helper	1,003,355	1.35	885,893	1.10
Persons on Other Occupation	151,010	0.20	174,810	0.22
Others	2,911,181	3.92	3,418,643	4.23
T o t a l	5,227,375	7.03	5,863,381	7.26

Source: Agricultural Census, 1955 and 1960, from Tsui and Lin.

The man-equivalent labor unit of the family was only 2.15, but only 298 man-days of labor were spent on the average farm. The average number of man-days per hectare were 264.

Agricultural labor is paid less than other types of employment (Table III.9), a factor which has contributed to rural urban migration.

A significant study* by Tsui and Lin of JCRR highlighted the causes of this migratory pattern in three metropolitan areas. This survey showed that eight of ten families have had off-farm employment opportunities, and

* Tsui, Y.C. and T.L. Lin. A Study on Rural Labor Mobility in Relation to Industrialization and Urbanization in Taiwan. JCRR. Economic Digest Series No. 16. 1964.

Table III.9

Index Numbers of Wage and Cost-of-Living
1952-1962

1953 = 100

Year	Wage Indices				Cost of Living Index
	Agriculture	Mining	Manufacturing	Electricity and Gas	
1952	73.0	37.8	80.1	57.3	76.9
1953	100.0	100.0	100.0	100.0	100.0
1954	105.2	104.7	111.3	102.8	100.5
1955	107.2	130.6	125.2	115.1	111.8
1956	118.5	173.9	141.2	123.8	121.8
1957	134.7	226.7	155.0	133.5	131.5
1958	151.9	243.0	164.6	133.1	135.0
1959	168.9	246.4	176.8	133.4	146.7
1960	214.1	270.6	207.1	168.9	176.1
1961	238.8	299.4	251.8	226.8	187.2
1962	252.6	319.7	265.0	231.3	191.9

Source: Industry of Free China.
Index number of agricultural wage is computed by Rural Economics Division based on data in "Production Costs of Paddy Rice", published by PFB.
Cost of Living Index was computed by AID/C from 1952 to 1961, while 1962 figure was quoted from BAS, PGT.

that 156 persons per 100 households work as commuters, seasonal workers or long term employees. (Salaries and wages accounted for 13.7 percent of farm family income in 1957.) Of the total, approximately 22 percent worked as commuters, half as seasonal workers, and the rest as permanent employees. The number of such workers per family was closely correlated negatively with cash farm income and farm size. Movers tended to be young and better educated than the average. Higher education was strongly associated with commuter and permanent jobs, which included a high percentage of teaching, clerical and government service as well as factory jobs.

The growing opportunities for more remunerative employment in industry, the better education available to young rural folk, easier mobility,

and the pressure on the land all encourage rural-urban migration. In the process, the beneficiaries are frequently the families with the poorest land endowment. As members of these families are forced to obtain off-farm employment, the farm family income grows, and the rural poor improve relative to their better endowed neighbors.

C. INCOME AND CONSUMPTION

Farm family earnings increased by 87%, an average annual rate of 4.3%, between 1952 and 1967 (Table III. 10)[1]. This increase was accompanied by significant changes in the source and nature of income and expenditures.

Farm receipts increased absolutely but declined relatively, from 87 percent of family receipts to 75 percent. A slight decline in the value of crops was offset by increased livestock and other earnings.

Non farm receipts were propelled upwards largely by non farm employment. Wages increased from 3.4 to 13.7 percent of total receipts between 1952 and 1957, more than offsetting the near disappearance of rental income with agrarian reform. The importance of wages is underscored by a study[2] of off farm employment in three industrializing provinces which showed that 80 percent of the farm households surveyed had members who worked as commuters, seasonal workers or long term employees, with an average of 1.56 such workers per household.

Cash (as opposed to kind) assumed a greater importance in both receipts and expenditures. Between 1952 and 1957 in-kind receipts and expenditures declined from 56 to 60 percent of totals, respectively, to 37 and 36 percent.

Expenditures for farm operations increased 18 percent between 1952 and 1957 and leveled off at that level through 1962. In 1957, the principal farming expenditures were for fertilizer (22%), feed (19%), hired labor (13%), and rent and depreciation (10%).

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(1) JCRR surveyed farm income in 1952, 1957, 1962 and 1967. We have had access only to the publication of the results of the 1954 survey (Y.C. Tsui, A Summary Report on Farm Income of Taiwan in 1957 in Comparison with 1952. JCRR Economic Digest Series No. 13, Dec 1959). Fragmentary references in other documents to the other surveys have allowed us to extend some parts of this survey over the entire period.

(2) Y.C. Tsui and T.L. Lin, A Study on Rural Labor Mobility in Relation to Industrialization and Urbanization in Taiwan. JCRR Economics Digest Series No 16. 1964.

Table III. 10

TAIWAN - SURVEY OF FARM INCOME
1952-57-62-67

(A). Average Family Earnings of Farmers in Taiwan by Size Group. 1952, 1957, 1962, and 1967*.

(In 1952 Prices)***

NT$

Size Group in Chia***	Year			
	1952	1957	1962	1967
Average	7,361	3,612	9,782	13,784
0.49 or less	3,765	5,014	5,655	9,920
0.50 - 0.99	5,097	6,873	7,937	10,754
1.00 - 1.99	8,010	9,481	11,145	15,297
2.00 or more	14,653	16,606	17,631	25,361

* Farm family earnings are the differences between total family receipts (farm and non-farm) and total farm expenditure.

** Deflated using Index of Prices-received-by-farmers published by the Provincial Bureau of Accounting and Statistics. Taipei, Taiwan; (1952 = 100, 1957 = 164, 1962 = 249 and 1967 = 293).

*** One Chia = 0.97 hectares or 2.4 acres.

Source: Joint Commission on Rural Reconstruction (JCRR), Taiwan Farm Income Survey of 1967, with a Brief Comparison with 1952, 1957,and 1962 (Taipei: JCRR, 1970), p. 35. The income surveys were based on a random sample of all farm enterprises in Taiwan. In 1952, 4,000 farmers were interviewed, in 1957, 1,402, in 19 2, 1,947 and in 1967, 1,640. As reported by Dale Adams, T.H.Lee, and Marcia Ong. Research Notes on Agricultural Capital Formation and Technological Change. OSU and JCRR. Taiwan 1971. Mimeo.

(B). Source and Distribution of Annual Family Earnings

	1952		1957		1962	
	NT$	%	NT$	%	NT$	%
Farm Receipts	10,873	87.0	11,501	78.4	11,860	75.0
Crops	8,817	70.6	8,530	58.2		
Livestock	1,967	15.7	2,613	17.8		
Other	89	0.7	358	2.4		
Non-Farm Receipts	1,627	13.0	3,170	21.6	3,961	25.0
Subsidiary Industry	149	1.2	913	6.2		
Wages	427	3.4	2,014	13.7		
Rent and Interest	1,051	8.7	243	1.7		
Farm Family Receipts	12,500	100	14,671	100	15,821	100
Expenditures	5,139		6,059		6,149	
Farm Family Income	7,361		8,612		9,672	
Household Expenses			7,947			
Surplus			665			

Size of farm was a significant determinant of income. Farm households with less than 0.5 hectare , although they cultivated more intensively, earned less and spent less than those with larger farms. These small farms were profitable operations, but farm income alone was insufficient to sustain household expenditures. Even with off farm income, many small farm families operated at a deficit, indicating farm decapitalization.

Over the years, however, the financial position of this smallest farm class has improved relative to other size classes, their earnings increasing from only 51 percent of the average in 1952 to 72 percent in 1967. This appears to be the result of rising off farm employment opportunities combined with the need to accept those opportunities.(Table III-11, Figure III-1). Tsui and Lin's study of off farm employment demonstrated a strong correlation of small farm size with off farm employment.

Family consumption expenditures in 1957 paralleled these farm family earnings (Table III-12). Expenditures for all types of consumption were lowest for the under 0.5 hectare group, but food was relatively higher. However, the consistency of these patterns among farm sizes indicates that even the largest size classes were hardly wealthy.

Table III-12

Distribution of Farm Family Living Expenditures by Size Groups and by Cost Items. 1957

Item	Average of All Farms %	Below 0.49 Chia %	0.50-0.99 Chia %	1.00-1.99 Chia %	More than 2 Chia %
Total	100	100	100	100	100
Food	57.3	62.5	56.7	56.9	54.2
Clothing	7.9	6.8	7.9	8.4	8.3
Education	2.5	1.8	2.3	2.7	3.1
Principal Ceremonies	9.9	7.5	11.5	8.9	11.4
Interest	1.0	1.5	0.8	0.9	0.9
Medicine and Sanitation	5.4	5.5	5.1	5.5	5.5
Others	16.0	14.4	15.7	16.7	16.6

Source: Y.C. Tsui. JCRR Economic Digest Series No. 13

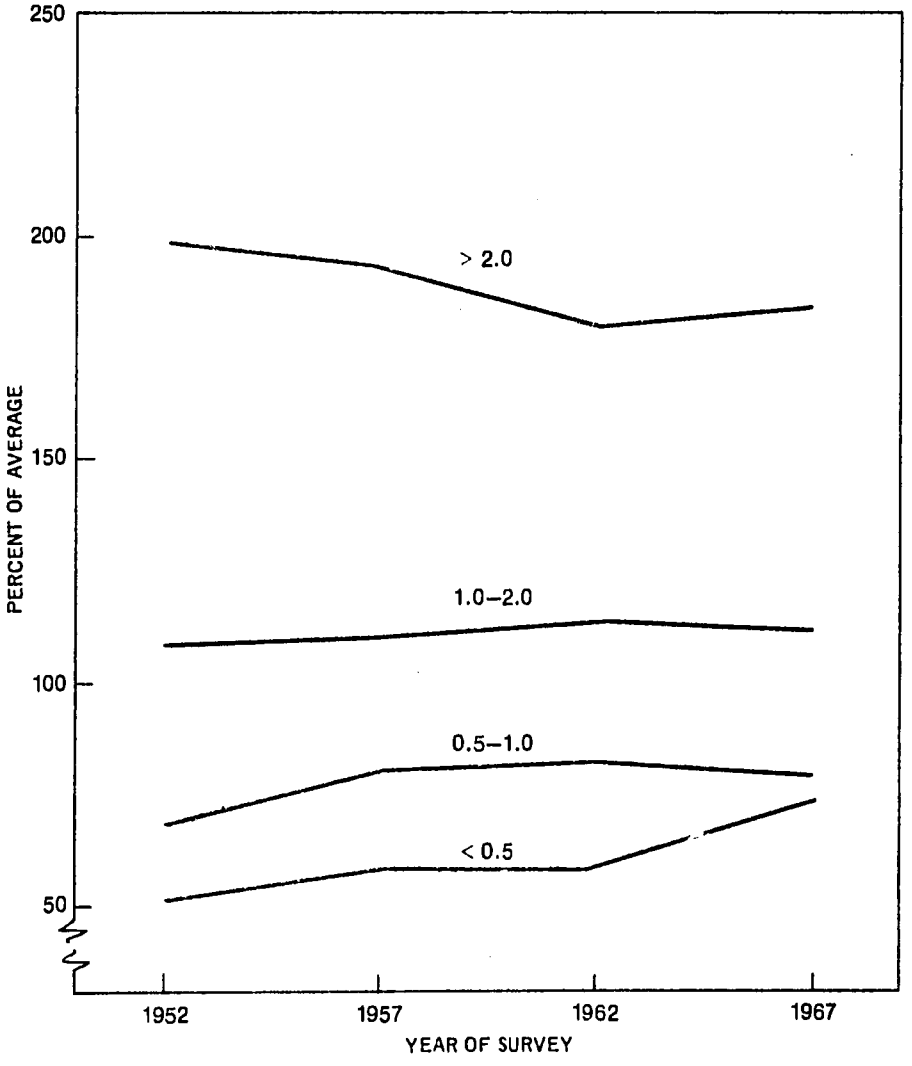


Fig. III-1—Taiwan—Relative Shifts in Farm Family Income by Farm Size Class

Food accounts for more than half of farm family expenditures, but we were only able to obtain fragmentary information on diets. These studies are not directly comparable because of project design.

A 1952 sample of 120 families indicated a diet that was heavily weighted towards rice, sweet potatoes and vegetables, with some fish but little meat and few pulses. A 1964 study by JCRR citing 1961 food consumption levels showed a similar dietary pattern but with a decided increase in products of animal origin (from 5 percent to 14 percent of the diet), higher in fruit and sugar and higher in total calories (Table III-14).

The 1952 sample was small and appears to represent a class of farmers who were better off than the average. Another 1952 study* of consumption of basic foods (rice, sweet potatoes, wheat) showed a smaller volume of calories originating in these basic foods than was characteristic of the 120 family sample. A comparison of calories levels derived from basic foods in the three studies confirms this and demonstrates even greater improvement in dietary balance over the intervening years:

Table III-13

Changes in Caloric Levels Derived from Basic Foods

	Survey		++
	1952 120 Family Cal.	1952 Basic Food Cal.	1961 JCRR Cal.
Rice (3600)	1883	1445	1558
Sweet Potatoes (970)	128	115	178
Wheat (3500)	19	21	134
Subtotal	2030	1581	1870
Other Foods	434	n.a.	828
Total	2464	n.a.	2698

* Sing-min Yeh, Per Capita Consumption Level of Basic Food in Taiwan. Economic Digest Series No. 11, JCRR. 1957.

Table III-14

Changes in Dietary Consumption
1952-1961

	1952 Kgs/yr	%	1961 Kgs/yr	%
Rice	191		158	
Sweet Potatoes	48		67	
Wheat	2		14	
Ohter Cereals	T		1	
Pulses	5		9	
Vegetables (green)	83		25	
Vegetables (tubus)	14		17	
Vegetables (squash)	17		9	
Vegetables Other	17		6	
Vegetable oil	2		3	
Fruits	1		16	
Other vegetable origin	3		--	
Sugar and syrups	1		12	
Subtotal	384	95	337	86
Meat	5		22	
Fish	12		25	
Eggs	1		2	
Milk	T		3	
Lard	2		2	
Other animal origin	T		--	
Subtotal	21	5	54	14
Total	406	100	391	100
Calories/day	2464		2698	

Source: JCRR General Reports No. 6 and No. 15, dated 1955 and 1964, respectively.

These changes reflect both the greater income of the population and the greater availability of nutrients.

Table III-15

Daily Per Capita Apparent Nutrients Availability in Taiwan

	1935-39 pre-war average	1940-43 war-time average	1945	1950	1955	1957	1958	1959	1960
Food energy, cal.	1865.3	1692.9	1276.7	2057.0	2247.2	2369.4	2358.6	2338.9*	239.0*
Total prot. gm.	44.85	34.96	24.31	45.79	53.15	56.80	56.89	56.57	57.13
Anim. prot. gm.	15.36	7.59	3.23	9.20	13.30	14.09	14.60	14.59	13.91
Fat. gm.	35.48	19.36	11.01	27.87	37.17	40.24	41.58	38.29	43.22
Calcium. mg.	254.9	180.4	130.7	226.6	262.60	270.01	285.22	290.81	278.65
Iron, mg.	7.98	6.37	4.52	7.78	8.76	9.38	9.44	9.19	9.38
Vit. A, val. IU	6388.2	5025.8	3756.5	4705.3	4319.8	4421.1	4679.8	4502.8	4548.7
Thiamine, mg.	1.07	0.85	0.59	1.04	1.15	1.25	1.25	1.21	1.22
Riboflavin, mg.	0.53	0.36	0.25	0.45	0.52	0.52	0.56	0.55	0.54
Niacin, mg.	10.59	8.73	6.08	10.96	12.07	13.17	13.14	13.00	13.23
Ascorbic acid, mg.	118.71	95.10	72.37	99.85	89.18	93.20	96.72	92.63	95.21

* including about 30 calories from wine and beer.

Source: Chinese-American Joint Commission on Rural Reconstruction, General Report, No. 12, Taipei, Taiwan, 1961, p. 131.

* Sing-min Yeh, Per Capita Consumption Level of Basic Food in Taiwan. Economic Digest Series No. 11. JCRR. 1957

D. TECHNOLOGY

The cultivated land area of Taiwan has been relatively constant around 875,000 hectares since 1950. The food to feed a burgeoning population and an excess for export has come from increased productivity. Crop yields have increased steadily since the low point of World War II, stimulated first by recovery, then by land reform, and finally through a thoughtful program of public and private investment in land improvements. Rice yields went up 30% in a decade, sweet potatoes 44%, soybeans 46% and other crops in proportion.

Table III-16

Crop Yields Per Hectare in Kilograms

Items	1950-52 avg.	1953	1954	1955	1956	1957	1958	1959	1960	1961
Rice	1,909	2,109	2,183	2,151	2,284	2,348	2,434	2,392	2,495	2,577
Sweet potatoes	9,045	9,576	10,328	9,918	11,154	11,774	12,934	12,778	12,654	13,713
Peanuts	715	728	701	693	833	905	927	979	1,017	1,061
Wheat	1,077	1,058	1,397	1,503	1,735	1,812	1,755	1,884	1,808	2,034
Soybeans	598	617	676	700	705	806	870	816	882	905
Sugar cane (white s.)	6,439	9,251	8,445	10,804	9,794	9,816	10,062	10,712	9,162	10,296
Sugar cane (brown s.)	2,516	3,833	4,046	5,015	5,415	6,068	5,530	6,632	6,293	6,964
Tea	246	267	282	312	282	313	327	341	359	379
Pineapples	9,730	12,076	11,945	12,437	12,897	13,813	16,326	16,425	17,108	17,823
Bananas	7,186	7,556	7,867	7,934	6,131	8,205	8,041	8,060	8,987	8,791
Citrus fruits	6,052	6,164	5,745	5,763	6,083	6,250	5,991	5,772	6,527	6,081
Citronella oil	85	104	90	94	130	115	120	132	128	149
Jute	1,012	787	1,140	1,252	1,277	1,340	1,352	1,344	1,278	1,246
Tobacco	1,381	1,807	1,734	1,863	1,836	1,930	1,916	1,957	1,993	2,085

Source: Prepared jointly by APCC, Ministry of Economic Affairs, and the Rural Economics Division of JCRR, January, 1962, cited by T.H. Shen. Agricultural Development in Taiwan since World War II, Cornell University, 1964.

1. Productive Inputs. Chinese farmers are quick to adopt improved practices, including irrigation, fertilizers and seed.

Water. Some 562,000 hectares of land had come under irrigation and drainage control by the beginning of World War II, but this dropped with neglect to around 300,000 by 1945. Rehabilitation began with retrocession and received a major impulse with the transfer of the Government to Taiwan. Additional irrigation and drainage works had brought the total

to 652,000 by the end of 1960.

Fertilizer. Inorganic fertilizers were being used at the rate of 250-350,000 metric tons before World War II. Their use declined almost to zero during the war, and then recovered rapidly, rising to a 400-500,000 MT level by 1954. Organic fertilizers continue as a major source of fertility, however, amounting to an average annual input of more than 130,000 MT of elemental nutrients. For comparison, this is well above the inorganics used annually on the rice crop.

Seed. A three-level rice seed multiplication program of foundation seeds, stock (registered) seeds and extension (certified) seeds existed under Japanese occupation. This system was expanded and improved and the extension seeds were certified by laboratory analysis. The result is a system which can move new varieties rapidly into use.

2. The Technology Network

Education. Taiwan started with something of an endowment of agricultural professionals when the Government moved to Taiwan in 1949. For example, the JCRR, which was not an implementation agency, was able to obtain and maintain a well-qualified technical staff of Chinese professionals numbering around 100. However, immediate and continuing efforts were made to expand this endowment. The faculty of the Agricultural College of the National Taiwan University increased from 47 in 1945 to 248 in 1958, while the staff of the Provincial Agricultural College increased from 77 to 311. Student numbers increased correspondingly. The result has been a steady flow of technicians and professionals to staff both the technology network and the public and private operating organizations.

Research. The agricultural research network includes both universities and the Provincial Department of Agriculture and Forestry. PDAF has an Agricultural Research Institute and a Livestock Research Institute coordinated closely with seven District Agricultural Improvement Stations whose work centers on problems of regional adaptation and which collaborate directly with the extension service and other local organizations.

The network also includes a Seed and Seedling Multiplication Farm, a Forestry Research Institute with six branch stations, a Fishery Research Institute with four branch stations and a Veterinary Serum and Vaccine Laboratory. Special crops (sugar, tobacco, and pineapple) have their own research institutes sponsored by the appropriate corporations. Almost all of these stations were initiated under the Japanese occupation, but have since been enlarged and expanded. There are now some one thousand professionals and technicians (56% with one or more college degrees) engaged in agricultural research in sixty agencies.

Extension. The Cooperative Extension Work in Agriculture and Home Economics is carried on by the provincial, county, and township farmers' associations under the sponsorship of the Provincial Department of Agriculture and Forestry. There were a total of 342 farm advisors working at the township level in 1960. They work with the farmers' associations and particularly with farm discussion groups, each advisor taking care of an average of 3.5 discussion groups with around 20 members each.

3. Management and Cultural Practices

The Japanese occupants of Taiwan did not stint on providing agricultural training to the Taiwanese farmer. He became a competent, industrious farmer who, under the tenancy system, managed his farm and performed virtually all functions with family labor. Land reform did not in any way change the management system. It just released the tenant from an onerous rent, permitting him to acquire more of the fruits of his labor and giving him an incentive to apply himself and his capital to the farming operation.

Part of the improvement in his well being involved the addition of other crops and livestock to his system. In addition, multiple cropping has expanded significantly, helped both by improved irrigation and drainage and by varieties whose life cycle fits the climatic pattern of the Province. The multiple cropping index (crop area ÷ cultivated land area x 100) increased at a compounded rate of 1.5% between 1939 and 1960 and was still growing at 0.75% in the fifties (Table III-17).

Table III-17

Multiple-cropping index

Year	Total crop area (1,000 ha.)	Total cultivated land area (1,000 ha.)	Double-cropping index
1939	1,147	860	133.4
1940	1,174	861	136.5
1941	1,184	859	137.8
1942	1,155	854	135.3
1943	1,128	839	134.5
1944	1,119	808	138.5
1945	904	816	110.8
1946	981	832	117.9
1947	1,193	834	140.1
1948	1,345	863	155.9
1949	1,438	865	166.2
1950	1,484	871	170.4
1951	1,483	874	169.7
1952	1,506	876	171.9
1953	1,505	873	172.4
1954	1,519	874	173.8
1955	1,495	873	171.3
1956	1,535	876	175.2
1957	1,563	873	179.0
1958	1,590	884	179.9
1959	1,594	878	181.5
1960	1,596	867	184.0

Source: PDAF, op.cit. (1946, 1951, and 1961). Cited by Shen, T.H. Agricultural Development on Taiwan since World War II, Cornell University, 1964.

E. ORGANIZATIONS

The farmers' associations of Taiwan are now a federated system of cooperative organizations which are directed by their members to whom they provide a variety of credit, purchasing, marketing and extension services. They serve as the thread which connects the farmers to each other, to public services, and to the marketplace. They have been as important to improving the wellbeing of the small Taiwanese farmer as land reform or improved technology.

The farmers' association system was initiated by the Japanese during the period of their occupation of the island. These associations, which were generally organized by government officials, served as instruments of the Japanese administration in matters relating to agricultural production. The chairmen, vice-chairmen, directors, and counselors of the associations at various levels were appointed or selected by government officials at the corresponding level; the Japanese governor-general was chairman of the Provincial Farmers' Association, and local magistrates chaired the local associations.

The local leadership which took over the farmers' associations at the end of the Japanese occupation in 1945, was inexperienced, often careless and in some cases incompetent. During 1949-1950, the JCRR and Provincial Government conducted several surveys to determine the condition of Farmers' Associations with the intention of establishing guidelines for improving them. Most notable of these studies was one conducted at the invitation of JCRR by Professor W. A. Anderson of Cornell University. Professor Anderson's study of the laws, regulations, and organization of the associations and recommendations for revisions, led to the Provincial Government's setting up in 1951 a committee (which included representatives of the JCRR, the Provincial Department of Agriculture and Forestry and the Provincial Farmers' Association) to draft a revised law for the reorganization of the Farmers' Associations. This revised law and supplementary regulations which established conditions of membership and management were officially promulgated in June 1953.

The basic aim of the reorganization was the democratic control of the associations by bona fide farmers, so that their services would meet the real needs of their members and be efficiently and profitably managed to advance the economic and social wellbeing of the population.

The Farmers' Associations are a federated system of multi-service cooperative organizations which operate on three levels: provincial level, county and municipal level, and township level. Members of each village in a township area are organized into small agricultural units (SAU), which are the immediate units for member voting and the building blocks of the association. Farmer members control their associations through an elected and unpaid board of directors (who make policy) and of supervisors (who provide audit functions). The manager is appointed by the Board of Directors and is paid for his full time services.

These associations perform such services and offer such facilities as rural credit and savings deposits, extension services, sale and marketing of agricultural products, provisions for rural health and transportation, promotion of rural industry, settlement of disputes relative to farming problems, and sale of items such as farm tools, food, cloth and clothing. They also render services to the government, provide facilities for rice milling, warehousing of rice and fertilizers, and aid in crop and livestock improvement. Thus these associations serve as the grassroots agencies which promote government policy, agricultural development and the improvement of rural communities.

Table III.18 provides quantitative information on the varied activities which these associations perform and their economic importance.

Table III.18

Growth of the Farmer's Associations in Taiwan
FY-1961-FY-1967

	1961	1967
Number of FAs	340	364
Membership	786,129	878,651
Employees	8,098	10,913
Capital and reserves	NT$194,741,000	NT$694,222,348
Total marketing and supply business revenue	NT$683,295,000	NT$1,120,342,249
Value of total agricultural production	NT$24,427,000,000	NTS42,896,000,000
Extension expenditures from:	NT$81,782,000	NTS96,651,554
members' contribution	NT$9,987,000	NT$10,072,880
transfers from credit and marketing business	NT$12,733,000	NT$19,918,140
government subsidy	NT$22,042,000	NT$27,521,741
incomes from assets and production services	NT$38,536,000	NT$39,138,892
Deposits	NT$1,048,978,000	NT$3,792,717,435
Loans	NT$741,646,000	NT$3,843,405,039
Hogs insured	190,719	369,887
Profits earned	NT$20,244,000 (293FAs)	NT$60,814,357 (337 FAs)
Deficits incurred	NT$8,947,000 (44 FAs)	NT$2,296,937 (16 FAs)

Source: Prepared by Farmers Service Division, JCRR, in 1968.

F. SOCIAL SERVICES

1. Health

When Taiwan was restored to China after World War II, there were no health centers and health stations providing health care to the rural population. By 1949, when the Nationalist Government moved to the Island, Taiwan's health program was still confined chiefly to curative work of the hospitals located in the cities. Health centers and stations were few in number and poorly maintained. In 1949, only half of the 104 health stations that had been established were operational.

The health program inaugurated in Taiwan concentrated on four elements:

- o To improve and expand the primary health network
- o To regularize the provision of drugs and medical supplies
- o To improve the training of medical and para medical staff
- o To attack systematically those diseases which limited the productivity of the farming population.

a. Health Network Expansion

Between 1949 and 1960, health centers were established in all county seats and health stations in all townships and villages. Health rooms were established in mountainous areas, and mobile teams were developed to serve over 400 part-time health rooms. Initial funding was a joint national government (JCRR) and township obligation, but this was rapidly phased into full township support.

Table III.13. Growth of Health Facilites Network

	1949	1952	1956	1960
Hospitals and Sanataria	n.a.	32	43	55
Health Centers (County)	17	22	22	22
Health Stations (Township)	104	360	368	391
Health Rooms	-	-	140	168
Temporary Health Rooms	-	-	-	411

Source: From Chinese-American Joint Commission on Rural Reconstruction, General Report, No.7, 1956, p.45 and Jacoby, Neil, H., U.S. Aid to Taiwan, Frederick A. Praeger, Publishers, New York, 1966, p.301.

b. Drug and Medical Supply Program

The government assumed responsibility for sales of drugs to avoid speculation, hoarding and black marketing of drugs. A three-point program was then organized to strengthen the local pharmaceutical industry, to establish a plant to manufacture drugs not yet produced in Taiwan, and to establish a laboratory to standardize both local and imported medical products.

c. Training

First priority in establishing the health network was given to construction of facilities. This was closely followed by a steady program of training to improve the quality of health care. Between 1953 and 1956 some 1,836 trainees received training which covered such subjects as nursing, midwifery, sanitation and dental hygiene.

d. Disease Control

A series of programs were carried out to bring under control those diseases which most affected the health and productivity of the rural population. Included were erradication of malaria, and control of tuberculosis, venereal diseases, gastroenteritis, and pneumonia and bronchitis. Control methods ranged from elimination of the vector to improved environmental sanitation, immunization and treatment.

This fourfold attack on rural health problems brough about a significant decline in mortality and morbidity. (Table III-19).

Table III.19 Major Causes of Death (1952-1969)

Causes of Death	Mortality Rates per 1,000,000								
	1938/42 Average	1952	1953	1954	1955	1956	1957	1958	1959
Pneumonia and Bronchitis	4895	1596	1438	1150	1352	1073	1274	1016	1077
Gastro-entero-colitis	2430	1350	1456	1068	1142	981	1081	860	732
All deaths from external causes	--	282	301	259	282	334	331	314	581
Diseases peculiar to early infancy	--	455	480	491	592	644	626	607	564
Vascular lesions affecting central nervous system	533	488	531	519	535	573	599	538	507
Tuberculosis, all forms	846	916	780	698	681	637	657	539	477
Heart diseases	436	465	526	535	591	539	564	502	452
Neoplasms	342	315	315	319	338	365	374	402	398
Nephritis and nephrose	--	363	373	279	284	353	275	245	205
Malaria	716	275	170	83	36	6		0.8	0

From Joint Commission fro Rural Reconstruction, General Report, No.12, Taipei, Taiwan, 1961, p.51

2. Education

Educational opportunities have become generally available to both rural and urban children. Even in 1946, over 78% of eligible children were in school. By 1959, 95 percent of all school age children were in school. As a result, literacy increased from 57 percent to 76 percent in the 1951-63 period. There were 23,000 students in 43 agricultural vocational schools by 1959. The increased literacy joined with greater mobility, population pressure, further educational opportunities and off farm employment opportunities to further expand urbanization movement. The rural population continues to expand in absolute numbers, but not as rapidly as the urban population. Thus rural educational opportunities have helped to relieve the pressure on the land without driving rural poor to dead end urban situations.

3. Other

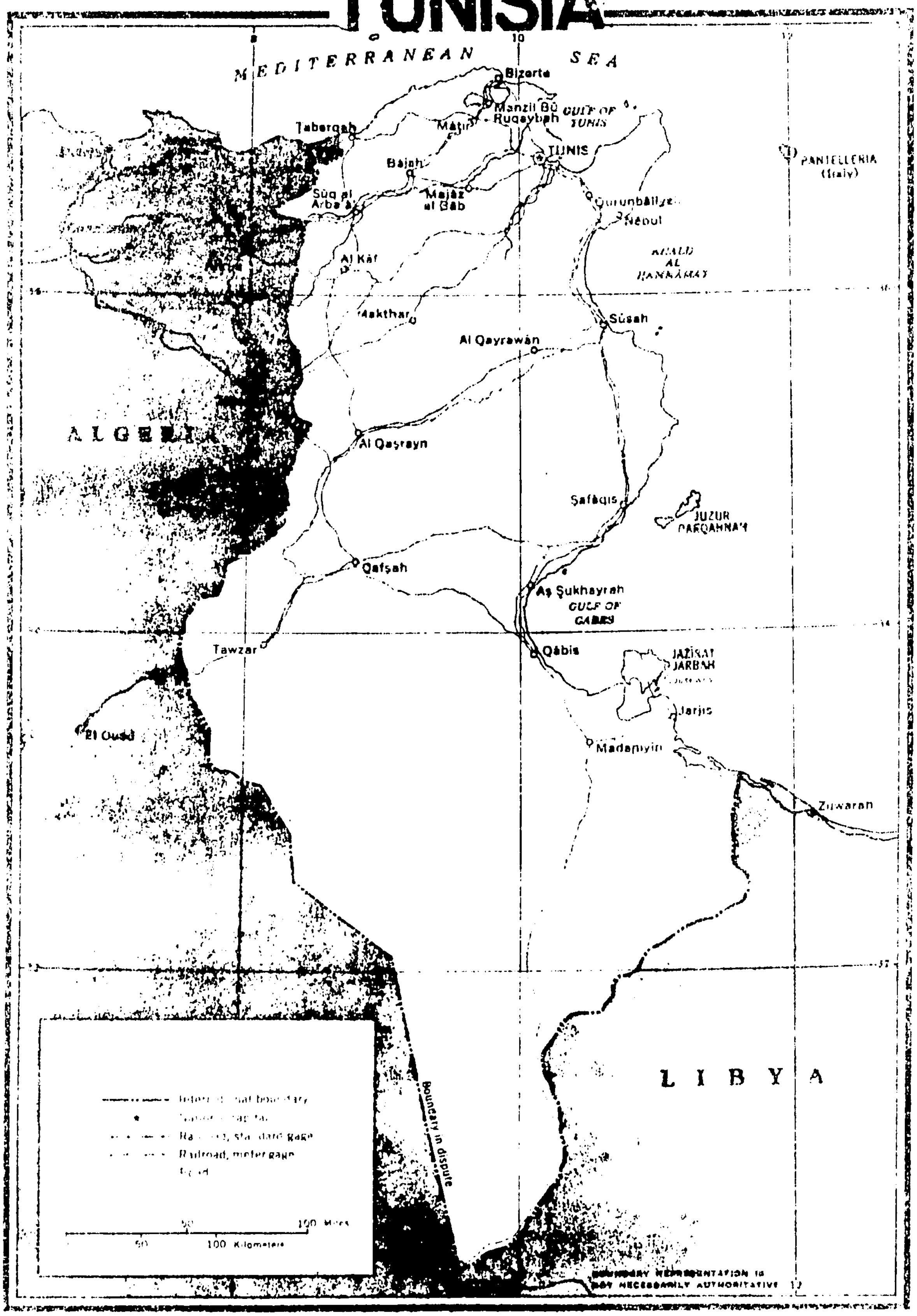
Increased mobility and expanded mass communications affect the rural population but probably not as much as their city brethern. A good road network, with a ratio of 15.5 kilometers of all weather roads to each square kilometer of cropland, and an ample rail and bus system facilitates inter-city travel and the exchange of goods. Newspapers, whose circulation more than doubled to 750,000 between 1957 and 1963, and radios, many supplied by JCRR, provide significant channels for exchange of information.

In the socio-political area, social, professional and trade organizations increased from 2,560 in 1952 to 5,230 in 1963. Included were about 350 farmers associations.

Although at the central government level, Mainland Chinese continued to control power, with little representation by native Taiwanese, at the local level there was a gradual development toward political pluralism.

In order to meet economic and social needs, community-based organizations - private, semi-public and public--developed at the rural level. These voluntary organizations (some of which existed in pre-war Taiwan and some of which were newly introduced) included farmers' associations, forest protection associations, soil conservation associations, irrigation associations, fishermen' associations, marketing cooperatives, and 4-H clubs. They encouraged local participation and provided new opportunities for rural people to gain experience in public affairs. The leadership and managerial skills thus gained in these essentially non political organizations prepared and assisted rural Taiwanese in obtaining political positions at provincial and local levels. In 1965, a significant proportion of all provincial and local officials had formerly been elected officials of the farmers' associations.

TUNISIA


MEDITERRANEAN SEA
Bizerte
Manzil Bū Ruqaybah
GULF OF TUNIS
Mātir
Tabarqah
TUNIS
PANTELLERIA (Italy)
Bājah
Sūq al Arbaʿāʾ
Majāz al Bāb
Qurunbālīyah
Nābul
Al Kāf
Makthar
Sūsah
Al Qayrawān
ALGERIA
Al Qaşrayn
Şafāqis
JUZUR QARQANNAH
Qafşah
Aş Şukhayrah
GULF OF GABES
Tawzar
Qābis
JAZĪRAT JARBAH
Jarjis
El Oued
Madaniyīn
Zuwārah
Boundary in dispute
LIBYA
Railroad, meter gage
100 Miles
100 Kilometers
BOUNDARY REPRESENTATION IS NOT NECESSARILY AUTHORITATIVE

TUNISIA. CONVERSION RATES

US$ 1.00 = 0.42 Dinar, 1955-September 27, 1964

US$ 1.00 = 0.52 Dinar, September 28, 1964 to December 19, 1971

US$ 1.00 = 0.48 Dinar, December 20, 1971 to February 1973

US$ 1.00 = 0.44 Dinar, after February 1973

IV. TUNISIA

COUNTRY CHARACTERISTICS

Tunisia has an area of 63,400 square miles. Long and narrow, it is bordered on the west by Algeria, on the southeast by Libya, and on the east and north by some 800 miles of Mediterranean coastline. It is not well-endowed with agricultural resources. The North, which lies north of the Dorsale mountain range and the Gulf of Hammamet, has an average annual rainfall of 400 to 800 mm. and is the richest agricultural region. Although only about twenty percent of the area, it produces more than two-thirds of the cereals, vegetables and milk, and all of the grapes and citrus.

The Center, which makes up another twenty percent, is south of the Dorsale and north of a line running through Gafsa to the sea, with a rainfall between 200 and 400 mm. The coastal region, or Sahil, receives more rainfall than the interior high plains and supports an agriculture based on olive and nut trees. The interior is mostly grazing, with some dryland cereal culture.

The South, which includes most of Tunisia's land area also includes the Tunisian Sahara, some 600,000 hectares of extremely low rainfall. Along the coast of the southern region, rainfall approaches 200 mm., allowing some grazing, but most of the productivity of the South is in the irrigated oases of Gabes and Chott Djerid.

Rainfall, besides being low, is also widely variable. Particularly in the Center and South, the total annual precipitation frequently occurs in two or three months. The variability of agricultural production is shown graphically in Figures IV-1 and IV-2. Most of the 150-200,000 hectares which are conceivably irrigable are in the Northern Region. Low winter temperatures reduce the productive potential of irrigation.

Demography

The Tunisian population of 4,533,000 (1966 Census) is growing at a rate of around 2.5 percent per year. Both birth and death rates are on a

long term downward trend, hopefully leading to achievement of a stable 2.0 percent growth rate within the next two or three decades.

Approximately 45 percent of the population is under 15 years of age and over 4 percent is above 65 years, for a fifty percent dependency ratio.

In gross terms, the population density is 31.6 per square kilometer. However, the population is strongly concentrated in the best endowed regions, notably the Northeast, the Sahil and the North Central Plateau, with densities of 128, 65, and 69, respectively.

As in most countries, there is a general rural-urban migratory pattern, but the main flow is towards the Northeast in general and Tunis in particular. The precise extent of rural-urban migration is obscured by migratory work patters, including semi-permanent relocation of males who eventually return to their place of origin. However, between 1956 and 1966, the urban population grew at a rate of almost 4 percent, while the annual growth of the rural population was under 2 percent.

Recent History

Tunisia became a French protectorate in 1881. The French gradually assumed complete control of the government and of the agricultural wealth of the norther region. The Destour Party was founded in 1920 to oppose French rule. The Neo Destour Party, created in 1934, led a more militant opposition for two decades, until independence was achieved in 1956. Within two years, a constitution was promulgated and Habib Bourguiba was elected President. In 1962, in an effort to achieve economic as well as political independence, a Ten-year Development Perspective was promulgated, which became the guiding document for subsequent three and four year economic development plans.

During their occupation, the French created and administered modern departments for finance, commerce, agriculture,public works, health and justice. Ports, roads, railroads, schools and hospitals provided the infrastructure for a modern state. French and other European immigrants

administered this governmental structure and created the productive plantation agriculture of the North. However, they did virtually nothing to improve the Center and South. Thus, the Northern modern sector was the domain of the European. The traditional sector, which included virtually all of the South and Center and parts of the North, was Tunisian.

Independence brought with it the departure of the French and most other Europeans, leaving the country with less than half the trained professionals and administrators of the colonial period. Included in the departure were the former owners and operators of the most productive farms in the new nation.

Economic Growth

The new nation had achieved political independence, but must still build its nationhood and establish economic independence. The remainder of the Fifties, following Independence, were largely devoted to establishing the constitutional character of the nation, organizing the government, and determining the lines to be pursued in development.

In 1961, GOT published a ten year indicative plan, Perspectives Decennales, designed to guide the development of the Tunisian economy as it achieved independence from its colonial past. This perspective sought economic growth rate of 6 percent to be brought about by a high investment of public, private and borrowed funds. It sought a redistribution of income in the process, to assure that all parts of the population would have a minimum per capita income of D45, considered to be essential to support the minimum adequate living standard.

During the plan period, the GDP grew at an annual rate of 4.7 percent. National income grew at a 3.9 percent rate, an increase in per capita income of 1.9 percent. Slow growth is largely the result of the very slow, almost stagnant, growth of the agricultural sector, which suffered from floods, drought and poor management.

The number of individuals with less than a D50 per capita income declined from seventy percent to forty, indicating that income redistribution

was working, even though neither production nor minimum income goals were met. The shortfall was most severe in the rural sector, where the inclement weather led to agricultural stagnation. There is some evidence that rural incomes have risen rapidly in the 1971-73 period because of surging growth in agricultural production.

FACTORS AFFECTING THE RURAL POOR

A. LAND RESOURCES.

The cultivable land in Tunisia is 33 percent of total land area, an average of 1.18 hectares per inhabitant in 1966.

Table IV.1. Land Use Potential and Ownership

	1955 000 Has.	1970 000 Has.	%
Total National Land area	16400	16400	100
Unusable Area	7369	7688	47
Productive Area	9031	8712	53
Extensive Pastures (Collective Ownership)	2550	2140	13
Forests	--	1240	7
CULTIVABLE	6481	5332	33
Private	4500	4517	28
Public (habous)	150	--	
Private Trust (habous)	1046	--	
French	715	--	
Other Foreign	70	--	
Other Public	--	815	5

This would be about 14.3 hectares per male farm worker.

Land Policies and Practices.

The de facto agricultural land policies which emerged in the twenty years after independence included four major elements:

- o Abolition of "habous"
- o Abolition of foreign ownership
- o Limitation on collective ownership of grazing lands
- o Maintenance of productivity

As in all matters Tunisian, detailed statistics to trace these elements throughout the period are sketchy.

1. Abolition of Habous

The habous are public or private trusts whereby the rent from the land is destined to a particular charitable purpose. At independence, about 150,000 has. were in public habous and 1,046,000 has. were in private trusts. These trusts were abolished, the land going to the government or reverting to private owners. Government land from mixed public-private habous was sold to the private owner or to another individual.

2. Abolition of Foreign Ownership

At independence, some 715,000 has. were owned by the French and 70,000 has. more were owned by other foreigners. Most of this land was in the productive Northern Region and contributed heavily to Tunisian agricultural production. In the French emigration which occured in conjunction with independence, much of this land was sold to Tunisian owners. However, a freeze on expatriation of foreign exchange effectively stopped these sales. In 1964, the remaining foreign-owned land was nationalized. Small farms were ceded to private ownership, usually former workers on the French estates. Virtually all small public units (both foreign-owned and habous) had been disposed of by 1962. Large farms were retained by the State and later became the nucleus of production cooperatives (see Organization).

3. Reduction of Collective Ownership Rights

Most of the extensive grazing land in the Center-South was held in collective ownership by members of semi-nomadic tribes. These hereditary rights continued, even though the individual tribal member no longer used them. Uncontrolled grazing of communal land is destructive of the resource. In June 1964, as a first step to bringing this land under control and development, the GOT passed a law sharply limiting the potential ownership by establishing criteria for such rights. This law, combined with the development work carried out by three major regional development offices has had the effect of bringing about 300,000 hectares of the more productive land under control, of which 200,000 has. have been planted with olive and other fruit bearing trees. Most of these lands were incorporated into polyculture cooperatives as a means of protecting the public investment in their development. However, the eventual disposition of much of this land is still uncertain.

4. Maintain or Increase Land Productivity

The departing foreigners took with them at independence virtually all the technical and managerial skills responsible for agricultural production in the North. This production may have accounted for up to 40% of the marketed product of the sector. Communal lands in the Center-South were deteriorated, and the uncertain rainfall caused severe annual fluctuations in production. The GOI response to these problems was an agricultural investment program to expand irrigation and the planting of tree crops, using State dominated cooperatives as the primary means for organizing agricultural production. (See Organization).

Land Investment

A high percentage of the public agricultural investment budget has gone into long term land improvements:

Table IV. 2. Public Investment in Agriculture

	MD	%
Forestation and Erosion Control	69	25
Irrigation	81	29
Olive and Fruit Tree Planting	42	15
Livestock and Fodder Production	11	4
Machinery and Equipment	43	16
Research and Extension	23	8
Fisheries	5	2
Other	4	1
	278	100

Much of this investment has not matured sufficiently to have had a significar impact on production.

- o Irrigation. There are about 200,000 has. of land suitable for irrigation with available water. At independence about 65,000 has. were irrigated. This has increased by 45,000 has. to 110,000 has. However, in 1972, only about 45% of the available water was being used, and much of the shortfall came from large dams and deep wells which were developed recently.

Table IV. 3. Water Sources and Utilization

	Available Mil. m3	Used Mil. M3	Used/Available %
Large Dams	191.2	46.7	24
Small Dams	7.7	6.8	88
Deep Wells	191.6	96.0	50
River Pumps	41.3	40.8	99
Artesian Wells	17.4	16.8	96
Shallow Wells	75.5	74.8	99
Treated Sewers	4.8	4.8	100
	529.5	286.7	54

- Reforestation and Erosion Control. From 1962 to 1971 approximately 59 million man/days were spent on reforestation and another 51 million were used for erosion control. The productive payoff of these investments will lag the investment made by many years.
- Olive and Fruit Tree Planting. More than 400,000 has. were planted to olive, citrus, almonds and other tree crops, including 200,000 has. of former communal grazing lands. The impact on production has been slight since olives require 10 to 15 years to reach commercial yields and fruit and nut trees need 5 to 10 years.

Land Distribution

The history of land ownership in Tunisia since independence has passed through several phases:

(1) Abolition of habous and distribution of small parcels.
(2) Abolition of foreign ownership and distribution of small parcels.
(3) Development of "production cooperatives", which were essentially state run collectives incorporating small private farms with a state farm as nucleus.
(4) Cooperativization of virtually all remaining land into polyculture cooperatives.
(5) Dissolution of most cooperatives and reversion to private ownership.

The failure of the cooperative movement in 1969 and subsequent return to private ownership of almost all cultivated land left the following distribution of land ownership:

Table IV. 4. Land Distribution by Size Class

	OWNERS			HECTARES		
Size	No.	%	Cum %	1000	%	Cum %
1 - 5	131,600	41.0	41.0	304	6.7	6.7
5 - 10	72,300	22.5	63.5	507	11.2	17.9
10 - 20	63,300	19.8	83.3	879	19.5	37.4
20 - 50	41,500	12.9	96.2	1287	28.5	65.9
50 - 100	8,000	2.5	98.7	541	12.0	77.9
100 - 200	2,600	0.8	99.5	372	8.2	86.1
200 - 500	1,150	0.4	99.9	356	7.9	94.0
500 +	400	0.1	100.0	271	6.0	100.0
	320,850	100.0		4517	100.0	

No comparable distribution figures were available for 1955. The principal redistribution of land in Tunisia was the private purchase of European states, the return by the state of small parcels of habous land and foreign-owned land to landless former employees of these estates, and assignment of communal grazing/farming land to individuals. This has increased the number of owners of small properties, but did not affect the larger holdings.

Between 1955 and 1970, the public acquired almost 2 million hectares of land. By 1970 it retained only about 800,000 hectares so there should have been a net redistribution of 1,200,000 hectares. However, one is uncertain about who received this land, since less than 3 million hectares of land have a clear title. The rural poor may be better off with the distribution shown above than they were before independence, but land distribution is still very badly skewed.

B. EMPLOYMENT OPPORTUNITIES

a. The Labor Force

In the Population Census of 1966, the agricultural labor force was calculated at almost 700,000 workers, including an estimated 250,000 female family workers on farms and some 60,000 who are engaged in fishing, forestry and other non-farming operations. (Table IV. 5). These 700,000 workers are 52 percent of the total labor force, but represent a significant decline from the 875,000 workers counted in 1956, when the agricultural labor force was two-thirds of the total. The total rural work force of around 850,000 includes about 200,000 non-agricultural workers in rural areas.

Excluding fishing and forestry and the female family workers, roughly half of the farming labor force were classified by occupation as farm owners or managers and half as farm workers.

b. Unemployment

Unemployment and underemployment have been persistent characteristics of the Tunisian economy. The 1966 census* enumerated 167,000 unemployed:

	Urban	Rural	Total	% of Labor Force
Males	53,000	105,000	158,000	15.3
Females	6,000	3,000	9,000	13.5
Total	59,000	108,000	167,000	15.2

Source: National Population Census of 1966, reported in Tunisia TOAID A-595 (10/31/69)

*Statistics on unemployment from the 1966 census have been broadly criticized. Although faulty, they appear reasonable. Conducted in May, individuals employed for ten days in April and those engaged in food-for-work were considered fully employed. Unemployment is probably understated, while the definition of employed almost certainly overstates employment. The arbitrary inclusion of 250,000 female family workers after the census is another anomaly.

TABLE IV. 5

Composition of Labor Force, 1966
(Includes 250,000 female family workers on farms)

	MALE		FEMALE		TOTAL	
	Number (000)	%	Number (000)	%	Number (000)	%
Total Population	2314.4	--	2218.9	--	4533.3	--
Total Labor Force	1,027.2	100.0	316.5	100.0	1343.7	100.0
By Location:						
Urban	415.8	40.5	49.5	15.6	496.9	37.0
Rural	611.5	59.5	267.0	84.4	846.8	63.0
By Occupation (rural workers):						
Non-agricultural	194.7	19.0	9.0	2.8	202.7	15.1
Agricultural	416.8	40.6	258.0	81.5	674.9	50.2*
Fish, Forests	43.9	4.3	0.9	0.3	44.8	3.3
Farming	372.9	36.3	257.1	81.2	630.1	46.9
Farmers	191.4**	18.6	2.1	0.7	193.5	14.4
Workers	181.5**	17.7	255.0	80.5	436.6	32.5
By Industry						
Total Labor Force					1343.7	100.0
Non-agricultural					645.4	48.0
Agricultural					698.3	52.0*
Farming					636.4	47.4
Crops					565.9	42.1
Livestock					44.3	3.3
Other					26.2	1.9
Fish, Forests					61.9	4.6
Forestry					50.0	3.7
Fishing					11.7	0.9
Other					0.2	--

* There are fewer agriculturists classified by occupation than by industry. The agricultural industry classification includes veterinarians, guards, and others who are classified under other occupational categories. This same type of variance exists in other industry/occupation comparisons.

** It appears probable that some of the farm workers (and non-agricultural rural workers) may be small farmers on food-for-work or other jobs. There were some 321,000 parcels of land identified in 1970.

However, even the 15.3 percentage unemployment for males severely understates the unemployment picture. Workers under the food-for-work program were considered to be employed. Table IV. 6 shows unemployment rates running 3 to 22% higher when the unemployed work force is adjusted to account for the impact of food-for-work programs. Total unemployment would have run 241,600 without these projects, or 23 percent of the labor force, and nearly all of this unemployment would have been rural.

Unemployment by occupation lists the three highest categories of unemployed males as:

Laborers and artisans		71,800
Undetermined		39,300
Agricultural		35,600
	Subtotal	146,700
Other		11,300
	Total	158,000

It is almost certain that the agricultural unemployed are understated. Many of the "undetermined" and "laborers and artisans" are probably farm workers (or farm owners) seeking employment elsewhere.

Underemployment is always a problem in rural areas and Tunisia is no exception. Agricultural production fluctuates from year to year and this has a significant influence on both urban and rural unemployment. Unemployment, excluding food-for-work, is on the order of 250,000, but in bad years, it may rise as high as 350,000, or drop to 200,000 or less in good.

The agricultural work year includes two seasonal peak months when gainful employment is available for a large number of those usually unemployed. One is in midsummer in the Northern and North Central regions where the grain and fruit harvest absorbs these workers, while the date and olive harvest in the South Central and Southern regions provides full employment for a month in fall. In good years, during harvest,

TABLE IV. 6

Male Unemployment and Food-For-Work Project

Governorate	Male Labour Force	Unemployed Males Reported by Census	% of Labour Force	Unemployed Males in the Absence of Food Projects	% of Labour Force
Tunis	201,900	24,300	12.0	30,700	15.0
Bizerte	78,300	12,600	16.1	19,000	24.0
Beja	74,400	11,700	15.7	21,600	29.0
Jendouba	58,300	13,300	22.8	31,800	55.0
Le Kef	71,300	14,000	19.6	19,500	27.0
Nabeul	76,100	6,100	8.0	9,800	13.0
Sousse	103,300	15,600	15.1	21,200	21.0
Sfax	89,100	12,600	14.4	15,500	17.0
Kairouan	64,400	10,800	16.8	14,900	23.0
Kasserine	47,000	11,900	25.3	17,600	37.0
Gafsa	71,600	8,700	12.2	13,700	19.0
Gabes	41,400	6,400	15.5	11,100	27.0
Medinine	50,300	9,700	19.3	15,200	30.0
Total	1,027,700	157,700	15.3	241,600	24.0

Source: 1966 Census, Part 3, Economic Characteristics. Reported in Grissa.

Note: In this table we have retained the 20,000 working as semi-permanent because we do not know their distribution by governorate.

unemployment becomes negligible. In fact, food-for-work programs commonly suspend activities during these two months for lack of workmen.

The degree of underemployment is also influenced by the type of agriculture. The normal work year varies from under 100 days in the cereal monoculture to 300 or more in diversified irrigated agriculture. Most small farmers are in cereals and their mobility is restricted by their responsibilities to their property. The opportunity for alternative employment in their immediate locality continues to be limited.

C. Unemployment Policies

The GOT's employment policies appear to have included four major elements, with optimism in planning balanced by pragmatism in execution.

(1) Investment. GOT is pursuing an investment policy which it hopes will provide enough employment to take off the new entrants to the labor force and achieve full employment by 1980. Some more pessimistic estimates have indicated the need to triple the annual rate of investment to achieve the full employment goal by 1980.

(2) Direct Employment. Food-for-work projects have had a major effect on holding unemployment within tolerable limits and making restrictions on rural/urban migration acceptable. The government also employed more people on the state cooperatives than were economically desirable, contributing to the operating deficits of these institutions, but absorbing additional potential unemployment. Central and municipal government employees doubled from around 50,000 in 1956 to more than 100,000 in 1966.

(3) Direct and Indirect Labor Force Reductions.

- Encouraging emigration. The labor force was reduced by 86,000 foreigners between 1956 and 1966.

Between 1961 and 1971, net emigration of Tunisian nationals surpassed 170,000 of whom a majority were probably male workmen.

- Education. The number of male school attendees of economically active age had increased from under 50,000 at independence to 88,500 by 1966. This increase has been accorded primary responsibility for lowering the male labor participation rate to 81 percent in urban areas, compared with 86.6 percent for rural areas.

- Family Planning Programs. Tunisia has an active program of distribution of contraceptive information and materials and recently authorized abortions for women with more than four children. These programs are primarily oriented to urban areas and will not have a material impact on the labor force for some years.

(4) Restrictions on Rural-Urban Migration. From independence through 1969, the GOT sought to restrict rural/urban migration through control of identity cards as well as through rural work programs. Both unemployed and underemployed unskilled workers are easier to absorb (and ignore) in the country than in the city. It is difficult to say how successful this policy has been. Certainly Tunis and its environs have grown at the expense of all other governorates, while the entire northeast has grown much faster than the rest of the country. Other centers which attract rural residents are Bizerte, Nabeul, Sfax, Gafsa, and Sousse.

C. INCOME AND CONSUMPTION

A cornerstone of the Tunisian 10 Year Perspective was the redistribution of income. A combination of survey data and projections established a Baseline from which changes were to be measured. That showed a median income of less than D30 per capita, with seventy percent of the population under D50. The Perspective set a goal of improving income distribution to assure a minimum per capita income level of D45, requiring reduction of the highest incomes in order to raise the lowest.

Between 1965 and 1968, a household survey of consumption enumerated a 1% sample of the population. These two surveys are not entirely comparable. The first estimated income while the second measured consumption, but the difference between income and consumption must be slight among the poor. The first survey segregated between rural and urban, the second among industries, but again, the differences in income levels between "rural" and "agricultural" are probably not great.

Income classes of the 1959 survey were adjusted to 1966 values (D45 in 1959 = D52 in 1966) and tabulated and graphed to permit comparison (Table IV.7., Fig. IV.1).

In 1959, median per capita income was below D25 (1966 prices); by 1966-68 it had passed D50. In 1959, 75% of rural dwellers had incomes below D45; by 1966-68 the 75% level had advanced to about D75. In 1959, 45% of the rural population had incomes below D20; by 1966-68 only 7 percent of the agriculturally occupied suffered such levels.

Rural and urban income distributions appear more alike in 1966 than they were in 1959. However, the 1959 urban study was projected from a study of Tunis, which has the highest per capita income of any city. Other evidence suggests that rural incomes actually increased less during the sixties than urban incomes. However, given the lower cost of housing in the countryside and the value of on-farm consumption, the urban and rural income levels from the 1966-68 study are fairly comparable.

A notable improvement is the reduction in the percentage of the rural population included in the lowest income categories. In 1959, a full 45 percent of the population earned less than D20. By 1966, the poorest 48 percent were spread up to D50, with only 7% below D20.

Table IV.7 Comparison of Annual per capita Income/Expenditures 1959-66

INCOME CLASS	1959*(1)				1966(2)			
	RURAL		URBAN		RURAL		URBAN	
DINARS	%	CUM	%	CUM	%	CUM	%	CUM
0-20	45	45	22	22	7	7	4	4
20-30	20	65	9	31	13	20	8	12
30-40	9	74	9	40	15	35	10	22
40-50	8	82	6	46	13	48	10	32
50-60	6	88	6	52	12	60	11	43
60-70	3	91	6	58	10	70	9	52
70-80	3	94	4	62	7	77	7	59
80-90	1	95	4	66	6	83	7	66
90-100	1	96	3	69	4	87	6	72
100-110	1	97	1	70	2	89	4	76
100+	3	100	30	100	11	100	24	100

* Adjusted to 1966 prices

Source: (1) Retrospectives Decennales
(2) La consommation et les depenses des menages en Tunisia, 1965-68. Secretariat d'Etat du Plan. 1968

There are still wide regional variations in income:

Table IV.8 Average Household Expenditures by Location

Region	Average Household Expenditures	% of Families with per capita income under D50
Northeast	D521	20
Northwest	334	53
Central	351	47
South	373	--
Total	D405	--
Urban	D634	17
Rural	330	51

However, even the poorest of these regional averages are well above the 1959 median.

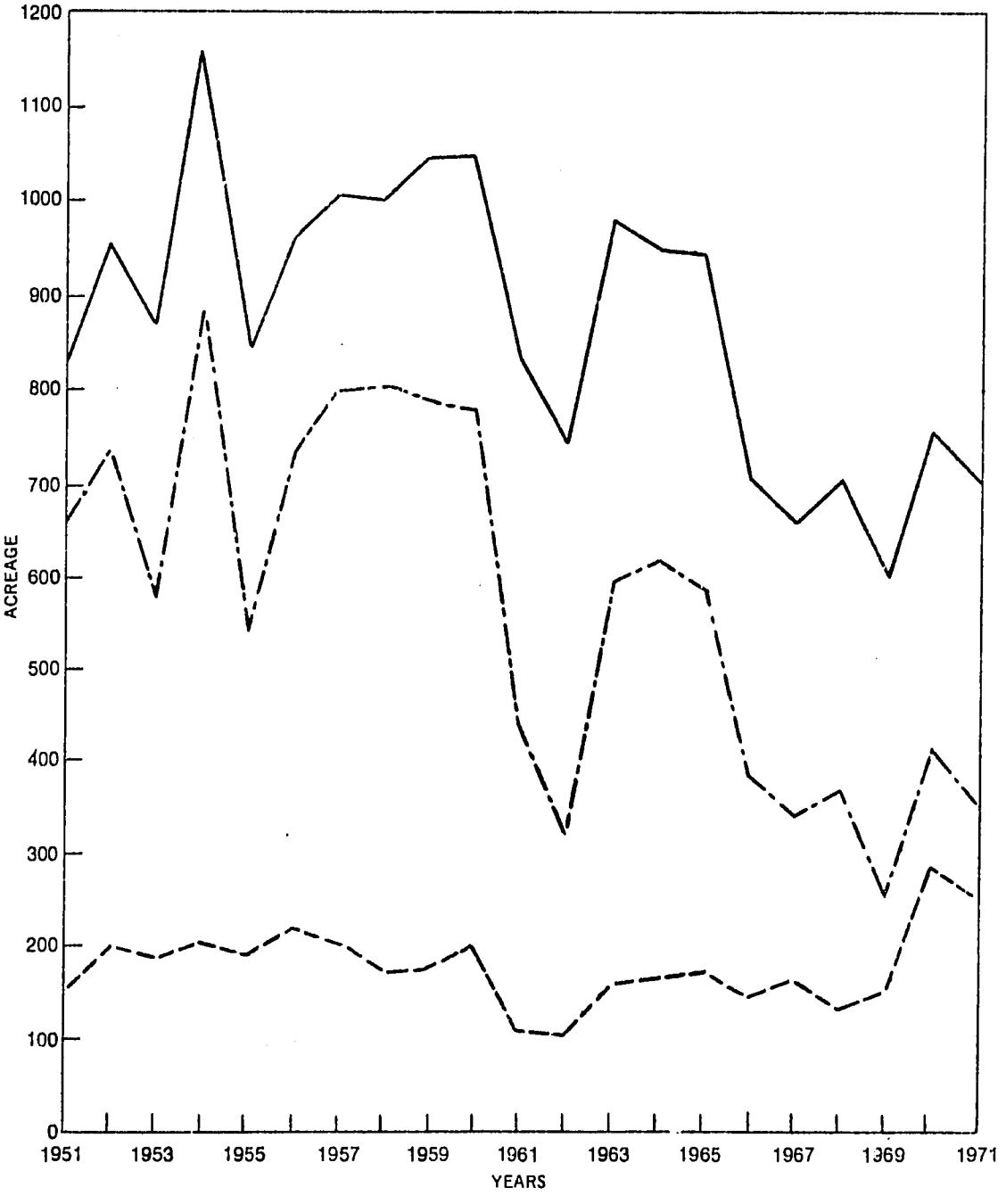


Fig. IV-1—Tunisia—Production Acreage, 1951–1971

——— Hard Wheat – – – – Soft Wheat —·—·— Barley

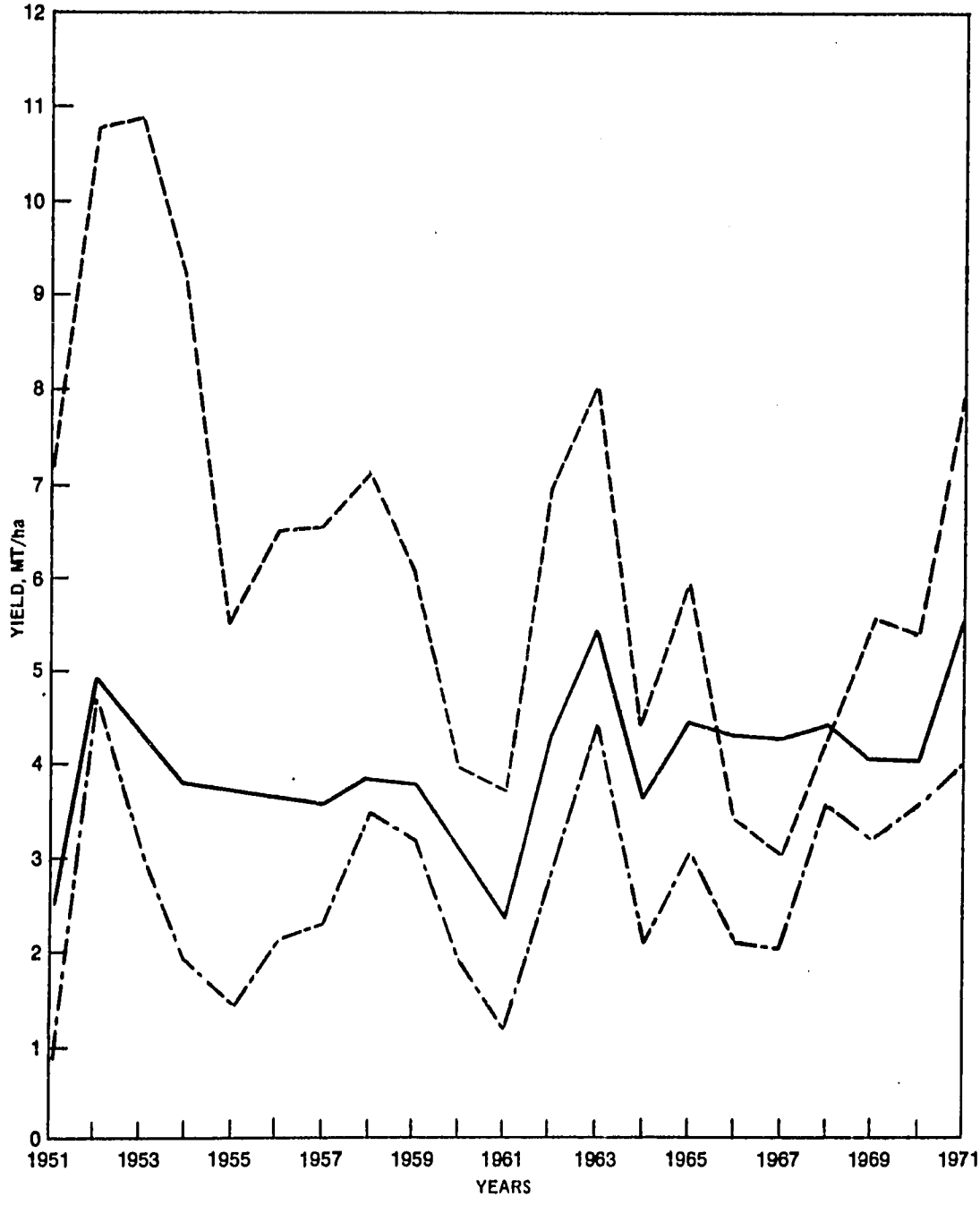


Fig. IV-2—Tunisia—Ceareal Yields, 1951–1971

Hard Wheat — — — Soft Wheat —·—·— Barley

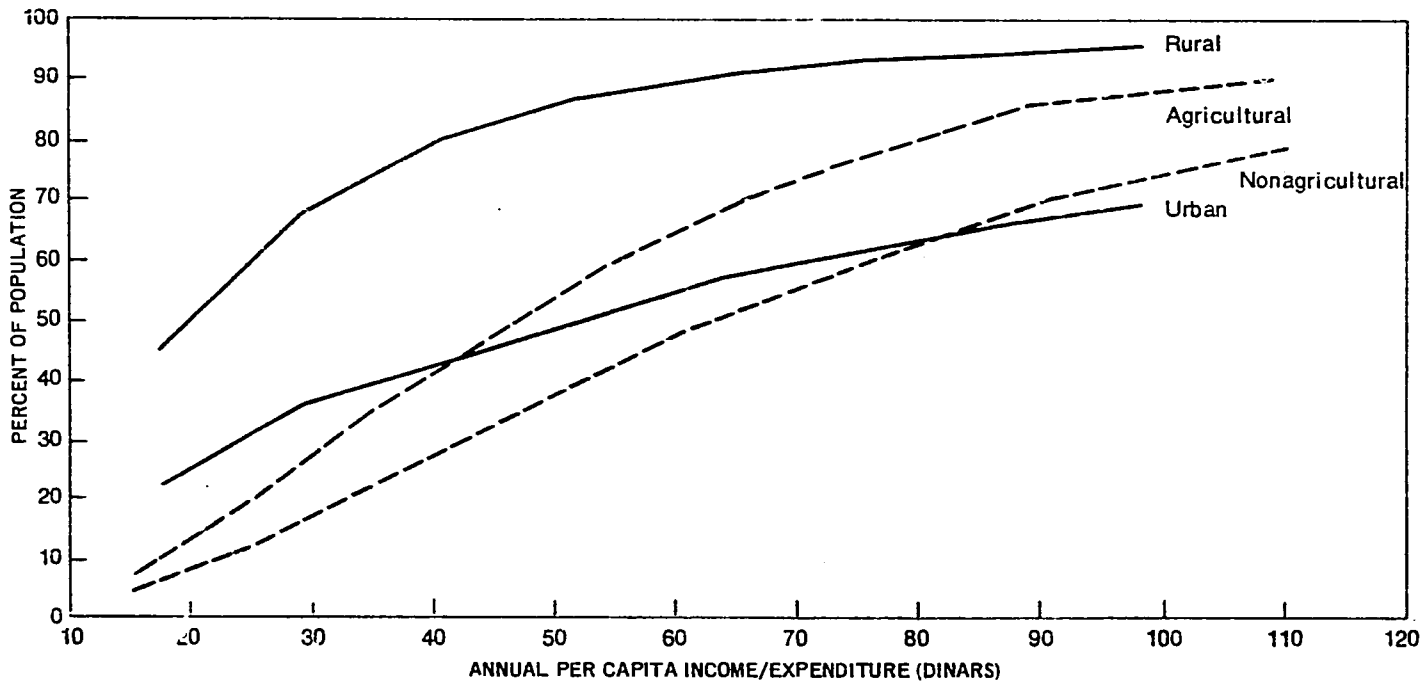


Fig. IV-3—Tunisia—Comparison of Annual Per Capita Income, 1959–1966

——— 1959 — — — 1966

There are a number of potential reasons for these rather remarkable improvements.

1. Government Commitment. GOT was commited by the Ten Year Perspective to achieve a redistribution of income. This commitment was manifested by a number of acts, including the setting of minimum wages and land distribution, which tended to establish an appropriate atmosphere for improvement of relative incomes. The importance of this atmosphere is reflected in the fact that industrial workers wages increased at levels beyond that expected by increases in productivity. Minimum wages went up in the agricultural sector at a 6 percent annual rate, even though sector production increased only slightly.

2. Land Ownership. Many former employees became land owners through redistribution of habous land, foreign-owned lands and tribal grazing lands. The extent of ownership transfer is obscured by the cooperative movement and the lack of detailed information on land ownership. We were unable to ascertain the effect that land ownership per se might confer on family income. However, almost any relief from the downward pressure on farm wages caused by excess unemployment and underemployment would tend to raise incomes generally in the rural areas.

3. Job Creation. A major element in the increased rural incomes must have been the employment provided by the production cooperatives to former employees of French farms. The cooperatives and other state farms always paid the minimum wage. A second element was food-for-work. The payment in kind and cash (semolina valued at 167 millimes/day and in cash 230 millimes/day) together formed a wage of 397 millimes. While inferior to competitive offers*, in the absence of such offers, this wage was a decided improvement. When food-for-work wages paid during slack period were added to other family income it could push the income levels into higher brackets. Food-for-work operated at a level of around 16,500,000 man-days per year in 1966. This alone would have added the equivalent of D2.41 to the per capita rural annual income.

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* Competitive minimum wages are 500 millimes for agriculture and 750 millimes for non-agricultural laborers.

Rising incomes still leave the rural poor with deficient diets. The 1968 consumption survey established the fact that only 46 percent of the population received more than 2,500 kilocalories per day, only forty percent received 70 grams of protein, and only six percent had an intake of animal protein equivalent to 40 percent of total protein. (Table IV.9). Rural inhabitants on average received fewer calories, less total protein, and less animal protein than urban dwellers.

Table IV.9. TUNISIA - Nutritional Levels by Population Component. 1968

	Rural	Urban	TOTAL
ENERGY LEVELS	%	%	%
Inferior (<2000 Kcal)	30	12	25
Mid Range (2000-2500 Kcal)	30	25	29
Superior (>2500 Kcal)	40	63	46
	100	100	100
TOTAL PROTEIN			
Inferior (<55 grams)	30	12	25
Mid Range (55-70 grams)	50	30	45
Superior (>70 grams)	20	58	30
	100	100	100
PROTEIN BALANCE (Animal Protein - Total Protein)			
Inferior (<20% AP/TP)	70	34	61
Mid Range (20-40% AP/TP)	29	46	33
Superior (>40% AP/TP)	1	20	6
	100	100	100

Source: Retrospectives Decennales. Reporting on Work of Sectoral Committee on Nutrition and Food Planning. 1968.

The 1969-72 development plan does not anticipate great improvement in rural diets during the plan period:

Table IV.10 Expected Dietary Levels for 1969-1972

	PER DAY		
	Urban	Rural	Total
Calories	2600	2250	2340
Protein Total	74	63	65
Animal	25	11	14.4
A/T Ratio	34	17	22

	PER YEAR
	Kilograms/capita/year
Cereals	145
Potatoes	15
Sugar	18.3
Pulses	4.0
Vegetables	86.5
Fruits	65.0
Meats	15.8
Eggs	2.4
Fish	5.3
Milk	62.0
Oils	11.4

Source: Plan 1968-71.

The major economic factors which affect nutrition besides income, are food prices and preference as indicated by income elasticities. Average incomes have risen considerably since 1959:

	MEDIAN INCOME		
	1959	1966	Change
Rural	D20	D46	130%
Other	D56	D67	20%

Retail prices of ceral products, the basic staple of the Tunisian diet, have been restricted by GOT pricing policies, while other food prices have been free to change in accordance with demand:

Table IV.11 TUNISIA - Retail Price Trends of Certain Agricultural Products

	1960	1969
Bread	100	110
Fine Semolina	100	117
Pasta	100	108
Couscous	100	107
Beef	100	176
Cotton	100	193
Chicken	100	173
Eggs	100	181
Fruit and Vegetables	100	164
Edible Oil (1962 = 100)	100	98
General cost of living (1960-62 = 100)	100	130

Source: Bulletin Mensuel de la Statistique de la Tunisie

Income elasticities revealed by the consumer survey of 1966 show a continuing strong demand for ceral products in rural areas:

Table IV.12 TUNISIA - Income Elasticities for Certain Agricultural Products as Revealed by the Consumers' Survey of 1966.

Commodity	Rural Areas	Large Towns	Country as a Whole
Cereal Products	0.76	0.36	0.57
Oil and fats	0.74	0.47	0.62
Fruit	1.22	1.73	1.41
Meat	1.37	1.30	1.31
Eggs	1.49	1.96	1.73
Milk and milk products	0.96	1.41	1.13

Source: La consommation et les dépenses des ménages en Tunisie, 1965-68, Répubublique Tunisienne, Direction Générale de Plan, p. 379.

A perusal of these three sets of data indicate a general improvement in the economic availability of the cereals and oils which form the basis of the diets of the poor. Average income has risen much faster than the stabilized prices of ceral products and edible oils. This is particularly true in the case of the s bmedian income levels which were originally concentrated below D20 and are now spread up to D56. Increased incomes have probably not led to equivalent increases in consumption of animal protein products, since the prices of the latter have risen about as rapidly as incomes. However, given their high income elasticity, it is probable that some expansion in consumption of protective foods has accompanied the general improvement in income levels.

D. TECHNOLOGY

Technology, defined here as the resultant of management, cultural practices and productive inputs, suffered a severe reversal with the departure of the Europeans immediately before, during and after independence, and has not yet fully recovered. Reliable yield figures are difficult to obtain, wide annual fluctuations in yield complicate the analysis, and expansion and contraction of acreage confound attempts at quantitative analysis. Grissa provides figures on national yields of hard wheat and olive oil per hectare from 1921 to 1968 which indicate that productivity has stagnated over a period of fifty years. However, at least some of this stagnation appears to be due to expansion of cultivation into less favorable areas about as fast as technology advances, while other stagnation results from over-aging of olive groves. Nevertheless, the departure of the Europeans, who had the best yields in the most productive area of the country, eliminated the major source of further yield increases and led immediately to a measurable decline in bread wheat yields. Perhaps the best index of the importance of this loss was the determination by GOT to retain control of French farms to prevent further losses of production.

Static or declining production, combined with increasing population resulted inevitably in lower per capita output:

Table IV. 13

Per Capita Output of Cereals

Period	Estimated Annual Production of Cereals in Tons (5 yr average)	Estimated Total Population in mid-Period (Thousands)	Per Capita Output in kg.
1925-1929	512,000	2,200	233
1930-1934	543,000	2,450	222
1935-1939	604,000	2,650	228
1948-1952	662,000	3,400	195
1953-1957	670,000	3,750	179
1958-1962	600,000	4,100	146
1963-1968	583,00	4,400	132

Source: Annuaire Statistique de la Tunisie

The value of agricultural production surged in 1971 and 1972, buoyed by an outstanding olive crop. In retrospect we may also find broader sources of this growth, including expanded private investment as the private sector recovered from the insecurity of the state cooperative system and as some new technology, such as the use of Mexican wheats and increased fertilizer use takes hold.

1. Productive Inputs

Fertilizer is used primarily on irrigated farms in the North. Fertilizer use began to rise significantly in the mid-sixties, but its use is still severely limited:

Table IV. 14

Fertilizer Use in Metric Tons

	CONSUMPTION(1)	IMPORTS(2)				
	P_2O_5	Nitrogen	Potassic	Other	Imports	Total Consumption
1960-61	5800	21,016	4,292	681	16,989	22,789
1961-62	n.a.	12,798	2,517	1,487	16,802	n.a.
1962-63	9600	13,511	4,498	1,987	19,996	29.596
1963-64	n.a.	26,284	5,145	3,078	34,587	
1964-65	n.a.	25,008	6,513	2,224	33,745	
1965-66	12,000	16,513	1,750	110	18,373	30,373
1966-67	13,500	20,132	3,547	---	23,679	37,179
1967-68	15,000	21,505	3,479	4,306	29,290	44,290

Source:

(1) Plan 1969-72

(2) Statistiques du Commerce Exterieur de la Tunisie, in Grissa, Abdessatar, Agricultural Policie and Employment Case Study of Tunisia, OECD. 1973

Seed of improved cereal varieties is not significantly limiting on better sites. Mexican bread wheats were introduced in the 1967-68 season with an 800 hectare planting and were expected to reach 200,000 hectares in 1971-72. A locally developed variety performs nearly as well under similar conditions. However, there is no comparable durum variety for general use and the HYV strains require better environmental conditions than is generally available in Tunisia outside of the North. Much of the expanded fertilizer use may be going to these HYV wheats.

Water has been given a high priority in the development plans. The irrigable area has expanded some 65,000 hectares to 110,000 hectares as a result of major investments in dam construction and well drilling. However, much of this additional area is not yet being irrigated:

Table IV. 15

Areas Irrigated or in the Process of Being Irrigated by 1968

Governorate	Hectares
Tunis	15,100
Mabeul	20,000
Bizerte	6,000
Beja	700
Jendouba	1,600
Le Kef	3,100
Total North	46,500
Kairouan	4,000
Kasserine	6,000
Sousse	5,700
Sfax	600
Total Centre	16,300
Gafsa	10,800
Gabes	8,000
Medenine	1,000
Total South	19,800
GRAND TOTAL	82,600

Source: Perspectives Sectorielles et Globales du Niveau de l'Emploi en 1980, l'Agriculture, Institut de Science Economique Appliquée, Tunis 1968. Reported by Grissa.

2. Education, Research and Extension

Trained manpower for agricultural pursuits at all levels in Tunisia is critically limited. This deficiency was recognized in the Ten Year Perspective, but results fell far short of goals:

Table IV. 16

Planned and Actual Output of Trained Agricultural Personnel

		Perspective	Output
University graduates for top and middle technical and administrative positions		884*	703
Special and high school graduates for middle level technical positions	Total	3978	722
	Special School	800*	n.a.
	High School	3178	n.a.
High or technical school graduates for cooperative monitors or managers	Total	3725	3670
	Technical School	3000	n.a.
	High School	725	n.a.

Source: Johnson, William F., Agricultural Sector Paper, USAID/TUNISIA. 1972

There appears to be adequate capacity but it does not seem to be effectively used:

	Annual Graduating Capacity
University	60-80
Foreign University Graduates	20-30
Total University	80-100
Specialized Institutes	150-200
Four, including Chott-Maria, Saint-Cyprien, Medjez-el-Bab and Tabarka	
Agricultural Lycees, Ten in all	400-500

Source: ibid.

*Even these modest goals were inadequate. Yudelman, commenting on the Ten Year Perspective in 1965, indicated the need for 3000 to 4000 in the University and Special School categories rather than the 1,684 proposed.

The technical manpower problem distinctly limits the capacity of the research program to find ways for increasing productivity of Tunisian agriculture. It limits the number of people qualified to communicate research results to farm operators. And it was largely responsible for the deficient management of production in the state cooperatives, contributing to their inadequacies and eventual dissolution.

Research is conducted by an establishment that includes three national institutes (Agronomic Research, Forestry Research and Rural Engineering) administered by the Ministry of Agriculture. They are grouped on a 100 hectare central farm, with 25 substations controlling another 5594 hectares. The research staff includes only 40 Tunisians, and of these only 1 has a Ph.D. and only a few hold M.S. equivalents. Cereals and engineering are the only areas in which research capabilities appear reasonably strong. Research results as measured by publications are very limited, as are any notable varieties (other than cereals) or yield improvements. Objectives are poorly defined.

Extension, including both the Ministry Extension Service and personnel from other branches of the Ministry have a major job of dealing with some 320,000 farmers. Total staff is limited in numbers and qualifications. The extension service itself is staffed with 33 Tunisians and 20 foreigners with a B.S. equivalent or above and 270 staff members with a high school or lower education. They are supported by 24 Tunisians and 6 foreigners at the B.S. or better level in the Animal and Crop Production and Protection Divisions and 96 technicians in these two Divisions with a lycee or higher level education. The state farms and cooperatives and the larger farmers receive an adequate service, but the remaining 318,000 small farmers must rely mostly on the 270 agents with no more than a high school education. And the ratio is around 1200 farmers per agent.

3. Cultural and Management Practices

GOT focused most of its attention in the sixties on the organization of private and public lands into large state cooperatives where central management could be applied to improve cultural practices. Theprimary effort was directed at improving the technical capacity of central management (which was not very good) rather than at improving the managerial and agricultural capacity of individual farmers, who became farm laborers with little responsibility for agricultural decisions. The dissolution of the cooperatives in 1969 left the farmers to follow their traditional practices.

It is interesting to speculate on what may now happen. The reaffirmation of private property will provide the security which farmers need in order to invest in farm improvements. Such investments may include replanting of perennial crops (long overdue) as well as the application of new technology. These investments will be initiated by the more entrepreneurial, better situated farmers. Any logical production program of the government will initially support these entrepreneurial efforts, pulled by the desirability of meeting national production requirements and pushed by the need to allocate limited staff resources to achieve maximum benefits. Under these circumstances, the small traditional farmer is almost certain to remain small, traditional and poor.

E. ORGANIZATION

Cooperation was chosen as the desirable form for the organization of Tunisian agriculture. This form was believed most suitable for overcoming the technical and managerial vacuum left by the departing Europeans, and transforming the traditional near-subsistence small farmers, agricultural workers and nomads into modern market producers. The ideology was not spelled out in detail, but in practice, cooperatives became state farms, incorporating the lands of small farmers into an enterprise which was planned and managed by the state, with the land owner becoming a laborer with little influence on management.

Tunisian cooperatives which developed after independence lacked the basic characteristics usually associated with cooperativism (private ownership, participation by choice, control by membership, economic viability) and eventually developed most of the characteristics associated with state collectivization (state ownership and control, required participation, permissible economic losses).

The two major types of Tunisian cooperatives - production and polyculture - had essentially different origins and requirements.

The Production Cooperatives were based on large, productive farms, formerly owned by Europeans, largely in the North. At independence, there were some 2000 of these farms, averaging nearly 900 has. in size and covering 13% of the total agricultural land, but contributing a far greater proportion of production. GOT felt it essential to maintain this productivity without further exacerbating the uneven distribution of land.

To deal with this situation, GOT established production cooperatives which were essentially state farms, using a large nucleus and incorporating surrounding small plots owned by

Tunisian peasants. Besides the owners of incorporated plots, other cooperative members included landless agricultural workers who had formerly worked on the European properties. Through 1965, the composition of production cooperatives was as follows:

o Publicly owned land	79,000 has
o Incorporated private plots of participating members	82,000 has
o Rented from non-participating members	25,000 has
	186.000 has

The average size of each production coop was 1052 has. Average membership was 65, or an average of 16 has/member.

The Polyculture (Mixed) Cooperatives originated as an outgrowth of GOT attempts to develop the communal and tribal lands of Center and South. The government sought to reduce the number of people who held tribal rights to these lands and to improve the land's productivity through direct investment in fruit and forest trees and erosion control. Initially, land so developed was passed into hands of individual owners, but the poor productivity of the land and environment, the limited resources of the beneficiaries, and the long period (10 years or more) needed to get a return from tree crops placed too great a burden on individual owners. In order to protect the investment cooperatives were established to control this developed land.

In early 1969, GOT decided to generalize the cooperative movement despite the heavy drain which the existing coops were placing on national resources and a history of weak management. Between January and September 1969 more than 3.5 million hectares, both tribal and privately owned, were incorporated into cooperatives, in effect completing the nationalization of land begun with independence. The effect was seen by the land owners as a confiscation of their wealth. Farmers started

selling, slaughtering or exporting their livestock, quickly reducing the livestock wealth of the country. The financial difficulties of the cooperatives and political discontent worsened and in September 1969 the law was reversed and the movement was virtually dead. No new cooperatives were created and those created after January 1969 were dissolved, with land reverting to their former owners. Later, in the same year, members of earlier coops were allowed to opt out and most did. Finally, unprofitably cooperatives were dissolved.

The following Table IV 17 chronicles the growth and dissolution of the movement:

TABLE IV. 17

NUMBER OF AGRICULTURAL COOPERATIVES CREATED ANNUALLY AND THEIR AREA IN HECTARES

Year	Production Cooperatives				Polyculture Cooperatives				Total
			Cumulative				Cumulative		
	Number	Area	No.	Area	Number	Area	No.	Area	Hectares
Dec 62	15	10,211	15	10.2	--	--	--	--	10,211
" 63	81	64,249	96	74.2	--	--	--	--	74,560
" 64	51	39,560	147	114.0	14	45,310	14	45.3	159,430
" 65	66	72,000	213	186.0	26	108,100	40	153.4	339,530
" 66	88	118,120	301	304.1	33	99,900	73	253.3	557,550
" 67	37	48,560	338	352.7	33	109,000	106	362.3	715,110
" 68	5	8,270	343	361.0	111	355,350	217	717.7	1,078,730
Aug 69	n.a.	--	--	--	--	--=	--	--	4,667,000
Dec 69	n.a.	--	--	--	--	---	--	--	1,172,000

Source: Grissa, Abdessatur. Agricultural Policies and Employment Case Study of Tunisia OECD 1973.

Following dissolution of the unproductive cooperatives, the GOT inventoried the remaining land under its control and planned a distribution which would leave about 400,000 hectares in production cooperatives and another 125,000 hectares in state farms, including areas for research, demonstration and teaching. The remainder would be sold to the private sector.

The effect of the cooperative effort was generally negative. The cooperatives were a drain on development resources rather than a source of savings. Private farmers were deprived of credit resources and would not invest their own funds. Agriculture stagnated from 1965 to 1969. Stagnant production and increasing population required a diversion of foreign exchange from development capital to food imports. The training of traditional farmers in modern management and agricultural technology appears to have been minimal.

However, the cooperatives did provide employment to their members, at the minimum wage, and this was more than they had received before, as laborers. A head of household drawing the minimum wage could earn about D150 per year.

F. TUNISIA, SOCIAL SERVICES

Tunisia has invested heavily in social services, including health, education and social security. These expenditures increased from around D7 in 1962 to D19 in 1971 on a per capita basis and are now equal to around 8.5 percent of gross domestic product. Although most of these services are more available to urban than to rural residents, the latter have undoubtedly benefited as well.

Education

Education in Tunisia is the responsibility of the state. Elementary education, which begins at the age of six or seven and continues for six years, is by policy free and compulsory. Emphasis in the primary school is on preparation for further school, but less than ten percent of the rural children who begin primary school will finish the first year of secondary school.

Data is not readily available on Tunisian education levels, but it has been estimated that 78 percent of rural workers and 53 percent of urban workers can neither read nor write. The latest figures compiled by UNESCO placed illiteracy levels at 74 percent of Tunisian men and 96 percent of women in 1962.

The difference between the ideal and the real is slowly being reduced. Student enrollment increased from 417,500 in 1960-61 to 777,000 in 1966-67, an annual growth rate of 11 percent. Intermediate and secondary growth rates were 22 percent and 17 percent respectively (Table IV. 18).

Table IV. 18

Student Enrollment in Tunisian Public School System

	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
Primary	417,500	481,550	533,000	593,000	659,000	717,000	777,000
Intermediate	8,760	11,580	13,850	16,140	19,300	23,000	28,850
Secondary	28,300	31,700	35,050	40,200	47,850	57,350	70,800
Teacher	---	---	2,175	2,700	3,250	3,980	5,500
University: Tunis	2,495	2,700	3,300	3,880	5,160	6,230	6,830
University: Abroad	2,500	2,500	3,000	3,065	3,505	3,090	---

Health

Reliable statistics on health which distinguish between rural and urban areas apparently do not exist. Health conditions in general are poor in Tunisia and this is certain to be even more manifest in rural areas. Independence left the nation with only 421 doctors (roughly one to each 10,000 inhabitants) as 370 foreign doctors departed. This departure probably didn't hurt the rural poor directly, since they weren't served in any event, but it has slowed the government's ability to improve their medical care.

Rural areas are served primarily by some 400 outpatient clinics located outside the provincial capitals. These clinics are staffed with paramedical rural health technicians, who are qualified to give first aid, administer immunizations, make simple diagnoses, and furnish simple medication. About one-fourth of these clinics and some smaller hospitals also provide maternal and child health care.

Sanitary conditions are generally poor in rural areas. Dysentery and diarrhea are among the chief causes of infant death. Dysentery, typhoid, malaria, tuberculosis, venereal diseases, trachoma and skin infections were common during the late sixties. Typhus and smallpox, common in the first half of the decade, have been virtually eliminated by vaccination, and it looks like typhoid is coming under control except for some isolated areas.

V. CONCLUSION

The courses which each country followed over the seventeen years were quite different with respect to improvement of the wellbeing of the rural poor. But conditions were also quite different.

In Taiwan, with a disciplined and entrepreneurial farmer, a store of underutilized technology and a cadre of qualified professionals, the choice was to provide the farmer with rough equity in land, arrange an effective delivery system for social and economic services, and try to stay ahead of him with technology and markets. Overall economic growth was the primary goal - income redistribution was not a Chinese priority - and agricultural production was geared to that goal. Agriculture was expected to do the traditional things: (1) Provide food and raw materials, (2) provide labor for other sectors, (3) provide foreign exchange and (4) provide enough savings for its own continued development.

The formula worked in Taiwan, stimulated by a foreign assistance investment fund capably managed by JCRR. The economy grew, agriculture prospered and met the requirements laid upon it. In the process, all levels of the rural population participated in the general prosperity. Incomes grew, but there was little income redistribution. Income of the larger farmers grew more than the average, presumably because of the workings of compound interest. Incomes of the smallest farmers also grew more rapidly than the average, presumably because of off farm employment.

The poorest of the Taiwanese rural poor were helped by improvements in equity and services that increased productivity, but the ultimate solution has been off farm employment in manufacturing and service industries.

Tunisia's situation was entirely different. Two-thirds of its agriculture was traditional and it immediately lost, and was unable to replace, much of the technical and managerial resources which made the other third productive. Its rural inhabitants were for the most part not market oriented, nor productive. The government's technical and administrative

resources were limited. Its agricultural resources were poor, even compared with Taiwan's. Above all, it was faced with the immediate task of nation building.

The pattern Tunisia chose was to effect an income redistribution, coupled with an investment program designed to create a more independent economy, extend the modernization process and provide employment.

The agricultural sector didn't grow and acted as a drag on the rest of the economy, but an income distribution was effected. Although it tried, the government was unable to improve land distribution materially nor to provide the technical and managerial resources to modernize the rural sector. Its attempt at maintaining production and organizing the sector through cooperativization was aborted.

It is too soon to tell how the process will work out in Tunisia for the rural poor. The modernization of traditional agriculture is a very slow process. Even in Taiwan, where the Japanese had full control, a strong production incentive and their own extraordinary development experience to guide them, agricultural productivity hardly moved for twenty-five years. The Tunisians have not concentrated enough on building technology, but, here too, seventeen years is a short time to create a modern educational system to provide the staff to perform the research to generate the information to be extended and finally adopted. Neither have they affected a distribution of land resources, but this was a conscious decision based on an assessment of available farm management capability.

Employment creation efforts in the rural sector were non-competitive with investment induced employment opportunities. They were also devoted to development efforts whose impact requires a long time to be felt.

A. ECONOMIC DEVELOPMENT

The rate of economic growth may very well determine the ability of a nation to deal with the problems of the rural and urban poor. Growth can provide the revenues to finance the development and extension of productive technology and lead to the investments in water resources development and input production which that technology requires. Growth generates the demand for products which poor farmers may produce. Growth generates revenues which can provide the health, education and other welfare services to the poor. Growth also provides an ultimate solution to the fundamental problem of the rural poor, since it creates industries and off-farm employment to make the rural poor both less rural and less poor.

Economic development is an essential condition, but not a sufficient one. There must be a conscious effort to create the conditions under which the rural poor may participate in the fruits of economic development. Such conditions may require structural reform of social relationships and redistribution of land to provide the basic security and incentives for small farm production. They most certainly require the development of an effective network of channels and communications which place the small farmer in touch with unbiased market forces, technical and economic information, inputs, consumer goods and credit. They require the development of a set of sources for technical information and productive inputs. And they require a way of organizing individual farmers into groups which can provide them some economies of scale in obtaining goods and marketing their output and which can provide them with some degree of influence over programs and policies which affect them.

GNP grew at 4.2 percent in Taiwan, 4.5 percent in Tunisia. The Taiwan economy started from a larger base, with a more suitable structure and more favorable resources and grew faster, so the larger pie could be more easily shared. Moreover, the Chinese did spectacularly well in assuring all of the conditions of sharing. They immediately effected a land reform which provided the essential incentives. They rapidly expanded their technology establishment, arranging for the availability of both technology and inputs. They reformed and improved the farmers' associations and saw to it that these associations served as the primary means of transmitting information and goods, attaching a variety of programs to them. The hierarchy of association levels also helped to establish the network of channels and communications. They invested heavily in rehabilitation of land, in reclamation and irrigation in order to maximize their scarcest resource, and also in the technology of the use of irrigation and multiple cropping.

Tunisia tried to effect some of the same reforms but fell far short of the Chinese model. They transferred some land resources, but effected no general redistribution. In recognition of the technical and managerial deficiencies of traditional farmers, they sought to organize them into a structure - state cooperatives - which could provide management, essential services and training, but were unable to provide the quality of services, management or training required. Starting with a weak technology establishment, they were unable to generate in the study period an adequate cadre of professionals nor a significant improvement in technology. The agricultural sector did not grow, partly due to management, but also due to inclement weather. The government resorted to relief measures to improve the distribution of income, and expanded the availability of social services, and were moderately successful. It seems evident that Tunisia can maintain a satsifactory rate of economic growth, and welfare

services. What remains to be seen is whether it can provide a rural structure which will permit the viable rural poor, mostly small farmers, to contribute effectively to their own wellbeing and that of the nation.

B. PROGRAMS TO IMPROVE PRODUCTIVITY

Productivity, defined as yield per hectare, is the resultant of productive inputs (fertilizer, water, seed) and management and cultural practices, all of which may be leveraged with credit or mechanical energy.

It is axiomatic that the long term improvement of agricultural productivity requires a system for research and development of genetic materials and cultural practices and a means for transmitting these materials and information to the farmer. The economies of scale involved in research and extension have generally led the state to assume responsibility for these functions. Both services require professionally trained personnel and the state has usually supported educational activities to produce these professionals and technicians. A good deal of AID's agricultural sector activities have been directed towards creating or strengthening this agricultural technology establishment or in other efforts to improve technology and its delivery.

The value of the output of these institutions to agricultural productivity and economic growth may be difficult to prove but is generally accepted. No agriculture has advanced persistently without effective programs of agricultural education, research and extension. However, the relationship between these institutions and the technology they engender and its benefit to the rural poor is extremely tenuous. The assumption is that most of the rural poor are farmers who will benefit from improved technology. This assumption is doubly dubious: (1) most rural poor, even when they own land, are laborers and receive a significant part of their total income from off farm employment. These laborers do not benefit from increases in productivity or prices. Their benefit is from the wages paid, and agricultural wages are notably unresponsive to farm profit levels. (2) Improvements in technology usually are accompanied by increased risk, increased capital costs and increased education requirements. The risks are less acceptable to smaller farmers while capital and credit are not available to most of the rural poor in the same magnitude as to their wealthier, entrepreneurial counterparts. Some form of state intervention is usually required if the small farmer is to survive or the wellbeing of

the rural poor is to be improved (or not made worse!) by the direct application of "improved" technology.

Technology does have a significant beneficial impact on the wellbeing of both the rural and urban poor. Improved productivity results in a reduction in unit costs, and hence helps to maintain reasonable food prices. And the rural poor purchase much of the food and other agricultural products which they consume.

The Taiwanese and Tunisian experiences don't provide a conclusive answer to the question of the impact on the rural poor of productivity-enhancing programs. However, what they do show certainly does not relieve the doubts expressed above.

In the Taiwan case productivity was enhanced and most small farmers benefitted, but the agrarian reform had eliminated the largest farms, so there was no overweaning competition from a particularly advantaged class. The small Chinese farmers were exceptionally competent receptacles for improved technology after fifty years of Japanese orientation, so productivity increases followed rapidly on the heels of agrarian reform and new technologies were quickly adopted.

The poorest of the small farmers - those with less than half a chia of land - had to have off farm income in order to support their families, even though their productivity increased and their farming income grew. Clearly, there are physical constraints to the most productive conventional technology which may prevent attainment of income above the poverty level. One should also keep in mind that the income of these small farm families improved relative to that of other farm size classes - because they sought and found off farm employment. They became less poor because they became less rural.

The Tunisians were strongly aware of the technological weakness of their small farmers and the need to maintain national agricultural production. This was the basic logic behind the formation of state production

cooperatives based on expropriated French farms. However, the GOT overestimated its own capacity to maintain the productivity of these farms. They did little to improve their technology network during the study period and there is some doubt that this network could have been improved enough in the short run to offset that which was lost with the exodus of Europeans. At any rate there was no improvement in productivity. Most production cooperatives were unprofitable, but it is not clear how much of the loss was due to weak technology and how much to overinvestment, overstaffing or other managerial deficiencies. What is certain is that Tunisian technology is weak and farm management, particularly among the small farmers, is not very good nor well prepared to recognize and adopt better technology. As hypothesized in the sections on technology, the most probable course will be that improved technology will be adopted by the larger farmers and will have little impact on the smallest.

C. WELFARE

Welfare programs come in two somewhat overlapping packages. One package, which includes education and most health activities, improves the capacity of the individual to respond to opportunities for self improvement and to meet his obligations to society. The other package, which includes relief, some health activities and social security, reflects society's obligation to its less fortunate citizens. Both types of programs are essential to any society. In fact, the way in which a government encourages and prepares its citizens for and provides them with meaningful work and accepts responsibility for its dependents is the principal measure of its social value.

Both of these governments have tried to fulfill their responsibilities to their respective societies, within their means and traditions, but their approaches have been different. Taiwan did not consciously seek income redistribution, but a general prosperity in which rural residents could share. Taiwan did not concern itself with unemployment problems which, even with a large standing army and rapid growth, consistently exceeded nine percent, but relied on the traditional extended family relationship to ease the burden. Primary social services provided were education and health, and these were pervasive, even in rural areas. As a result, rural residents were able to prepare themselves for off-farm employment. A study of urban employees with farm background indicates that these employees found positions as clerks, teachers, and factory employees for which their education had prepared them.

Tunisia, as a part of its nation building program, consciously sought an income redistribution to help the poorest majority catch up. Tunisia was very conscious of its unemployment problem, steered its investment program towards job creation, and used a variety of work creating programs to effect the income distribution when not enough jobs materialized. They created a network of health centers throughout rural areas, and expanded their school system. In both of these endeavors, and particularly in vocational training at the farm level, they were hampered by the limited availability of professionals to develop programs and train middle-level staff. The lack of skills hampers industrial expansion, as well as the ability of rural residents to find remunerative work in industry.

D. INTEGRATED RURAL DEVELOPMENT

Agricultural production, on which nearly all rural residents must ultimately depend for their livelihood, is the output of a complex system. This system transforms natural resources (land, air, water) and productive inputs (water, seed, fertilizers) into useful products (food and fiber) through the application of cultural technology and the farmers' labor and management (which may be leveraged with capital, credit and energy). This basic system is fed by a number of subsystems which generate technology and extend it, provide the channels and conditions for exchanging farm products for inputs and consumer goods, provide the training and education required to staff the systems at all levels, and provide the other social services which keep the participants in the system healthy and happy. The functioning of the system depends upon the adequacy and balance of incentives, risks and returns.

The art of rural development is to assure that all parts of this system are functioning effectively and are in balance with the needs of the people who operate within the system and the requirements of the external society for its products. Integrated rural development projects attempt to provide or enhance a number of different parts of the system which analysis has demonstrated to be deficient. Most commonly, these projects are applied regionally, or to a selected target group. This is usually a matter of convenience and limited resources; there is no reason why the nation's agricultural sector should not be considered as a whole system, with specialized regional subsystems.

This, in essence, is the way the JCRR dealt with the system in Taiwan. It used its participation as a planning agency to identify weak areas in the national system, and its resources (monetary, persuasive, and technological) to improve the balance. There is virtually no aspect of the system and its subsystems which was not touched in some way by JCRR activities. However, they were touched with sensitivity, in accordance with the need of the system and its environment in space and time.

Tunisian officials also felt the need for dealing with agriculture

as a production system, but demonstrated less understanding and authority. The production cooperatives were intended to be integrated production systems which could maintain output while improving the wellbeing of their members, at the same time that the latter received instruction in modern farming. The underlying concept was all right, but it lacked completeness and faltered in execution. The state was not sufficiently informed nor endowed to make the system work and was forced to abandon this approach. It is now faced with the need to analyze the larger, less structured national system and its regional subsystems and devise policies and programs which can strengthen or reform them.

APPENDIX - A

A.I.D. PROGRAMS WITH MAJOR IMPACT ON THE RURAL POOR

In examining the progress of the rural poor in Taiwan and Tunisia we encountered two programs in which A.I.D. was heavily involved which had had a significant impact on the wellbeing of the rural poor. The first of these programs was the Chinese-American Joint Commission on Rural Reconstruction (JCRR). The JCRR, through its unique status, the competence of its staff, and its funding authorities was able to orchestrate and integrated rural development program. It participated in policy formulation, program planning, project approval, funding and monitoring dealing with every aspect of agriculture from land reform to family planning.

The second program was the Tunisian Lutte Contre le Sous Development (LCSD), A Food for Work program designed to alleviate unemployment by providing U.S. surplus food and a modest cash payment in exchange for work on economically desirable projects. Although this program has had broader economic outputs, its principal impact has been as a welfare activity, providing a substandard wage paid partly in kind to people who would otherwise be unemployed, and providing their families with at least minimum sustenance. In contrast to the JCRR, which covered the entire rural sector, and affected the rural poor in passing, this activity was directly targeted at the poorest rural inhabitants.

TAIWAN. CHINESE-AMERICAN JOINT COMMISSION ON RURAL RECONSTRUCTION

The Chinese-American Joint Commission on Rural Reconstruction was a bilateral organization which operated on a semi-autonomous basis, with programs and projects covering all aspects of agriculture, first in Mainland China and later on Taiwan. It was created as a non-permanent agency for the post-war reconstruction of China, but circumstances led to its principal utilization in the economic development of Taiwan.

Background

In October 1945 the Chinese government formally presented to the American government a proposal for technical collaboration in agriculture between the two countries. This led to the creation of a joint China-U.S. agricultural mission which was given the task of outlining a program for the agricultural development of China and suggesting the type and form of public service necessary for implementation of such a program.

In April 1948 the China Aid Act (PL472) authorized the Secretary of State to conclude an agreement with China for the establishment of a Joint Commission on Rural Reconstruction in China. The Commission, to be composed of two U.S. citizens appointed by the President of the United States and three Chinese citizens appointed by the President of China, was intended to "formulate and carry out a program for reconstruction in rural areas of china, which shall include such research and training activities as may be necessary or appropriate for such reconstruction."

Following the conclusion of an Economic Aid Agreement between China and the U.S. on July 3, 1948, an exchange of notes on August 5, 1948, authorized the establishment of the JCRR. The Commission's initial activities began on the mainland, but, in less than one year, the Nationalist Chinese government was forced to move to Taiwan and JCRR accompanied it. JCRR efforts were thereafter concentrated on the reconstruction and development of rural Taiwan.

Organization

The JCRR was an autonomous, semi-independent organization controlled jointly by the Chinese and American governments. The director of the U.S.

AID Mission to China exercised policy direction and fiscal control over JCRR, and the JCRR acted as the agricultural arm of the U.S. AID China Mission, performing functions usually carried out by the Food and Agricultural Division of AID missions to other countries. At the same time, the JCRR was subordinate to the Cabinet of the Chinese government and subject to the direction and supervision of the Premier. However, since the JCRR was a unique organization, the relationship between the commission and other Chinese government agencies was not clearly specified, although the JCRR Chairmanship was generally considered to be of ministerial rank.

The original governing body of the JCRR consisted of five commissioners, three Chinese citizens appointed by the President of China and two U.S. citizens appointed by the President of the U.S. After June 1957 the number became one American and three Chinese, and in 1964 the number was further limited to one American commissioner and two Chinese commissioners.

Internally, the commission was organized on a subject matter basis. In 1952 there were nine technical divisions: Plant Industry, Animal Industry, Forestry, Land Reform, Food and Fertilizer, Irrigation and Engineering, Rural Economics, Farmers' Organization, and Rural Health, with administrative offices controlled by a Commission Secretariat. These divisions varied somewhat over time as programs and activities of the commission were readjusted a modified.

Role and Functions

JCRR held a unique position in the councils of government. With the transfer from the mainland, the Ministry of Agriculture had been abolished and was replaced by a Department of Agriculture and Forestry in the Ministry of Economic Affairs. This avoided the possibility of direct confrontation at the cabinet level. As Taiwan moved from reconstruction to development, the Economic Stabilization Board (ESB) was created to take charge of economic planning, and another Commissioner of the JCRR became members of that Board. A JCRR commissioner became the Chairman of Committee D of the ESB which was the formulator of the agricultural development plan. This

relationship with overall agricultural sector policy and planning was maintained through successive changes in the ESB, first to the Agricultural Planning and Coordination Committee and finally as the Council for International Economic Cooperation and Development.

At the operating level, the JCRR was a program planning, financing and monitoring entity. It received requests for project funding from all levels of government, from the Department of Agriculture and Forestry of the National Government, the Taiwan Provincial Government and its subsidiaries, the County and City Governments, Township Offices and the Farmers' Associations. It reviewed these requests, assisted in their modification and approved or rejected them. In the process, it taught project planning principles and negotiated matching contributions. It provided technological guidance in planning and in monitoring the activities which it had approved. Since it insisted on direct relationship with all levels to which it granted funds, its impact went to all levels of the agencies with which it became involved, and these were virtually all agencies of the agricultural and rural sectors. Between 1950 and 1965 it had approved some 6,280 projects. During this period, project beneficiaries contributed 48 percent on average of the cost of these projects.

One of JCRR's most important functions was the conduct of surveys and the sponsorship of special studies which detailed the progress of the agricultural sector.

In conducting its policy and operating responsibilities, JCRR followed four basic guiding principles:

1. There must be felt a need for JCRR services on the part of farmers themselves as the direct beneficiaries of the projects.

2. There must be a fair distribution of the benefits that are derived from the JCRR projects.

3. There must be a sponsoring agency qualified to undertake any given JCRR project and to utilize JCRR assistance effectively.

4. There must be a demonstration of feasibility of any particular JCRR project before undertaking its broad expansion.

Staffing

Staff of the JCRR consisted of American and Chinese experts plus a number of supporting personnel. The general policy was that an American expert would not be employed if an equally qualified Chinese expert was available. American experts were employed to train their Chinese counterparts who would eventually take over the job. In some divisions Americans were used only as short-term consultants.

In the first few years of the Commission's existence, the number of American technical staff members averaged eight to ten. From 1954 to 1963 the number increased to thirteen, and after 1963 was gradually reduced. (Numbers do not include short-term consultants.)

Staff members numbered 40 when the Commission began operations in 1948, and reached a maximum of 243 in 1962, with more than 100 professionals.

Financing

Originally no more than ten percent of U.S. economic aid was to be available for the rural reconstruction program in China. However, this restriction eventually was lifted. JCRR handled about 0.7 percent of the dollars and 16.0 percent of the local currency of the entire assistance program. The following tables show the breakdown of U.S. dollar and local currency channelled through JCRR during the period of the U.S. AID Mission to Taiwan:

Table A-1

U.S. Dollar Assistance to Agriculture
Channeled Through JCRR, FY1951-FY1965

Category	Amount
U.S. agricultural advisers	US$ 2,070,000
Commodities	7,106,400
Participants training:	
in U.S.	1,033,850
in other countries	419,300
Total	US$10,629,550

Source: Office of U.S. AID Representative in China, November 1967.

Table A-2

New Taiwan Dollar Assistance to Agriculture
Channeled through JCRR, FY1951-FY1965

Category	Amount
Project costs*	NT$4,025,113,000
Participants training local currency costs	23,050,000
U.S. technicians local currency costs	37,855,000
Total	NT$4,086,018,000

Source: Office of U.S. AID Representative in China, November 1967

*This figure includes NT$20,008,000 programmed in FY 1950.

These funds were disbursed for the activities shown in Table A-3. Water Use and Control received the largest allocations of funds (31% of NT$, 36% of US$), followed by Crop Production (11% of NT$ and 14% of US$).

Table A-3

JCRR Allocation of Money for
Major Categories, FY1950-FY1965

Activity	NT$	US$
Crop Production	415,581	1,024.4
Livestock Production	293,237	318.9
Water Use and Control	1,341,378	2,552.4
Forestry and Soil Conservation	213,310	475.9
Rural Organization and Agricultural Extension	286,610	88.0
Economic Research and Agricultural Credit	376,654	11.4
Fisheries	307,426	30.5
Land Reform	25,812	---
Rural Health	142,375	317.5
Agricultural Research and Education	90,627	731.2
Rural Electrification and Communication	53,763	---
Gov't Budget Support to Local Agri. Programs	242,946	1,027.0
Miscellaneous Projects (incl. outlying islands and mountain resources Development)	150,485	194.5
Administration	184,909	304.7
Total	4,025,113	7,106.4

Note: The above table includes only funds disbursed by JCRR. Payment of salaries, allowances and international travel of American personnel, and expenses for sending trainees to the United States or other countires are disbursed by the Agency for International Development, China Mission. The US$ figures represent costs of commodity. The conversion rates used are: NT$10 to US$1 up to and including FY1951; NT$10.30 to US$1 for FY1952 and FY1953; NT$15.65 to US$1 for FY1954 and FY1955; NT$24.78 to US$1 for FY1956, FY1957 and FY1958; NT$36.38 to US$1 for FY1959 and FY1960; and NT$40 to US$1 for FY1961, FY1962, FY1963, FY1964 and FY1965.

Source: JCRR General Report, No. 17, 1966.

Accomplishments

JCRR's hand is felt in all aspects of the agricultural sector. It funds specialists to review problem situations, participates on committees which review the recommendations and draft legislation or prepare programs for correcting the situation. It sponsors research and surveys which provide the basic information required for policy formulation and program planning and sits on the boards that formulate the policy and plan the overall programs. It sponsors production research into all manner of crop, livestock, fishery and forestry problems.

JCRR sponsors the introduction of innovative technology and underwrites its testing and promotion. It funds all manner of rural construction activities, from irrigation and drainage works to marketing facilities and processing plants. It promotes the development of the farmers' associations and then uses them for everything from running extension and credit programs to marketing agricultural products and farm inputs. It funds the credit programs, helps train the credit supervisors and extension agents, and promotes the rural health. It conducts or sponsors the surveys which provide the statistics which measure progress and the analysis which gives them meaning. It is ubiquitous. The following sampler is indicative -- not exhaustive:

- o Agrarian Reform. JCRR helped plan the reform program, trained personnel and conducted the cadastral survey which permitted both rent reduction and the successful implementation of land redistribution.
- o Farmers' Associations. Co-sponsored the visit of Dr. W. A. Anderson, Cornell Rural Sociologist, who reviewed the farmers' associations and their law and suggested improvements. Participated in the committee which drafted a revised law and helped lobby for its adoption.
- o Agricultural Plans. Participated in the planning of four-year agricultural plans, and funded many of the projects which contributed to meeting plan targets. The average annual agricultural production growth rate in constant 1951 prices was 6.0 percent for the sixteen-year period.
- o Education and Research. Started initial crash training programs in 1949-50 for the staffs of local agencies and farmers' associations and initiated an international fellowship program. Participated in the planning

committee on agricultural education which mid-wifed successive contracts with the University of California and Michigan State Unitersity and modified The National Taiwan University and the Taiwan Provincial Chunghsing University. Funded a wide variety of research projects and provided salary support for 1087 professional and subprofessional employees to perform research which helped increase agricultural productivity.

- o Extension. Introduced the modern extension system with agricultural technical training combined with home improvement and rural youth activities. Arranged to have extension activities managed by the farmers' associations with financial and technical support furnished by the government.

- o Land Use and Soil Conservation. Introduced comprehensive soil conservation practices on 46,000 hectares of land between 1963 and 1966 and initiated the integrated Soil Conservation and Land Use Program. Introduced land consolidation and participated in the planning and implementation of 22 projects covering 4600 hectares. Supported surveys of ten watersheds and has been active in promoting coordination of watershed management activities.

- o Water Control and Utilization. Helped rehabilitate and return to rice production 260,000 hectares of land in 1949-52. Assisted in the conduct of a number of water resource surveys, provided loans for irrigation works, reorganized the Provincial Water Conservancy Bureau, reorganized the 39 irrigation associations into 26 associations and assisted in improving their management. Conducted irrigation investment studies and trained staff. Participates in the investigation and planning of all major multipurpose water resources development projects. Has been involved in a wide variety of innovative activities including the introduction, testing and promotion of rotational irrigation, upland crop irrigation, and tidal land reclamation. JCRR has financed the construction of storage reservoirs and irrigation systems and land reclamation projects. It supported initial studies on ground water development and arranged financing for large scale ground water projects. In these activities, about 44,000 hectares were newly irrigated and 467,000 hectares received supplemental water. More than 200,000 hectares have been rehabilitated after floods or reclaimed. 110 kns. of new dikes were constructed in 175 kns. of old dikes repaired. The annual increase in the production of paddy from these efforts has been estimated at 430,000 metric tons.

- o Plant Industry, Animal Industry and Fisheries. Funded research on crop breeding, seed multiplication, soil testing, fertilizer trials and recommendations, soil surveys, plant protection, multiple cropping systems,

farm mechanization. Sponsored programs which controlled hog cholera and stimulated swine and poultry production programs. Financed projects for improvement of fish culture and harbor and shore facilities, mechanization of small fishing craft, fisheries research, deep sea fishing and fish marketing. The value of agricultural production increased at a rate of 6 percent for sixteen years. Fish production quadrupled over the same period.

- o Forestry. Financed a full-scale forest resources survey, and participated in the subsequent preparation of a forestry policy and improvement plan. Four hundred kilometers of forest and rural access roads were constructed. Forest products research was initiated.
- o Agricultural Credit. In 1949, money lenders provided 82 percent of agricultural credit. In 1967, 81 percent was provided by institutional sources. The Unified Agricultural Credit Program, run through the farmers' associations, reaches one out of three farm families each year.
- o Rural Health. Promoted establishment and improvement of a health station for each of the 356 townships. Rehabilitation of water works. Rabies completely erradicated. Promulgation of national family planning regulations was in part the work of JCRR's promotional activity.
- o Agricultural Statistics. JCRR has been largely responsible for the publication of farm price statistics, establishment of longitudinal farm record keeping activities, crop reporting, and the periodic farm income survey. It has helped support full and sample censuses and conducted and supported a variety of economic research.
- o Agricultural Marketing and Export. JCRR has financed market surveys, and improvement of market facilities, particularly through the farmers associations. It has been active in promoting production and processing of agricultural products for export.

A final word: The JCRR's staff has been limited to fewer than 250 people, of whom less than half are professionals. They have not done all these things, but they have seen to it that they got done. In getting these things done they appear to have been blessed with the following attributes, not necessarily in order of importance:

- o Good leadership and relative freedom from bureaucratic constraints.
- o The capacity and willingness to go outside their organization for specialized talent when needed.
- o Access to a large source of funds outside the normal government budget.
- o Talented, industrious professionals in the agencies which they funded. JCRR programs trained many of these professionals.

- Farmers who were disciplined and entrepreneurial - the output of fifty years of Japanese development programs.
- A network of farmers organizations and public agricultural institutions, also a legacy from the Japanese occupation.

TUNISIA. FOOD FOR WORK
APENDIX - B

Over the past 12 years, a Food for Work program, La Lutte Contre le Sous Development (LCSD) has evolved from a one-time emergency relief measure to a program affording large-scale assistance to a major segment of Tunisia's unemployed. This program, which uses PL-480 Title II food as its major external resource, was initiated in 1958 to offset extensive crop failure resulting from a prolonged drought.

Title II of PL-480 provides grants of US agricultural surpluses for either emergency relief in the case of famines, floods, drought, etc., or for economic development activities where the US surplus commodities can be used for payment in kind to laborers constructing public works.

The LCSD Food for Work program in Tunisia was the first program utilizing PL-480 food as part payment of wages of hand labor. Since that time, similar programs have been initiated in other countries. The objectives of the program were (a) to provide employment and (b) to utilize an unskilled and semi-skilled labor force in labor intensive projects, such as reforestation, soil conservation, and irrigation development, which assist the economic development of the country.

Background

An extensive drought induced crop failure in 1956-1957 led to an emergency relief donation under PL-480, Title II, of 45,000 MT of wheat. The wheat was used primarily for wages on work projects organized in the gouvernorats on the basis of wheat allocations made by the Ministry of the Interior. The wages consisted of the wheat equivalent of 300 millimes ($.71) per work day in Tunis and 250 millimes ($.60) elsewhere in the country. There was also a direct relief distribution of wheat to needy individuals.

A second program of Title II commodity donations, consisting of 90,000 MT of wheat and 2,000 MT barley, was made in fiscal years 1958-1960 to meet distressed economic conditions in the country caused by the departure of foreign capital and technicians in the aftermath of Tunisian independence. The initial

phase (1958-59) of the second program covered 50,000-75,000 unemployed, working on economically useful projects on a 10- to 15-day rotation basis. These were taken from an unemployment pool then estimated at about 300,000 persons, including the seasonally, partially, and under-employed, as well as the totally unemployed. The workers received a daily wage of 3.6 kilos of semolina (the kind equivalent in value of 196 millimes) and 100 millimes in cash provided by the GOT, making the total wage equivalent to 296 millimes ($.70), compared with a basic agricultural wage of 350 millimes ($.83).

Following a review by President Bouguiba, the program was expanded to 140,000 workers, becoming a major national means of combatting under-development and unemploymnet, Workers were employed full-time, for a 6-day work-week of 48 hours. With the expansion of the program, the cash part of the wage was raised to 200 millimes ($.48), while the semolina payment was decreased to 1.5 kilos, resulting in an equivalent daily wage of 279 millimes ($.67), or about 80% of the basic agricultural wage.

Following the amendment in May 1960, of Section 202, Title II, PL-480, to permit the direct use of agricultural commodity donations for economic development in less-developed countries, the Tunisian government applied for assistance under the new authority to permit the continuation of the program. A third program was authorized for the use of 93,000 MT of wheat, computed on the basis of 140,000 workers per annum. The planning and administration of projects under the third program was "regional", i.e., it was carried out under the control of the individual gouvernorats. The same wage rates in cash and kind applied. The "national" program, administered by the national government, and designed to carry out reforestation and soil conservation activities in direct support of the Four-Year Plan, changed to an all-cash wage (350 millimes per day) from 1963-1965. No US support was provided to the national program during this period. The GOT subsequently applied for a grant of wheat for local sale to generate funds for the purchase of tools, equipment and materials for the works program and the TA was amended to provide for the shipment of an additional 31,000 MT of wheat for such purposes. During the period FY-1961 through FY-1964, four Transfer Authorizations totaling 445,000 MT were issued for the LCSD program.

Starting in FY-1965, the Food for Work program once again encompassed national projects in addition to those developed at the regional level. Both the cash wage and seminola rations were increased so that workers under this new arrangement received cash/food wage equivalent of 452 millimes ($.86) on national projects and 397 millimes ($.76) on regional projects. In late CY-1968, the GOT announced the establishment for 1969, within the regional program, of a new "municipal projects" category, under which the gouvernorats received - in addition to their regular allocation of mandays for regional projects - a further allocation of 50% of the number of mandays allocated in 1968, to be utilized for urban activities. Under the new category, the gouvernorats received from the national government the usual allocation of semolina (now 2.5 bags) plus 23 millimes per manday for materials and supervision. The cash wage (230 millimes per manday), however, was provided by the gouvernorats or municipalities, rather than the national government.

Organization

National projects are the responsibility of the Ministry of Agriculture, subject to approval and funding by the Ministry of Plan. National Projects are agricultural in nature (reforestation, soil and water conservation) and form an integral part of the agricultural section of the Tunisian National Development Plan. Responsibility for planning, coordinating and implementing specific projects rests in the first instance with the CRDA*, who is assigned to each gouvernorat by (and responsible to) the Ministry of Agriculture. These officials, all of whom are agricultural engineers, regularly meet in Tunis under the auspices of their Ministry to discuss and develop national programs, some of which cross gouvernorat limes (such as large-scale reforestation projects which in some instances involve as many as three gouvernorats).

Once these programs are agreed upon within the Ministry of Agriculture, they are submitted to the Ministry of Plan for approval and allocation of semolina and funds, with subsequent implementation becoming the responsibility of the individual CRDAs and their professional staffs. The CRDAs usually work with local officials in recruiting the labor force; they tend to favor training

* Commisaire Regional de Development Agricole.

and retaining permanent or semi-permanent work crews on their projects, which frequently are quite extensive in scope and may require several years for implementation.

Regional Projects are usually smaller in scope than national projects, of shorter duration, and are more decentralized in their administration. Among the major types of activities carried out under this facet of the program are road maintenance and construction, reforestation, construction of wells and water points, soild and water conservation measures and building construction. Urban activities (rehabilitation, maintenance and construction), which in the past have accounted for only a limited percentage of the allocated mandays are likely to increase substantially in the future in view of the establishment of the "municipal projects" category.

Projects are usually proposed at the local level by the "cheikh" (village chief and local political leader), municipal council or "delegue" (district administrator, responsible to the governor), and coordinated at the gouvernorat level by the governor's "delegue economique". During the planning stage, projects are discussed by the governor's office with the technical field personnel of the pertinent national ministries, e.g., Agriculture (CRDA) or Public Works. This check is designed to verify the technical feasibility of the project, but not the extent of its economic value, or for that matter, its relevance to the overall economic development program in the area.

Once approved at the gouvernorat level, the project "package" is forwarded to the Ministry of Plan, where it is reviewed in light of availability of funds and national priorities. Tentative approval (of all or part of the proposed package) is given at the beginning of the calendar year, with an initial allocation of funds and wheat. Once the approved program is returned to the gouvernorats by the Ministry of Plan, "credits" in the form of wheat and fund allocations are made available to the responsible local officials. The gouvernorats have considerable leeway in reprogramming allocation to other activities. The involvement of national officials, e.g., the CRDA or Public Works engineers, in the actual carrying out of the work is usually minimal.

Two other LCSD programs are also included:

(1) The 71 Civil Service Centers of the 13 gouvernorats are also provided US wheat. Trainees (5,650 young men and women in CY-1969) daily receive two hours of classroom instruction and six hours of practical work experience in various subjects, such as agriculture, building construction, carpentry, animal husbandry, agricultural machinery repair and forestry in these Centers. The Centers are allocated 1.5 kgs. semolina daily per trainee (approximately 6% of the total provided by the USG under the LCSD program) plus additional GOT funds for supervision, room and board.

(2) A Special Hospital Program forms part of the LCSD program. As of 1969, 1,075 unskilled workers were permanently employed as cleaners, guards, gardeners, etc. in hospitals, children's homes and homes for the aged in various parts of the country. Like regional LCSD workers, they received 2.5 kgs. semolina and 230 millimes in cash wages per day. This project utilizes less than 1% of the total USG wheat contribution to the LCSD program.

Financing

The total program costs about $25 million per year, with the PL-480 contribution averaging between $6 and $7 million per year. The commodity contribution amounts to 26 percent of the total costs for the effort. (Table A-4). The national program of reforestation, soil and water conservation takes up about 60 percent of the total. Regional projects (road maintenance and construction, reforestation, construction of wells, building construction, and so on) use 34 percent, and most of the remainder is used in the Civil Service Centers.

Table A-4

PL-480 Title II Food-for-Work Program 1966-1969

(Cost Summary (Dollars)

	National Program	Regional Program	Civil Service	Hospitals Program	Total	Percent
Cash Wages	22,066,577	11,933,931	2,455,169	333,705	36,789,382	49.1
Supervision and Supplies	12,298,624	6,387,086	---	---	18,685,710	24.9
Value U.S. Wheat Contribution	10.773,599	7,139,828	1,318,654	197,368	19,429,449	26.0
Grand Total	45,138,800	25,460,845	3,773,823	531,073	74,904,541	100%
Percentage of Total	60.3	34.0	5.0	.7	100	

Achievements

The Food for Work program has been successful in alleviating the economic, political, and social consequences of unemployment. The program's effects can be seen in three areas - reducing unemployment, improving the national food balance, and physical accomplishments.

1. Reducing Unemployment

At the time of the 1966 Census, the country had a total population of approximately 4,533,000, with a male labor force of 1,027,266. Of this group, 869,658 were counted as employed, and 157,608 (15.3%) as unemployed. The unemployment rate was 17.2% in rural areas and 12.6% in urban areas. Unemployment, as measured in the 1966 Census, varied significantly by gourvernorat, ranging from approximately 8% in Nabeul to over 26% in Kasserine.

The Census considered LCSD workers as part of the employed population. In 1966, approximately 82,000 were employed under the LCSD program; thus about 8 percent of the total employable male population were employed under the Food for Work program. Considering that without LCSD there would have been about 240,000 unemployed, the LCSD program was reducing unemployment by 34 percent. LCSD workers normally are recruited from among the persons residing within the area in which the projects take place. Thus, the program is essentially of a local nature, depending on the presence of a project in any given area. While this precludes the need for logistic support such as transportation and housing for workers, it detracts from both the economic development and employment benefits of the program, since economically beneficial projects cannot necessarily be located in areas of high unemployment.

The transition rate from LCSD to other employment is relatively low, due principally to the lack of work available for unskilled and semi-skilled laborers. On the other hand, LCSD workers appear to have an edge over unskilled non-LCSD workers in obtaining more remunerative employment elsewhere on the basis of their LCSD experience.

Many of the workers have not previously worked for wages, other than occasional seasonl agricultural work. The LCSD program often represents their first encounter with a formal group work situation requiring the use

of hand tools. While many do only menial hand labor, the very fact that they are taught to utilize hand tools, load vehicles and work in conjunction with some construction or earth-moving equipment, makes them more employable for other, non-LCSD, jobs which may become avialable. In addition, the opportunity to work closely with skilled and semi-skilled workers, such as bricklayers, drivers, equipment,operators, etc., may provide some apprentice-type training. Formal job training is not a normal part of the program but some training may be provided if special skills are required. For example, some LCSD workers have been trained as drivers and operators of mechanical equipment. In some cases, former LCSD workers have found employment with regional or national authorities as supervisors of LCSD work crews.

LCSD workers in 1969 received 285 millimes ($.54) on national projects or 230 millimes ($.44) on regional projects, plus 2.5 kgs. semolina, valued at 167 millimes ($.32), to bring the total daily wage to 452 millimes ($.86) or 397 millimes ($.76) respectively. Taking 200 days worked per annum as an average, the total income in cash and kind is $172 or $152 for national or regional projects, plus any additional amounts derived from seasonal agricultural employment. In comparison, the minimum wage for agricultural workers is 500 millimes ($.96) per day, while non-agricultural laborers receive about $1.45 for the normal 9-hour day. In addition, both agricultural and other laborers receive furhter non-wage benefits not accorded to LCSD employees.

Unemployed laborers much prefer regular employment outside the LCSD program due to the higher wages, additional social benefits and receipt of the entire wage in cash. LCSD employment is accepted as a last resort when the need is great and no other employment is available.

2. Nutrition

According to a report prepared in August 1968 by the Tunisian Government's "Sectoral Committee on Nutrition and Food Planning", Tunisia's average daily per capita consumption of cereals (almost exclusively wheat) is approximately 400 grams. Assuming an average of four dependents per worker (which is considered low), the average worker would thus require approximately 60 kgs.

of wheat per month. If he works 20 days per month under the LCSD program, he will receive in kind 50 kgs. semolina per month, or not quite 85% of his monthly cereals consumption during the period he is actually employed.

The Sectoral Committee's report clearly demonstrated that Tunisia has serious nutritional problems. In comparison with the GOT's modest nutritional objectives, more than one-half of the population receive insufficient calories and a much larger porportion of the population, especially in the rural areas, receive inadequate amounts of protein, minerals and vitamins.(1) Most of the population is dependent on cereal grans for their major nourishment, these being the cehapest source of calories of any food currently available for the normal diet, as well as being traditionally the most acceptable. The provision of semolina effectively combats the calorice shortage and is acceptable to the workers but does not help overcome other deficiencies. Efforts to interest the GOT in accepting other foodstuffs for partial "in kind" payment to LCSD workers have been unsuccessful due primarily to problems of distribution of other commodities and the non-acceptance by Tunisians of certain other foods.(2) In any event, with calories covered by the semolina wage, a portion of the cash wage is presumably available for the procurement of essential "quality" foods.

3. Physical Accomplishments

Tables A-5 and A-6 provide an indication of the extent and distribution of activites carried out or projected under the national and regional programs for the period 1966-1969.

The national program, which has accounted for approximately 60% of the total LCSD program (not including the Civil Service and Special Hospital Programs), was largely devoted to forestry activities, to which approximately

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(1) For instance, only 46% of Tunisia's population (40% of the rural and 63% of the urban inhabitants) receive at least 2,500 calories per day (the modest nutritional objective set by the Committee is 2,600 calories), while only 30% (20% of the rural and 58% of the urban population) receive the 70 grams of protein considered to be the minimum requirement. Deficiencies of calcium and vitamins B2, A and C also are serious.

(2) It appears that the World Food Program is encountering problems along this line due to the non-acceptance of cheese, which is being provided under WFP projects. There have been reports of the cheese finding its way into the open market.

6.5 to 7 million mandays were being devoted annually. Some 200,000-250,000 hectares were treated per annum, and even the casual observer of the Tunisian countryside is struck by the large number of young trees and forestry maintenance personnel visible in various parts of the country.

The general concensus of the Mission's U.S. Soil Conservation Service PASA team is that the quantitative accomplishments of the national program, as reflected in the above tables, reflect a satisfactory work output per man, In addition, members of the PASA SCS team were impresssed on a number of site visits by the quality and soundness of the conservation measures observed and carried out.*

The regional projects for 1969 include a substantial increase (over 1968) of activities in urban areas due to the GOT's decision to authorize a 50% increase over 1968 in the number of mandays under the "municipal projects" category. Not only urban construction and rehabilitation, but also considerable portions of the road maintenance and construction, stone extraction and the construction of wells, cisterns and water points will be carried out in, or on behalf of, urban areas.

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*Grissa (Agricultural Policies and Employment Case Study of Tunisia) has a much more negative opinion of the effectiveness of the food for work program, citing widespread inefficiencies in manpower usage, "slowdowns" on the part of the workers to compensate for the less-than-average agricultural wage, projects undertaken on the basis of favoritism rather than public good, and projects poorly chosen and conducted and then not followed up to assure the gain that could have been achieved (e.g., reforestration and planting of olive trees--not planted deep enough, not watered or otherwise maintained to keep new growth alive--only a 10 percent survival rate).

Table A-5

(National Program LCSD)

Work Distribution and Physical Accomplishments

Soil and Water Conservation (CES)	1966(1) Mandays	1966(1) ha.	1967(2) Mandays	1967(2) ha.	1968(3) Mandays	1968(3) ha.
Drainage	560,465	15,698	5,234		393,456	4,208
Terracing	2,047,732	28,474	14,197		872,443	7,598
Pasture Land Dev.	1,791,204	56,938	123,620		1,033,393	33,025
Land Levelling	8,940	3,139	7,940		---	---
Semi-Agr. Work	35,270	10,073	5,620		---	---
Small Water Distr. Channels	---	---	---		---	---
Flood Control	---	---	---		---	---
Subtotal	4,443,611	114,322	5,743,738(3)	156,611	2,299,292	44,831
Forests						
Impr. Treeless Areas		13,236		25,320		64,100
Reforestation		9,859		13,369		15,489
Protection of Oases		1,750		1,470		490
Alfa Sheet Impr.		115,200		61,944		113,656
Impr. Exist. Forests		43,594		5,879		5,155
Maintenance of Forests		22,484		103,412		72,135
Wildlife Protection		43,366		13,526		---
Protect. Sloping Basins		---		524		285
Reforet. Tourist Areas		---		206		1,308
Nurseries		---		74		2,881
Fix. of Sand Dunes		1,985		---		---
Reforest. Priv. Land		710		---		---
Forest Pasture Lands		---		---		---
Planting Fodder Trees		---		---		---
Subtotal	6,611,898(3)	252,184	7,177,255(3)	225,724	6,334,975(3)	275,499
GRAND TOTAL	11,055,509	366,506	12,920,993	382,335	8,634,267	320,330

(1) Actual
(2) Projected
(3) Figure provided by GOT; no breakdown available.

Table A-6

Regional Program (LCSD)

Work Distribution

Program	1966(1) No. of Mandays	%	1967(1) No. of Mandays	%	1968(2) No. of Mandays	%
Roads Main. and Const.	976,704	18	1,186,565	16	818,790	16
Irrigation	218,329	4	---	--	107,000	2
Reforestation	165,748	3	787,923	10	879,840	18
Drinking Water Supplies	384,761	7	367,801	5	348,390	7
Wells; Cisterns; Water Points	716,565	13	842,399	11	601,061	12
Stone Extraction	---	--	414,470	6	459,393	9
Soil and Water Conservation	228,705	4	669,886	9	966,100	19
Low Cost Housing	100,676	2	1,341,159	18	354,817	8
Production Units (Coop.)	674,609	13	371,110	5	221,407	4
Maintenance of Rivers	369,746	7	161,014	2	---	--
Urban Construction	1,059,964	20	1,218,158	16	---	--
Urban Rehabilitation	498,582	9	177,613	2	271,400	5
Archeological Excavation	---	--	---	--	---	--
TOTAL	5,394,388	100%	7,538,098	100%	5,028,198	100%

(1) Actual
(2) Projected