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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
INTERNATIONAL DEVELOPMENT ASSOCIATION

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THE DEVELOPMENT PROSPECTS

OF

TURKEY

(in nine volumes)

VOLUME III

ANNEX I - AGRICULTURAL POLICIES AND PROBLEMS

March 10, 1971

Europe, Middle East and  
North Africa Department

CURRENCY EQUIVALENTS

After August 9, 1970.

|              |   |             |
|--------------|---|-------------|
| US \$1.00    | = | TL 15.0     |
| TL 1         | = | US \$0.067  |
| TL 1 million | = | US \$66,667 |

Prior to August 9, 1970

|              |   |             |
|--------------|---|-------------|
| US \$1.00    | = | TL 9.00     |
| TL 1         | = | US \$0.11   |
| TL 1 million | = | US \$11,111 |

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BASIC DATA

Area

780,600 sq.km.

Population (1970)

35.7 million

Rate of growth 1965-69

2.8 percent per annum

Density

45 per square kilometer

Gross National Product (1969, current market prices)  
(1970, provisional " )

TL 126.1 billion

TL 133 billion

Annual rate of growth (constant prices)

1963-67: 6.9%; 1969: 6.6%; 1970: 5%

GNP at factor cost (1969)

TL 111.1 billion

GNP per capita at factor cost (1969)

TL 3,200 (\$356) <sup>1/</sup>

Annual rate of growth per capita (constant prices)

1963-67: 4.0%; 1969: 3.7%;

Industrial Origin of NDP (% of NDP at constant prices)

1962    1969

Agriculture, forestry

39.7    30.9

Industry, mining, electricity

16.2    19.5

Construction

6.3    7.4

Transport, communication

7.2    7.8

Trade

8.1    8.7

Housing

4.8    5.3

Government services

9.7    10.6

Financial institutions and other services

8.1    9.8

Expenditure on GNP (% of GNP at constant prices)

Private consumption

74.1    71.5

Public consumption

15.4    11.9

Gross fixed investment

14.8    19.1

Net imports of goods and services

3.6    3.1

Net factor income from abroad

-0.6    -0.5

Gross national saving

10.5    16.6

Government tax revenue

15.6    17.1

Public Finance (Billion TL)

| <u>1969</u> | <u>1970</u> | <u>Annual Growth Rate (%)</u> |                |
|-------------|-------------|-------------------------------|----------------|
|             |             | <u>2/1963-67</u>              | <u>1968-69</u> |
| 21.6        | 27.1        | 16.3                          | 13.4           |
| 12.4        | 15.0)       | 16.6                          | 13.3           |
| 6.6         | 7.9)        | 16.6                          | 24.0           |
| 2.6         | 4.2         | 5.1                           | -3.8           |
| 6.9         | 7.0         | 10.7                          | 17.5           |

Current receipts

Current expenditures

Current and capital transfer

Surplus, net of transfer

Investment expenditures

Money and Credit Prices (Billion TL)

Sept. 70

Total money supply, including sight saving deposits

30.1    30.4    15.6    15.1

Time and saving deposits

22.3    22.2    20.5    20.0

Total Central Bank credits and advances

12.9    14.6    37.0    21.0

Total commercial bank credits

33.2    37.8    17.7    19.2

Commercial bank credits to private sector

30.2    30.0    18.3    21.0

Rate of change of wholesale price index

5.9    6.5    5.7    5.2

Rate of change of consumer price index (Istanbul)

5.0    9.2    7.7    5.5

<sup>1/</sup> At the exchange rate current in 1969, TL 9 = US \$1.00

<sup>2/</sup> Budget

| <u>Balance of Payments (Million US \$)</u>                 | <u>1962</u>      | <u>1967</u>      | <u>1968</u>      | <u>1969</u>      | <u>1970</u> |
|--|------------------|------------------|------------------|------------------|-------------|
| Imports of goods   | 622              | 685              | 764              | 801              | 935         |
| Exports of goods   | 381              | 523              | 496              | 537              | 585         |
| Net invisibles (including NATO receipts)                   | - 1              | 48               | 37               | 43               | 113         |
| Current account deficit                                    | -242             | -114             | -231             | -221             | -237        |
| <br>   |                  |                  |                  |                  |             |
| <u>Commodity Concentration of Exports (%)</u>              |                  | <u>1962</u>      | <u>1969</u>      |                  |             |
| Cotton   |                  | 17               | 21               |                  |             |
| Tobacco  |                  | 25               | 15               |                  |             |
| Hazelnuts  |                  | 17               | 20               |                  |             |
| Fruits, vegetables   |                  | 7                | 10               |                  |             |
| <br>   |                  |                  |                  |                  |             |
| <u>External Public Debt (Million US \$)</u>                |                  | <u>Dec.31/68</u> | <u>Dec.31/69</u> |                  |             |
| Total outstanding debt                                     |                  | 1984.2           | 2215.3           |                  |             |
| Debt service   |                  | 103.1            | 137.1            |                  |             |
| Debt service ratio (% of exports of goods)                 |                  | 21               | 25               |                  |             |
| (% of exports of goods and services, gross)                |                  | 17               | 20               |                  |             |
| (% of exports of goods, services and workers' remittances) |                  | 14               | 17               |                  |             |
| <br>   |                  |                  |                  |                  |             |
| <u>IBRD/IDA Operation (Million US \$)</u>                  |                  | <u>1968</u>      | <u>1969</u>      | <u>1970</u>      |             |
| Total loans - IBRD (including internal sales)              |                  | 98.4             | 146.9            | 186.9            |             |
| - IDA  |                  | 80.3             | 92.3             | 92.3             |             |
| Repayments - IBRD  |                  | 39.6             | 41.9             | 45.1             |             |
| Total loans outstanding - IBRD                             |                  | 55.8             | 104.3            | 138.9            |             |
| - IDA  |                  | 80.5             | 92.5             | 92.3             |             |
| <br>   |                  |                  |                  |                  |             |
| <u>Foreign Exchange Reserves (Million US \$)</u>           | <u>Dec.31/68</u> | <u>Dec.31/69</u> | <u>June 1970</u> | <u>Dec.31/70</u> |             |
| Gold and convertible foreign exchange, gross               | 123              | 245 1/2          | 218              | .                |             |
| Gold and convertible foreign exchange, net                 | 40               | 200 1/2          | 144              | 410              |             |
| Inconvertible currencies                                   | 92               | 125 1/2          | .                | .                |             |
| <br>   |                  |                  |                  |                  |             |
| <u>IMF Position (Million US \$)</u>                        | <u>1968</u>      | <u>1969</u>      | <u>Nov. 1970</u> | <u>Dec. 1970</u> |             |
| Quota  | 108              | 108              | 108              | 108              |             |
| Fund holdings of Turkish lira                              |                  |                  | 193              |                  |             |
|  |                  |                  | (179% of quota)  |                  |             |
| Drawings outstanding                                       | 76               | 64               | 112              |                  |             |
| Allocation of SDR  | -                | -                | 18               |                  |             |

1/ Reserves are not comparable. The increase primarily reflects a one-time shortening of the "lead" in import payments.

SUMMARY AND CONCLUSIONS

i. Agriculture continues to be a crucial sector in the economy of Turkey. It contributes about 30% of the national product and provides some 70% of total employment, supplies much of the raw material for industry, and accounts for the bulk of the country's foreign exchange earnings.

ii. In recent years, the agricultural sector has lagged behind the rest of the economy and generally fallen short of targets. Agricultural value added expanded at 3.4% annually over 1963-67, but dropped to 1.9% in 1968 and close to 1% in 1969, the first two years of the Second Plan. The target is 4.2% annually over 1968-72. With reasonably favorable weather and concentration on high priority programs, output in 1971 and 1972 could expand enough to achieve an average growth of 3.0 to 3.4% for the Plan period. In the subsequent plan (1973-77), Turkey should be able to step up agricultural growth significantly, with a 4.5-5.0% increase annually.

iii. Organization and policy mechanisms are a key issue. Fragmentation of responsibility, weak coordination, duplication of effort and even competition among agencies are characteristic. The lack of unified technical control in the field has meant further dissipation and misuse of resources. Furthermore, major weight has been given political and social considerations, frequently at the expense of economic objectives. At the policy planning level, some kind of machinery is needed to consider development strategy and priorities. Second, the Ministry of Agriculture should have greater control over agricultural development activities, but the Ministry itself would have to be reorganized and strengthened materially. Services would be more effective if organized on a regional basis, with all extension activities under the Ministry. Third, in irrigation, consideration should be given to making DSI (General-Directorate of State Hydraulic Works) responsible for the full development of irrigation projects. As a minimum, the government should make suitable arrangements for better coordinating the work of DSI and Topraksu (General Directorate of Conservation and Farm Irrigation) and for allocating sufficient resources to on-farm development and other irrigation follow-up work. Similar principles would need to be applied to the Ministry of Forests.

iv. The following activities are considered of high priority:

- (a) completing and fully utilizing existing irrigation projects;
- (b) increasing wheat production, particularly on the Anatolian Plateau;
- (c) producing fruits and vegetables for export;
- (d) developing livestock, including dairying, fattening, feedstuffs, and marketing;

- (e) reducing output of surplus commodities, through pricing policies and development of alternative pursuits;
- (f) greater utilization of forest resources; and
- (g) expanding credit facilities, inputs and other supporting services.

v. Irrigation is a vital investment because much of Turkey has a low and variable rainfall, and even in many coastal areas distribution is unreliable. Government irrigation schemes have expanded rapidly in area over the past several years, but probably no more than one-half of the area is actually irrigated. In light of this past experience, the announced policy of utilizing existing investments more fully is encouraging, because policy and organizational factors have favored construction of major works at the expense of distributaries, on-farm development, and research and extension. With a realignment, it should be possible to bring some 60 to 80,000 hectares a year under full irrigation. Thus the entire remaining 800,000 or so hectares for which major works either have been or are being constructed could be covered in perhaps 10 to 13 years. Excluding overhead and other indirect costs, minimum investments of approximately TL 300 to TL 500 million probably would be required annually over the period.

vi. Turkey's goal for wheat production is to achieve self-sufficiency within the next few years. Output fell short of Plan targets for 1968, 1969 and 1970 due mainly to adverse weather. While self-sufficiency is a realizable goal, the longer term objective should be to allocate scarce resources according to economic efficiency criteria. The recent introduction of Mexican wheat varieties into some coastal regions has proved promising. The Ministry of Agriculture has prepared a Wheat Development Project which aims to bring 38% of the total wheat area under high-yielding varieties between 1968 and 1972. Increased output should center on raising productivity on the Anatolian Plateau and releasing coastal and irrigated lands for producing higher valued crops. A substantial increase in wheat productivity would not only prevent further encroachment on pasture lands; it would also reduce the area devoted to wheat cultivation, freeing land for the production of feed grains and forage for livestock. The opportunity for raising wheat and fodder in combination should not be overlooked.

vii. Future development should take full advantage of opportunities to raise higher valued crops which are labor and land intensive. Fruit and vegetable production for both domestic consumption and export has grown rapidly in recent years, and there is considerable potential for further expansion. Turkey has the advantages of favorable climate and easy access to export markets. The main impediments to further rapid expansion are lack of adequate supplies of seed and stock, medium and long-term credit, and handling and internal marketing facilities. A fruit and vegetable export project was under appraisal by the Bank at this writing. It would assist in raising fruit and vegetable exports from US\$19 million in 1969 to US\$80 million by 1975. Also needed are marketing, storage and processing

for domestic consumption to meet rising demand and absorb output not exported. A study of the organizational, policy and investment requirements for an increase in domestic and export production should be undertaken as soon as possible.

viii. Livestock production has failed to keep pace with fast growing demand. The main obstacles relate to animal husbandry, supply of feedstuffs, and marketing facilities. The Government has prepared a six-year program (1969-74) for overall livestock development. An Intensive Dairy Production Project (TL 63 million) was appraised for IDA assistance in autumn 1969, and other livestock projects (totalling TL 774 million) were under Bank consideration in late 1970. A project for drying beet pulp for animal feed is being implemented by the Sugar Corporation. Expansion of Turkey's livestock industry will depend largely on the success of the wheat production program. Increased output on presently cultivated areas should reduce further encroachment on pasture lands and release land for production of animal feedstuffs. Improvement in animal husbandry and marketing of both feedstuffs and livestock products also will be important.

ix. Tobacco, sugar and tea are surplus commodities with stockpiles that are well in excess of requirements, despite measures to restrict output and reduce existing supplies. What is required is a revision of present price support policies and increased investigation of alternatives. An estimated 850-900,000 families are engaged in tobacco, sugarbeet and tea cultivation. Thus, any program to reduce production must be accompanied by measures to assist affected farmers in making the transition to alternative crops, particularly fruits, vegetables and fodder, or other means of livelihood.

x. Forests in Turkey are extensive and are a major, though largely untapped, resource. Logging and extraction policies are inefficient; infrastructure is inadequate; wood is provided forest villagers at highly subsidized prices; the nature and accessibility of the various forest reserves are not fully considered; and forest industries have no control over raw material sources. Local prices of wood and wood products are almost double world prices. Measures should include: (a) acceleration of the forest inventory, (b) major infrastructure investments in access roads to the forests and in forest roads, (c) reorganization to take advantage of the economics of both vertical and horizontal integration, (d) concentrated cuttings and new felling and transport systems, (e) additional reforestation, (f) major concessions under suitable safeguards and, (g) more reliable material guarantees for wood-using industries. For the immediate future, the possibilities which exist for exporting sawnwood should be exploited. On the organization side, the government should consider reorganizing the two presently sprawling and overlapping bureaucracies, the Ministry of Forests and the State Pulp and Paper Organizations (SEKA). The first objective should be a national approach to forestry development with the Ministry of Forests possibly having policy control over pulp and paper as well as other aspects.

xi. Fertilizer consumption in Turkey has grown rapidly in recent years, and demand is expected to continue to rise. Improvement of distribu-

tion channels will be needed to handle the increased volumes. Seed production and distribution generally have progressed satisfactorily. However, importation of vegetable seeds and fruit stock not available in Turkey has been subject to excessive red tape by the Ministry of Agriculture; steps to correct this problem reportedly have been taken.

xii. The use of tractors, seed drills, and other agricultural implements has grown markedly. Tractor use generally is not intensive due to lack of experience in operation, problems of maintenance (especially shortages of spare parts), and the frequent absence of accompanying implements. Although data are limited, it appears that very little labor has been displaced by mechanization so far. There is scope for increased local manufacture of farm machinery.

xiii. Most of the institutional credit available to the sector is provided by the Agricultural Bank, the country's second largest financial institution. The bank has expanded its lending substantially. Because its policy is to give priority to reaching as many small farmers as possible, it makes a large number of relatively small, short-term loans; agricultural credit cooperatives, using Agricultural Bank resources, also make large numbers of small, short-term loans to their members. Most of these loans are too small in themselves to make more than a limited impact on development, and are used mostly for subsistence and current expenditures. At the same time, the amount of credit available to development-oriented medium- and long-term investments generally has been inadequate. The needs of a growing Turkish agriculture for development credit over the next several years will be enormous. The Government should initiate an early study of future agricultural credit requirements, appropriate policies and institutional arrangements, and organizational and staffing requirements.

xiv. Extension and research activities in Turkey, in general, are ineffective in meeting immediate needs of farmers. These functions might be better organized on a regional, rather than a provincial, basis and strengthened substantially.

xv. While the activities discussed above should be given highest priority, there are others which are important and cannot be neglected. Cotton, hazelnuts and pistachio nuts, for example, will continue to be important foreign exchange earners. Efforts to improve their yields and quality should be intensified. The production of oilseeds will have to expand to keep pace with the growing demand for vegetable oils. Besides the completion and more intensive utilization of existing projects, some new major irrigation works, mainly those associated with electric power generation, will have to be undertaken. The wider use of groundwater projects, however, should be properly planned and executed to ensure that they are economic and that water is provided at the lowest possible cost and small-scale irrigation, especially on the Anatolian Plateau, should be thoroughly investigated. Marine fishing offers scope for expansion. Wide-scale organization of farmers into cooperatives will be essential to the success of many of the programs. Land consolidation in irrigated areas should be in-

tensified. Immediate measures also should be taken to speed up the cadastral survey and registration of titles to land, to provide a clearer picture of the present land-holding situation.

I. SOME CHARACTERISTICS AND RECENT DEVELOPMENTS

1. Recent Bank reports 1/ have described in detail Turkish agriculture, agricultural policies and problems and have offered recommendations for improvement. The present report will focus mainly on developments in agriculture occurring since the earlier reports and elaborate on the major problems and possible measures for their solution.

Continued Importance of Agriculture

2. Agriculture continues to be a crucial sector in the economy of Turkey. Although production of the agricultural sector (farming, forestry and fishing) as such contributes only about 30% of the net domestic product, it provides some 70% of total employment, supplies much of the raw materials for industry, and accounts for the bulk of the country's foreign exchange earnings. In 1969, for example, agricultural exports, mainly cotton, tobacco, fruits and nuts, were approximately US\$405 million 2/, 75% of Turkey's total export earnings (see Appendix 5). The agricultural sector also is an important market for domestic manufactures, particularly fertilizers, pesticides and agricultural machinery as well as consumer goods. The basic role of agriculture as the major employment sector, supplier of raw materials for industry, and source of foreign exchange earnings is not likely to change any time soon.

Other Characteristics

3. Of Turkey's some 78 million ha, around 24 million (31%) is given to field crops, plus another 2.4 million ha to horticulture. Pastures occupy about 26 million ha, of which at least 20 million are badly overgrazed. According to recent estimates, approximately 18 million ha, 22-23% of the total, are in forests. Considerable amounts of marginal lands are cultivated, and about one-third of the area cropped is left fallow each year. On the central Anatolian Plateau, most of the area is sown one-half in cereals and one-half left fallow. Erosion has become a serious threat to many areas due to improper land management, particularly over-grazing and the ploughing of slopes.

4. The cultivation of cereals, mainly wheat, accounts for about 70% of the total area cropped and for more than one-quarter of the total value added in agricultural production. The production of fruits and vegetables, which has expanded significantly in recent years, accounts for another 20% of total value added. Industrial crops (cotton, tobacco, sugarbeet and potatoes) and oil seeds rank next in both volume and value of output. The contribution of the livestock subsector to agricultural value added amounts

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1/ "The Development of Agriculture in Turkey", December 31, 1969, and "The Agricultural Economy of Turkey: Problems and Policies", January 12, 1970.

2/ At exchange rate of US\$1.00 = TL 9.00.

to about one-fifth of the total while the contributions of forestry and fishing, despite the existence of significant resources in both cases, are relatively minor.

5. Turkish agriculture is further characterized by significant regional differences 1/: the coastal regions (Mediterranean, Aegean, Thrace and Marmara, and Black Sea) are the most productive agriculturally; the central Anatolian Plateau, covering about one-third of the country, mainly produces cereals in traditional farming under dry-land conditions; the more isolated eastern highlands, where livestock is the most important economic activity. Although most coastal areas receive adequate rainfall, distribution frequently is unreliable 2/. On the Anatolian Plateau, rainfall is both low and unreliable. Irrigation is essential to further development in much of the country, and the potential for irrigation development generally is large.

#### Slowdown in Growth

6. Turkish agricultural growth in the 1950's averaged about 5% per annum, due mainly to the rapid expansion of cultivated area, especially in wheat. In recent years, however, the sector has lagged behind the rest of the economy and generally fallen short of the targets of the First (1963-67) and Second (1968-72) Development Plans. In the First Plan period, agricultural value added expanded at an average 3.4% per year, compared with a target of 4.2%. During the first two years of the Second Plan period, net output increased only 1.9% in 1968 and 1.1% in 1969. Since 1962, annual growth of net output averaged 2.9% for agriculture, compared with 6.6% for the economy as a whole. Table 1 indicates that 1966 was an exceptional year, with an increase of over 11%.

Table 1

#### GROWTH IN AGRICULTURAL PRODUCTION

(1965 Prices)

|                              | 1962 | 1965 | 1966 | 1967 | 1968 | 1969* |
|------------------------------|------|------|------|------|------|-------|
| Net value added (TL billion) | 22.5 | 23.4 | 26.0 | 26.6 | 27.1 | 27.4  |
| % of total NDP               | 40   | 35   | 36   | 35   | 33   | 31    |
| Annual % increase            | --   | --   | 11.1 | 2.3  | 1.9  | 1.1   |

\*Provisional

Source: State Institute of Statistics with adjustments by IBRD

1/ See Map No. 2.

2/ See Map No. 1.

7. This slow down in growth since the 1950's reflected the fact that the limit of cultivable land had been reached and the possibilities for expanding traditional agriculture at its existing level of technology pretty much exhausted. In addition, the marketing of many of the traditional products had become more difficult. Subsequent growth has had to rely largely on improving technology such as the use of improved varieties and fertilizers, and the extension of irrigation. However, weather has remained a key factor.

#### Dependence Upon Weather

8. One of the objectives of Turkish development has been to lessen dependence upon weather through the wider use of modern farming methods. Weather conditions, however, still are a major determinant of agricultural production and were largely responsible for the low output in 1968 and 1969. The dominance of cereals in Turkish agriculture (more than one-quarter of total value added), of which 75-80% are grown in traditional dryland farming on the Anatolian Plateau, accounts for much of the vulnerability to weather <sup>1/</sup>. High-yielding Mexican varieties of wheat have been introduced successfully in the higher-rainfall coastal areas. On the plateau, however, improved varieties, moisture conservation practices and wider use of fertilizers are only just beginning to be introduced (actually, in the absence of adequate research on fertilizer usage on different soil types, there is a need for farmers in some areas to exercise caution in the use of fertilizer and improved varieties). Thus, in spite of increased planting and greater use of high-yielding Mexican varieties, wheat production in 1968 and 1969 fell short of domestic requirements. This was partly due to shortfalls in local fertilizer production, and transport and available funds for supplying fertilizers, and a negative attitude on the part of the farmers. Low rainfall in the latter part of 1969 and the spring of 1970 resulted in further serious shortfalls in the 1970 wheat crop. Approximately 420,000 tons were imported in 1969 and 690,000 tons in 1970. Another 650,000 tons are scheduled for importation in 1971.

#### Surplus Production Due To Price Support

9. Besides weather, agricultural growth has been increasingly disturbed by problems of marketing and government price support policies. Producer-oriented, with little or no relation to prevailing conditions of demand and supply, these policies have caused stocks of sugar, tobacco and tea to rise to excessive levels (see Table 2). Tobacco stocks in 1969-70 increased to approximately 299,000 metric tons, compared with 245,000 tons

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<sup>1/</sup> A study of the effects of rainfall on grain yields gave a coefficient of variation of about 12% over 1950-65. This implies that grain yields could be expected to fluctuate more than 12% around the average yield one in three years. Given the importance of grains in total national output, a drop of 12% would mean a fall of 1% or more in the gross domestic product.

in 1967-68 and 291,000 in 1968-69. The State Monopolies 1/ estimated that it would enter the 1970-71 export season with tobacco stocks equal to almost three years of potential exports. Stocks of sugar in 1969, although less than the previous year, still represented about one year's domestic consumption. Large stocks of tea expanded still further as production continued to rise. The low quality of much of the tea and tobacco produced has been a major concern.

10. The value of stocks of tobacco, tea and sugar in 1969 totaled approximately TL 7.3 billion, equal to more than 20% of the total value added by agriculture in that year. Of this total, public sector stocks accounted for about TL 6.5 billion. The burden in terms of financing and storage imposed by such large supplies has been heavy. (Almost one-half of the total assets of the State Monopolies in February 1969 were in stocks, mainly tobacco and tea). Moreover, since they are financed largely by advances from the Central Bank and the Agricultural Bank, they have, in effect, meant the diversion of sizable amounts of funds from more economically beneficial investments elsewhere.

11. The government recently has attempted to limit production on the one hand and to step up exports on the other. Measures to promote exports include tax rebates to exporters, bilateral trade agreements (with the USSR in particular), and sales at reduced prices and on extended credit terms 2/. However, exports of sugar, tea and, in some cases, tobacco have been at prices substantially below equivalent prices paid to producers and have resulted in losses to the Government.

12. On the supply side, tobacco area and production declined about 25% between 1967 and 1969, but the reduction was rather small when compared with the magnitude of the problem. A new tobacco law, which comes into operation in 1970, hopefully will enable the Monopolies to better restrict output and improve quality. The Sugar Corporation (which produces all Turkish sugar) is able to control production through its system of contracts with growers and has managed to reduce the area and output of sugarbeet by about one-third over the past three years. Tea cultivation, under the State Monopolies, has remained largely free of restrictive measures. Production of dry tea climbed from approximately 10,000 metric tons in 1963 to 28,000 in 1968 and 37,000 tons in 1969.

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1/ The General Directorate of the Turkish State Monopolies (TEKEL), under the Ministry of Customs and Monopolies, controls all trade in tobacco for domestic use and the manufacture and sale of tobacco products. The export trade is left largely to private merchants, although TEKEL also makes some exports. TEKEL also administers the tea monopoly, purchasing leaves from growers, processing tea and selling it domestically and abroad.

2/ The State Monopolies earlier this year sold 10,000 metric tons of tobacco, largely from 1965-1967 crops with a small amount from the 1968 crop, below normal export prices and on extended credit terms.

Table 2  
PRODUCTION AND STOCKS OF TOBACCO, TEA AND SUGAR  
( '000 metric tons)

|                        | (1)        | (2)                     | (3)     | (4)                  | (5)                         |
|------------------------|------------|-------------------------|---------|----------------------|-----------------------------|
|                        | Production | Domestic<br>Consumption | Exports | Stocks <sup>a/</sup> | Stocks as<br>% of (2) + (3) |
| <u>Tobacco</u>         |            |                         |         |                      |                             |
| 1967-68                | 189        | 39                      | 83      | 245 <u>b/</u>        | 200                         |
| 1968-69                | 160        | 41                      | 89      | 291 <u>c/</u>        | 223                         |
| 1969-70                | 142        | 42                      | 95      | 299 <u>d/</u>        | 218                         |
| <u>Tea</u>             |            |                         |         |                      |                             |
| 1967                   | 21         | 15                      | 9       | 17                   | 70                          |
| 1968                   | 28         | 16                      | 7       | 20                   | 86                          |
| 1969                   | 37         | 18                      | 8       | 32                   | 123                         |
| <u>Sugar (refined)</u> |            |                         |         |                      |                             |
| 1967                   | 728        | 506                     | 76      | 736                  | 126                         |
| 1968                   | 649        | 540                     | 26      | 819                  | 144                         |
| 1969                   | 501        | 584                     | 146     | 589                  | 80                          |

a/ Tobacco as of August 31; tea, February 28; and sugar, December 31.

b/ Of which 74,500 tons were private.

c/ Of which 73,500 tons were private.

d/ Including 60,700 tons private.

Sources: State Monopolies and Sugar Corporation.

### Rising Output of Cotton, Oilseeds, Fruits and Vegetables

13. Cotton area and output over recent years have continued to expand, although weakness in export markets, combined with steadily rising production costs and the relatively attractive alternative of high-yielding Mexican wheat, caused a decrease in 1969. Next to cereals and fruits, cotton is Turkey's largest crop, and is the country's single biggest export item. A steady climb in oilseed and olive output (the number of olive trees increased by about 1.6 million over the past decade) has enabled Turkey to move from net importer to net exporter of vegetable oils. High support prices and a tax rebate for olive oil exports were important factors in expanding output.

14. Important gains also have been made in the production and export of Turkish nuts, fruits and vegetables. The production of potatoes has grown appreciably for home consumption. Turkey is the world's largest producer and exporter of hazelnuts and the second largest of raisins, and these two crops traditionally have been among the country's top exports. Output of fresh fruits and vegetables, which presently supports a large domestic consumption, has been expanding rapidly, and exports have risen sharply, from US\$2.4 million in 1962 to US\$9 million in 1968 and US\$19 million in 1969. The largest increases have been in grapes and citrus. An estimated 35,000 ha are currently in citrus and this area is expanding by about 6% annually. The production of both early and late varieties of vegetables is growing substantially with the use of greenhouses and tunnels (both increasingly of plastic). Much of the stimulus has come from government incentives: tax rebates, special credit facilities, and the establishment of four companies for producing and exporting fruits and vegetables.

### Slow Expansion of Livestock Industry

15. The livestock sector, which provides about 20% of the total value added in agriculture each year, is one of the most important agricultural activities in Turkey, particularly in the country's eastern areas. Production, however, has failed to keep pace with a fast-growing demand. Against a projected annual increase of 4.6% in consumption during 1967-72, output in 1968 and 1969 expanded only 3.1% and 3.5% respectively. As a result of shortfalls in supply over the past several years, prices have risen substantially. In 1969 wholesale prices of livestock products were 42% above 1963 levels, compared with 37% for wholesale prices in general. Exports of livestock and livestock products in the same period declined from US\$30 million to US\$24 million.

16. The main obstacles to achieving a highly productive livestock industry are the lack of modern animal management and proper feeding practices, and the absence of adequate marketing facilities. The eastern highlands, the least developed part of Turkey, have the highest concentration of cattle and are considered the principal cattle breeding area. Animals generally are grazed on communal pastures, crop residuals and

stubble, and fallow land. Few farmers grow forage crops and fewer preserve these as hay or silage.

17. Pastures on the whole are over-stocked and over-grazed. While the number of animals 1/ increased over the past 20 years at an average rate of about 2%, the area of pasture land and meadows declined from 37,800 ha in 1950 to approximately 26,000 ha in 1968. (Much of the grazing land in the 1950's was brought under cereal cultivation.) Moreover, under the pressures of increased numbers, the quality of existing grazing lands has deteriorated badly.

18. Given these conditions, most animals are on a semistarvation level of feeding for more than one-half of the year. The typical livestock diet, composed largely of roughages, is excessively bulky and deficient both in total calories and proteins and necessary vitamins and minerals. The diet is especially poor for young and growing animals and is a major factor in the high mortality rates.

19. Except for the larger cities, livestock products are marketed in a long established traditional pattern. Milk is sold to village manufacturers for production of yoghurt and cheese. Live animals are marketed in local sale-yards, primarily to agents and middlemen who ship them to the main fattening and consuming areas on the Anatolian Plateau and in Western Turkey.

20. The relative prices of animals, livestock products and feedstuffs in the past have tended to inhibit production of feedstuffs, particularly in view of the attractive prices and, in most cases, more assured markets for wheat, cotton, and fruits and vegetables. Rises in prices, however, have begun to favor the expansion of livestock as well as feedstuffs production. A key element is the necessity to increase wheat production on the Anatolian Plateau as quickly as possible. With a relatively assured high level of supply, the price of wheat relative to fodder crops should decline and encourage land to be taken out of wheat and used to grow fodder crops. These could be attractive rotation crops.

21. The Government has embarked upon a general livestock development program which includes fattening, dairy production, breed improvement, and the establishment of modern livestock markets and slaughterhouses in the main producing areas of the country. It is estimated that in 1967-68 about 520,000 sheep and 270,000 cattle were fattened throughout the country. The development of fattening operations is being aided by credit from the Agricultural Bank, including USAID funds, and the Sugar Corporation's Sugar Bank. In 1968-69 TL 65 million was made available from these sources to 2,800 fatteners for feeding some 97,000 cattle and 142,000 sheep (approximately 22% of cattle and a negligible percentage of sheep suitable for fattening). So far, however, government research and extension have made

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1/ Estimated in 1967 at about 76 million animals of which 36 million were sheep, 21 million goats and 14 million cattle.

a relatively minor impact upon traditional practices and have done little to promote the wider cultivation of fodder crops. Technically and economically feasible crop rotations have not been worked out nor suitable fodder crop varieties and cultivation practices sufficiently tested.

#### Underutilization of Irrigation Investments

22. Much of Turkey has a low and variable rainfall. On the Anatolian Plateau many areas receive only 300 to 400 mm of precipitation each year. Even in many coastal areas where rainfall is higher (averaging about 700 mm annually), distribution frequently is unreliable. Irrigation is essential for reducing the uncertainties of rainfall, increasing yields and cropping intensities, and growing high-value crops for which climatic conditions are favorable but which need assured supplies of water. The contribution which irrigation development can make to the economy in monetary terms is difficult to measure. Rough comparison of irrigated versus unirrigated lands indicates that irrigation increases the value of production by at least TL 1,435 per ha annually on a conservative accounting basis (although, of course, the cost of development must be put against the value of production).

23. The potential for irrigation in Turkey is large. An estimated 12.5 million ha are suitable for irrigation, but probably no more than 5.5 million ha could be irrigated economically, including 0.5 million ha from groundwater. In 1969, the irrigation sector could be considered as covering 1.53 million ha (including land connected with completed works but not irrigated) as follows:

|                                  | <u>('000 ha)</u> |
|----------------------------------|------------------|
| Unimproved private irrigation    | 806              |
| Reconstructed private irrigation | 194              |
| Government schemes               | <u>530</u>       |
|                                  | 1,530            |

24. The area covered by government irrigation schemes has expanded rapidly over the past several years from 89,000 ha in 1960 to 530,000 ha in 1969. Public investments in irrigation have been correspondingly heavy. During the First Plan (1963-1967), they were some TL 3.5 billion, 60% of total public sector investments in agriculture. In the Second Plan period, the government expects to invest TL 7.2 billion in irrigation development, which will account for about 65% of public sector agricultural investments. An additional TL 1.5 billion is expected to be invested by the private sector.

25. Major irrigation works completed in 1968 and 1969 increased the service area by some 256,000 ha. Although the construction of these works exceeded targets, the amount of new land actually brought under irrigation fell considerably below planned levels. In 1968, the latest year for which

data are available, only 29,000 ha were brought under irrigation, although the target was 61,200 ha. It is estimated that some 800,000 ha, connected with works, either built or under construction, remain to be developed. The type of work needed varies greatly, however (see Appendix 2).

26. Thus, while Turkish investments in irrigation works have been large, their contribution to overall agricultural growth has been minor, due mainly to their gross underutilization. The resultant losses to the economy due to such underutilization are large. At least TL 267 million is lost annually from the value of increased production which would be forthcoming if all of the land already covered by government schemes were actually irrigated.

27. Such underutilization is due principally to the failure to complete the irrigation network required throughout each project, construct necessary drainage, and do on-farm development (particularly land leveling). Efficiency of production will become a much more crucial factor as more farm land becomes irrigated. Underlying these shortcomings have been the dispersion of human and financial resources in a relatively large number of partially completed projects scattered throughout the country; division of responsibilities, with little or no coordination, among DSI 1/, Topraksu 2/ and the Ministry of Agriculture; and allocation of resources among the three organizations favoring construction of major works at the expense of providing small distributaries and the other supporting development needed.

#### Major Forest Resources Largely Untapped

28. Forests represent a major, though largely untapped, resource in Turkey. Total production (about 1% of GDP), despite increases of 12% in 1968 and 9% in 1969, still is only a fraction of the potential. Exports are nominal. There are an estimated 18.3 million ha in forests, about 22 to 23% of the country's total land area. Based on present, probably understated information, Turkish forests contain approximately 738 million m<sup>3</sup> of wood, of which 540 m<sup>3</sup> are coniferous and the remainder broadleaved. These figures include 65 million m<sup>3</sup> of degraded coniferous and 23 million m<sup>3</sup> of degraded broadleaved forests.

29. The best site qualities are found in the Black Sea region where soils are rich and climate favorable. Broadleaved species (mainly beech)

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1/ Devlet Su Isleri, the General Directorate of State Hydraulic Works, in the Ministry of Energy and Natural Resources, is responsible for construction, operation and maintenance of dams and reservoirs (for electricity, drinking water and irrigation) and main irrigation and drainage canals. It also has responsibility for initial groundwater development.

2/ General Directorate of Conservation and Farm Irrigation, in the Ministry of Village Affairs, is in charge of minor irrigation canals (including those supplied by groundwater) and drains, on-farm development, and soil and water conservation).

predominate, but there are also considerable stands of spruce and fir. In the Aegean and Mediterranean regions, pines are the most common species; site qualities generally are lower and the climate drier (though, of course, these characteristics do not affect the processing quality of the trees). In eastern and middle Anatolia forests are scattered. High forests are mainly mature and over-mature. An estimated two-thirds of coniferous and 85% of broadleaved trees are over 60 years old and 53% of the latter are more than 100 years old. Decay and other deterioration are decreasing their value, and there is relatively little young growth.

30. From a resources viewpoint, Turkey's forests are a major asset. Utilization, though, has been extremely limited. The UNDP/FAO estimates that present forests could form an excellent basis for a forest industry of international size with total annual removal in the immediate future of 12.6 million m<sup>3</sup> industrial roundwood under bark, rising to 15-16 million m<sup>3</sup> by 1980 and 23-24 million m<sup>3</sup> in 2000 1/. Set against this potential are these production figures:

|  | <u>1960</u> | <u>1961</u> | <u>1962</u> | <u>1963</u> | <u>1964</u> | <u>1965</u> | <u>1966</u> | <u>1967</u> | <u>1968</u><br>(est.) |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------------|
| Industrial wood<br>(million m <sup>3</sup> ) | 1.9         | 1.8         | 2.8         | 2.4         | 2.4         | 3.6         | 3.6         | 3.8         | 4.3                   |
| Fuelwood <u>/1</u><br>(million tons)         | 6.1         | 6.5         | 5.5         | 5.6         | 6.3         | 6.2         | 6.4         | 6.5         | 6.5                   |

/1 Mainly branches, logging residues and wood of noncommercial quality.

Source: General Directorate of Forestry and UNDP/FAO 2/.

31. The reasons for this underutilization lie mainly in (1) a forest policy which, though changing gradually, is concerned principally with conservation and protection, and (2) problems of forest villagers with rights to forest resources and livestock grazing. Forest activities have centered on afforestation, erosion control and range management. The removal of timber has been modest compared with the potential. Selective cutting is the principal silvicultural method, with only small areas being clear-cut and reforested.

32. Some 9 to 10 million persons (almost one-third of Turkey's population) are estimated to live in villages in or adjacent to forests. The Ministry of Forestry has a special responsibility to them, since, in 1948, all forests were expropriated by the state and the right of free construction wood and fuelwood was given to all people living in or within 10 km of the forest. The principal livelihood for these villagers is subsistence

1/ Report to the Government of Turkey on Forest and Forest Industries Development (UNDP/FAO Consultancy Mission), FAO and UNDP Report FO:SF/TUR 26, 1969.

2/ Ibid.

agriculture and livestock grazing, and their living standards, in financial terms, are considerably below the national average. Many are employed on a seasonal basis in forestry work. A large number, however, are not dependent upon the forest and have sufficiently high standards of living to justify ending the provision of free wood to them.

33. Local prices of wood and wood products are almost double world prices. Present logging and extraction policies (selective felling, transporting logs to the roadside, thence to depots) contribute to high logging costs. Prices to industrial users are inflated further by including the costs of providing wood to forest villagers at highly subsidized prices. Government aid to these villagers and the salaries and overhead costs of the Ministry of Forests personnel who administer such programs also are added to the cost of wood. Industrial users, who have no control over their raw material sources nor receive any long-term material guarantees, must compete in auctions all over Turkey to satisfy their raw material needs. There is virtually no horizontal integration of forest industries so that residuals are not utilized as by-products.

34. Notwithstanding several encouraging developments (such as the establishment of a separate Ministry of Forestry, a proposed new forest law which would allow reductions in the cost of forests products, gradual changes in concepts of forest management and utilization, and increasing removals of industrial wood), the fact remains that the utilization of the major resource represented by Turkey's forests is progressing slowly. Work on the national forest inventory and demarcation of forests is lagging, and the pace of forest road construction (3,500 to 4,000 km per year), is grossly inadequate for the requirements of major forest industrial plants. Present policies and planning offer little encouragement to developing integrated and economic forest industries. Both in the approach to forest management and utilization, and to the selection, design and location of forest industries, economic considerations as yet figure relatively little. Removal operations and the provision of infrastructure, particularly access roads, also are not related in terms of size or location to industry requirements.

#### Increasing Use of Farm Inputs

35. The use of fertilizers, improved seed and farm machinery in Turkey has continued to grow rapidly, but in 1969 encountered serious bottlenecks. Fertilizer consumption, which stood at only 20,000 nutrient tons in 1960, increased to more than 470,000 tons in 1969. However, the rate of increase in use, which was more than 42% annually during 1962-67 and 38% in 1968, was only 17% in 1969. This sharp drop was due to delays in domestic production, financing difficulties, and, to some extent, adverse weather conditions and shortages of railway wagons.

36. Besides the unavailability of Agricultural Bank financing for local procurement when needed, transfers of foreign exchange were delayed so that imported fertilizers also arrived late. As a result, fertilizers

were not supplied to farmers in the volumes and at the times required, and sizable stocks had to be carried over into 1970. The failure to provide timely supplies of fertilizers was a factor in reducing 1969 agricultural output, especially of the newly introduced Mexican wheat. (USAID estimates that the shortage of nitrogenous fertilizers lowered Mexican wheat yields as much as 400,000 tons below their potential.) More crucial perhaps was the negative impact such shortages had on many farmers' attitudes toward adopting improved farming methods and the reliability of the supply of inputs needed to sustain such farming.

Table 3

FERTILIZER CONSUMPTION

('000 metric tons of nutrients)

|                               | <u>1960</u> | <u>1962</u> | <u>1965</u>  | <u>1967</u>  | <u>1968</u>  | <u>1969</u>  |
|-------------------------------|-------------|-------------|--------------|--------------|--------------|--------------|
| <u>Production</u>             | <u>12.0</u> | <u>30.7</u> | <u>72.9</u>  | <u>69.6</u>  | <u>95.4</u>  | <u>99.0</u>  |
| <u>Consumption</u>            | <u>20.3</u> | <u>51.4</u> | <u>160.4</u> | <u>301.3</u> | <u>403.3</u> | <u>471.3</u> |
| of which:                     |             |             |              |              |              |              |
| N                             | 9.3         | 29.9        | 73.5         | 141.8        | 193.0        | 245.3        |
| P <sub>2</sub> O <sub>5</sub> | 11.0        | 16.3        | 81.4         | 152.0        | 200.2        | 214.0        |
| K <sub>2</sub> O              | -           | 5.2         | 5.4          | 7.5          | 10.1         | 12.0         |
| <u>Application</u>            | 0.9         | 2.2         | 6.7          | 12.7         | 16.7         | --           |
| (kg/ha of<br>cultivated land) |             |             |              |              |              |              |

37. The rapid expansion of fertilizer use during the past several years was stimulated by Agricultural Bank credits-in-kind, subsidies to the fertilizer industry which made prices attractive to farmers (keeping local prices on a level with those of imports), and extensive demonstration programs which were carried out by the Government with assistance from FAO.

38. Fertilizer use, of course, varies considerably with crop and region. Until the recent introduction of Mexican and other improved wheat varieties, most of the fertilizer applied was on cash crops, principally cotton and sugarbeet. According to the Second Plan, 50% of the area under cotton in 1967 was fertilized with nitrogen and 75% with phosphate. All of the areas planted with rice, sugarbeet, citrus and tea supposedly were fertilized with both nitrogen and phosphate. The Plan projects that the area of wheat fertilized will rise from 5% N and 22% P<sub>2</sub>O<sub>5</sub> in 1967 to 20% N and 52% P<sub>2</sub>O<sub>5</sub> by 1972. Similar increases in areas fertilized are forecast for maize, legumes and forage, cotton,

potatoes, sunflower, and vegetables. In terms of total area, 1972 application of nitrogen is supposed to cover 43% and phosphate 53%, compared with 18% and 24% respectively in 1967.

39. In general, the production and distribution of improved seed (excepting some vegetable and fruit nursery stock) have progressed satisfactorily. Seed production in 1969 is estimated at 400,000 tons, compared with 93,000 tons distributed to farmers in 1962 (see Table 4).

Table 4

DISTRIBUTION OF IMPROVED SEED

('000 metric tons)

|           | <u>1962</u> | <u>1965</u> | <u>1967</u> | <u>1968</u> | <u>1969</u> |                        |
|-----------|-------------|-------------|-------------|-------------|-------------|------------------------|
| Wheat     | 53          | 76          | 210         | --          | --          |                        |
| Barley    | 17          | 7           | 27          | --          | --          |                        |
| Cotton    | 19          | 30          | 29          | --          | --          |                        |
| Sugarbeet | 3           | 5           | 3           | --          | --          |                        |
| Other     | <u>1</u>    | <u>6</u>    | <u>5</u>    | <u>--</u>   | <u>--</u>   |                        |
| Total     | 93          | 124         | 274         | --          | 400         | (estimated production) |

Source: Ministry of Agriculture.

40. The Ministry of Agriculture, through the State Farms Organization and contract growers, produces seed and some nursery stock. Credits-in-kind are granted by the Agricultural Bank, and subsidies provided for grain seeds against transport and distribution costs. Seeds of improved wheat varieties were imported in substantial quantities. Needed importation of vegetable seeds and fruit stock not available in Turkey, however, has been subject to excessive red-tape and delays on the part of the Ministry of Agriculture. Steps to correct this problem reportedly have been taken.

41. Animal power is widely used in Turkey. The use of tractors and other farm implements has grown markedly in recent years, though not uniformly throughout the country (in the Northeast, for instance there is about one tractor per 100 farms). It was envisaged that tractor-based mechanization would proceed slowly, but before the end of the First Plan a policy of acceleration was adopted. In 1962, some 44,000 tractors were estimated to be cultivating approximately 3.3 million ha. By 1969, the figure had climbed to about 99,800 tractors cultivating around 7.5 million ha, 31% of total cultivated area (Table 5). Favorable credit terms by the Agricultural Supply Agency 1/ helped the expansion.

1/ General Directorate of Agricultural Supplies, Machinery, and Implements (Zirai Donatim Kurumu), a state economic enterprise attached to the Ministry of Agriculture, is responsible for the procurement and distribution of agricultural machinery, implements and supplies such as fertilizers, seed, and pesticides.

Table 5: MECHANIZATION IN TURKEY

|   | <u>1960</u> | <u>1962</u> | <u>1965</u> | <u>1967</u> | <u>1968</u> | <u>1969</u> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Number of tractors ('000)                               | 42          | 44          | 55          | 75          | 85          | 99.8        |
| Area cultivated with tractors <u>/a</u><br>(million ha) | 3.2         | 3.3         | 4.1         | 5.6         | 6.4         | 7.5         |
| Number of draft animals<br>(million pairs)              | 2.6         | 2.7         | 2.7         | 2.7         | 2.6         | -           |
| Area cultivated with animals<br>(million ha)            | 20.1        | 19.9        | 19.7        | 18.2        | 17.6        | -           |
| Total cultivated area<br>(million ha) <u>/b</u>         | 23.3        | 23.2        | 23.8        | 23.8        | 24.1        | -           |

/a At 75 ha per tractor.

/b Including fallow land.

Source: SIS, "Summaries of Agricultural Statistics".

Most of the tractors are used on larger holdings, particularly in the south, for cotton and increasingly for wheat cultivation. Their use generally is not intensive, due to lack of experience in operation; problems of maintenance, especially shortages of spare parts; and the frequent absence of accompanying implements. Many are used mainly for hauling and transport. There is little evidence of changes in farm productivity, displacement of labor, etc., though there appears to have been some reduction of the area cultivated by animals.

42. Other agricultural machinery and implements have registered similar increases. Animal-drawn ploughs and animal and tractor-drawn drills for grain, cotton and sugarbeet farming have grown significantly. Their increased use has been stimulated by the greater use of fertilizers with these crops. Approximately 40-50% of all farmers planting Mexican wheat reportedly used seed drills. Combines, too, which began to be manufactured locally in 1966, are expanding in use; annual sales are expected to rise from 450 in 1967 to 800 in 1972.

#### Insufficient Credit

43. In spite of substantial expansion in recent years, credit available on reasonable terms for modernizing agriculture in Turkey is inadequate. Shortages of medium and long-term credit have created serious bottlenecks, and, more recently, the Agricultural Bank has been unable to provide financing for procuring and distributing fertilizers, improved seed and farm equipment when needed. A "project type of approach", as favored by many experts including the IBRD's, has not been followed.

44. The lack of resources in the Bank's "Fertilizer Financing Fund" <sup>1/</sup> in 1969 and 1970 made it impossible for the Agricultural Supply Agency and the agricultural credit cooperatives to procure and distribute planned amounts of domestically produced fertilizers on schedule.

45. Inadequate credit for dealers and farmers caused shortfalls in the production and distribution of improved seeds and also reduced sales of tractors. In addition, credit difficulties and shortages of raw materials, particularly steel, restrained the domestic manufacture of agricultural implements such as deep-furrow seed drills, chisel plows and rod weeders.

46. The Agricultural Bank, second in size to the Central Bank, provides almost all of the institutional credit available to farmers. It has some 750 branches scattered throughout Turkey and carries out a full range of banking activities. Besides lending directly to farmers, it lends to agricultural cooperatives, the Agricultural Supply Agency, finances the procurement and distribution of agricultural machinery, fertilizers and seed, and aids the development of livestock, fisheries and agricultural-related industries. It also makes commercial loans. The TL 2.5 billion loans outstanding in 1969 accounted for 20% of its total outstanding credit. The bank accepts deposits, which totaled TL 8.7 billion in 1969 (about 30% of all deposits in the country's banking system), and makes commercial loans. Paid-up capital and reserves in 1969 were TL 1.8 billion. With privileged recourse to the Central Bank for its agricultural credit business, the bank is able to carry large outstanding balances.

47. Agricultural Bank lending has expanded substantially in recent years. Total credit outstanding in 1967 was TL 2.4 billion (144% above the 1962 level, and in 1969 increased to a total of TL 9.7 billion (Table 6). More than 80% of the credit, however, is short-term, largely for seasonal production and marketing needs. Loans are made directly to farmers by branch offices or through a network of agricultural credit cooperatives controlled by the bank. Although the Agricultural Bank generally breaks even on its commercial loans and direct loans to farmers, its loans (at 5% interest per annum) to credit cooperatives mean a loss on the average of 3.5%. This subsidy element should be examined closely as to its rationale and mechanics.

48. Because the bank's policy is to give priority to reaching as many small farmers as possible, it makes a large number of relatively

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<sup>1/</sup> The "Fertilizer Financing Fund" is a revolving credit fund established at the Agricultural Bank in 1969 to finance fertilizer procurement and distribution by the Agricultural Supply Agency and the agricultural credit cooperatives. These two agencies are responsible for about two-thirds of the total amount of fertilizer supplied. In addition, the fund also is supposed to meet retail credit requirements of customers of the two agencies and those farmers who purchase fertilizers through agricultural production cooperatives. The fund's authorized level is TL 2.3 billion, of which TL 1.7 billion has been allocated.

Table 6

AGRICULTURAL LOANS BY AGRICULTURAL BANK

(Loans outstanding as of December 31 in TL million)

|  | <u>1968</u>  | <u>1969</u>  |
|--|--------------|--------------|
| <u>Short-Term</u>                      |              |              |
| Farmers                                | 2,461        | 2,918        |
| (of which seasonal production)         | (2,221)      | (2,657)      |
| Credit cooperatives                    | 1,735        | 2,003        |
| Sales cooperatives                     | 2,127        | 2,850        |
| Agricultural Supply Agency             | <u>278</u>   | <u>308</u>   |
| Sub-Total                              | 6,601 (83%)  | 8,079 (83%)  |
| <u>Medium and Long-Term</u>            |              |              |
| <sup>a/</sup> Farmers                  | 1,152        | 1,453        |
| Others                                 | <u>164</u>   | <u>167</u>   |
| Sub-Total                              | 1,316 (17%)  | 1,620 (17%)  |
| Total                                  | 7,917 (100%) | 9,709 (100%) |
| <u>Borrowers:</u>                      |              |              |
| (a) Farmers                            |              |              |
| Direct                                 | 3,440        | 3,991        |
| Supervised Credit                      | 108          | 165          |
| Loans from special funds <sup>b/</sup> | <u>65</u>    | <u>216</u>   |
| Sub-Total                              | 3,613 (46%)  | 4,371 (45%)  |
| (b) Credit Cooperatives                | 1,735 (22%)  | 2,003 (21%)  |
| (c) Sales Cooperatives                 |              |              |
| Current account                        | 367          | 211          |
| Price support purchase                 | 1,686        | 2,370        |
| Delinquent loans                       | <u>74</u>    | <u>269</u>   |
| Sub-Total                              | 2,127 (27%)  | 2,850 (29%)  |
| (d) Other                              | 442 ( 5%)    | 485 ( 5%)    |

a/ Mainly farm machinery, livestock, equipment, land acquisition and establishmentb/ Includes USAID funds for livestock fattening, pest control equipment, tractors and fisheries.Source: Agricultural Bank

small loans. In 1968, it advanced seasonal loans to 1.3 million farmers, averaging TL 1,250 each. Agricultural credit cooperatives, using Agricultural Bank resources, also make relatively large numbers of small short-term loans to their members. Collection of agricultural loans has deteriorated markedly in recent years; in 1969 uncollected loans were 28% of the total due, compared with 15% in 1967. Delinquent loans at the end of 1969 amounted to about TL 1,150 million, 11% of loans outstanding.

49. The number of credit cooperatives has increased rapidly. There are around 1,985 societies with 1.3 million members. The bank also advances loans to agricultural sales cooperatives. These comprise some 420 societies and 15 unions which are semi-public organizations dealing with hazelnuts, cotton, figs, raisins, olive oil, and other export crops. The Agricultural Bank advanced TL 2.9 billion to these cooperatives in 1969, of which TL 2.4 billion was used for government price support purchases.

50. A program of supervised credit, initiated by the bank in 1964, has now been extended to 28 out of Turkey's 67 provinces. Between 1964 and 1969, TL 246 million was disbursed for more than 12,400 projects supervised by about 200 bank technicians.

51. Since the Agricultural Bank's resources are inadequate to meet farmers' need for credit, it has resorted to a restrictive policy and the division of scarce resources among a large number of borrowers. The bulk of credit has been for price intervention or seasonal loans too small to make more than a limited impact on development, most of the credit has been used for subsistence and current expenditures. At the same time, the amount of credit available for development-oriented medium and long-term investments generally has been inadequate, due to the shortage of the bank's resources for this purpose 1/.

#### Inadequate Supporting Services

52. Finally, agriculture in Turkey is marked by a growing inadequacy in both level and quality of essential supporting services. The fragmentation of responsibility among numerous agencies and the dispersion of resources and lack of coordination among them weaken whatever services are provided. Although Turkey has numerous agricultural research stations and institutes, research is uncoordinated and generally fails to focus on providing information most needed by farmers. Extension activities are divided and spread among several organizations located in different ministries. These difficulties are further compounded by extension workers being diverted from extension to administrative, regulatory and other functions; a shortage of transportation which severely limits contact with

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1/ Only about TL 4.7 billion (27%) of its resources are suitable for medium and long-term lending. At present, however, about 60% of these funds are in delinquent loans, unpaid capital, field assets, and equity investments.

farmers; low salaries and per diem allowances for field work; inadequate training facilities; and lack of direct control by the Ministry of Agriculture over many of its field personnel.

Summary Statement

53. On balance, the recent performance of Turkish agriculture has been below expectations. In spite of encouraging developments in some areas, growth fell considerably short of Plan targets. Agriculture has remained highly dependent upon weather. Exports declined and substantial imports of wheat were necessary in 1969 and 1970 to make up shortfalls in domestic production. Large stocks of tobacco, tea and sugar have continued to be a serious financial burden on the Government and a loss to the economy. A sluggish livestock industry has been unable to keep pace with rising demand. Progress in improving animal feeding and in developing the supply of feedstuffs has been slow. The large investments made in major irrigation works have been seriously underutilized, and the output of forest products, despite substantial increases, still has represented only a fraction of the country's forest potential. Shortages of medium- and long-term credit have hampered the modernization of agriculture, and, more recently, the Agricultural Bank has been unable to provide financing when needed for procuring and distributing fertilizers, improved seed and farm equipment.

II. MAJOR PROBLEMS

Policy and Institutional Shortcomings

54. Much of the disappointing performance of Turkey's agriculture has been due to:

- (a) lack of coordination in policy and in organizing and implementing agricultural development;
- (b) a tendency to disperse and scatter available resources, both human and financial, among many activities with little regard to economic priorities;
- (c) pricing policies which have been excessively producer-oriented at major cost to the economy;
- (d) not giving enough attention to the economic use of resources so as to get returns as quickly as possible.

Underlying many of these shortcomings, political and social considerations have received undue weight, usually at the expense of economic objectives.

### Organization and Coordination

55. The problem of agricultural organization and coordination has been of concern to Turkish authorities for several years <sup>1/</sup>. Unfortunately, little has been done so far to resolve it. The various aspects of agricultural development continue to be fragmented among an array of ministries and agencies. Among their programs, coordination usually is weak and duplication and competition not unusual.

56. In general, there is no commonly agreed upon and commonly followed set of priorities. Hence, DSI, in the Ministry of Energy and Natural Resources, makes large investments in major irrigation facilities, but completion of necessary distributaries and on-farm development is delayed due to inadequate resources being provided Topraksu, which is in the Ministry of Village Affairs. The limited capabilities of the Ministry of Agriculture are diluted through nine general directorates and two directorates whose functions often overlap and not infrequently compete with one another. The extension and research responsibilities of the General Directorates of Veterinary Services, Plant Protection, and State Farms, of Topraksu (irrigated farming), the Sugar Corporation (sugarbeet farming and livestock fattening), the State Monopolies (tobacco, tea and opium), and the Agricultural Bank (supervised credit), are all under the jurisdiction of different ministries.

57. Numerous other examples might be cited where resource allocation, lacking effective direction, results in undercutting essential programs by diverting needed resources away from them to activities of lesser economic priority. The objective of expanding wheat production is hampered by limited budget allocations and a lack of credit, while at the same time large amounts of public funds are devoted to producing and stocking commodities in excess of market demand. Imbalances in agricultural credit severely restrict needed medium and long-term credit; extension services are handicapped by inadequate transportation and field allowances; large investments are made in activities such as haras (veterinary farms) and state farms which often reach few farmers; and so on.

### Social and Political Considerations

58. Aside from failures of coordination, many of the problems of organization and resource allocation are reflections of a more difficult issue, i.e. that of reconciling economic and social objectives. According to the Second Plan, the main objective of achieving and maintaining a high rate of economic growth is to be pursued within the framework of: balanced development between various geographical regions and income brackets, greater employment opportunities, equitable sharing of the benefits and burdens, and efficient and stable improvement in the social and economic structure.

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<sup>1/</sup> Available studies as well as the Second Plan document reflect this concern.

59. While it goes without debate that social and political considerations usually enter into most decisions, the weight given to these factors in Turkish agriculture over the past several years has resulted in considerable economic cost to the nation. The dispersion of scarce resources over a relatively large number of projects scattered over the country has inordinately extended the time required for their completion -- and for obtaining benefits from the investments. Similarly, dispersing limited Agricultural Bank resources in as many small loans as possible and spreading already sparse supporting services very thinly have reduced the effectiveness of these needed inputs. The Government's price intervention program, while benefitting some producers, has meant the diversion of large amounts of resources which otherwise could have been employed to better economic advantage for the nation as a whole. Finally, the commercial exploitation of Turkey's forest resources has been inhibited by mixing a social program of aid to forest villagers with the economic objective of forest utilization. Obviously, no general formula is possible: each decision must be weighed against the economic, social and political requirements prevailing at the time. What is possible, though, is: first, separating the economic and other aspects of each case in terms of objectives and costs so that the trade-offs between them can at least be compared on an objective basis; second, obtaining greater balance in the future between the two sets of objectives by giving greater accent to economic considerations than has been the case in recent years; third, pursuing purely social objectives by devising, where possible, distinct programs which would be more suited to that purpose than essentially economic measures would be.

#### Other Problems

60. Turkish agriculture also suffers other disabilities common to many developing countries: low productivity and income per farm worker, a large number of small and fragmented holdings, small investment per farm unit, underemployment and idle seasonal workers. The OECD estimates that, in 1965, per capita net income in agriculture was only 43% that of the nonfarm population, a ratio relatively constant since 1950. There is wide disparity in land holdings and income within the agricultural sector as well.

61. The growth of Turkish farm population (about 1.5% annually) has meant an ever-increasing number of farm units -- from approximately 2.5 million in 1952 to 3.1 million in 1963 <sup>1/</sup>. Although expansion in cultivated area increased the average amount of tillable land per farm from 7.6 ha in 1953 to 8.4 ha in 1963, the small size of many holdings is still a problem. Some 69% of farms in 1963 were less than 5 ha in size (See Table 7 below), compared with 62% in 1952. As a consequence, income on most farms is too low to allow much improvement in living conditions or investment in greater productivity.

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<sup>1/</sup> Agricultural census of 1963, the latest year for which data is available.

Table 7

NUMBER OF FARM UNITS BY SIZE AND  
AS PERCENTAGES OF FARMING AREA IN 1963

|                                   | Area (ha)   |      |       |              | Total |
|-----------------------------------|-------------|------|-------|--------------|-------|
|                                   | Less than 5 | 5-10 | 10-20 | More than 20 |       |
| Number of farm units ('000)       | 2,132       | 562  | 292   | 115          | 3,101 |
| Percent of total farm units       | 69          | 18   | 9     | 4            | 100   |
| Percent of farming area <u>/a</u> | 24          | 23   | 23    | 30           | 100   |

/a Total = 17,143,000 ha, excluding pastures, meadows and fallow land.

Source: State Institute of Statistics

62. Increasing population pressure also has meant widespread fragmentation of holdings. According to the 1950 Census, some 95% of farm holdings consisted of more than one parcel. On the average, each holding had seven plots of 1.2 ha each. More recent data is not available, but there are no indications of significant improvement. In newly irrigated areas, a program of land consolidation has made only limited headway so far.

63. There also is wide disparity in the distribution of farmland and incomes within the agricultural sector. According to the 1963 data, the more than 2.1 million farming units with 0.5 ha or less had an average annual income of TL 2,900. At the other end of the scale, farms 100 ha or larger (less than 1% of the total) occupied about 10% of total farmland and had an average yearly income of TL 298,500. A sizeable number of farmers are sharecroppers and there are many permanent and seasonal agricultural workers who earn low incomes.

64. The existing land-holding situation in Turkey is far from clear, since title to much of the land has not yet been registered and the cadastral survey is proceeding slowly. The extent of big landholdings cannot be determined exactly because the distinction between ownership and operating unit is not clear. Holdings are frequently divided among several family members. Moreover, since only 30% of immovable property is registered legally with title-deed offices, the extension of agricultural credit is made difficult and land consolidation hampered. Disputes over land boundaries and pasture use are frequent.

65. Even though rural population growth has been substantially below that of urban areas, the agricultural sector has not been able to provide sufficient employment opportunities for the labor force. Even in the peak season, unemployment has been very high in the rural areas. The State Planning Organization estimated that some 0.9 million people of working age

were not employed in July-August 1967, about 9% of the then 9.9 million agricultural labor force.

66. Organizing farmers into cooperatives has proceeded slowly. In 1969, for instance, there were 1,985 agricultural credit cooperatives with 1.3 million members. At the end of 1968 there were 449 agricultural sales cooperatives, with 189,000 members, and close to 100 production cooperatives. Given an agricultural labor force of more than 10 million (out of a total rural population of more than 23 million), it is obvious that most farmers still are outside cooperatives.

67. Large regional differences remain. The most productive areas are in the coastal regions which have fairly reliable yields and, in addition to food, grow cash crops such as tobacco, cotton, fruits and vegetables. The Central Anatolian Plateau, dominated by cereal production, is relatively less developed, and the eastern highlands, where livestock-raising predominates, is the least developed region. Agricultural incomes per capita follow this same pattern in spite of the fact that the more prosperous areas have much higher population densities. Sharecropping and absentee landlords are particularly common in the southeastern portion of the country.

### III. A PRESCRIPTION FOR DEVELOPMENT

#### Concentration on High-Priority Activities

68. Turkey possesses a resource of immense potential in its agriculture -- a potential, however, that is being only partially realized. Agriculture's generally poor performance can be improved markedly by changes in organization and policy, with greater concentration on high-priority activities. Toward this end, it is essential that the Government focus initially upon a selected few activities of high potential and make a concerted effort in their development. Only in this way can limited resources be employed to give rapid returns.

69. To some extent, the Government already has identified several such activities, but has yet to follow through sufficiently with necessary policies and implementation. Examining these in the context of Turkey's particular requirements and the potentials of its agriculture, the following priority activities could form the basis of a successful development program for the remainder of the Second Plan and probably during the subsequent plan period (1973-77):

- (a) completing and fully utilizing existing irrigation projects;
- (b) increasing wheat output, particularly on the Anatolian Plateau;
- (c) producing fruits and vegetables for export;
- (d) developing livestock, including dairying, fattening feedstuffs, and marketing;
- (e) reducing output of surplus commodities, through revision of pricing policies and encouragement of alternative pursuits;
- (f) greater utilization of forest resources;
- (g) expanding credit facilities, inputs and other supporting services.

#### Completion and Full Utilization of Irrigation Projects

70. In view of the importance of irrigation to Turkish agriculture and the large amounts invested in irrigation facilities, it is imperative that these facilities be employed as efficiently as possible. In recognition of the problems, the Second Plan states that irrigation policy will be based more on full utilization of existing or planned investments than on undertaking new ones. In projects under construction, priority will be given to rapid development of the entire area, extension services

will be given special attention, and problems of coordination between DSI and Topraksu will be eliminated. The mapping of groundwater supplies in most of Turkey has apparently been accomplished, but development should proceed with some caution and attention given to insuring that groundwater projects are properly planned to provide water at economic costs.

71. Policy measures in regard to the large irrigation schemes will require a number of actions: (1) reorganizing existing irrigation, on-farm development and extension functions; (2) formulating an overall program, based mainly upon economic priorities, for completing and bringing all existing irrigation projects into full utilization over the next decade or so; (3) preparing detailed project submissions and feasibility studies for each project or group of projects within the program; (4) insuring that required funds, personnel and equipment are made available to complete and fully utilize those projects as well as new ones which are constructed subsequently; (5) strengthening the capabilities of private Turkish contractors so that they can undertake a major portion of the work required.

72. If such actions were taken, it should be possible for Turkey each year to bring some 60- to 80,000 ha of project lands under full irrigation and intensive agricultural development. The remaining 800,000 ha or so for which major works either have been or are being constructed could be covered in 10 to 13 years, although with experience and full commitment on the part of the Government it might be possible to accelerate the rate of development. Excluding overhead and other indirect costs, minimum investments of approximately TL 300 to TL 500 million probably would be required annually over the period.

73. Besides redeployment of much of DSI's present resources, such a program would require new equipment (especially for land levelling and installation of tile drainage), additional personnel, and a major program of training. Equally important, the Government should begin immediately to devise means by which private Turkish contractors could obtain equipment, personnel and other facilities necessary for them to build up their capacities for carrying out the bulk of the work.

#### Increased Wheat Production

74. The importance of cereals in Turkish agriculture has been noted. Cereals, mainly wheat, are the staple food of the country, accounting for two-thirds or more of total caloric intake, and are the most widely grown crop. The Government proposes to expand wheat production rapidly enough for local demand to be met fully from domestic output by the early 1970's. National output totaled some 9.2 million tons in 1969 and 8.3 million in 1970. 1/ Of this about 2.5 million tons were produced in coastal areas.

75. Actually, in years of favorable weather, Turkey presently could produce enough wheat to meet or even exceed domestic demand. It is important, however, that output per hectare be increased substantially to allow

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1/ State Planning Organization estimates.

reduction in the area devoted to wheat cultivation. While major fluctuations cannot be eliminated, the use of new varieties and improved cultural practices should result in adequate supplies and lessen year-to-year variations. A sufficiently high and relatively stable production base would release land for growing animal feedstuffs and other crops. It also would prevent further conversion of pasture into cereals. In this connection, principal emphasis should be on improving Anatolian Plateau output. Increasing wheat production here, where 75-80% of the wheat is grown could release better watered coastal lands, for producing higher valued crops such as fruits and vegetables. Another factor is the relative lack of alternative cropping opportunities and the present low incomes on the Plateau.

76. The Ministry of Agriculture has prepared a Wheat Development Project which aims between 1968 and 1972 to bring 3.0 million ha (38% of total wheat area) under high-yielding varieties, accompanied by increased use of fertilizers and improved cultivation practices. Project expenditures would total TL 234.2 million; in addition, farmer credit--to purchase improved seed, fertilizers and equipment--would rise from TL 519.8 million in 1968 to TL 1,205.9 million in 1972.

77. In 1967 the Government, assisted by USAID, introduced Mexican wheat, largely in the higher-rainfall coastal areas. The area planted with improved varieties climbed from 170,000 ha in 1967 to more than 650,000 ha in 1968 and an estimated 800,000 ha in 1969. Yields averaged 3,250 kg per ha in 1967-68. Although they declined to 2,200 kg in 1968-69, due to adverse weather, fertilizer shortages, and reduction of the program, they were substantially above the 1,100-1,200 kg recorded for local varieties.

78. On the Anatolian Plateau, much of the area is too dry and the growing season too short for producing other crops, although rotations with forage crops provide a substantial opportunity. Precipitation generally is small (500 mm or less each year in most places) and the total amount and distribution uncertain. Most wheat and other cereals are grown by traditional dryland farming, where land is left fallow every other year, but weeds are allowed to grow. Yields, as might be expected, are low, usually less than 1,200 kg per ha for wheat. Although there is irrigation in some areas, and potential for it in others, widespread large-scale development in the immediate future is not likely.

79. Some 1.2 million ha on the plateau (and in Thrace) are supposed to come under project control in 1970-71, using high-yielding varieties (particularly Bezostaya from Russia) which are adapted to highland conditions. Increased output in the dry highlands will depend upon better moisture conservation practices coupled with the use of improved seed varieties, fertilizers, and weed control. Clean fallowing, the use of stubble as mulch, the employment of deep-furrow seed drills to penetrate to moisture-bearing strata, chisel plows, and rod weeders to pull up deep-rooted weeds are the main elements for improving moisture conservation.

80. To date, achievements in increasing highland wheat output have been modest. The Government imported 16 deep-furrow seed drills in 1967. The State Farms Organization constructed an additional 100 units, and in 1968 planted 38,000 ha of improved seed imported from the United States, of which 10,000 ha had been chisel-plowed. Improved seed was made available in 33 provinces for 1969 fall planting. Even though several local firms reportedly are interested in manufacture, only a limited supply of the drills, plows and weeders is available. Budget allocations for the project have been below requirements and little has been done to supply needed vehicles or make sufficient funds available for project operation or farmer credit.

81. By 1975, virtually the entire 1.4 million ha on which wheat presently is grown in the coastal areas is expected to be in Mexican wheat. Yields are projected to be about 3,200 kg per ha at that time so that in average weather, production from the coastal areas would run about 4.2 million tons. Although there are as yet no conclusive results, initial experience suggests that wheat output on the plateau also can be raised materially through using improved seed and better moisture conservation practices. Yields in 1969-70 of the Russian Variety Bezostaya on state farms was 2.2 tons per hectare, ranging up to 4.1 tons. Farmers have reported yields of 3.0 tons per hectare and more. By 1975 it should be possible to bring one-million hectares on the plateau under improved varieties yielding in the neighborhood of 2.4 tons per hectare. Adding production from local varieties (say 6.0 million tons on 5.5 million hectares), output on the plateau could total about 8.4 million tons, compared with an estimated 6.6 million in 1969-70. National wheat production in 1975 would total around 12.7 million tons.

82. Expanding output on the Anatolian Plateau will require deep-furrow seed drills, chisel plows, rod weeders, and probably tractor power. Extensive farmer education also will be needed. State farms and contract growers presently are producing improved seed, and supplies in the future should be adequate. In addition, possibilities of wheat pasture or fodder crop rotation and integrated livestock farming should be explored. It is not clear precisely what technique and operations would be the most suitable in the long run, but known techniques and machinery already developed could be used to raise productivity on the plateau and increase returns to farmers there. The Government should as quickly as possible initiate a program for further study and a pilot project to obtain wider field experience. Depending upon the results, the project might be expanded to cover the entire plateau. Essential to the success of any such program would be: (1) adequate funding, personnel, vehicles, and field allowances; (2) sufficient credit for farmers to purchase implements and farm inputs; (3) fertilizers, seed, implements, and other supplies available to farmers when needed; (4) suitable means of channelling credit, implements and supplies to the many small farmers; and (5) organizing them so that they can use these inputs. In this connection, it might be possible to funnel money through the Agricultural

Bank, or other institutions, to local entrepreneurs. They, in turn, could establish service centers to supply power and machinery to farmers on a contract basis and sell them seed, fertilizer, pesticides and other supplies and services. Reportedly, a large number of entrepreneurs, mainly owner-operators of combines 1/, already exist who might carry out such a program. To stimulate local equipment manufacture, credit access to raw materials (particularly steel), and other incentives will have to be provided local manufacturers of equipment. Present TMO 2/ storage capacity (about two million tons of grain) probably is sufficient to meet requirements. It may be necessary, though, to develop storage capacity at flour mills which presently rely upon TMO storage.

### Fruits and Vegetables

83. The potential for increasing Turkey's production and export of fruits and vegetables is large. Turkey has the climate, ranging from subtropical to high temperate, and other conditions for growing a wide variety of produce. Turkey also has the advantage of location -- close to the European market and Russia -- for exports, particularly of products which it can grow with a seasonal advantage. Output of fruits and vegetables, which presently supports a large domestic consumption, has been expanding rapidly; exports also have grown sharply in recent years.

84. The most important fruits are grapes, citrus, peaches, apples, figs and apricots. All have potential for greater export, but the most promising are grapes, citrus and peaches. While fresh vegetables have only begun to be exported in modest quantities, many have good prospects. The main impediments to the rapid expansion of exports are providing growers with adequate supplies of seeds and virus-free nursery stock of suitable export varieties, sufficient medium and long-term credit, and satisfactory handling and marketing facilities.

85. A fruit and vegetable export project was under IDA appraisal at year's end (1970). It would assist in increasing fruit and vegetable exports from 90,000 tons in 1969 to 350,000 tons in 1975. Export earnings could increase from US\$19 million to US\$80 million by 1975. Total project cost between 1970-73 was tentatively estimated at TL 225 million of which TL 135 million was foreign exchange. This excluded credit to farmers for orchard and other horticultural development.

86. There is relatively little relationship between total production of fruit and vegetables in Turkey and the availability of products for

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1/ According to USAID/Turkey, there are at least 800 owner-operators with six to eight combines. They send their combines all over Turkey, harvesting the crops as the season moves from the coastal areas on to the Anatolian Plateau. Other entrepreneurs might include cooperatives, truck and bus operators, machinery dealers and repair centers.

2/ Yoprak Mahsulleri Ofisi, the Soil Products Office, is a state economic enterprise responsible for purchasing, storing and selling cereals.

export. What is important, however, is the production of varieties which are acceptable for export, and the establishment of good trade relations with the importing entities. Future output must be geared to exportable varieties. Technical assistance and contracting policies of exporters must be directed toward the production of these export varieties. The Government is placing great emphasis on the expansion of fruit and vegetable exports and is providing incentives such as tax rebates to exporters and transportation subsidies. It should be possible to expand exports of fresh fruits and vegetables even further after 1975, rising to as much as 500,000 tons by 1977. Investment requirements during 1974-77 to sustain this order of increase would approximate those presently contemplated for 1970-73 (TL 225 million).

87. In order to satisfy rising domestic demand there is also a necessity for enlarging the supply of fresh and canned fruits for domestic consumption. With the expansion of produce for export, there should be a related increase in fruits and vegetables for domestic consumption. There also must be adequate marketing, storage and processing facilities to handle the produce not exported. Local food processing industries, after initially catering to the domestic market, establishing quality and obtaining management experience, might also enter the export trade. In 1968, Heinz Ltd. opened a factory which this year is expected to have an annual capacity of 12,000 tons, mostly tomato paste. A Campbell Soup-Coca Cola factory is scheduled to begin production of tomato paste and frozen fruits and vegetables in 1971, and other factories for tomato paste, juice and nectar are being constructed.

88. Small farmers will not be able to supply the quality produce required on a regular basis without extension work by the Government or canners. Given the large numbers of growers involved, the problems will be difficult and probably require extensive organization of producer and marketing cooperatives. Equally important will be the development of adequate supplies of low-cost tins for cans. A thorough study of organizational, policy and investment requirements for domestic marketing and processing should be undertaken as soon as possible.

#### Livestock Development

89. Demand for meat and livestock products is rising rapidly in Turkey. The Second Plan projects an annual increase between 1967-72 of 5.2% in meat and 6.1% in poultry consumption. Future demand can be expected to increase even more rapidly. The FAO projects demand for meat and poultry in 1975 at 40-85% above 1965 levels and forecasts Turkey moving from a net exporter to net importer by that time. It is obvious that a major effort is required if Turkish livestock production is even going to be able to meet future domestic demand. To increase exports substantially in the foreseeable future seems unlikely, except at the cost of domestic consumption.

90. The Second Plan aims at increasing the output (by value) of meat and other livestock products 4.8% annually during 1967-72. Yearly milk production is projected to increase 4.6%.

91. Exports of livestock and meat are to grow 8.7% annually, meat 5.6% and poultry 6.1%. These increases are to be accomplished through improved feeding and fattening projects, breed improvement, better disease control and supporting veterinary services, and construction of slaughterhouses and other marketing facilities.

92. The Government has prepared a six-year program (1968-74) 1/ -- that is, extending beyond the Second Plan -- for overall livestock development which raises the original Plan targets substantially--meat production to 6.7% annually, meat exports to almost 15% annually, and milk production to 4.3% annually. The program calls for investments totaling TL 1,848 million during 1969-72 and TL 1,268 million in 1973-74. An additional TL 1,302 and TL 697 million would be required during these periods as short-term financing. The program as proposed is highly ambitious and is being revised both in scope and content. On the other hand, by 1975 an additional 30,000 tons of carcass meat will be required for internal consumption and it is unlikely that present and proposed fattening schemes will produce more than a third of it. Support for livestock development is of obvious priority.

93. In this connection, an "Intensive Dairy Production Project" was appraised for IDA assistance in autumn 1969 2/, and an "Integrated General Livestock Development Project" was being prepared for IDA appraisal. At end 1970, negotiations were in progress on a US\$4.5 million IDA credit for livestock I (Dairy) and a project preparation report was in train on Livestock II (\$15 million). The latter will include village livestock development in the northeastern highlands and on the Central Anatolian Plateau 3/, expansion of a fattening project currently underway 4/, and the construction of slaughterhouses 5/. A project of drying beet pulp for animal feed also is being implemented by the Sugar Corporation.

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1/ State Planning Organization, Economic Planning Department, "Development Programs for Turkish Livestock Sector", October 1968.

2/ Estimated total cost TL 63 million. "Intensive Dairy Production Turkey" (IBRD Report No. PA-36, February 11, 1970).

3/ Estimated total cost TL 577 million. "Draft Report of the Turkish Farm and Common Land Livestock Development Project in Turkey" (FAO/IBRD Cooperative Program Report No. 26/70 TUR 13, July 16, 1970).

4/ Estimated total cost TL 73.9 million. "Draft Report of the Sugar Beet Program Report No. 13/70 TUR 10, March 18, 1970.

5/ Estimated total cost TL 123 million. "Draft Report of the Abattoirs Development Project in Turkey" (FAO/IBRD Cooperative Program Report No. 14/70 TUR 10, March 19, 1970).

94. While the changes in price relationships indicated earlier increasingly should favor livestock and feedstuff development, the obstacles to any rapid expansion are formidable. Such expansion not only will require sizeable investments and vastly improved credit facilities, but a major extension effort and farmer education as well. Progress in reaching the large numbers of farmers involved, many with extremely limited resources, will necessarily be slow. The small size and fragmentation of farm holdings will be a further barrier. Much will depend upon the rate of progress in increasing wheat production and promoting rotational cropping. The marketing of livestock products, although leaving much to be desired, should not be a real bottleneck; most feedstuffs would be locally grown (generally on the farm producing the livestock); however, the need for organized marketing should also be recognized. It is leadership direction in the broad field of livestock development, including pasture and fodder crop development, and the provision of development credit, which are the basic requirements.

95. Nevertheless, it should be possible for Turkey to fatten some 500,000 cattle and at least 600,000 sheep annually by 1973-74, rising possibly to a combined level of 1.6 million in 1977. The additional output of meat would represent a significant increase over present levels, but still would be short of the targets of the Second Plan or the six-year development program.

96. Emphasis should be placed on the expansion of beef and poultry production for domestic consumption. Larger supplies of beef and poultry could substitute for mutton in local diets, freeing the latter for export. There is considerable scope for expanding the poultry industry in Turkey if incentives and technical assistance are provided to develop commercial broiler operations. For improving cattle breeds, greater attention should be given to the possibilities of artificial insemination. It would be necessary to import animals and establish necessary facilities such as insemination centers, transport refrigeration and communications.

#### Reduction of Surplus Production

97. The cost to the economy of producing surplus supplies of tobacco, tea and sugar should be an urgent concern of the Turkish Government. Present price support policy should be reviewed as soon as possible with an eye to reducing surplus output and at the same time improving quality. Considerable improvement could be made by greater use of differential pricing for varying grades of quality and establishing minimum standards of quality for purchases. Annual support prices also should be more flexible, based on market conditions for each particular year, and announced sufficiently early to influence the area of each crop planted.

98. Means are presently available for controlling the area and volume of sugar production. The Government yearly sets the amount of sugar to be produced, based on estimated domestic requirements, and determines the price and premiums (in cash or sugar) to be paid for sugarbeet. Since 1964, the price for sugarbeet has been uniform at TL 0.14 per kg, including the sugar premium. No allowance is made for variations in sugar content of the

beet. The selling price of sugar has been TL 3.00 per kg of crystal and TL 3.30 of cube since 1967. The Sugar Corporation contracts with groups of growers each year for specified quantities of sugarbeet, which is delivered to the Corporation's 17 factories for processing into sugar. The policy set forth in the Second Plan stipulates that production is to be adjusted in compliance with internal consumption, maintaining a "guarantee stock" to insure adequate supplies, and that no sugar is to be produced for export.

99. In the case of tobacco, output could be reduced and quality markedly improved by restricting cultivated areas to those which produce high-quality leaf and by establishing minimum quality levels below which there would be no purchases. The State Monopolies is hopeful that the new tobacco law coming into operation this year will allow greater control of cultivated areas than has been possible heretofore. The necessary adjustment in production could be accomplished through using the new law for reducing acreages and the intervention price as a further incentive to reduce the total area planted and to grow only high-quality leaf.

100. The tea situation, too, could be improved significantly by lowering the present support price for tea leaves (which has remained far above world levels at TL 3.50 per kg since 1966-67), 1/ and establishing a scale of prices depending upon quality. Such pricing would decrease yields by reducing the amount of coarse picking. This, in turn, would upgrade present quality, which is extremely low by world standards.

101. An estimated 400,000 families are engaged in tobacco growing, some 200,000 in tea, and another 250-300,000 in sugarbeet cultivation. Thus, any program to reduce production must be accompanied by measures to assist affected farmers in making the transition to alternative means of livelihood. To formulate and carry out such measures, however, it first will be necessary to determine the exact areas, numbers of persons and extent to which their incomes would be affected, and second, the technical and economic feasibility of alternative crops or other economic activities 2/. Based upon the results of these investigations, a project providing technical

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1/ For comparison, recent leaf tea prices (at TL 9.00=US\$1.00) in other countries have ranged between TL 70 and TL 100 per kg in Ceylon and India, TL 60-70 in Pakistan, and TL 50-60 in several African countries.

2/ Most high-quality tobacco is produced on rocky, sloping lands. Since much of the areas not suited to tobacco would be bottom lands, they should be capable of producing cereals, oilseeds, fruits, fodder crops and livestock. In the case of sugarbeets, many of the larger producers reportedly are switching to growing vegetables and other crops. Wheat and fodder crops to some extent also are being grown as rotation crops, and livestock fattening, based on beet pulp, is expanding in sugarbeet areas. Providing acceptable alternatives to tea cultivation probably will be more difficult, although there may be possibilities for fruit growing in many tea areas.

assistance and credit to affected farmers could be drawn up. Responsibility for technical assistance to farmers and overall supervision of the programs might be given to the Ministry of Agriculture, while credit could be channeled through the Agricultural Bank.

102. Other Price Supports. Although not immediately connected with reduction of surpluses, it is relevant to review some other price supports at this point. Price intervention in wheat and other cereals is the responsibility of the TMO (Soil Products Office). The TMO's purchases (mainly wheat) usually have been around 5% of total cereals output in any one year. Support prices have consistently been below market prices (although substantially above world prices). <sup>1/</sup> With increasing output in the future, it will be essential to keep the support price of wheat responsive to market conditions. Reductions in prices will be in order as output increases, and one objective of future policy should be to encourage shifting land which can grow higher valued crops to more efficient use.

103. Price supports for cotton, hazelnuts, pistachio nuts, grapes, dried figs, olive oil and sunflowers are handled by sales cooperatives. The Agricultural Bank advances credits to the cooperatives to finance marketing of their products and for price support purchases upon instructions of the Government, which also sets the support price. Although data are not generally available, production of some of the crops, particularly hazelnuts and raisins, apparently is heavily subsidized.

#### Greater Utilization of Forest Resources

104. As indicated earlier, Turkey's forests represent a major national resource which, under proper management, could form the basis for a forest industry of international size and competitiveness. To realize this potential, however, the Turkish wood-based industry must be put on a reasonably equivalent footing with international competition. It must have ready access to economically priced raw materials, based on efficient forest management and largely free of the costs of social assistance programs. Changes must be made in present policies and institutional arrangements, including the association of forest villagers in the forest economy, to facilitate such a development.

105. The development of large-scale integrated forest industries should be a major goal, but obviously will require time. In the immediate future, however, attention should be given to exploiting the possibilities which exist for producing sawn wood for export.

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<sup>1/</sup> At the former exchange rate of TL 9.00=US\$1.00, the prices paid to producers for soft wheat were substantially above the price of imported wheat. In 1969, for example, Turkish producers received TL 800 per ton, while imported wheat cost TL 533. At the new rate of exchange the 1970-71 price to producers (TL 930 per ton) would be roughly equivalent to the 1969 import price.

106. The UNDP/FAO Special Project in Forestry and Forest Development 1/ in 1969 established a target of 14.6 million m<sup>3</sup> of industrial roundwood to be cut by 1982. The Turkish Government advanced the target date to 1977. While resources and market would support such a target, either date is very ambitious in the context of present forest policies and practices. As suggested above, major changes would be necessary prerequisites for greater exploitation. Any accelerated forest development would require vigorous pursuit of the following measures: (1) early completion of national forest inventory and demarcation; (2) preparation of development plans, based upon economic criteria, defining size and location of industries and the forest management units which would supply them; (3) a new removals policy giving priority to more favorable sites, concentrating on fewer but larger tracts, and introducing clear felling with immediate replanting as rapidly as conditions permit; (4) legislation allowing forest concessions or allocation of forest areas for exclusive exploitation by large, integrated export-oriented industries; (5) guarantees for quantity, quality, price and source of supply for other forest industries; (6) elimination of social costs and all but directly relevant Ministry overheads from price of wood; (7) redefinition of government responsibilities to forest villagers, changing their rights to wood and grazing to direct financial assistance; (8) stepped up forest road construction.

107. Little rational planning for development is possible until a modern national forest inventory is completed. Priority should be given to covering the remaining areas before the end of 1971, if possible. Demarcation of forest areas also must be completed at an early date. Studies of national and regional infrastructure; location and size of plants; and feasibility and costs of road construction and logging and extraction in each region should form the basis of management plans. A new policy of forest removals should give priority to particularly favorable sites, such as the Black Sea region; concentration on larger tracts could produce substantial savings in costs. Costs of harvesting could be further reduced by speeding the flow of logs from forest to mills through more nearly year-round operations, increased mechanization, and elimination of present routing through forest depot.

108. Reforestation should be intensified to the extent it is economic. Optimum land use studies and the supply of seedlings and extension services at subsidized costs for private land reforestation could be useful tools. Forest and access road construction should be stepped up to around 10,000 km per year and be closely coordinated with location and completion of major factories.

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1/ "Forest Industries Preliminary Development Plan to 1982" (UNDP/FAO Special Project in Forestry and Forest Development, October 1969).

109. Any program of forest development obviously will have to include provision for the forest villagers, who now have legal rights to wood and grazing. Much of the problem could be solved through the increased employment opportunities which would result from greater exploitation. The UNDP/FAO Consultancy Mission estimated that the target of 14.6 million m<sup>3</sup> removals would increase the number of man-days of employment in direct commercial operations (road building, land preparation, wood harvesting, reforestation and tending cut-over areas) to 53.5 million compared with 22.1 million in 1968. Man-day requirements for additional related undertakings (such as constructing roads connecting with main highways, reforestation of degraded areas and afforestation for erosion control and watershed management) would rise from 5.0 million 1968 to 9.0 million with expanded operations.

110. Although these employment requirements, based upon present working techniques and mechanization, would be reduced by improved logging methods, the increase still could be considerable. Employment should be on a permanent rather than the present seasonal basis. Moreover, many of the 9 to 10 million forest villagers have sufficient employment and income from other sources so that they are not dependent upon the forests. Studies should be undertaken to identify the villagers requiring forest employment and/or other forms of assistance. Suitable alternative economic activities for dependent villagers also should be explored. A program of technical assistance and credit, possibly including direct grants for family maintenance, could aid their transition to these activities.

#### Farm Inputs

111. In spite of the dramatic rise in fertilizer use during recent years, the area covered and amount applied still fall considerably below requirements. Demand is projected to rise to about 760,000 nutrient tons by 1972 and 1.3 million tons by 1977. To handle these volumes and insure that they are available to farmers at the time required, planned expansions in domestic production will have to proceed on schedule, imports of finished fertilizers and raw materials for local manufacture will have to be made on time, distribution and marketing facilities enlarged, and sufficient credit for procurement and distribution provided. Provision of foreign exchange needed for imported items will have to be expedited. Steps also should be taken immediately to increase the Agricultural Bank's "Fertilizer Financing Fund" and guard against any repetition of the 1969-70 situation in which the fund was temporarily frozen for want of money.

112. Equally important is the need to insure that adequate supplies of seeds and nursery stock are provided to farmers when required. Importation of such items not available in Turkey should be expedited.

113. The Second Plan, on the assumption that the use of tractors will accelerate, projects the number of new tractors sold each year to rise to 15,600 in 1972, compared with 14,690 in 1967. The small size and fragmentation of holdings in Turkey obviously present a serious obstacle to rapid motor mechanization. The rural employment situation is another consideration

from the policy viewpoint. However, increased production of wheat (and other crops subsequently) on the Anatolian Plateau will greatly enlarge the need for deep-furrow seed drills, chisel plows and rod-weeders in the next few years. While some of these implements will be animal-drawn, soil conditions and other factors will dictate that a growing number be tractor-powered.

114. Since many of the holdings on the plateau are small, it will be necessary for farmers to be organized into cooperatives or groups able to purchase or rent such equipment. Measures should be taken to expand local manufacture of these items (including whatever size tractor is most suitable) as well as the land levelling and other equipment required for on-farm development. Production of these items has suffered from lack of credit and shortages of raw materials, especially steel. The future requirements for other tractors and tractor-drawn equipment versus those for animal-drawn implements should be assessed carefully in the light of anticipated manpower, employment, tenure, and other conditions.

#### Credit

115. The Second Plan expects that TL 5.5 billion (32% of the total investments in agriculture) will be invested in agriculture by the private sector during 1968-72, compared with TL 3.4 billion in the previous five years. (Both figures are in 1963 prices.) Since farm savings are limited, most of this amount will have to come from the Agricultural Bank. In order to meet these demands, the bank's funds available for development purposes will have to be expanded substantially. Second, the administrative capacity of the bank to handle such levels of lending effectively will have to be materially improved. The creation of new credit institutions might reduce the load on the Agricultural Bank, but it is doubtful that such a move would gain much in the immediate future. Considerable talent and time would be required to bring any new institutions up to the bank's present level of competence.

116. In any case, it will become increasingly necessary that the Agricultural Bank focus both its financial and administrative resources on activities which will maximize agricultural development. In the first place, the supply of medium- and long-term credit for making necessary agricultural improvements will have to be increased substantially.

117. Secondly, the bank's present emphasis on making small, seasonal operating loans to as many farmers as possible needs prompt reexamination. The requirements for short-term credit for fertilizers, seed and other inputs will grow rapidly. Such lending, however, should be concentrated as far as possible in larger, though possibly fewer, loans tied to the purchase of inputs or given in kind. Such credit could be better supervised and make a greater development impact. The bank's programs already oriented in this direction (e.g. supervised credit, special loans for improved seed and fertilizer) should be expanded.

118. The projected increase in fertilizer consumption will place heavy demands on the "Fertilizer Financing Fund". Thus, this fund should be increased sufficiently to insure adequate financing for both wholesale and retail operations. There is similar need to enlarge the supply of credit for improved seed and nursery stock.

119. Finally, the Agricultural Bank's policies and lending operations should be tied as closely as possible to the overall priorities of Turkey's agricultural development program. Without adequate credit none of the high priority activities outlined earlier -- full utilization of irrigation projects, increased wheat output, fruit and vegetable production for export, livestock development, reduced surplus production, greater utilization of forest resources -- can succeed fully. The need for effective coordination of the bank's lending with the activities of other agencies, especially the Ministry of Agriculture, is obvious. In this regard, serious consideration should be given to transferring responsibility for the bank from the Ministry of Commerce to the Ministry of Agriculture. This move should ease the task of coordination generally and supply a needed link between the technical resources of the Ministry and the operations, especially supervised credit, of the Bank. Given agricultural credit's importance, a study of overall requirements and policies, institutional and organizational arrangements for meeting these requirements is urgently needed. The study should pay particular attention to the role of the Agricultural Bank and upon possible changes in its structure and operations, and on its personnel needs.

#### Organization

120. Organization or reorganization at several levels is urgently needed. At the policy planning level, some kind of machinery must be established which will insure that for all of agriculture there is a common development strategy and set of priorities and that policies and resources necessary to carry out such a strategy are forthcoming. Such machinery should provide for effective coordination at all levels -- policy, planning, budgeting, and implementation.

121. One means for improving coordination of the agricultural development program might be the creation of an interagency agricultural planning group, under the auspices of the State Planning Organization. Such a planning group could be composed of representatives at the working level of the Ministry of Agriculture, Agricultural Bank, DSI, Topraksu, Ministry of Forests, Sugar Corporation, State Monopolies, Soil Products Office, Meat and Fish Organization and others (such as the Ministry of Finance) on an ad hoc basis as required. The group would draw up specific policies and programs within the framework of the development plan. It also could monitor progress on high priority activities, detecting bottlenecks and recommending corrective measures. Subgroups concerned with specific fields in projects (e.g. credit, fertilizers, irrigation) could function within the larger group.

122. The High Planning Council, augmented by the addition of the Ministers of Commerce, Energy and Natural Resources, Village Affairs, and

Monopolies, might act as an agricultural policy body, receiving and approving or disapproving the policies, programs and measures recommended by the agricultural planning group and periodically reviewing the progress of agricultural development generally.

123. Within this framework, the Ministry of Agriculture should play the leading role. However, it would have to be reorganized and strengthened materially. A limited number (say nine) of regional offices reporting directly to the Ministry would allow vastly better use of personnel and resources than is currently possible. In such an arrangement, field personnel no longer would be under the control of provincial governors. The existing directorates and general directorates in the Ministry might be reorganized into (1) field operations, responsible through the regional offices mentioned earlier, for farmer training, extension, plant protection, veterinary services and animal husbandry; (2) technical supporting services (including research for these functions); (3) marketing, inspection and control of agricultural, livestock and fisheries products; (4) other auxiliary and supporting services, such as the Agricultural Supply Agency and the production and distribution of seeds and nursery stock. Technical specialists could be on the staff of each regional office to provide technical support for country agents and other extension workers. Further backstopping could be provided by technical personnel in Ankara. There would have to be a general improvement in personnel qualification throughout the Ministry.

124. Serious consideration should be given to transferring responsibility for the Agricultural Bank, agricultural credit and sales cooperatives, Soil Products Office, and Meat and Fish Organization from the Ministry of Commerce to the Ministry of Agriculture. A regional structuring of abattoir companies seems a needed reform. In addition, upgrading the extension service generally, providing needed transportation and adequate allowances for work in the field would be essential.

125. Turning to irrigation, there is necessity for greater integration and better coordination among construction, on-farm development, and extension and other supporting services. While a case can be made for bringing the irrigation activities of DSI and Topraksu together under the Ministry of Agriculture, such a course probably is not feasible at this time. Instead, consideration should be given to making DSI responsible for the full development of irrigation projects, from constructing the major works through providing tertiaries, drainage, land levelling, farm roads and other project requirements.

126. To accomplish this task, much of DSI's capacity would have to be reoriented from its present construction of major facilities to the other works mentioned. In addition, those portions of Topraksu's organization, personnel and equipment which are responsible for irrigation development, might be transferred from the Ministry of Village Affairs to become an integral part of DSI and the nucleus of the latter's on-farm development organization. Topraksu's remaining functions logically fall into the province of the Ministry of Agriculture. Regardless, means must be provided

to insure that (a) completion and rehabilitation work is speeded-up; (b) sufficient resources are allocated for on-farm development and other irrigation follow-up activities; and (c) suitable arrangements are made for coordinating the work of DSI and Topraksu.

127. The exact organizational structures and agency relationships of the policy planning and coordination bodies, and the Ministry of Agriculture and DSI-Topraksu would have to be worked out. In any case, organization in both headquarters and field should be structured to concentrate rather than disperse limited resources. Present duplication and overlapping should be reduced and linkages among the various constituents of irrigation and agricultural development should be improved. At the implementation level, the greater use of project authorities or coordinating committees to direct and coordinate all of the different elements in a project might be useful. New legislation requiring time for preparation and passage would be necessary in most instances. Therefore, thought should also be given to possible ad hoc arrangements for the interim period.

128. The Ministry of Forests, established in 1969, currently consists of four general directorates, plus two departments which handle planning and coordination and organization and methods. A proposed new forest law would improve the organization by splitting the General Directorate of Forestry into four general directorates and making the General Directorate of Forest Industries a state economic enterprise. This might eventually be broken up into four independent regional enterprises and more closely associated with a similar distribution of responsibility within regional groupings of the State Pulp and Paper Organization (SEKA). However, the most pressing need in regard to forestry is the development of a national approach to forestry, and this consideration suggests that the Ministry of Forestry possibly should have policy control over pulp and paper as well as other aspects. The Ministry of Forests will need to form a strong planning and economic research unit to undertake urgently needed studies on domestic and foreign demand for forestry products and on the costs and prices appropriate to a competitive industry. The main object of national policy should be to modernize the extractive facilities and establish a system of timber production and sustained harvesting designed to meet growing demand and to capitalize on the export potential for wood and wood products.

#### Extension, Education and Research

129. As suggested above, agricultural extension, education and research might be reorganized on a regional basis, under the direction of a regional agricultural officer, and strengthened substantially. Each region would have an Agricultural Activity Center, which would house extension and research operations and be linked closely with agricultural training and educational institutions in the region.

130. There is need for both extension and research to focus upon problems of immediate concern to farmers. Their operations should be channeled to support high priority areas of activity as fully as possible. A particular problem with research in Turkish institutions is that it attempts

either to be too theoretical, e.g. at Lalahan, or it almost totally accepts the limits set to village production by existing constraint, e.g. at Gole; in both examples the vast improvements that could be made by applying existing knowledge are neglected. Coordination of research could be accomplished through a national agricultural research advising council, which should include official and private representatives and encompass research, farming and industrial interests. An office in the Ministry of Agriculture probably could supervise and coordinate the implementation of plans agreed upon by the council.

131. By combining extension personnel and making more concentrated use of them, it would be possible to obtain substantially improved performance without any large increase in numbers. It would be essential, however, to provide them with sufficient transportation and equipment, increase their allowances for work in the field (presently only TL 10 per day, plus TL 15 for overnight), and general salary levels, and provide in-service training. For the Veterinary Directorate, there should also be some shift of emphasis from inspectorial to extension functions.

132. An early review of the future roles of the haras (veterinary farms) and state farms is important. These farms would have to be better integrated into the Ministry's research and extension programs, many possibly could serve as agricultural activity centers.

133. An FAO/IBRD mission in October 1969 1/ recommended investments in agricultural research, extension and education of approximately US\$36 million.

#### Other Activities

134. While the activities discussed above should be given highest priority, obviously there are others which are important and cannot be neglected. Cotton, hazelnuts and pistachio nuts, for example, will continue to be important foreign exchange earners for Turkey. Efforts to improve their yields and quality should be intensified. The production of oilseeds will have to expand to keep pace with the growing demand for vegetable oils. Given the potential which exists, steps also should be taken to stimulate the development of marine fishing. Providing adequate marketing arrangements and long-term credit and improving fishery administration (which currently is divided among a number of ministries and agencies) would be essential to such development.

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1/ See "Report of the Reconnaissance/Identification Mission of Agriculture Development Services Including Education and Training, Turkey" (FAO/IBRD Cooperative Program, Report No. 17/70 TUR 12, April 16, 1970).

135. In irrigation, completing and better utilizing existing projects should have overriding priority for the next several years. Some new projects (such as the Ceyhan-Asiantas scheduled for Bank appraisal), however, may warrant consideration on the basis of hydro-electric power, flood control, land settlement, or other factors. The economic feasibility and priority of such projects should be clearly established, and in the case of hydro-electric power include comparison with alternative energy sources. The wider use of groundwater resources and small-scale irrigation, especially on the Anatolian Plateau, should be thoroughly investigated. Projects, however, should be properly planned and executed to insure that they are economic and that water is provided at the lowest possible cost.

136. Finally, the general goal of improving rural incomes and rural living conditions can be related to economic lines of development. Expanding the cultivation of high value crops, such as fruits and vegetables, which are land and labor intensive, will be the best possible means of rural economic development. Livestock development is another. Conditions in many areas, however, do not favor such enterprises and, even in areas where they are favorable, development frequently will be long-term. More immediate is the need to improve the present structure of farm holdings. A greater reliance in economic efficiency criteria in decision makings is perhaps the greatest single step that could be taken.

137. In connection with the structure of farming, the government should redouble its efforts to speed up the cadastral survey and registration of ownership. Consolidating small and fragmented holdings, especially in irrigated areas, should be accelerated and measures taken to prevent further subdivision. Distribution of land owned or reclaimed by the state, or obtained from large landowners, to farmers who have little or no land, should be intensified. (Between 1947-67, the program distributed only 2.0 million hectares to about 400,000 families.) The government, too, could improve present tenure conditions through regulating rental and partnership arrangements to allow long-term leases and eventual ownership by the cultivator. Organizing the many small and medium-sized farmers into cooperatives and other groupings will be essential to any widespread agricultural development or general improvement in rural living conditions.

IV. INVESTMENTS AND PREINVESTMENT STUDIESFirst and Second Development Plans

138. The First Plan (1963-67) called for agricultural investments of TL 12.1 billion, <sup>1/</sup> which were 18% of the total amount planned for the economy. An estimated TL 9.3 billion (78% of the target) was actually invested in agriculture, while in the rest of the economy some TL 54.3 billion (97% of the target) was invested. Thus most of the shortfall in First Plan investment was in agriculture (see Table 8).

Table 8

FIRST AND SECOND DEVELOPMENT PLAN INVESTMENTS

(TL billion)

|             | <u>First Plan (1963-67)</u> |                |                          | <u>Second Plan (1968-72)</u> |                |
|-------------|-----------------------------|----------------|--------------------------|------------------------------|----------------|
|             | <u>Target</u>               | <u>% Total</u> | <u>Actual Investment</u> | <u>Target</u>                | <u>% Total</u> |
| Agriculture | 12.1                        | 18             | 9.3                      | 16.9                         | 15             |
| Industry    | 21.0                        | 31             | 19.8                     | 38.0                         | 34             |
| Other       | 35.0                        | 51             | 34.5                     | 56.6                         | 51             |
| Total       | 68.1                        | 100            | 63.6                     | 111.5                        | 100            |

Sources: State Planning Organization and OECD

139. Investments in agriculture in the first two years of the Second Plan, however, were significantly above those in the previous five years. Compared with an annual average during the First Plan of TL 1.9 billion (rising from TL 1.4 billion in 1963 to TL 2.3 billion in 1967), agricultural investments were TL 2.7 billion in 1968 and an estimated TL 3.1 billion in 1969. Agricultural investments during 1968-72 are planned at TL 16.9 billion, 15% of the total. One-third of the amount would be in the private sector, concentrated in machinery and equipment; the larger part of public expenditures would go for irrigation (see Table 9 below). Besides increases

<sup>1/</sup> At 1965 prices. Unless otherwise noted, all investment figures in this section will be in 1965 prices.

in expenditures for irrigation and machinery and equipment, there also would be relatively larger expenditures for improved seeds and nursery stock, buildings, marketing facilities and forestry.

Table 9

AGRICULTURAL INVESTMENT IN FIRST AND SECOND PLANS

(TL million in current prices)

|                       | First Plan  |      |          |      |          |       |
|-----------------------|-------------|------|----------|------|----------|-------|
|                       | Private     |      | Public   |      | Total    |       |
|                       | TL mill.    | (%)  | TL mill. | (%)  | TL mill. | (%)   |
| Irrigation            | 177         |      | 3,546    |      | 3,723    | (39)  |
| Machinery & Equipment | 2,742       |      | 91       |      | 2,833    | (30)  |
| Other                 | 713         |      | 2,337    |      | 2,950    | (31)  |
| Total                 | 3,532       | (37) | 5,974    | (63) | 9,506    | (100) |
|                       | Second Plan |      |          |      |          |       |
|                       | Private     |      | Public   |      | Total    |       |
|                       | TL mill.    | (%)  | TL mill. | (%)  | TL mill. | (%)   |
| Irrigation            | 1,475       |      | 7,236    |      | 8,711    | (52)  |
| Machinery & Equipment | 3,477       |      | 148      |      | 3,625    | (21)  |
| Other                 | 843         |      | 3,721    |      | 4,564    | (27)  |
| Total                 | 5,795       | (34) | 11,106   | (66) | 16,900   | (100) |

Sources: State Planning Organization and OECD

Investments in High Priority Activities

140. The proposed level of investment in the Second Plan should be adequate for the scope of agricultural development envisaged during the period. However, some adjustment in their composition and in subsequent plans may be needed to insure sufficient concentration on high-priority activities.

Preinvestment Studies and Project Preparation

141. Investment requirements are not available for several of the high-priority activities, and most of those for which estimates are available would require additional study to develop suitable projects. The list below indicates some of the preinvestment preparations required. Appendix 4 lists preinvestment studies which are presently available or are underway.

Preinvestment Studies and Preproject Preparation

Completion and full utilization  
of existing irrigation projects

Survey of existing projects and  
formulation of overall program.

Increased wheat production

Review Ministry of Agriculture  
project, draw up program for  
studying expansion of Anatolian  
Plateau output, and prepare pilot  
project.

Fruits and vegetables

a) Export

Project preparation for 1973-77.

b) Domestic

Survey of requirements for domes-  
tic production, marketing and  
processing.

Livestock development

a) Feedstuffs and forage crops

Research and trials on forage  
crops; varieties and cultivation  
practices; harvesting, handling  
and storage.

b) Poultry

Survey for establishment of poul-  
try industry for urban centers.

Reduction of surplus production

Surveys of areas, numbers of  
persons and extent to which in-  
comes will be affected.

Studies of technical and economic  
feasibility of alternative crops  
or other economic activities.

Determination of technical assist-  
ance and credit requirements.

Greater utilization of forest

Completion of national forest inventory and demarcation of forest areas.

Overall development plans based upon national and regional infrastructure; feasibility and costs of road construction, logging and extraction.

Forest management plans for each unit.

Determination of investment requirements for logging operations, afforestation and forest roads for each unit.

Agricultural credit

Study of overall agricultural credit requirements.

Other activities

General feasibility study of Lower Euphrates irrigation and agricultural development. Study of effects of changes in volume, speed, seasonality and quality of water flows to lower valleys. Study of basis for International Agreement on Riparian Rights.

## V. PROSPECTS

### General

142. In spite of continuing decline in relative importance, agriculture still will play a major role in the Turkey economy for some time to come. Employment in non-agricultural pursuits is growing rapidly, but new job opportunities are not likely to be large enough to allow much reduction in the agricultural labor force. The high growth rate planned for the economy will not be possible without major increases in agriculture. Domestic demand for food, especially livestock products, will continue to increase rapidly; substantial expansion of local output will be required to avoid a gap between demand and supply. The heavy reliance of the economy on agricultural exports for foreign exchange earnings is unlikely to change in the immediate future.

143. Any major expansion in agricultural output over the longer term will depend largely on the use of more intensive production methods -- irrigation, fertilizers, improved seed, better implements and other modernization measures. These measures, in turn, will require substantial investments and greater working capital. The area under cultivation cannot be expected to expand much farther in view of the increases in marginal cropland and the steady decline in pasture land. In fact, a major effort will be required to enlarge the supply of feedstuffs, which presently is inadequate to feed the existing livestock population.

### Overall Growth

144. The Second Plan aims at increasing gross agricultural value added by 23%, or 4.2% each year (the same target as in the previous plan) during 1968-72. The planned investment of TL 16.9 billion in agriculture during the period implies a capital-output ratio of 2.7. <sup>1/</sup> This ratio is considerably higher than the 2.1 figure attained in the First Plan period. The proposed level of investment should be sufficient to generate the anticipated rate of growth, considering that emphasis will shift to on-farm development in the irrigation subsector.

145. However, given the shortfalls in the first two years and the likelihood of another poor wheat crop in 1970, it is extremely doubtful that Turkey can reach its gross agricultural growth target within the remaining years of the Plan period. Nonetheless, it should be possible with reasonably favorable weather and by concentrating on high-priority programs to expand output in 1971 and 1972 enough to achieve an average annual growth rate of 3.0 to 3.4% for the Plan period.

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<sup>1/</sup> While capital-output ratios in general should be approached with caution, they are particularly unreliable in agriculture due to the heavy influence of weather and the nature of agricultural technology, among other things. However, they remain useful as an indication of gross relationships.

146. By concentrating on better utilization of investments already made, particularly in irrigation, and on other activities which could yield fairly quick returns, such as the production of wheat, fruits and vegetables, it may be possible to reduce total planned investments. Some adjustment in the composition of the investment program would be necessary to insure such concentration. The principal determinants will be the speed with which the Government is able to mount these programs and make necessary improvements in policies, organization and supporting services -- especially agricultural credit.

147. In the subsequent plan period (1973-77), Turkey should be able to step up its agricultural growth significantly. A target of 4.5% to 5.0% annual increase in value added would not be unrealistic. Assuming a capital-output ratio in the neighborhood of 3.0 - 3.5, investment requirements would range around TL 20 to TL 30 billion.

148. In terms of particular products, it should be possible for Turkey to attain self-sufficiency in wheat production by the early part of the Third Plan period. The production and export of fresh fruits and vegetables also can be expanded markedly in the next several years. In the livestock sector, however, it is likely that progress will be slower than projected, and that problems of supply will continue for some time. Although forest resources are extensive, effective utilization probably will lag unless rigorous corrective measures are taken.

#### Foreign Trade

149. Agricultural exports by the end of the Second Plan should have recovered from the declines suffered in 1968 and 1969, but probably will fall considerably short of the planned increase of 4.2% per annum (23% for the five-year period). During 1973-77, total exports should expand more rapidly, due largely to rapid increases in fresh fruits and vegetables. The long-term outlook for Turkey's traditional exports (cotton, tobacco, nuts and dried fruit) is less certain. Hazelnut exports are projected to increase in view of rising Turkish production and the likelihood of continued increases in external demand. Turkish trade in raisins and dried figs also is expected to maintain past rates of growth. Tobacco and cotton, Turkey's two largest export products, are projected to register relatively modest gains.

150. Although the Government plans to increase exports of livestock products substantially, such an increase is unlikely in the near future. As the livestock development program makes progress in breaking the supply bottleneck, exports to Middle Eastern countries -- the principal market at present -- could expand substantially. Given the preferences in these countries, such exports would be mainly live animals (sheep) rather than meat products. Without marked improvement in supply, however, it is doubtful that Turkish production can meet domestic demand without significant price increases.

151. While fewer imports of cereals should be necessary in the future, imports of livestock products (mainly Merino wool) and coffee and cocoa will continue to rise. Imports of finished fertilizers should increase through 1975, but with expanding domestic manufacture should decrease after that time. Imports of raw materials, particularly phosphate rock, for local manufacture, however, will grow correspondingly.

#### Structural Improvement

152. The problems of high population growth rates, low incomes, unemployment and underemployment, and small and fragmented holdings, which afflict much of Turkish agriculture, are unlikely to be reduced appreciably during the Second or Third Plan periods. The contemplated production and investment programs will in many instances create new employment and income opportunities, particularly in connection with practices on the Anatolian Plateau. Development of the livestock industry also will offer better livelihoods for low-income farmers. Construction, operation and maintenance of agricultural projects will help to provide rural employment opportunities.

153. Nevertheless, the total impact of these developments probably will not be large enough to provide major relief. (Family planning measures are not expected to have significant effect on rural unemployment before 1983). Furthermore, the disparity between agricultural and nonagricultural incomes can be expected to widen as growth in the latter sectors continues to be faster than in the former.

154. Within the agricultural sector, too, little improvement in the structure of land holdings and the distribution of income can be foreseen in the near future. In the absence of a considerably stepped-up program, consolidation of the many small and fragmented holdings into viable units and prevention of further fragmentation will continue to lag. In any event, the problem of working with large numbers of farmers who have small and fragmented holdings will continue to confront the entire range of agricultural programs. In the absence of wide-scale organization of farmers into cooperatives, the benefits of many of the programs will be limited to larger farmers.

STATISTICS

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| 16 | Agricultural Credit Cooperatives Loans Outstanding, New<br>Loans, and Collections                       |
| 17 | Main Agricultural Targets in the First (1962-1967) and<br>Second (1968-1972) Economic Development Plans |
| 18 | Annual Rates of Increase of Main Products in the First and<br>Second Economic Development Plans         |
| 19 | Investment Program in Agriculture in the Second Economic<br>Development Plan (1968-72)                  |
| 20 | Structure of Investments in the First and Second Economic<br>Development Plans                          |



Table 1

PATTERN OF LAND USE

| Year | Area   |                    | Grazing<br>area      | Vineyards<br>and olive<br>Groves | Fruit and<br>vegetables | Forest | Wasteland |
|------|--------|--------------------|----------------------|----------------------------------|-------------------------|--------|-----------|
|      | Total  | Fallow<br>Per Cent |                      |                                  |                         |        |           |
| 1946 | 13,093 | 36.0               | -                    | -                                | -                       | -      | -         |
| 1951 | 17,361 | 36.0               | 34,789               | 1,031                            | 636                     | 10,584 | 13,298    |
| 1956 | 22,453 | 35.1               | 29,489               | 1,195                            | 681                     | 10,584 | 13,302    |
| 1961 | 23,076 | 34.4               | 28,767               | 1,361                            | 778                     | 10,584 | 13,232    |
| 1966 | 23,982 | 35.6               | 28,013               | 1,496                            | 888 <sup>/1</sup>       | 10,584 | 13,095    |
| 1967 | 23,836 | 34.9               | 26,135 <sup>/2</sup> | 1,514                            | 900                     | 12,578 | 13,095    |
| 1968 | 24,092 | 36.1               | 26,135               | 1,571                            | 1,405                   | 18,273 | 13,095    |
| 1969 | 24,731 | 35.7               | 26,135               | 2,512                            |                         | 18,273 | 13,095    |

<sup>/1</sup> Including tea.

<sup>/2</sup> Reduction is due to increase in forest area.

Source: Summary of Agricultural Statistics, 1966 and Agricultural Structure and Production 1968.

Note: Small anomalies occur in the figures due to revision of the estimate of the total area of Turkey. Land use statistics also require revision in the light of the recent discovery that the total forest area, formerly believed to be 10.6 million hectares, actually exceeds 18 million hectares.

Table 2

LAND DISTRIBUTION: NUMBER AND SIZE  
OF AGRICULTURAL HOLDINGS

| Size of Holding<br>Ha | No. of Holdings |       | Land Area  |       |
|-----------------------|-----------------|-------|------------|-------|
|                       | Total           | %     | Total      | Ha    |
| 0.1 - 5.0             | 2,132,291       | 68.6  | 5,219,248  | 25.0  |
| 5.1 - 20.0            | 853,425         | 27.6  | 8,775,146  | 42.0  |
| 20.1 - 100.0          | 110,764         | 3.6   | 4,932,427  | 23.0  |
| 100.1 - 500.0         | 3,832           | 0.1   | 1,632,655  | 7.7   |
| Over 500              | 491             |       | 513,072    | 2.3   |
|                       | 3,100,803       | 100.0 | 21,072,548 | 100.0 |

Note: A reputed 308,000 rural families having no land or less than one decare have been excluded.

Source: Budget Speech of Minister of Agriculture, 1968.  
Data derived from 1963 agricultural census.

Table 3

AGRICULTURAL CROP PRODUCTION

(000 metric tons)

| Product                 | Average<br>1950-55 | Average<br>1956-62 | 1963   | 1964  | 1965  | 1966  | 1967   | 1968  | 1969   | 1970                |
|-------------------------|--------------------|--------------------|--------|-------|-------|-------|--------|-------|--------|---------------------|
| <u>Cereals</u>          |                    |                    |        |       |       |       |        |       |        |                     |
| Wheat                   | 5,120              | 7,858              | 10,000 | 8,300 | 8,500 | 9,600 | 10,000 | 9,520 | 10,500 | 9,500 <sup>a/</sup> |
| Barley                  | 2,820              | 3,371              | 4,288  | 3,200 | 3,300 | 3,800 | 3,800  | 3,560 | 3,740  | 3,100 <sup>a/</sup> |
| Maize                   | 807                | 914                | 990    | 1,000 | 945   | 1,000 | 1,050  | 1,000 | 1,000  | 1,010 <sup>a/</sup> |
| Rye                     | 590                | 669                | 900    | 735   | 775   | 850   | 900    | 820   | 817    | 650                 |
| Other Cereals           | 1,001              | 1,179              | 700    | 1,153 | 1,150 | 1,161 | 1,119  | 774   | 1,044  | 957                 |
| Pulses                  | 443                | 573                | 608    | 583   | 589   | 588   | 610    | 594   | 593    | 538                 |
| <u>Industrial Crops</u> |                    |                    |        |       |       |       |        |       |        |                     |
| Potatoes                | 879                | 1,367              | 1,600  | 1,700 | 1,680 | 1,750 | 1,760  | 1,805 | 1,936  | 1,862               |
| Sugar beet              | 1,232              | 2,828              | 3,280  | 4,706 | 3,421 | 4,422 | 5,523  | 4,715 | 3,354  | 3,975               |
| Tobacco                 | 101                | 116                | 132    | 193   | 132   | 164   | 189    | 160   | 142    | 153                 |
| Cotton (lint)           | 145                | 187                | 257    | 326   | 325   | 382   | 396    | 404   | 400    | 340                 |
| Oil seeds               | 480                | 554                | 622    | 792   | 793   | 909   | 968    | 1,048 | 1,072  | 989                 |
| Tea (dry)               | --                 | --                 | 10     | 10    | 13    | 23    | 21     | 27    | 34     |                     |
| <u>Fruits and Nuts</u>  |                    |                    |        |       |       |       |        |       |        |                     |
| Apples                  | 143                | 227                | 327    | 337   | 362   | 440   | 640    | 700   | 620    | 700                 |
| Grapes                  | 1,750              | 2,883              | 2,692  | 2,790 | 3,350 | 3,100 | 3,500  | 3,725 | 3,635  | 3,700               |
| Peaches                 | 50                 | 67                 | 63     | 111   | 66    | 65    | 103    | 99    | 66     | 80                  |
| Figs                    | 104                | 161                | 208    | 206   | 210   | 215   | 232    | 215   | 215    | 200                 |
| Olives                  | 334                | 465                | 619    | 694   | 394   | 841   | 495    | 822   | 308    | 800                 |
| Hazelnuts               | 70                 | 103                | 88     | 195   | 62    | 190   | 71     | 138   | 170    | 240                 |
| Citrus fruits           | 118                | 268                | 384    | 325   | 425   | 456   | 545    | 679   | 562    | 536                 |

a/ State Planning Organization estimates adjusted upward. Since State Institute Statistics for wheat, barley, maize and rye are considered to be over-estimated, the SPO revises them downward by 12.5%. Hence, national accounts figures and SPO production figures given elsewhere (See Table 4) will not be consistent with those here.

Sources:

- 1950 - 69 State Institute of Statistics: Some 1969 figures are revised in accordance with later State Planning Organization estimates.
- 1970 State Planning Organization estimates, but with major cereals adjusted upward to maintain SIS series.

Table 4

QUANTITY AND VALUE OF AGRICULTURAL PRODUCTION

(Quantity in 000 MT)  
(Value in TL million in 1965 prices)

| Product           | 1968     |        | 1969     |        | 1970 <sup>a</sup> |         | 1971 Program |        | Chain Index |       |       |       |
|-------------------|----------|--------|----------|--------|-------------------|---------|--------------|--------|-------------|-------|-------|-------|
|                   | Quantity | Value  | Quantity | Value  | Quantity          | Value   | Quantity     | Value  | 1968        | 1969  | 1970  | 1971  |
| Wheat             | 8,330    | 6,298  | 9,188    | 6,947  | 8,312.5           | 6,285.1 | 9,625        | 7,278  | 95.2        | 110.3 | 90.9  | 115.8 |
| Barley            | 3,115    | 1,626  | (10,500) | 3,273  | 2,712.5           | 1,415.9 | 3,500        | 1,827  | 95.7        | 105.1 | 82.8  | 109.0 |
| Rye               | (820)    | 400    | (817)    | 399    | 568.7             | 317.0   | 750          | 418    | 91.1        | 99.7  | 79.4  | 131.8 |
| Oats              | 394      | 182    | 410      | 189    | 376.0             | 173.7   | 450          | 208    | 88.3        | 104.1 | 91.7  | 119.7 |
| Mixed grain       | 270      | 165    | 297      | 181    | 300.0             | 183.0   | 250          | 153    | 89.9        | 109.6 | 101.1 | 83.3  |
| Spelts            | 83       | 38     | 81       | 37     | 91.9              | 42.1    | 95           | 44     | 86.5        | 97.6  | 113.4 | 103.3 |
| Maize             | 875      | 545    | 875      | 545    | 883.7             | 550.7   | 950          | 592    | 95.3        | 100.0 | 100.9 | 107.5 |
| Millet            | 53       | 31     | 56       | 33     | 60.0              | 35.3    | 60           | 35     | 96.3        | 106.4 | 106.9 | 100.0 |
| Rice              | 189      | 265    | 194      | 272    | 185.0             | 259.0   | 200          | 280    | 97.9        | 102.6 | 95.2  | 108.1 |
| Canary seed       | 3        | 2      | 3        | 2      | 4.0               | 2.9     | 4.2          | 3      | 97.3        | 115.7 | 131.8 | 105.0 |
| Total grain       | 14,030   | 9,432  | 15,025   | 10,315 | 13,434.3          | 9,264.7 | 15,789.2     | 10,837 | 94.2        | 107.9 | 89.8  | 117.0 |
| Pulses            | 596      | 648    | 592      | 660    | 538               | 605     | 646          | 712    | 97.1        | 101.8 | 91.7  | 117.8 |
| Industrial crops  | 7,130    | 4,804  | 5,846    | 4,390  | 6,345             | 4,244   | 7,557        | 4,635  | 99.8        | 91.4  | 96.7  | 109.2 |
| Cotton            | 435      | 1,560  | 400      | 1,802  | 340               | 1,532   | 400          | 1,802  | 109.8       | 91.9  | 85.0  | 117.6 |
| Tobacco           | 161      | 1,196  | 142      | 1,055  | 153               | 1,139   | 140          | 1,040  | 88.5        | 88.2  | 108.0 | 91.3  |
| Sugarbeet         | 4,714    | 625    | 3,354    | 444    | 3,975             | 527     | 5,000        | 663    | 90.7        | 71.1  | 117.5 | 129.6 |
| Potatoes          | 1,805    | 953    | 1,936    | 1,022  | 1,862             | 983     | 2,000        | 1,056  | 107.6       | 107.2 | 96.2  | 107.4 |
| Others            | 15       | 70     | 14       | 67     | 15                | 63      | 17           | 74     | 95.7        | 94.0  | 117.5 | 117.5 |
| Oilseed           | 1,053    | 1,047  | 1,072    | 1,070  | 989               | 1,003   | 1,121        | 1,130  | 109.4       | 102.2 | 93.6  | 112.6 |
| Sunflower         | 230      | 243    | 310      | 328    | 325               | 344     | 350          | 370    | 100.0       | 135.0 | 104.9 | 107.7 |
| Cottonseed        | 701      | 584    | 640      | 533    | 550               | 458     | 640          | 533    | 110.6       | 91.3  | 86.0  | 116.7 |
| Others            | 122      | 220    | 122      | 209    | 114               | 201     | 131          | 227    |             | 95.0  | 96.2  | 112.9 |
| Fruits and Nuts   | 10,727   | 6,311  | 10,094   | 5,182  | 10,743            | 6,543   | 10,793       | 6,087  | 125.2       | 83.1  | 125.2 | 93.6  |
| Oranges           | 530      | 137    | 350      | 146    | 376               | 156     | 400          | 166    | 105.4       | 106.2 | 107.4 | 106.4 |
| Mandarins         | 55       | 36     | 63       | 41     | 73                | 47      | 80           | 53     | 110.0       | 114.7 | 114.7 | 110.7 |
| Lemons            | 74       | 56     | 78       | 59     | 82                | 62      | 86           | 65     | 104.1       | 105.1 | 105.4 | 104.8 |
| Sub-total b/c     | 464      | 231    | 496      | 248    | 536               | 268     | 572          | 286    | 105.8       | 107.4 | 108.1 | 106.8 |
| Apples            | 700      | 479    | 620      | 424    | 700               | 479     | 700          | 479    | 109.3       | 88.5  | 112.9 | 100.0 |
| Pears             | 180      | 111    | 160      | 99     | 165               | 102     | 180          | 111    | 109.0       | 79.0  | 100.3 | 106.6 |
| Plums             | 105      | 44     | 97       | 41     | 100               | 42      | 100          | 42     | 103.0       | 92.0  | 103.2 | 100.7 |
| Apricots          | 131      | 71     | 113      | 61     | 120               | 65      | 120          | 65     | 111.0       | 85.3  | 106.6 | 100.0 |
| Peaches           | 99       | 51     | 66       | 34     | 80                | 41      | 80           | 41     | 96.2        | 66.5  | 121.2 | 100.0 |
| Figs              | 215      | 85     | 215      | 85     | 200               | 80      | 200          | 80     | 97.6        | 100.0 | 93.5  | 100.0 |
| Grapes            | 3,725    | 1,620  | 3,635    | 1,581  | 3,700             | 1,610   | 3,900        | 1,697  | 106.4       | 97.6  | 101.8 | 105.4 |
| Olives            | 822      | 1,823  | 308      | 683    | 800               | 1,774   | 600          | 1,331  | 106.1       | 37.4  | 254.9 | 75.0  |
| Hazelnuts         | 138      | 443    | 170      | 546    | 240               | 770     | 190          | 610    | 194.4       | 123.2 | 141.7 | 79.2  |
| Pistachio         | 19       | 81     | 4        | 19     | 15                | 65      | 15           | 65     | 220.1       | 22.9  | 349.4 | 100.0 |
| Watermelon        | 3,600    | 482    | 3,670    | 491.7  | 3,580             | 480     | 3,600        | 482    | 103.4       | 102.0 | 97.5  | 100.0 |
| Tea (leaf)        | 127      | 445    | 160.1    | 560    | 130               | 455     | 130          | 455    | 126.4       | 125.3 | 81.3  | 100.0 |
| Vegetables        | 4,999    | 1,396  | 5,103    | 1,442  | 5,803             | 1,621   | 6,180        | 1,724  | 104.5       | 103.2 | 112.4 | 106.4 |
| Others            |          | 4,027  |          | 4,396  |                   | 4,300   |              | 4,500  | 100.6       | 109.2 | 92.8  | 124.6 |
| Total crops       |          | 27,785 |          | 27,454 |                   | 27,580  |              | 29,624 |             | 98.8  | 100.5 | 107.5 |
| Livestock         |          | 12,126 |          | 11,986 |                   | 11,804  |              | 12,271 |             | 98.8  | 98.5  | 103.2 |
| Meat              |          |        | 589      |        | 599               |         | 624          |        |             |       |       |       |
| Milk              |          |        | 3,552    |        | 3,552             |         | 3,603        |        |             |       |       |       |
| Eggs              |          |        | 91       |        | 100               |         | 107          |        |             |       |       |       |
| Fisheries         |          | 207    |          | 275    |                   | 251     |              | 274    |             | 133.3 | 91.0  | 109.1 |
| Forestry          |          | 1,352  |          | 1,399  |                   | 1,564   |              | 1,666  |             | 103.5 | 111.8 | 106.5 |
| TOTAL AGRICULTURE |          | 41,471 |          | 41,115 |                   | 41,198  |              | 43,834 |             | 99.1  | 100.2 | 100.0 |

Notes:

a/ Estimated

b/ State Institute of Statistics figures are given in parentheses. See Table 3.

c/ Totals do not add in all cases due to omission of relatively insignificant other crops

Source: State Planning Organization

Table 5

NUMBER OF LIVESTOCK

| Year | Total | (----- in millions -----) |                   |                 |        |           |        |         | (in thousands) |        |
|------|-------|---------------------------|-------------------|-----------------|--------|-----------|--------|---------|----------------|--------|
|      |       | Sheep                     | Ordinary<br>Goats | Angora<br>Goats | Cattle | Buffaloes | Horses | Donkeys | Mules          | Camels |
| 1962 | 70.9  | 31.6                      | 16.4              | 5.7             | 12.7   | 1.2       | 1.2    | 1.9     | 207.8          | 52.7   |
| 1963 | 71.0  | 32.3                      | 15.9              | 5.6             | 12.7   | 1.2       | 1.2    | 1.9     | 204.9          | 48.3   |
| 1964 | 71.6  | 32.7                      | 15.6              | 5.6             | 13.2   | 1.2       | 1.2    | 1.9     | 216.4          | 46.4   |
| 1965 | 72.0  | 33.4                      | 15.3              | 5.5             | 13.2   | 1.2       | 1.2    | 2.0     | 225.0          | 45.9   |
| 1966 | 74.1  | 34.7                      | 15.3              | 5.6             | 13.8   | 1.3       | 1.2    | 2.0     | 238.0          | 43.0   |
| 1967 | 75.4  | 35.9                      | 15.2              | 5.5             | 14.2   | 1.2       | 1.2    | 2.0     | 259.0          | 43.0   |
| 1968 | 75.7  | 36.6                      | 15.2              | 5.5             | 13.8   | 1.3       | 1.2    | 2.0     | 273.0          | 42.0   |
| 1969 | 76.2  | 37.0                      | 15.1              | 5.4             | 14.0   | 1.3       | 1.1    | 2.0     | 280.0          | 41.0   |

Table 6

PRODUCTION OF WOOL, HAIR AND MOHAIR

|             | (000 tons)  |             |               |
|-------------|-------------|-------------|---------------|
| <u>Year</u> | <u>Wool</u> | <u>Hair</u> | <u>Mohair</u> |
| 1962        | 42.710      | 9.3         | 8.9           |
| 1963        | 43.3        | 9.2         | 8.920         |
| 1964        | 43.000      | 8.900       | 8.500         |
| 1965        | 43.000      | 8.700       | 8.300         |
| 1966        | 44.000      | 8.700       | 8.800         |
| 1967        | 46.000      | 8.700       | 8.400         |
| 1968        | 48.000      | 8.700       | 8.500         |
| 1969 (Plan) | 54.205      | 8.580       | 8.823         |
| 1970 (Plan) | 55.018      | 8.665       | 8.096         |

Table 7

AGRICULTURAL BANK LOANS

(millions TL end of year)

|   | <u>1965</u>  | <u>1966</u>  | <u>1967</u>  | <u>1968</u>         | <u>1969</u>         |
|---|--------------|--------------|--------------|---------------------|---------------------|
| <u>Loans Outstanding</u>  |              |              |              |                     |                     |
| Commercial  | 1,587        | 1,900        | 2,314        | 2,058               | 2,207               |
| Agricultural  | <u>3,206</u> | <u>4,531</u> | <u>5,551</u> | <u>7,393</u>        | <u>8,861</u>        |
| Total   | 4,793        | 6,431        | 7,865        | 9,451               | 11,068              |
| <u>Delinquent Loans &amp; Accounts</u>                                |              |              |              |                     |                     |
| Commercial  | --           | --           | --           | 299                 | 299                 |
| Agricultural  | --           | --           | --           | 524                 | 848                 |
| Sales Cooperatives  | --           | --           | --           | (197) <sup>a/</sup> | (269) <sup>a/</sup> |
| Other   | --           | --           | --           | <u>4</u>            | <u>6</u>            |
| Total   |              | 567          | 577          | 827                 | 1,153               |
| <u>Agricultural Loans Outstanding</u><br>(including delinquent loans) |              |              |              |                     |                     |
| Short-term  | 2,860        | 4,035        | 4,837        | 6,601               | 7,806               |
| Medium and long term <sup>b/</sup>                                    | <u>632</u>   | <u>788</u>   | <u>1,018</u> | <u>1,317</u>        | <u>1,903</u>        |
| Total   | 3,492        | 4,823        | 5,855        | 7,918               | 9,709               |
| % Short-term  | 81%          | 84%          | 83%          | 83%                 | 80%                 |
| Average size of loan (TL) <sup>c/</sup>                               |              |              |              |                     |                     |
|   | 1,408        | 1,222        | 1,535        | 1,750               | 1,992               |

<sup>a/</sup> Marketing loans for price intervention by cooperatives. Not included in totals.

<sup>b/</sup> More than one-year

<sup>c/</sup> Direct, excluding those through cooperatives

Source: Agricultural Bank of Turkey

Table 8

AGRICULTURAL BANK OF TURKEY

SUMMARIZED BALANCE SHEET

(Millions TL, End of Period)

|                                    | <u>1967</u>  | <u>1968</u>  | <u>1969</u>  |
|------------------------------------|--------------|--------------|--------------|
| <u>Assets</u>                      |              |              |              |
| Cash and liquid deposits           | 530          | 849          | 910          |
| Compulsory reserves                | 1,119        | 1,349        | 1,412        |
| Agricultural loans                 | 5,551        | 7,393        | 8,861        |
| Commercial loans                   | 2,314        | 2,058        | 2,207        |
| Equity investments                 | 236          | 236          | 257          |
| Fixed assets                       | 264          | 301          | 343          |
| Unpaid capital                     | 538          | 498          | 472          |
| Delinquent loans and accounts      | 577          | 827          | 1,153        |
| Other                              | <u>1,102</u> | <u>1,397</u> | <u>1,621</u> |
| Total                              | 12,231       | 14,909       | 17,236       |
| <u>Liabilities</u>                 |              |              |              |
| Capital and reserves <sup>a/</sup> | 1,768        | 1,776        | 1,771        |
| Central bank advances              | 2,288        | 3,437        | 4,342        |
| Deposits                           | 6,683        | 7,906        | 8,736        |
| Bonds issued                       | 88           | 76           | 62           |
| Other items                        | 1,327        | 1,650        | 2,282        |
| Net profit                         | <u>77</u>    | <u>64</u>    | <u>42</u>    |
| Total                              | 12,231       | 14,909       | 17,236       |

a/ Authorized capital of TL 1,500 million (includes unpaid capital).

Note: Total may not equal sums of parts due to rounding.

Source: Agricultural Bank of Turkey.

Table 9

AGRICULTURAL BANK OF TURKEY - INCOME AND EXPENDITURE

(Millions TL)

|                                      | <u>1967</u> | <u>1968</u> | <u>1969</u> |
|--------------------------------------|-------------|-------------|-------------|
| <u>Income</u>                        |             |             |             |
| Interest and commissions             | 648         | 758         | 903         |
| Banking services                     | 58          | 59          | 78          |
| Bonds                                | 10          | 32          | 32          |
| Equity investments                   | 10          | 10          | 10          |
| Foreign exchange transactions        | 6           | 7           | 8           |
| Other                                | <u>23</u>   | <u>26</u>   | <u>27</u>   |
| Total                                | 756         | 892         | 1,057       |
| <u>Expenditures</u>                  |             |             |             |
| Interest and commission paid         | 321         | 403         | 524         |
| Salaries and wages                   | 224         | 265         | 317         |
| Taxes                                | 29          | 38          | 41          |
| Incentive awards on savings accounts | 11          | 16          | 19          |
| Depreciation and provisions          | 11          | 16          | 15          |
| Other                                | <u>83</u>   | <u>91</u>   | <u>99</u>   |
| Total                                | 679         | 829         | 1,015       |
| <u>Net Profit</u>                    | 77          | 64          | 42          |

Table 10

AGRICULTURAL BANK OF TURKEY - SOURCE & COST OF FUNDS

| (Millions TL)          |              |          |              |          |              |          |
|------------------------|--------------|----------|--------------|----------|--------------|----------|
| <u>Source of Funds</u> | <u>1967</u>  | <u>%</u> | <u>1968</u>  | <u>%</u> | <u>1969</u>  | <u>%</u> |
| Current accounts       | 2,229        |          | 2,697        |          | 2,932        |          |
| Deposits               | <u>4,453</u> |          | <u>5,209</u> |          | <u>5,805</u> |          |
| Sub-Total              | 6,683        | 58%      | 7,906        | 57%      | 8,737        | 54%      |
| Re-discounts           | 2,288        |          | 3,438        |          | 4,342        |          |
| Other external         | <u>962</u>   |          | <u>1,029</u> |          | <u>1,362</u> |          |
| Sub-Total              | 3,250        | 29%      | 4,467        | 32%      | 5,704        | 36%      |
| Capital and reserves   | 1,422        | 13%      | 1,505        | 11%      | 1,559        | 10%      |
| Total                  | 11,355       | 100%     | 13,878       | 100%     | 16,000       | 100%     |

Cost of Funds - 1969

Annual interest (%)

|                        |    |
|------------------------|----|
| Current accounts       | 2  |
| Deposits               |    |
| less than 4 months     | 2  |
| less than 4-6 months   | 4  |
| less than 6-12 months  | 5  |
| less than 12-18 months | 6  |
| 18 months or longer    | 6½ |

Source: Agricultural Bank of Turkey

AGRICULTURAL BANK INTEREST RATE

| <u>Category</u>  | <u>(% per annum)</u><br><u>Interest Rate</u> | <u>Other Charges</u>                                       |
|--|--|--|
| <u>A. Regular Operations</u>   |  |  |
| <u>Agricultural loans</u>  |  |  |
| Short-term   | 9  | $\frac{1}{2}\%$ commission for supervision                 |
| Medium and long-term   | 7  | $\frac{1}{2}\%$ commission for supervision                 |
| <u>Commercial loans</u>  | 10 $\frac{1}{2}$                             | $\frac{1}{2}\%$ commission and taxes of 20% on all charges |
| <u>B. Special Operations</u>   |  |  |
| <u>Promotion and encouragement funds</u> (2 $\frac{1}{2}\%$ goes to Agricultural Bank, remainder goes to government)                                   |  |  |
| Agricultural development   | 5  |  |
| Food processing  | 8  |  |
| Chemical industry  | 4 $\frac{1}{2}$                              |  |
| Forest products processing for export  |  |  |
| Manufacture of agr. machinery and equipment  | 8  |  |
| Export promotion   | 3  |  |
| <u>Credits to exporters</u> (USAID fund of TL 20 million)  | 4 $\frac{1}{2}$                              |  |
| <u>Special fund of Central Bank for development of export trade</u>  | 6  |  |
| <u>Livestock feeding and marketing from USAID fund</u><br>(Agricultural Bank returns 3%; 2% goes to veterinary services and remainder accrues to fund) |  |  |
| <u>Supervised credit</u> (USAID and local funds)   |  |  |
| Short-term   | 9  | $\frac{1}{2}\%$ commission                                 |
| Medium and long-term   | 7  | $\frac{1}{2}\%$ commission                                 |
| <u>Loans to government bodies and State enterprises</u>  | 10 $\frac{1}{2}$ (most)                      |  |
| <u>Loans to credit cooperatives</u>  | 5  |  |
| <u>Loans to sales cooperatives</u>   |  |  |
| Domestic   | 10 $\frac{1}{2}$                             |  |
| Exports  | 5  |  |
| <u>Loans under Topraksu schemes</u>  | 5  | 9% penalty on overdue balance                              |

Table 12

AGRICULTURAL BANK OF TURKEY

SUPERVISED AGRICULTURAL LOANS

| <u>Year</u> | <u>No. of Bank branches participating</u> | <u>No. of farm units under program</u> | <u>Percentage increase of farm units over previous year</u> | <u>Dekars<sup>1/</sup> of land covered by loan applications</u> | <u>Money allocated to Bank branches for program</u><br>(TL million) | <u>Loans Outstanding</u><br>(TL million) |
|-------------|---|--|---|---|---|--|
| 1965        | 7   | 325                                    | 353%  | 35,931  | 8   | ) ) )<br>54                              |
| 1966        | 21  | 1,369                                  | 421%  | 158,237   | 30  |  |
| 1967        | 66  | 3,664                                  | 267%  | 426,448   | 64  |  |
| 1968        | 92  | 7,758                                  | 211%  | 768,654   | 98  | 102                                      |
| 1969        | 180                                       | 12,434                                 | 160%  | 1,178,139   | 107   | 167                                      |

Supervised agricultural loan funds allocated to Bank branches according to loan subjects as of December 31, 1969

|                                      | <u>TL Millions</u> |
|--------------------------------------|--------------------|
| Operating loans                      | 69                 |
| Irrigation and land improvement      | 11                 |
| Agricultural machinery and equipment | 65                 |
| Livestock                            | 128                |
| Installations and other investments  | 38                 |

<sup>1/</sup> 10 Dekars = 1 hectare

Source: Agricultural Bank of Turkey

Table 13: BASIS FOR AMOUNTS OF AGRICULTURAL BANK LOANS  
(TL)

A. Short-Term Operational

| Type of crop | Cash per dekar $\frac{1}{10}$ of land | Credit for fertilizer | Credit for seeds per dekar $\frac{1}{10}$ of land | Gasoline |
|--------------|---------------------------------------|-----------------------|---|----------|
| Opium        | 32.-                                  | 45.40                 | -   | 5.-      |
| Pistachio    | 50.-                                  | -                     | -   | -        |
| Sunflower    | 40.-                                  | 43.93                 | -   | 5.-      |
| Legumes      | 60.-                                  | -                     | -   | 5.-      |
| Strawberries | 125.-                                 | -                     | -   | 5.-      |
| Other fruits | 80.-                                  | -                     | -   | -        |
| Peanuts      | 80.-                                  | 13.63                 | -   | -        |
| Alfalfa      | 25.-                                  | -                     | -   | 5.-      |
| Roses        | 15.-                                  | -                     | -   | -        |
| Cereal       | 12.-                                  | 46.13                 | 17.-  | 5.-      |
| Figs         | 60.-                                  | -                     | -   | -        |
| Corn         | 15.-                                  | 59.38                 | -   | 5.-      |
| Bananas      | 400.-                                 | 201.95                | -   | -        |
| Oranges      | 300-400.-                             | 30.72                 | -   | -        |
| Cotton       | 30- 75.-                              | 45.40                 | 6.-   | 5.-      |
| Potatoes     | 50.-                                  | 81.25                 | -   | 5.-      |
| Rice         | 65.-                                  | 18.-                  | -   | -        |
| Vegetables   | 200-400.-                             | 13.63                 | -   | 5.-      |
| Soya         | 50.-                                  | 44.07                 | 8.40  | 5.-      |
| Sesame       | 50.-                                  | 68.90                 | -   | 5.-      |
| Tobacco      | 50-130.-                              | 35.60                 | -   | 5.-      |
| Grapes       | 60-150.-                              | 74.-                  | -   | 5.-      |

$\frac{1}{10}$  10 dekars = 1 hectare.

B. Agricultural Machinery and Equipment Loans

TL per unit

|            |        |
|------------|--------|
| Tractors   | 30,000 |
| Trailers   | 5,000  |
| Harvesters | 75,000 |
| Other      | 15,000 |

Source: Agricultural Bank.

Table 14

AGRICULTURAL CREDIT COOPERATIVES

|                            | <u>1965</u> | <u>1966</u> | <u>1967</u> | <u>1968</u> | <u>1969</u> |
|----------------------------|-------------|-------------|-------------|-------------|-------------|
| Number of Cooperatives     | 1,734       | 1,816       | 1,871       | 1,936       | 1,985       |
| Number of Villages         | 18,458      | 19,796      | 20,884      | 21,091      | 20,615      |
| Number of Members<br>(000) | 1,091.2     | 1,153.2     | 1,225.3     | 1,266.2     | 1,293.8     |

Source: Agricultural Bank of Turkey

Table 15

AGRICULTURAL CREDIT COOPERATIVES  
NUMBER AND SIZE OF NEW LOANS EXTENDED

|      | <u>Number of<br/>Loans</u> | <u>Total Credit<br/>Extended<br/>(TL Millions)</u> | <u>Mean Loan<br/>(TL)</u> | <u>Median Loan<br/>(TL)</u> |
|------|----------------------------|--|---------------------------|-----------------------------|
| 1965 | 829                        | 932  | 1,122                     | 655                         |
| 1966 | 934                        | 1,259  | 1,346                     | 774                         |
| 1967 | 1,061                      | 1,682  | 1,584                     | 990                         |
| 1968 | 1,055                      | 1,742  | 1,649                     | 1,034                       |

Source: Agricultural Bank of Turkey

Table 16

AGRICULTURAL CREDIT COOPERATIVES

LOANS OUTSTANDING, NEW LOANS, AND COLLECTIONS

(TL Millions)

|      | <u>Loans Outstanding<br/>at Beginning<br/>of Year</u> | <u>New Loans<br/>Made During<br/>Year</u> | <u>Total<br/>(1)+(2)</u> | <u>Amount Collected<br/>During Year</u> | <u>Percent Collected<br/>During Year<br/>(4)+(3)</u> |
|------|---|---|--------------------------|---|--|
|      | (1)   | (2)                                       | (3)                      | (4)                                     | (5)  |
| 1965 | 851   | 932                                       | 1,783                    | 786                                     | 44   |
| 1966 | 998   | 1,259                                     | 2,256                    | 1,010                                   | 45   |
| 1967 | 1,246   | 1,682                                     | 2,928                    | 1,195                                   | 41   |
| 1968 | 1,733   | 1,742                                     | 3,475                    | 1,421                                   | 41   |

Source: Agricultural Bank of Turkey

Table 17

MAIN AGRICULTURAL TARGETS IN THE FIRST (1962-1967)  
AND SECOND (1968-1972) ECONOMIC DEVELOPMENT PLANS

|  | First Plan |       |                | Second Plan |       |                |
|--|------------|-------|----------------|-------------|-------|----------------|
|  | 1963       | 1967  | Percent Change | 1968        | 1972  | Percent Change |
| 1. Final Production<br>(TL Billions)   | 34.7       | 43.6  | 4.7            | 38.9        | 48.9  | 4.6            |
| of which: crops                        | 19.2       | 23.8  | 4.4            | 25.2        | 31.3  | 4.4            |
| livestock                              | 9.2        | 12.1  | 5.6            | 11.8        | 14.9  | 4.8            |
| 2. Value added to GNP<br>(TL Billions) | 23.1       | 28.5  | 4.3            | 25.9        | 31.9  | 4.2            |
| of which: crops                        | n.a.       | n.a.  | -              | 18.9        | 23.0  | 4.0            |
| livestock                              | n.a.       | n.a.  | -              | 5.2         | 6.4   | 4.3            |
| 3. Capital Investment<br>(TL Billions) | 10,548     |       |                | 16,900      |       |                |
| of which irrigation                    | 5,347      |       |                | 9,186       |       |                |
| 4. Productivity (Index)                | 100        | 112.6 | 2.4            | -           | -     | -              |
| 5. Exports                             | n.a.       | n.a.  | -              | 391.3       | 480.9 | 4.2            |

n.a. : not available

1. Table based on Table V.1, OECD, T/C(67)23.

Table 18

ANNUAL RATES OF INCREASE OF MAIN PRODUCTS IN THE  
FIRST AND SECOND ECONOMIC DEVELOPMENT PLANS

|   | <u>1962 - 1967</u>                 |                    | <u>Percentages</u><br><u>1968 - 1972</u> |            |
|---|------------------------------------|--------------------|--|------------|
|   | <u>First Plan</u><br><u>Target</u> | <u>Achievement</u> | <u>Second Plan</u><br><u>Target</u>      |            |
| Cereals   |                                    | 2.9                | 1.7                                      |            |
| of which, wheat   | 2.3                                | 1.8                |  | 3.0        |
| Pulses  |                                    | 4.4                | 3.2                                      |            |
| Industrial crops  |                                    | 5.7                | 7.7                                      |            |
| Vegetable Oils  |                                    | -                  | 9.9                                      |            |
| Fruit   | 4.8)                               | 4.6                | 2.6)                                     | 5.5        |
| Vegetables  | 4.4                                | —                  | 3.8)                                     | 5.6        |
| <u>Total crops</u>  |                                    | <u>4.4</u>         | <u>2.9</u>                               | <u>4.4</u> |
| Meat )  |                                    | 7.7                | 2.6)                                     | 5.6)       |
| Poultry)  |                                    |                    | 3.9)                                     | 6.1)       |
| Milk  |                                    | 6.1                | 2.7                                      | 4.6        |
| Eggs  |                                    | 11.1               | 5.0                                      | 6.9        |
| Wool, mohair  |                                    | <u>4.1</u>         | <u>0.1</u>                               | <u>3.4</u> |
| <u>Total Livestock</u>  |                                    | <u>5.6</u>         | <u>2.5</u>                               | <u>4.8</u> |
| <u>Total Agricultural Pro-</u><br><u>duction (incl. forestry</u><br><u>and fishing)</u> |                                    | <u>4.7</u>         | <u>3.3</u>                               | <u>4.6</u> |
| Value Added   |                                    | <u>4.2</u>         | <u>3.1</u>                               | <u>4.2</u> |

1. Data derived from production data at constant prices.
2. Table based on Table V.2, OECD, T/C(67)23.

Table 19

INVESTMENT PROGRAM IN AGRICULTURE IN THE  
SECOND ECONOMIC DEVELOPMENT PLAN (1968-72)

| <u>Investment</u>                    | <u>TL Millions</u><br><u>(1965 prices)</u> |
|--------------------------------------|--|
| Newly irrigated areas (large works)  | 4,890                                      |
| Improvement of newly irrigated areas | 2,185                                      |
| Small water supply systems           | 1,636                                      |
| Flood control                        | 250  |
| Soil conservation                    | 224  |
| Agricultural equipment               | 3,625                                      |
| Seeds, nurseries                     | 300  |
| Research, extension: public works    | 815  |
| Agricultural buildings               | 400  |
| Marketing improvements               | 175  |
| Imports of improved livestock        | 42   |
| Forests                              | 1,660                                      |
| Fishing                              | 517  |
| Other                                | <u>179</u>                                 |
| Total                                | <u>16,900</u>                              |

Table 20

STRUCTURE OF INVESTMENTS IN THE FIRST AND  
SECOND ECONOMIC DEVELOPMENT PLANS

|                                    | <u>1962 - 1967</u> | <u>1968 - 1972</u> |
|------------------------------------|--------------------|--------------------|
|                                    | <u>%</u>           | <u>%</u>           |
| New irrigated areas                | 45.1 )             | 29.9 )             |
| Improvement of irrigated areas)    | 8.8 ) 53.9         | 25.5 ) 55.4        |
| Land improvement )                 |                    |                    |
| Tractors and material              | 14.9               | 21.4               |
| Extension work, research and seeds | 8.9                | 6.6                |
| Forests                            | 8.7                | 9.8                |
| Fishing                            | 2.7                | 3.0                |
| Other                              | <u>10.9</u>        | <u>4.8</u>         |
| TOTAL                              | 100.0              | 100.0              |
| Value: TL millions (1965)          | 10,548             | 16,900             |

Table based on Table V.4, OECD, T/C.(67)23.

IRRIGATION

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IRRIGATION 1/

1. The responsibility for technical work in connection with irrigation development is mainly with two Government agencies, viz.:

- DSI (Devlet Su Isleri; the General Directorate of State Hydraulic Works), which belongs to the Ministry of Energy and Natural Resources.
- Topraksu (Soil and Water General Directorate) which belongs to the Ministry of Village Affairs.

DSI is responsible for construction, operation and maintenance of reservoirs and main irrigation and drainage canals. Topraksu is in charge of minor irrigation canals and drains, and on-farm development. DSI and Topraksu also have responsibilities outside the field of irrigation: DSI is in charge of dam construction for hydropower and domestic water supply, while Topraksu's duties include soil and water conservation in areas that are not irrigated. However, this Appendix deals only with the irrigation activities of these agencies, along with the Ministry of Agriculture.

A. ASSESSMENT OF THE PROBLEMS

The Irrigation Sector

2. Agriculture continues to play a major role in the Turkish economy, in terms of employment, food and raw materials production, and foreign exchange earnings. Much of Turkey, however, has a low and variable rainfall, and even in many coastal areas where rainfall is higher, distribution is unreliable. Thus irrigation is important.

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1/ The economic mission to Turkey (April-May 1970) included two irrigation consultants, Messrs. D. S. Mitchell and J. van Assen. Their terms of reference were:

"to examine the irrigation program in Turkey in order to assess the appropriate balance between new projects and rehabilitation of on-going projects during the period of the next 8-10 years. On the basis of consideration of objectives and likely shortcomings, they should indicate a strategy for obtaining effective utilization of facilities, subsequent on-farm development and the most fruitful use of completed investments. As part of their overall assignment they would take part in a reconnaissance survey of existing irrigation projects in Turkey, selected in consultation with DSI to identify those which might be best suited for rehabilitation and listing rough orders of priority and approximate costs and magnitudes involved." The mission visited 15 projects.

3. By insuring an adequate supply of water when required, irrigation makes it possible to obtain higher yields from existing crops, to extend the cropping period and intensity, and to grow higher-value crops which could otherwise not be cultivated. As an example, DSI data for 1968 <sup>1/</sup> indicate that with irrigation the average gross value of crop production increased by almost three times--from about TL 1,480 per ha to TL 4,350, an increase of TL 2,870 per ha. Allowing 50% of the gross value as production costs (including irrigation operation and maintenance), irrigation probably increased the average net value of output by at least TL 1,435 (US\$96) per ha. <sup>2/</sup>

4. Of the 23.5 million ha of agricultural land in Turkey, it is estimated that between 5.5 and 8.0 million ha could be irrigated economically. As of 1969, the gross area in the irrigation sector--including the areas to be served by completed major works--is approximately 1.5 million ha, of which 1.0 million ha is privately irrigated (including 0.2 million ha which has been reconstructed by state agencies).

5. The gross area covered by government irrigation schemes has expanded rapidly over the past several years--from approximately 89,000 ha in 1960 to 530,000 ha in 1969. Public investments in irrigation and drainage have been correspondingly heavy. During the First Five Year Development Plan (1963-1967), they were TL 3.5 billion (US\$233 million), almost 60% of total public sector investments in agriculture. In the Second Plan period (1968-1972), the Government expects to invest TL 7.2 billion (US\$480 million) in irrigation. This amount will constitute 65% of total public sector investments in agriculture during the period. Investments in DSI major projects, including flood control and some hydroelectric power, have averaged more than TL 1 billion (US\$67 million) per annum during 1967-1970.

6. While Turkish investments in irrigation have been large, their contribution to overall agricultural growth (which averaged only 2.9% per annum during 1962-69) has been little more than marginal. The reason that returns from irrigation projects have fallen short of reasonable expectations lies mainly in the low level of utilization. The efficiency of private irrigation generally is poor, and probably no more than one-half of the area in government schemes is actually producing. Also, agricultural supporting services are generally inadequate. Given the contribution which irrigation potentially can make to agricultural growth, the resultant loss to the Turkish economy is a major one.

7. On the basis of conservative estimates, an indicative value can be put on the loss due to underutilization of present projects. Taking an average value of TL 1,435 per ha per annum, and an area of 185,000 ha which by DSI data are not yet served or farmed (para 30) the yearly loss in net value of production is at least TL 265 million (US\$18 million). An annual loss of this size, compounded over five years (at 10%) would amount to over TL 181 million.

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<sup>1/</sup> DSI Statistical Bulletin, 1969.

<sup>2/</sup> All conversions in this Annex are at TL15 = US\$1.00.

In fact, the losses are higher because production even in the area under irrigation could be increased considerably above the levels cited by DSI, if more attention were given to supporting agricultural services (research, extension, marketing and credit).

8. Irrigation efficiency also is poor -- it is estimated at an average of 25% by DSI. Water is very abundant for the limited area under irrigation at present. There is a danger that officials and farmers will become accustomed to wasteful utilization practices. This could make it difficult to improve efficiency in the future when the demand increases for the available resources. Moreover, excessive water use may aggravate drainage and salinity problems.

#### Technical Constraints

9. On the technical side, the implementation of projects has been characterized by the following deficiencies:

- lack of tertiary canals reasonably near the farm holdings;
- lack of farm ditches;
- lack of surface drainage facilities;
- lack of deep drainage facilities;
- need for land leveling;
- lack of farm roads.

10. In some of the older projects, tertiary and even secondary canals were not constructed at all; in others, they were spaced too widely. As a result, holdings are sometimes located 2,000 m and more from their tertiary canal. Under such conditions, farmers appear to be unable to dig their own supply ditches, the more so as most holdings are small and several holdings have to be traversed to obtain water from the DSI system. For more recent projects, including those under construction at present, DSI criteria provide for a spacing of 400 m between tertiary canals, with turnouts at distances of 200 m. Experience shows that in these projects farmers are able to dig their own supply ditches from the turnouts and that complete utilization of the project can be achieved, in the absence of other constraints.

11. No surface and deep drainage facilities were installed in the older projects. In most of the recent projects, however, DSI constructs collector drains adjacent to the tertiary canals, i.e. with a spacing of 400 m.

12. The construction of deep drainage systems, a responsibility of Topraksu, has been impeded by insufficient funds and staff. Consequently, most areas requiring deep drainage have not been brought under cultivation. Leveling of fields has also been delayed because Topraksu lacks funds and staff. Thus, in part of the projects, production is affected by unsatisfactory water distribution on the fields due to uneven topography.

13. In general, DSI has constructed operation and maintenance roads along main and secondary canals, the latter with a spacing of about 2,000 m. This road spacing is wide and hampers the transport of farm products. In some projects farm roads are constructed by Topraksu along with its deep drainage or land leveling operations; spacing varies from 200 to 1,500 m.

14. While these technical constraints are recognized by officials of DSI and Topraksu, most of the technical difficulties can be translated into organizational problems. Below we sketch briefly the nature of the two agencies, without, however, exploring their organization problems in detail.

#### The DSI and Topraksu

15. The DSI organization was established in its present form in 1954. In the intervening years, it has grown rapidly and has become a powerful agency within the Ministry of Energy and Natural Resources. Its employment roll has grown from about 5,000 personnel in 1957 to over 18,000 in 1970; its technical staff increased from about 600 to over 2,000. Its annual expenditures increased from TL 92 million in 1955 to TL 1,300 million in 1969. The agency's rapidly expanding programs in hydro-power development, irrigation, flood control, and domestic water supply have spread to all parts of the country.

16. In the irrigation sector, DSI has under its jurisdiction some 77 projects or divisions of projects ranging in size up to 53,000 ha. About 38 projects or divisions comprise less than 2,000 ha each. DSI classifies about 54 of the projects or divisions as completed; 23 are classified as under implementation. In addition, it has about 46 projects in the planning and investigation stage. Main irrigation facilities covering a total area of 50,000 to 60,000 ha are claimed to be completed every year.

17. Financial arrangements at the project level are not very satisfactory from economic or operational viewpoints. In most projects, water charges are levied by DSI, but these are intended to cover only operation and maintenance; in some projects, however, extra charges are levied for reimbursement of investment. Interest on investment is never included in the water charges, although the law permits its recovery. Costs of planning, design, and supervision are not recovered either, and even the costs of operation and maintenance are covered only 50% by water charges, because the Government has been hesitant to raise water charges while farmers' income did not increase. Collections and allocation of funds are transferred to the Ministry of Finance; thus, the entire process is effectively divorced from resource use policy.

18. A bright spot on the organizational side has been DSI's effort to delegate the responsibility for operation of tertiary canals to the farmers, who appoint a representative for each tertiary unit. Sometimes the operation of an entire project is delegated to a farmers' association. Some 150 associations have been established at present. In the case of transfer of responsibility, the water charges are reduced, because DSI's costs are also decreased. This policy of transferring operation and maintenance responsibilities to the farmers is sound, because operation costs are reduced and water supply can be more easily adapted to the farmers' needs.

19. Topraksu was founded in 1960, originally as a part of the Ministry of Agriculture; in 1964 it was transferred to the Ministry of Village Affairs. Its budget for on-farm works has been increased from TL 20 million in 1966 to TL 80 million in 1970. Its staff comprises 700 professionals; about 580 are employed in on-farm work, of which 73 are graduates.

20. Topraksu's on-farm work is mainly concentrated in the Seyhan and the Gediz projects. Annual capacity for on-farm work is estimated at present at 20,000 ha, which includes construction of farm ditches and surface roads on 20,000 ha, deep drainage on 6,000 ha, and land leveling on 15,000 ha. In most of the projects, development of Topraksu's on-farm work is hampered by lack of funds and staff.

21. In general, farmers are required to refund part of the estimated cost for on-farm development; the remainder is paid by the Government. This arrangement provides for some relationship between actual expenditure by Topraksu and the income it receives from its projects.

22. Apart from on-farm work, Topraksu is responsible for:

- development of small irrigation projects (in general with demands of less than 500 l/sec);
- establishment of cooperations for new groundwater projects and the construction of irrigation canals in these projects;
- soil conservation;
- instruction in irrigation techniques;
- extension work in relation to irrigation;
- land consolidation.

### Coordination

23. When the Ministry of Agriculture is added to the picture, there are three Ministries involved in irrigation development. This division of responsibility leads to imbalanced allocations of resources and lack of coordination of activities and prevents assessment of responsibilities for shortcomings. The DSI attained predominance when it was thought that water alone could transform Turkey's agriculture and insufficient attention was paid to introduction of fertilizer, good plant material, skillful soil management, and sound crop husbandry. This imbalance has continued, with the result that DSI's investment in 1969 amounted to 64% of the total investments in the agricultural sector.

24. Aside from discrepancies in resources, none of the three agencies feels itself responsible for the ultimate results of irrigation projects. Coordination among the three agencies is also difficult for specific reasons of organization. The Ministry of Agriculture's extension services are organized provincially, and the Topraksu and DSI regions do not coincide. Several DSI projects that are about to be completed have not been included in the Topraksu program.

25. The present situation leads to separatism and duplication of activities. DSI employs its own agriculturists and economists; they have rarely any contacts with the authorities of the Ministry of Agriculture on feasibility studies or the merits of alternative projects. Topraksu works on extension independent of the extension service of the Ministry of Agriculture.

26. The major problem at present is the discrepancy between construction of major irrigation works and the construction of tertiaries and farm works. This is largely due to the present organization of irrigation on development.

### The Problem Restated

27. As indicated in the preceding section, the Turkish economy suffers substantial annual losses due to the underutilization of investments made in irrigation. The mission attempted to assess the extent of this underutilization in the 77 projects or divisions of projects under the jurisdiction of DSI. These projects cover about 493,000 ha gross. For 69 of the projects or divisions of projects (comprising most of the total) for which data were available, irrigation networks had been completed for 351,400 ha. The area actually irrigated in 1969, according to the DSI, was about 46% of the gross area for which major facilities had been provided and 62% of the net for which irrigation networks had been completed (See Table 1).

Table 1: UTILIZATION OF DSI IRRIGATION PROJECTS  
(hectares)

| Area for which<br>major facilities<br>provided /a |               | Area for which<br>irrigation networks<br>completed | Area actually<br>irrigated |            |            |    |
|---|---------------|--|----------------------------|------------|------------|----|
| (1)   | (2)           | (3)  |                            |            |            |    |
| <u>Gross</u>                                      | <u>Net</u> /b | <u>Net</u>   | As % of                    |            |            |    |
|   |               |  | <u>(1)</u>                 | <u>(2)</u> | <u>(3)</u> |    |
| 493,200   | 419,200       | 351,400  | 233,900                    | 48         | 56         | 62 |

/a Storage and diversion dams, plus primary and secondary canals and structures.

/b 85% of gross area.

/c Major facilities plus tertiary canals. In many cases, however, canals are inadequate for requirements. Drainage generally is not included, nor are field channels from tertiary canals to farmers' plots.

28. The mission made field surveys of 15 of these projects, comprising 277,000 ha (about 56% of the total). These projects were selected as representing a reasonably good cross section of DSI projects after reviewing data in general for the total and in greater detail for 18 selected from them. Table 2 lists each of the projects visited, the area for which major facilities have been completed and the area actually irrigated. The table shows that of the 277,000 ha covered by the projects visited, only 77,900 ha, or 28%, were actually being irrigated.

29. The differences between the DSI and mission estimates of the percentage of area which is actually irrigated are due largely to lower DSI estimates, in many cases, of the total irrigable area (for which major facilities have been provided) and higher estimates of the area actually irrigated in some instances. The mission's estimates are considered in general more realistic.

30. Even taking the higher DSI figures, however, it is clear that the Turkish economy suffers major losses from the underutilization of its investments in irrigation. Thus, out of about 419,000 ha (net) for which major facilities have been constructed, only approximately 234,000 ha obtained benefits from irrigation in 1969. The remaining 185,000 ha gave no returns from the investments made on them.

STATUS OF PROJECTS VISITED BY MISSION

| Name of Project No.            | No.<br>(See Map No. 3) | Area in ha.                          |                                     | Percentage<br>Actually<br>Irrigated | Remarks  |
|--------------------------------|------------------------|--------------------------------------|-------------------------------------|-------------------------------------|--|
|                                |                        | Provided with<br>Major<br>Facilities | Actually<br>Irrigated<br>(estimate) |                                     |  |
| Eskisehir Alpu                 | 12                     | 21,000                               | 4,000                               | 19                                  | Project being rehabilitated  |
| Konya Cumru                    | 18                     | 53,000                               | 7,000                               | 13                                  | Rehabilitation commenced   |
| Asagi Goku (Silifke)           | 36                     | 13,800                               | 2,300                               | 17                                  |  |
| Mersin Gardens                 | 29                     | 3,500                                | 2,500                               | 71                                  |  |
| Tokat Kazova                   | 38                     | 18,100                               | 8,000                               | 44                                  |  |
| Varsak                         | a)                     | 9,000                                | 1,300                               | 14                                  | a) Not located on map  |
| Asagi Aksu Stage I             | 81                     | 15,000                               | 7,700                               | 51                                  |  |
| Asagi Koprucay                 | 80                     | 21,900                               | 8,100                               | 37                                  |  |
| Erbaa                          | 43                     | 7,500                                | 2,000                               | 27                                  | Project being rehabilitated  |
| Niksar                         | 40                     | 4,000                                | 3,000                               | 75                                  | Still under construction   |
| Asagi Gediz                    | 8                      | 96,000                               | 27,000                              | 28                                  | Still under construction; storage facilities completed   |
| Malatya Derme                  | 61                     | 3,000                                | 2,000                               | 67                                  |  |
| Sahnahan                       | 62                     | 9,000                                | 2,000                               | 22                                  |  |
| Akcadag                        | 57                     | 2,100                                | 1,100                               | 52                                  | Greater part under construction; a after completion 10,000 ha. Will be provided with major facilities. |
| Asagi Tohma Media<br>(Yezihan) | 55                     | -                                    | -                                   | -                                   |  |
| TOTAL                          |                        | 277,000                              | 77,900                              | Av. 28 percent                      | Under construction; after completion 10,000 ha. will be provided with major facilities.                |

B. REMEDIAL MEASURES

Technical Measures

31. The technical measures to obtain full utilization of the projects should aim at the completion of tertiaries and on-farm facilities on those projects for which major conveyance and storage facilities have already been constructed. Additional investments for completion of projects may vary considerably but in general will be from about TL 4,000 to 5,000 per ha, whereas investments for new projects (including on-farm works) generally run from 10,000 to 20,000 TL per ha. There may be cases, when the situation is examined closely, where higher returns from new projects would justify the higher investment. Also, examination of the irrigation sector cannot be separated from the larger waterworks program which includes generation of power or domestic water supply. This brings into the picture the hydropower projects included in Etibank's program (Table 3).

Table 3: HYDROPOWER PROJECTS

| Name                          | Firm<br>Capacity<br>in Mw | Proposed<br>Commissioning<br>Year | Remarks   |
|-------------------------------|---------------------------|-----------------------------------|---|
| Keban,<br>4th and 5th unit    | 310                       | 1975                              | Under construction, power only.<br>Total ultimate capacity 620 MM.  |
| Ayvacic, 1st and<br>2nd unit  | 250                       | 1977                              | Related to lower Yesilirmak irrigation project (80,000 ha). Cost to be allocated to power. Ultimate capacity 500 MM.  |
| Goksekaya                     | 300                       |                                   | Power only.   |
| Oymapinar                     | 540                       | 1978                              | Hydropower only.  |
| Aslantas                      | 135                       | 1978                              | Included in Ceyhan Aslantas irrigation project (120,000 ha in two stages). Considered of minor importance by Etibank.   |
| Balahor                       | 46                        | 1979                              | Included in lower Yesilirmak irrigation project. Considered of minor importance by Etibank. (See Ayvacik above).  |
| Cevizlik                      | 75                        | 1979                              | Power only.   |
| Lower Euphrates<br>(Karakaya) | 350                       | )                                 | Ultimate capacity 2,600 MM of power, and irrigation 670,000 ha. Study of feasibility of irrigation development, including international agreement on use of water required. |
| 1st stage                     | 350                       | 1979 )                            |   |
| 2nd stage                     | 330                       | 1980 )                            |   |

32. As Table 3 indicates, the investments for Keban, Goksekaya, Oymapinar, and Cevizlik are to be allocated to power only and work on these projects should continue at the rate required by the development of power demand. Before proceeding with the Lower Euphrates (Firat) Project, the government needs to thoroughly study: a) the feasibility of developing power, irrigation and agriculture in it; b) the effects of changes in the volume, speed, seasonality and quality of water flowing to consumers in the lower valleys; and c) to obtain agreement on riparian rights. Aslantas and Balahor are only of minor importance in Etibank's program and can be postponed.

33. Certain domestic water supply schemes and miscellaneous schemes being undertaken by DSI should also be mentioned. For instance, Ankara (1st and 2nd stages) and Istanbul (Terkos, Alibey and Omerli projects) are already under construction. Investments on Gokermak Karacmak have just commenced. This project includes only 2,500 ha irrigation and 1,100 ha flood control and supply of 3 million m<sup>3</sup> of water annually for domestic use; due to its limited size, execution will hardly influence the DSI program.

34. Following such a review of the larger program, attention can focus on the completion of the irrigation projects. The main technical aspects are reviewed below.

35. For tertiaries, the design criteria for recent irrigation projects provide intervals which enable the farmers to construct their own supply ditches from the tertiaries. In the older projects, additional tertiaries should be constructed in order to obtain the same spacing. In some instances existing tertiaries may have to be rehabilitated; the rehabilitation should consist of correction of levels and construction of concrete lining. It can be anticipated that farmers will construct the necessary supply ditches when the additional tertiaries have been constructed; however, extension advice may be desirable. All existing projects that do not require deep drainage should be provided with collector drains adjacent to the tertiary canals.

36. Construction of deep drainage and land leveling is largely a problem of funds and staff; no comment on technical details is necessary.

37. Construction of farm roads will become more urgent as output increases following further investment in the schemes. Road spacing should depend upon the size of the land holdings. In the Seyhan and Gediz projects, roads are constructed at rates varying from 6 to 50 m per ha. It is expected that the average length per ha in the projects to be completed should amount to approximately 15 m.

38. In regard to irrigation efficiency, which at present amounts to 25%, the projects were designed assuming an efficiency of 50%. One of the reasons for the poor efficiency relates to underutilization: Reservoir and diversion canals have been constructed for their final capacity, whereas

only part of the project areas is irrigated. However, there are also other elements involved. For instance, since no measurement or proportional division of water is possible at farm turnouts, it is difficult to detect excessive water use. Also, during the night farmers stop irrigation and most of the water is wasted, because supply in the major canals cannot be interrupted for a period of a few hours, and in some areas farm efficiency is reduced due to uneven topography or poor construction of farm ditches. Technical means of increasing efficiency of the system will become more important as more farms are brought under irrigation.

39. The cost of technical measures cannot be assessed accurately and will vary considerably from project to project. Some provisional rough estimates are given in Table 4. The summary costs are as follows, on a per ha basis:

|                   |          |
|-------------------|----------|
| Tertiaries:       | TL 1,500 |
| Surface drainage: | TL 900   |
| Deep drainage:    | TL 1,800 |
| Land leveling:    | TL 3,000 |
| Farm roads:       | TL 250   |

TABLE 4

COST OF TECHNICAL MEASURES  
 (Rough Estimates)

| <u>Tertiaries, Per Meter:</u>              | <u>TL</u> |
|--|-----------|
| Concrete lining 1.1 m <sup>2</sup> @ TL 40 | 44        |
| Compacted fill 1 m <sup>3</sup> @ TL 6     | 6         |
| Expropriation                              | 3         |
| Structures                                 | <u>5</u>  |
| Total                                      | 58        |

At an average spacing of 400 m per ha, 25 m will be required and the cost per ha will amount to 25 x 58 = TL 1,500 (rounded).

Surface Drainage, Per Meter:

|                                    |          |
|------------------------------------|----------|
| Excavation 6 m <sup>3</sup> @ TL 4 | 24       |
| Expropriation                      | 7        |
| Structures                         | <u>5</u> |
| Total                              | 36       |

With same spacing as tertiaries, cost per ha would be: 36 x 25 = TL 900.

Deep Drainage

TL 1,800 per ha on average (based on experience at Seyhan).

Land Levelling

TL 3,000 per ha, or slightly higher than experienced at Seyhan.

Farm Road, Cost Per Meter:

|  |          |
|--|----------|
| Compacted fill 1.3 m <sup>3</sup> x TL 6 | 8        |
| Expropriation                            | 7        |
| Culverts                                 | <u>2</u> |
| Total                                    | 17       |

At 15 m per ha the cost per ha would be: 15 x 17 = TL 250 (rounded).

Improvement of Organization

40. It is clear that bottlenecks could develop in on-farm works. Topraksu estimates that it can construct farm works on 20,000 ha annually. This rate, however, would fall short of DSI's capacity for doing its work. Neither does the Ministry of Agriculture have adequate resources to cope with the agricultural follow-up.

41. At the project level, one practical short-term solution is likely to be the installation of a semi-autonomous interagency authority for every project. The Seyhan project is already organized along these lines. A committee, in which all agencies concerned are represented, provides the necessary coordination. But the project manager is responsible for meeting the targets of the projects; it is he who prepares draft proposals for budget and staff allocations. However, this arrangement works only if real cooperation can be established among the committee members and between them and the project manager. Also, in view of the manpower constraints, it is not likely that such project authorities could be established for all projects that require completion. Thus, authorities might be established to cover groups of projects in a region.

42. It also is essential to consider basic changes in the present division of authority. The present division of authority under three ministries does not work well. Considering the realities of the situation, possible solutions such as bringing both Topraksu and DSI under the Ministry of Agriculture are not very realistic. It might be quite feasible, however, to transfer the technical activities of Topraksu to DSI and its extension activities to the Ministry of Agriculture. Thus, Topraksu's work on farm irrigation, small irrigation projects, groundwater irrigation, land consolidation and soil conservation would come under DSI, while its extension service would become part of the Ministry of Agriculture. With DSI held responsible for the completion of the major irrigation works as well as the on-farm works, it would be inclined to promote a more balanced allocation of resources to these two types of work than is achieved at present. Coordination could be achieved within the DSI organization in a much better way than under the present arrangement with DSI and Topraksu belonging to different ministries.

43. Coordination problems between DSI and the Ministry of Agriculture could be reduced if, during the construction of a project, extension officials of the Ministry of Agriculture are temporarily assigned to DSI to commence activities in connection with the agricultural follow-up of the project. After completion of the technical works, they could return to the Ministry of Agriculture, but stay on the same project and continue their work under the responsibility of the Ministry.

44. On the construction side, some needed flexibility might be achieved by separating initial construction of facilities from minor additions and maintenance work -- these being the responsibility of the project authorities. There would be considerable advantage in encouraging construction firms with a capacity to move personnel and equipment from job to job and from region to region. Such an arrangement would allow DSI to better concentrate its attention on the completion of existing projects.

45. Economic evaluation of projects should be a responsibility of DSI. Evaluation of completed projects is essential, and reports on this subject should be made to the Government. There would be merit in relating DSI's income more closely to project returns. Assessment of water charges to cover all capital, operation and maintenance costs, and allocation of the collected water charges to DSI, would constitute an important incentive to DSI to operate on an economic basis. If the Government decides to invest in uneconomic projects for social reasons, costs and revenues should still be accounted for on an economic basis, with the subsidy given for social reasons clearly defined.

### C. IMPLEMENTATION

46. It must now be assumed that the basic question of priorities will be settled in favor of shifting investments for irrigation development toward completion of major irrigation works. Since the present returns of these projects are low in proportion to the money invested, their completion should have priority over the commencement of new major works. We now consider the implications of the proposed remedial actions.

47. If Topraksu's technical staff were transferred to DSI, this group would constitute the nucleus in a new DSI section that would be put in charge of on-farm irrigation work. This work would also require additional staff, with the degree of strengthening depending on the rate of implementation and the degree to which contractors are used. Thus, an early task should be to assess an annual target for the completion of irrigation projects in order to obtain their full utilization. The economic assessment of priorities has to be based upon a comparison of the required investment and the anticipated net returns. Such an analysis can be made only after further studies, and it is recommended that such studies commence soon.

#### Targets

48. DSI has constructed major irrigation systems for approximately 500,000 ha; its program provides for completion of major works for 330,000 ha up to 1975, and major works for another 430,000 ha after 1975. It is assumed that most of the works scheduled for completion after 1975 would be postponed; on the other hand, activities and works scheduled for completion before 1975 could be suspended only to a limited extent. Therefore, the area of major projects under construction is provisionally estimated at

333,000 ha. Taking into account that farm works have already been completed in an area of 40,000 ha belonging to Seyhan, Gediz and some minor projects, completion of irrigation projects is required in approximately 800,000 ha (rounded).

49. Basic data have been collected on the various technical works that have to be executed in this area. Thus, it should be possible to prepare an accurate plan for completion of irrigation projects. To arrive at a provisional breakdown, rough estimates have been made of the average percentage of the project areas, in which various works--completion of tertiaries, land levelling, etc.--are required. These percentages are based on visual inspection by mission members during project visits. Table 5 gives these percentages, together with the calculation of the areas in which the various works should be executed and the cost of these works, applying the unit costs set forth in Section B.

Table 5: WORKS REQUIRED FOR COMPLETION OF PROJECTS COVERING 800,000 HA

|   | <u>Coverage Needed</u><br><u>(% of area)</u> | <u>Area</u><br><u>('000 ha)</u> | <u>Cost</u><br><u>Estimate</u><br><u>(TL per ha)</u> | <u>Total</u><br><u>(TL million)</u> |
|---|--|---------------------------------|--|-------------------------------------|
| Completion of Tertiaries                      | 40   | 300                             | 1,500  | 450                                 |
| Surface Drainage                              | 60   | 500                             | 900  | 450                                 |
| Deep Drainage                                 | 40   | 300                             | 1,800  | 540                                 |
| Land Levelling                                | 50   | 400                             | 3,000  | 1,200                               |
| Farm Roads                                    | 100  | 800                             | 250  | <u>200</u>                          |
| Total (excluding overhead and indirect costs) |  |                                 |  | 2,840                               |

50. With regard to implementation capacity, the construction of tertiaries is not likely to constitute a bottleneck. However, the capacity to construct on-farm works, now vested in Topraksu, will have to be greatly increased. At present, Topraksu is completing irrigation projects at a rate of 20,000 ha annually. Topraksu estimates that, with a doubled staff, the number of completed irrigation projects could be increased to 60,000 ha annually. Contractors would be used as they become available. Considering the task of reorienting the work effort, it might be reasonable to accept 60,000 ha per annum as a target for implementation.

51. Completion of 60,000 ha per annum would not result in serious problems as far as equipment is concerned although some additional numbers

will be required. <sup>1/</sup> For most of the on-farm works, the same equipment is required as is now being used by private contractors for major irrigation works. Excluding overheads and any indirect costs, the annual investments for these works amount to about TL 1,100 million. Based on an estimated cost of TL 2,840 million for 800,000 ha (Table 5), the average annual investment for 60,000 ha per annum would amount to about TL 213 million, far less than that required for major irrigation works.

52. A target of 60,000 ha per annum implies that completion of the irrigation projects would require an estimated 13 years, based on a total of 800,000 ha completed. This is a long period, but evidence of achievement will be a precondition for a more optimistic estimate. Table 6 gives the breakdown of the various items of work required for completion of 60,000 ha per annum on an annual basis. These figures have been derived by dividing the values of Table 5, second column, by 13 years. Table 6 also gives the estimated present capacities.

Table 6: COMPARISON OF CAPACITY WITH TARGET REQUIREMENTS

| <u>Item</u>                    | <u>Present Capacity<br/>(ha/annum)</u> | <u>Required<br/>(ha/annum)</u> |
|--------------------------------|--|--------------------------------|
| Construction of Tertiaries     | 50,000                                 | 22,000                         |
| Completion of Surface Drainage | 30,000                                 | 38,000                         |
| Construction of Deep Drainage  | 6,000                                  | 22,000                         |
| Land Levelling                 | 15,000                                 | 30,000                         |
| Farm Roads                     | 20,000                                 | 60,000                         |

The Staffing Constraint

53. Reinforcing the original Topraksu group, assuming it is to be transferred to DSI, would have to be effected gradually, so that new staff members can be absorbed efficiently. Some staff could be transferred from the work on new projects, as this work is reduced. Their knowledge and experience in construction and topographical work would be very useful for the on-farm type of work. Still, they would need additional training. At present, Topraksu staff members are being trained on the Seyhan Project with excellent results. The establishment of more training facilities deserves consideration.

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<sup>1/</sup> For instance: some 140 scrapers; 15-20 more each of land levelers, trenchers, loaders and graders; four crawler excavators; 20 mobile repair shops; etc.

54. Part of the farm work could also be constructed by private contractors. Employment of contractors would utilize their capacities as their work on major irrigation works is reduced. The additional land levellers and trenchers required for farm work would be purchased by contractors according to their needs. For the time being, however, it will be necessary to execute part of the farm work on force account. In the first place, contractors have to obtain experience in this special type of construction, and therefore they should start with the simpler type of work. Besides, the available capacity in this type of work should be utilized to the fullest.

Tentative Priorities

55. It is not possible to draw up a definite list of priorities for completion of irrigation projects, because feasibility studies for these works are not available. Moreover, only a selection of projects could be visited during the mission's stay in Turkey, and projects that were not visited may prove to be more attractive than those visited. Also, priorities can be assessed only after further discussion with the Turkish Government.



PRICE INTERVENTION POLICIES AND SUBSIDIES

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PRICE INTERVENTION POLICIES AND SUBSIDIES

General

The Government of Turkey intervenes to support the prices and marketing of most agricultural crops. Such intervention, however, has come to have little or no relation to prevailing conditions of supply and demand, but has become mainly a means for supporting the incomes of producers of some commodities.

Intervention for the various products is accomplished through the following organizations:

- (a) tobacco and tea -- Turkish State Monopolies;
- (b) sugar -- Sugar Factories Corporation;
- (c) wheat and other cereals -- Soil Products Office (TMO);
- (d) livestock and fish -- Meat and Fish Corporation;
- (e) cotton, figs, raisins, hazelnuts, pistachios, olive oil -- sales cooperatives for each of the various products.

The intervention price for all commodities except sugar usually is announced at or just prior to harvest time and hence exercises no direct influence on the acreage devoted to each product. However, the intervention program in recent years has stimulated production of tobacco, tea and sugar in excess of market demand with the result that the agencies concerned have been obliged to accumulate and store surplus stocks, frequently of marginal quality. In addition to large outlays in storage costs, substantial amounts of capital have been tied up in financing these stocks, and where tea and sugar have been exported, it usually has been at a loss to the government.

As Table 1 shows, there have been substantial increases in production and stocks of tobacco, tea and sugar over the past five years. Efforts to reduce acreage and production have made some impact on tobacco and sugar, but stocks continue to be large. The State Monopolies, for example, expected Turkey to enter the 1970 export season (beginning September 1) with stocks of tobacco equal to about three years of exports. By that time the Monopolies, excluding the private trade, anticipated that it would have around 260,000 tons of tobacco on hand.

### Tobacco and Tea

Because of its large stocks of tobacco and tea, the Monopolies must rent some 666,000 square meters of storage space, at a cost of TL 21 million annually, in addition to its own storage facilities which total about 349,000 square meters. As of February 28, 1969, the Monopolies had stocks of all products valued at TL 1,797 million, or 47% of the Monopolies total assets.

During the financial year 1968-69 (March-February) the Monopolies sustained a net loss on its export operations of TL 135 million, of which TL 132 million was from tea sold abroad. The basis of such losses is dramatically illustrated when the Monopolies cost of producing tea (TL 21.38 per kg) in 1968 is compared with the average export price (TL 2.18 per kg) actually obtained. The Monopolies pays growers TL 3.50 per kg of leaf tea. In contrast Ceylonese and Indian growers receive the equivalent of TL 0.70 to TL 1.00 per kg, and African growers usually TL 0.50 to TL 0.60.

Much of the expansion of tobacco cultivation has been into bottom lands which produce inferior quality oriented leaf. <sup>1/</sup> Hence, a large portion of the tobacco that the Monopoly has been obliged to purchase and store is of inferior quality and difficult to export except at a loss. More recently, however, the Monopolies has emphasized quality in its pricing and attempted to reduce or at least stabilize production. Acreage declined from 295,000 ha in 1967-68 to 229,000 ha in 1969-70 and production dropped from 189,000 to 142,000 metric tons in the same two years.

Furthermore, the Monopolies is hopeful that under a new law, which comes into effect this year, the area devoted to growing tobacco can be restricted, and cultivation on marginal lands reduced. In contrast to the old law, which permitted growers to produce as much tobacco as they wished within approved general areas, the new regulation will require that growers obtain licenses for specific areas of cultivation prior to production. An inter-ministerial committee each year will determine stocks and fix production quotas on the basis of local consumption and exports.

### Sugar

The sugar industry in Turkey is directed by the Sugar Factories Corporation, a state economic enterprise. The Corporation contracts with groups of growers each year for specified quantities of sugar beet which are delivered to the Corporation's 17 factories for processing into sugar. The government yearly sets the amount of sugar to be produced, based on estimated domestic requirements. Under the provisions of the Sugar Law,

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<sup>1/</sup> The best Turkish tobacco is grown on well-drained, relatively rocky slopes. The leaf is smaller, but of higher quality, than that grown on level bottom lands.

the Council of Ministries fixes the price and premiums (in cash or sugar) to be paid for sugar beet each year. The price of sugar is determined by adding the consumption tax to the cost of production. Since 1964, the price for sugar beet has been TL 0.14 per kg, including the sugar premium. The selling prices of sugar have been TL 3.00 per kg of crystal and TL 3.30 of cube since 1967.

With the stimulus to growers from a guaranteed price and the ready accessibility to inexpensive credit, supplies and technical assistance from the Sugar Corporation, production exceeded domestic requirements and stocks accumulated until 1969 when area and production were reduced substantially. (See table appended.)

The Sugar Corporation estimates that it costs TL 180 - 250 annually for storing one ton of sugar. At this rate, storage costs on the average totaled between TL 101.2 and TL 140.6 million in 1968 and between TL 100.2 and TL 139.2 million in 1969. In addition, an average of TL 1,086.1 million in 1968 and TL 1,188.7 million in 1969 (representing only the production cost) were tied in stocks of sugar. The sugar production policy set by the Second Five Year Development Plan (1968-72) provides for production for domestic consumption only. In order to reduce stocks, however, 146,000 tons of sugar was exported in 1969 (25,000 tons estimated for 1970). Such exports were accomplished only at a loss since the average prices obtained (TL 497 per metric ton in 1968 and TL 750 in 1969) were less than the cost of production (TL 1,931 per metric ton in 1967-68 and TL 2,135 in 1968-69). The sugar stocks shown in Table 1 are at the end of December. They are the maximum for each year (see Table 6) since they are the product of the year's beet harvest, which is completed by the end of November. The stocks thus must meet consumption needs for the ensuing nine or ten months. The government aims at maintaining annual reserve stocks of 150,000 tons in addition to those for consumption.

### Cereals

The Soils Product Office (Toprak Mahsulleri Ofisi or TMO) a state economic enterprise, is responsible for price intervention in wheat and other cereals. The TMO purchases any amounts offered at prices (for each variety and region) which are announced at the beginning of or just prior to harvest. A selling price, TL 0.06 to TL 0.09 above the purchase price, applicable to municipalities and villages is also announced at the same time. The TMO's purchases, mainly wheat, have ranged from 522,000 to 957,000 tons over the past five years, usually around 5% of total cereals output. Additionally, the TMO handles all imports of cereals which have run as high as 649,000 tons (in 1969). TMO's storage capacity totals 1,750,000 metric tons, but no more than about 1 million tons of storage is used in any one year. TMO stores its purchased cereals (including imports) and distributes them to private mills, municipalities and villages as required.

Support prices over the past five years have been consistently below market prices and the TMO's purchase of wheat has been less than 10% and (considerably less in the case of other cereals) of output in any year. Thus, the TMO has not carried large surpluses. Due in some measures to TMO operations, seasonal fluctuations in market prices generally have not been large: during 1966-69 lowest monthly prices, usually in July after harvest of wheat was 12% to 16% below highest prices, except in 1968, when they were 21%. At the farmer exchange rate (TL 9 = US\$1.00), both government purchase and market prices were considerably above world prices, whereas present prices (at TL 15 = US\$1.00) in Turkey are very close to world prices. It is not possible to assess the incentive effect of TMO's operations on Turkish cereal output. The TMO has provided market facilities and a floor price for producers and assured supplies of cereals and relatively stable market prices for both producers and consumers. Technology and other production constraints on the Anatolian Plateau however, probably have seriously limited farmer response to any price incentive.

#### Other Commodities

Price intervention for cotton, hazelnuts, pistachio nuts, grapes, dried figs, olive oil and sunflowers are handled by sales cooperatives. Membership in such cooperatives is voluntary, but they are essentially government organizations whose general managers and staffs are appointed by the Minister of Commerce. In the process of price intervention, the union of cooperatives for each product acts as an agent for the government, purchasing all quantities offered at the intervention price by both members and non members, handling, storing and selling the product. The Ministry of Commerce specifies the intervention price, and the Agricultural Bank supplies the union of cooperatives with funds to cover purchases and operating costs. The government covers any losses incurred in the program.

#### Results

The results of Turkey's price intervention programs can be discussed under the following headings:

- (a) incentives to agricultural producers by reducing risks through providing assured markets and relatively stable (and possibly high) price levels;
- (b) transfers of income, particularly to agricultural producers;
- (c) costs to the government and to the economy, including monetary effects.

In regard to the first category, government price intervention undoubtedly has provided a major spur for increasing the output of industrial crops such as tobacco, sugar, tea, olive oil, cotton, raisins and hazelnuts. Its effect on grain production and most other crops probably has not been particularly significant. In fact, government sales of imported food grains to meet the gap between local production and demand, coupled with a policy of setting prices for new high-yielding wheat varieties below those of local ones, probably has dampened prices and reduced producer incentive rather than the contrary.

Turning to income transfers, the price intervention programs have meant subsidies for growers of some agricultural commodities, most notably tobacco, tea, sugar beet, raisins and hazelnuts. The domestic marketing system also has been subsidized to some extent through the TMO's storage and transportation of grains; the Meat and Fish Corporation's processing, cold storage and distribution functions; and the State Monopoly's handling of tobacco. For tobacco, hazelnuts and raisins, intervening agencies have taken over some of the marketing functions from the private sector. Subsidies, in the form of commissions, have been paid by the intervening agencies to induce continued private sector handling of their products.

#### Costs to the Government

The cost to the government of its price intervention programs has been large. To the extent that the intervening agencies could not dispose of the commodities purchased in the market at prices covering the cost of purchase, storage and handling and any other related costs, these agencies either have had to sell at a loss or incur additional expenses for further storage. As indicated earlier, the agencies concerned have been obliged to acquire and store surplus stocks of sugar, tobacco and tea, frequently of marginal quality in the case of the latter two products. Funds for intervention, as well as for regular operating expenses and capital improvements, are supplied by the Central Bank. Any losses incurred are absorbed by the Bank as uncollectable advances. A large amount of such advances in 1961 (Law Number 154) were transferred to the government treasury as debt consolidation.

According to its balance sheets, the Soil Products Office incurred a loss of TL 72 million in 1968, but then made net profits on its operation of TL 47 million in 1969 and TL 41 million in 1970. Outstanding Central Bank credit to the Soil Products Office stood at TL 1.3 billion in August 1970, compared with TL 950 million at the end of 1969 and TL 250 million at the end of 1962. 1/

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1/ The amounts of Central Bank credits outstanding given in this section do not include those consolidated under Law Number 154 in 1961.

Under law, the Sugar Corporation is guaranteed a profit of 10% on the invested capital. Between 1966 and 1970, profits each year were around TL 90 per metric ton of domestically-sold sugar, a part of which came as a subsidy from the consumption tax on sugar (presently TL 850 per ton for crystal and TL 1,000 per cube). Much of the costs of purchasing sugar beet and storing surplus stocks of sugar, however, were financed by Central Bank credits, which increased from TL 137 million outstanding in 1962 to TL 700 million in 1969. Exports of Turkish sugar have been at prices substantially below production costs. In 1969, for example, 146,000 tons were exported at a price of TL 750 per ton. Cost of production, without any profit, however, was over TL 2,000 per ton.

The State Monopolies which handles the intervention programs for tobacco and tea, has been heavily burdened by increasing stocks of tobacco and tea. At the end of February 1969, the Monopolies had TL 1.8 billion, almost one-half of its total assets tied up in stocks. The Monopolies expected to begin the 1970 export season with stocks roughly equal to three year's potential exports. In addition to the cost of its own storage facilities (totalling 349,000 square meters), the Monopolies rented space of 666,000 square meters has cost about TL 21 million per year. The Monopoly also has had to finance and store large stocks of tea. Since much of the tea is of low quality, but high cost, exports have meant substantial losses. In the case of tobacco, the Monopoly has had to rely on bilateral trade arrangements and export sales at discounts and on extended credit terms. To finance the Monopolies' operations, outstanding credits from the Central Bank climbed from TL 423 million in 1965 to TL 1,750 million in August 1970.

#### Costs to the Economy

It is not possible to calculate all of the costs to the economy of the intervention programs. However, it can be stated quite strongly they have resulted in the diversion of needed scarce resources from economically productive investments to the production of commodities excess to the wants of the market. Since such production in several instances has been of high cost and marginal quality, exports could be made only at loss prices. In the case of certain export commodities, where the intervention price has been pegged too high to clear the market, buyers probably have been encouraged to purchase from other sources or to purchase substitute products. Such a result obviously reduces the market for Turkey's exports, whereas the investment of resources in market development rather than price intervention could have had a favorable effect.

Finally, since losses or profits from the intervention programs accrue to the government through changes in the amount of credit extended by the Central Bank, their operation has had unfavorable fiscal and monetary

effects. Thus, subsidies paid to growers have increased the money supply and the demand for consumption goods. At the same time, the availability of funds for investment elsewhere has been decreased and, to the extent the Government has tried to hold down increase in the money supply, expansion probably was not as great as it could have been in agricultural activities not receiving intervention funds and in nonagricultural sectors. Credit for the price intervention programs has increased substantially over the past several years, faster than Central Bank credit for other activities.



Table 1

PRODUCTION, CONSUMPTION & STOCKS OF TOBACCO, TEA & SUGAR

| Year                       | Area Cultivated<br>( <sup>'</sup> 000 ha) | Production<br>( <sup>'</sup> 000 MT) | Domestic<br>Consumption<br>( <sup>'</sup> 000 MT) | Exports<br>( <sup>'</sup> 000 MT) | Stocks <sup>a/</sup><br>( <sup>'</sup> 000 MT) | Stocks<br>as % of domestic<br>consumption and<br>exports. |
|----------------------------|---|--------------------------------------|---|-----------------------------------|--|---|
| <u>Tobacco</u>             |   |                                      |   |                                   |  |   |
| 1965-66                    | 222                                       | 132                                  | 36  | 91                                | 246  | 194   |
| 1967-68                    | 295                                       | 128                                  | 37  | 92                                | 245  | 190   |
| 1968-69                    | 275                                       | 119                                  | 39  | 81                                | 291  | 243   |
| 1969-70                    | 229                                       | 111                                  | 40  | 71                                | 245 <sup>b/</sup>                              | 221   |
| 1970-71 (program)          | - -                                       | 142                                  | 41  | 100                               | - -  | - -   |
| <u>Tea</u> <sup>b/</sup>   |   |                                      |   |                                   |  |   |
| 1965                       | 20  | 15                                   | 12  | 4                                 | 9  | 56  |
| 1967                       | 23  | 22                                   | 15  | 9                                 | 18   | 75  |
| 1968                       | 24  | 28                                   | 16  | 7                                 | 22   | 96  |
| 1969                       | 26  | 34                                   | 18  | 8                                 | 31   | 119   |
| 1970 (est.)                | - -                                       | 30                                   | 20  | 10                                | 31   | 103   |
| <u>Sugar</u> <sup>c/</sup> |   |                                      |   |                                   |  |   |
| 1965                       | 158                                       | 522                                  | 459   | 102                               | 476  | 101   |
| 1967                       | 149                                       | 728                                  | 506   | 76                                | 736  | 126   |
| 1968                       | 125                                       | 649                                  | 540   | 26                                | 819  | 144   |
| 1969                       | 102                                       | 501                                  | 584   | 146                               | 589  | 80  |
| 1970                       | 120                                       | 510                                  | 620   | - -                               | 545  | 88  |

a/ Tobacco - August 31; Tea - February 28; Sugar - December 31.

b/ January 31.

c/ Made Tea.

d/ Refined sugar.

Source: State Monopolies, Sugar Corporation and State Planning Organization.

Table 2 : TURKISH STATE MONOPOLIES

Operating Statement March 1, 1968 - February 28, 1969

(millions of Turkish Lira)

| <u>Income</u>                     |                 | <u>Expenditures</u>               |                |
|-----------------------------------|-----------------|-----------------------------------|----------------|
| <u>Defense Tax</u>                | <u>867.3</u>    | <u>Production Costs</u>           | <u>17.9</u>    |
| Tobacco                           | 836.7           | <u>Reserve for Fixed Assets</u>   | <u>108.3</u>   |
| Alcohol                           | 24.3            | <u>Depreciation and Insurance</u> | <u>55.3</u>    |
| Salt                              | 5.4             | <u>Municipality Payments</u>      | <u>43.4</u>    |
| <u>Domestic Sales</u>             | <u>1,293.6</u>  | <u>Treasury Payments</u>          | <u>1,787.6</u> |
| Tobacco                           | 612.5           | From Monopoly Revenues            | 920.3          |
| Spirits                           | 389.2           | Defense Tax                       | 867.3          |
| Gunpowder                         | *               | <u>Treasury Stamp Tax</u>         | <u>17.4</u>    |
| Tea                               | 249.5           | <u>Other (net)</u>                | <u>6.9</u>     |
| Marches                           | 2.3             |                                   |                |
| Coffee                            | 49.5            |                                   |                |
| Salt                              | (-9.4)          |                                   |                |
| <u>Exports</u>                    | <u>(-135.0)</u> |                                   |                |
| Processed Tobacco                 | 0.2             |                                   |                |
| Tobacco leaf                      | (-0.3)          |                                   |                |
| Tea                               | (-131.5)        |                                   |                |
| Monopoly Alcoholic Beverages      | 0.1             |                                   |                |
| Non-Monopoly Alcoholic Beverages  | (-3.5)          |                                   |                |
| <u>Misc. Income and Penalties</u> | <u>10.9</u>     |                                   |                |
| Total                             | <u>2,036.8</u>  | Total                             | <u>2,036.8</u> |

\* Less than TL 100,000

Table 3 : TURKISH STATE MONOPOLIES

Balance Sheet as of February 28, 1969

(millions of Turkish Lira)

| <u>Assets</u>                 |                | <u>Liabilities</u>                              |            |
|-------------------------------|----------------|---|------------|
| Fixed Assets (Revolving Fund) | 52.5           | Capital   | 1,750.0    |
| Cash                          | 324.5          | Reserves  | 19.5       |
|                               |                | Insurance                                       | (0.5)      |
| Shares and Bonds              | 13.1           | Depreciation Fund                               | (18.9)     |
| Stocks                        | 1,796.5        | Loans Used as Capital                           | 2,070.6    |
| Subsidiaries                  | 1.3            | Treasury  | (610.6)    |
| Credits (net)                 | <u>1,655.0</u> | Central Bank Bonds<br>Guaranteed by<br>Treasury | (1,460.0)  |
| Total                         | <u>3,842.9</u> | Other Debts                                     | <u>2.9</u> |
|                               |                | Total   | 3,842.9    |

Source: State Monopolies

Table 4 : TURKISH STATE MONOPOLIES STORAGE FACILITIES  
(May 1970)

| <u>Region</u> | <u>Monopoly-Owned<br/>Capacity (M<sup>2</sup>)</u> | <u>R e n t e d</u> |                                 |                   |
|---------------|--|--------------------|---------------------------------|-------------------|
|               |  | <u>Number</u>      | <u>Capacity (M<sup>2</sup>)</u> | <u>Rent (TL)</u>  |
| Aegean        | 68,330   | 330                | 360,465                         | 11,699,939        |
| Black Sea     | 125,443  | 141                | 99,067                          | 2,825,552         |
| Marmara       | 135,449  | 135                | 157,215                         | 4,668,066         |
| East          | <u>19,315</u>                                      | <u>40</u>          | <u>49,289</u>                   | <u>1,594,373</u>  |
| Total         | <u>348,587</u>                                     | <u>646</u>         | <u>666,036</u>                  | <u>20,787,930</u> |

Source: State Monopolies

Table 5

OPERATIONS OF THE TURKISH SUGAR CORPORATION

|   | <u>1966</u> | <u>1967</u> | <u>1968</u> | <u>1969</u> | <u>1970</u>          |
|---|-------------|-------------|-------------|-------------|----------------------|
| Sugar beet production<br>(000 tons)     | 4,422       | 5,253       | 4,715       | 3,356       | 4,200 <sup>a/</sup>  |
| Price to growers<br>(TL per ton)        | 140.80      | 140.80      | 140.80      | 140.80      | 140.80 <sup>b/</sup> |
| Sugar production<br>(000 tons)          | 645         | 728         | 649         | 501         | 510                  |
| Cost of producing sugar<br>(TL per ton) | 1843        | 1858        | 1931        | 2135        | 2100 <sup>a/</sup>   |
| Selling price<br>(TL per ton)           |             |             |             |             |                      |
| Crystal                                 | 2500        | 3000        | 3000        | 3000        | 3000 <sup>c/</sup>   |
| Cubes                                   | 2800        | 3300        | 3300        | 3300        | 3300 <sup>d/</sup>   |
| Sales Profit<br>(TL per ton)            | 96.60       | 98.30       | 88.30       | 93.60       | 89.50 <sup>a/</sup>  |
| Domestic consumption<br>(000 tons)      | 499         | 506         | 540         | 584         | 620 <sup>a/</sup>    |
| Exports<br>(000 tons)                   | 30          | 76          | 26          | 146         | -                    |
| Export price<br>(TL per ton)            | 602         | 613         | 497         | 750         | -                    |
| Stocks (end-of-year)<br>(000 tons)      | 591         | 736         | 819         | 589         | 545                  |

a/ Estimated

b/ TL 200 per ton 1970-71

c/ TL 3600 per ton 1970-71

d/ TL 3900 per ton 1970-71

e/ Remainder is tax less subsidy

Sources: Turkish Sugar Corporation and State Planning Organization

Table 6

SUGAR STOCKS BY MONTH

(000 tons)

|           | <u>1968</u> | <u>1969</u> |
|-----------|-------------|-------------|
| January   | 736.2       | 758.1       |
| February  | 641.4       | 723.4       |
| March     | 587.9       | 677.7       |
| April     | 540.6       | 625.4       |
| May       | 494.3       | 569.9       |
| June      | 449.2       | 489.8       |
| July      | 404.3       | 414.8       |
| August    | 380.2       | 347.3       |
| September | 451.5       | 399.5       |
| October   | 574.2       | 509.1       |
| November  | 671.1       | 575.5       |
| December  | 818.7       | 588.5       |

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Source: Turkish Sugar Corporation

Table 7

THE SOIL PRODUCTS OFFICE DOMESTIC PURCHASES AND IMPORTS

(000 tons)

|               | <u>1966</u> | <u>1967</u>      | <u>1968</u> | <u>1969</u> |
|---------------|-------------|------------------|-------------|-------------|
| <u>Wheat</u>  |             |                  |             |             |
| Purchases     | 793         | 868              | 505         | 500         |
| Imports       | 289         | 36 <sup>b/</sup> | 15          | 649         |
| <u>Rye</u>    |             |                  |             |             |
| Purchases     | 77          | 60               | 23          | 16          |
| Imports       | -           | -                | -           | -           |
| <u>Barley</u> |             |                  |             |             |
| Purchases     | 27          | 29               | 11          | 5           |
| Imports       | -           | -                | -           | -           |
| <u>Oats</u>   |             |                  |             |             |
| Purchases     | <u>a/</u>   | <u>a/</u>        | 2           | <u>a/</u>   |
| Imports       | -           | -                | 2           | -           |
| <u>Maize</u>  |             |                  |             |             |
| Purchases     | -           | -                | -           | -           |
| Imports       | 5           | -                | -           | -           |
| <u>Total</u>  |             |                  |             |             |
| Purchases     | 897         | 957              | 541         | 522         |
| Imports       | 294         | 36               | 16          | 649         |

a/ Less than 500 tons

b/ World Food Program

Table 8

THE SOIL PRODUCTS OFFICE PURCHASE AND SALE PRICES

a/  
(in kurus per kilogram)

|                   | <u>1966-67</u>  |             | <u>1967-68</u>  |             | <u>1968-69</u>  |             | <u>1969-70</u>  |             | <u>1970-71</u>  |             |
|-------------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|
|                   | <u>Purchase</u> | <u>Sale</u> |
| Wheat (for bread) | 77-78           | 86-87       | 77-78           | 86-87       | 77-78           | 86-87       | 77-80           | 87-90       | 85-95           | 87-102      |
| Barley            | 55              | 65          | 55              | 65          | 60              | 70          | 55              | 65          | 60              | 67          |
| White Barley      | 50              | 60          | 50              | 60          | 55              | 65          | 60              | 70          | 62              | 72          |
| Rye               | 57              | 67          | 57              | 67          | 57              | 67          | 60              | 70          | 65              | 72          |
| Oats              | 47              | 57          | 47              | 57          | 52              | 62          | 55              | 65          | 60              | 67          |

Source: Data supplied by Turkish authorities

a/ Kurus 100 = LT 1 (LT 9 = US\$1).

Table 9

## THE SOIL PRODUCTS OFFICE

## Profits and Losses from Commodity Transactions

|                                      | 1968-69                                |  |   | 1969-70                                      |   |   | 1970-71                                      |   |   |
|--------------------------------------|--|--|---|--|---|---|--|---|---|
|                                      | Amount sold<br>( <sup>'000</sup> tons) | Profit or loss<br>(-) per kg.<br>(Kurus) | Total profit<br>or loss (-)<br>(LT million) | Amount<br>sold<br>( <sup>'000</sup><br>tons) | Profit or<br>loss (-)<br>per kg.<br>(Kurus) | Total profit<br>or loss (-)<br>(LT million) | Amount<br>sold<br>( <sup>'000</sup><br>tons) | Profit or<br>loss (-)<br>per kg.<br>(Kurus) | Total profit<br>or loss (-)<br>(LT million) |
| Domestic sales                       |  |  |   |  |   |   |  |   |   |
| Wheat                                | 1,161                                  | 2.46                                     | 28.7  | 1,088  | 3.30  | 35.8  | 1,276  | -15.14                                      | -193.2                                      |
| Barley                               | 29                                     | 2.15                                     | 0.6   | 11   | -1.11                                       | -1.2  | 24   | -8.33                                       | -2.0  |
| Rye                                  | -                                      | -  | -   | 7  | -1.11                                       | -0.3  | 36   | -8.61                                       | -3.2  |
| Oats                                 | -                                      | -  | -   | 2  | -1.11                                       | -0.2  | 1  | -10.00                                      | -0.1  |
| Corn                                 | -                                      | -  | -   | -  | -   | -   | -  | -   | -   |
| Rice                                 | 9                                      | 84.83                                    | 8.9   | 8  | 61.43                                       | 5.2   | 16   | 97.30                                       | 15.6  |
| Narcotics                            | -                                      | -  | 1.2   | -  | -   | 0.9   | -  | -   | 1.7   |
| Other                                | 61                                     | 7.85                                     | 4.7   | 51   | 13.18                                       | 6.8   | 36   | 11.39                                       | 4.1   |
| Total                                | 1,260                                  | -  | 44.1  | 1,167  | -   | 46.5  | 1,389  | -   | -177.1                                      |
| Export sales                         |  |  |   |  |   |   |  |   |   |
| Barley                               | -                                      | -  | -   | -  | -   | -   | -  | -   | -   |
| Rice                                 | 1                                      | 1.55                                     | 0.1   | -  | -   | -   | -  | -   | -   |
| Cereals and rice<br>price difference | -                                      | -  | -   | -  | -   | -   | -  | -   | -   |
| Opium                                | -                                      | 2,027.13                                 | 2.6   | -  | 3000.00                                     | 3.7   | -  | 100,000.00                                  | 6.0   |
| Total                                | -                                      | -  | 2.7   | -  | -   | -   | -  | -   | -   |
| Total sales                          | 1,261                                  | -  | 46.8  | 1,167  | -   | 50.2  | 1,389  | -   | -171.1                                      |

Source: The Soil Products Office

a/ Profits and losses are calculated by deducting from the sale price the purchasing price and an overhead of 11.87 kurus per kilogram for cereals and corn. For narcotics and opium, higher overheads per kilogram apply. For selling and purchasing prices, see Table . The season is calculated from June 1 to May 31.

Table 10

THE SOIL PRODUCTS OFFICE  
BALANCE SHEET AS OF MAY 31, 1968, 1969 AND 1970

(In millions of Turkish lira)

|                                  | <u>1968</u>    | <u>1969</u>    | <u>1970</u> <sup>a/</sup> |                    | <u>1968</u>    | <u>1969</u>    | <u>1970</u> <sup>a/</sup> |
|----------------------------------|----------------|----------------|---------------------------|--------------------|----------------|----------------|---------------------------|
| <b>Assets</b>                    |                |                |                           | <b>Liabilities</b> |                |                |                           |
| Cash                             | 164.8          | 214.9          | 85.8                      | Paid-up capital    | 600.0          | 600.0          | 600.0                     |
| Receivables                      |                |                |                           | Reserves and       |                |                |                           |
| Accumulated losses               | 106.6          | 109.6          | 109.6                     | provisions         | 29.9           | 34.6           | 36.0                      |
| Price differentials              | 15.2           | 14.8           | 14.8                      | Amortization fund  | 207.2          | 227.8          | 249.6                     |
| Public sector debtors            | 81.4           | 184.9          | 127.9                     | Bonds              | --             | --             | --                        |
| Private debtors                  | 50.7           | 48.6           | 31.4                      | Creditors          | 40.6           | 73.6           | 45.6                      |
| Other                            | 107.6          | 236.2          | 187.7                     | Central Bank       | 470.0          | 475.0          | 475.0                     |
| Stocks                           | 327.0          | 169.8          | 354.8                     | Other              | 212.2          | 152.4          | 116.9                     |
| Participations                   | 15.4           | 15.4           | 22.6                      | Net profit for the |                |                |                           |
| Fixed assets                     |                |                |                           | accounting year    | --             | 46.8           | 41.2                      |
| Equipment                        | 235.8          | 238.9          | 243.5                     |                    |                |                |                           |
| Premises                         | 353.0          | 349.2          | 350.4                     |                    |                |                |                           |
| Articles for permanent use       | 18.8           | 19.8           | 21.6                      |                    |                |                |                           |
| Other assets                     | 11.4           | 8.1            | 14.2                      |                    |                |                |                           |
| Net loss for the accounting year | <u>72.2</u>    | <u>--</u>      | <u>--</u>                 |                    |                |                |                           |
| <b>Total</b>                     | <u>1,559.9</u> | <u>1,610.2</u> | <u>1,564.3</u>            |                    | <u>1,559.9</u> | <u>1,610.2</u> | <u>1,564.3</u>            |

Source: The soil products Office

a/ Forecast

Table 11

THE SOIL PRODUCTS OFFICE  
STOCKS OF COMMODITIES

|                     | <u>May 1967</u>    |                    | <u>May 1968</u>    |                    | <u>May 1969</u>    |                    | <u>May 1970</u>    |                    | <u>May 1971</u><br>(forecast) |                    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------------------|--------------------|
|                     | <u>000</u><br>tons | <u>LT</u><br>mill. | <u>000</u><br>tons | <u>LT</u><br>mill. | <u>000</u><br>tons | <u>LT</u><br>mill. | <u>000</u><br>tons | <u>LT</u><br>mill. | <u>000</u><br>tons            | <u>LT</u><br>mill. |
| <b>Domestic</b>     |                    |                    |                    |                    |                    |                    |                    |                    |                               |                    |
| Wheat               | 279                | 209                | 337                | 252                | 63                 | 48                 | 52                 | 44                 | 110                           | 84                 |
| Barley              | 23                 | 11                 | 30                 | 14                 | 12                 | 6                  | 8                  | 6                  | 2                             | 1                  |
| Rye                 | 28                 | 15                 | 16                 | 9                  | 1                  | 1                  | 4                  | 3                  | 8                             | 5                  |
| Unhusked rice       | -                  | -                  | -                  | -                  | -                  | -                  | -                  | -                  | -                             | -                  |
| Rice                | 11                 | 26                 | 6                  | 15                 | -                  | 1                  | -                  | 1                  | 8                             | 9                  |
| Other               | -                  | 5                  | -                  | 6                  | 5                  | 7                  | 4                  | 3                  | -                             | -                  |
| <b>Total</b>        | -                  | 266                | -                  | 299                | 83                 | 64                 | 68                 | 57                 | 123                           | 109                |
| <b>Imported</b>     |                    |                    |                    |                    |                    |                    |                    |                    |                               |                    |
| Wheat               | 79                 | 61                 | 8                  | 6                  | 110                | 84                 | 260                | 221                | 538                           | 516                |
| Barley              | -                  | -                  | -                  | -                  | -                  | -                  | -                  | -                  | -                             | -                  |
| Rice                | 3                  | 6                  | 2                  | 4                  | 3                  | 4                  | 2                  | 4                  | -                             | -                  |
| <b>Total</b>        | -                  | 67                 | -                  | 10                 | 113                | 88                 | 262                | 225                | 538                           | 516                |
| <b>Total Stocks</b> |                    |                    |                    |                    |                    |                    |                    |                    |                               |                    |
| Wheat               | 358                | 270                | 345                | 258                | 173                | 132                | 312                | 265                | 648                           | 610                |
| Other               | -                  | 63                 | 56                 | 51                 | 23                 | 20                 | 18                 | 17                 | 13                            | 15                 |
| <b>Grand Total</b>  | -                  | 333                | -                  | 309                | 196                | 152                | 330                | 282                | 661                           | 625                |

Source: The Soil Products Office

Table 12

PRICES OF AGRICULTURAL COMMODITIES SUPPORTED  
BY SALES COOPERATIVES

| <u>Commodity</u>       | <u>1970-71 Purchase Prices</u><br>(Kurus-per kg) |                    | <u>Export prices</u><br><u>November 10, 1970</u> |
|------------------------|--|--------------------|--|
|                        | <u>Members</u> <sup>b/</sup>                     | <u>Non Members</u> |  |
| Hazelnuts              | 750  | 730                | \$ 132 per ton                                   |
| Sultanas               | 280  | 270                | \$ 323 per ton <sup>c/</sup>                     |
| Figs                   | 200  | 190                |  |
| Pistachio              | 1,000  | 1,000              | \$ 1,100 per ton (in shell)                      |
| <u>Cotton</u>          |  |                    | \$ .56-.60 per kg                                |
| Tariş Cooperative      | 280  | 270                |  |
| Ant Birlik Cooperative | 280  | 270                |  |
| Çukobirlik Cooperative | 270  | 260                |  |
| Cottonseed             | 85   | 85                 |  |
| <u>Olive Oil</u>       |  |                    | \$ 620 per ton                                   |
| Tariş Cooperative      | 630  | 610                |  |
| Güneydoğu Cooperative  | 620  | 600                |  |
| <u>Sunflower seed</u>  | 180  | 170                |  |

a/ 100 kurus = TL 1.00

b/ Includes member fee paid to cooperatives

c/ Price set by international agreement.

Source: Ministry of Commerce.

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(A Partial List)

Irrigation

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DSI General Directorate.

Summary Report of Projects

Summary Report of Lower Ceyhan - Aslantas Project (February 1968).

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Activities of the Groundwater Division of the State Hydraulic Works 1952-1969. (1969)

Summary Report of Groundwater Development Project (February 1968).

See Also chart attached to Map No. 3 locating major DSI irrigation projects.

IBRD Projects Department. Turkey-Syria-Iraq: Systems Analysis of the Euphrates River Basin (August 8, 1968).

Ceyhan-Aslantas Multi-Purpose Project (January 23, 1968).

Wheat Production

Ministry of Agriculture, General-Directorate of Agriculture.  
Turkey, Wheat Production Development Project (1968).

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State Planning Organization, Economic Planning Department  
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Livestock Development Projects in Turkey (General Report, August 1969).

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(Report No. PA-36, February 11, 1970).

FAO/IBRD Cooperative Program

Draft Report of the Turkish Farm and Common Land Livestock Development Project in Turkey (Report No. 26/70 TUR 13, July 16, 1970).

Survey of Turkish Livestock (Report No. 14/68 TUR 1, September 9, 1968).

Livestock Preparation Mission to Turkey, General Report (Report No. 16/69, June 5, 1969).

Draft Report of the Sugar Beet Growers Livestock Development project (Report No. 13/70 TUR 10, March 18, 1970).

Draft Report of the Abattoirs Development Project in Turkey (Report No. 14/70 TUR 10, March 19, 1970).

Beet Pulp Drying Project (Project Report 4) (Report No. 24/69 TUR 8, June 19, 1969).  
Intensive Dairy Production - Project Report No. 1 (Report No. 23/69 TUR 5, June 19, 1969).  
Livestock Fattening - Project Report No. 2 (Report No. 24/69 TUR 6, June 19, 1969).  
National Dairy Breed Improvement - Project Report No. 3 (Report No. 25/69 TUR 7, June 19, 1969).

National Dairy Organization. Demand and supply studies for each proposed milk processing plant. \*

Meat and Fish Organization. Feasibility studies for slaughterhouses. \*

Animal Feed Industry Corporation. Feasibility studies for feed mixing mills constructed, under construction, or planned. \*

\* Underway

#### Fruits and Vegetables

State Planning Organization. Report on Export Prospects for Fresh and Processed Fruit and Vegetables from Turkey and Recommendations for An Action Program (SPO: 784-EID: 6 May 1969).

BASICO Feasibility Studies on the Turkish Fresh and Frozen Fruit and Vegetable Export Promotion:

Report on State One (March 1969)  
Report on State Two (2 Volumes)  
Report on State Three (March 1970)

TUMAS Market and Transportation. Study on Fresh Fruit, Vegetable, Meat and Fish Exports (Final Draft, July 1970, 3 Volumes).

The Economic Intelligence Unit. Study of the Food Processing Industry in Turkey:

Stage I - Preliminary Screening (November 1968)  
- Supplementary Study for Wine (November 1968)  
Stage II - Marketing Studies (March 1969, 4 Volumes)  
Stage III - Overall Feasibility (June - Sept. 1969, 6 Volumes)  
Cheese Plants  
Wine Plant  
Canning Plant  
Concentrated Citrus Juice Plant  
Grape Juice and Apple Juice Plant  
Tomato Paste Plant

Forestry

UNDP/FAO Consultancy Mission. (1) Pre-Investment Survey of the Antalya Region of Turkey, Vols. 1-4 (1966). (2) Report to the Government of Turkey on Forestry and Forest Industries Development (Report No. FO:SF/TUR 26, August 1969).

UNDP/FAO Special Project in Forestry and Forest Development. Forest Industries Preliminary Development Plan to 1982 (October 1969)

FAO/IBRD Cooperative Program. (1) Draft Report of the Turkey Antalya Forestry Project: First Stage Preparation Mission (Report No. 53/69 TUR 3, 30 December 1969). (2) Turkey Antalya Forest Project (First Stage Preparation Mission (Report No. 53/69 TUR 3, 1969).

USAID/Turkey. Turkish Forest Products: Problems and Opportunities.

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John M. Hill USAID/Turkey. Recommendations and Projections for the Turkish Fertilizer Industry (May 26, 1969).

John M. Hill and John R. Wilson USAID/Turkey. Turkey's 1970 Fertilizer Program.

IBRD. Subsector Study on the Fertilizer Industry in Turkey (Second Draft, April 20, 1970).

Turkish Petroleum Company. Feasibility Study of the Ipras Ammonia-Urea Fertilizer Plant.

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AGRICULTURAL TRADE

General

1. Agricultural products are the mainstay of the Turkish export market, comprising approximately four-fifths of Turkey's exports. Between 1963 and 1968, Turkey's agricultural exports grew at an annual rate of about 6%. In 1968, because of smaller exports of tobacco, nuts, and olive oil, total exports dropped by 7%. Cotton and tobacco dominate the Turkish export trade and should continue to do so. However, fresh fruit and vegetable exports should increase.
2. Tobacco was Turkey's leading export until 1965; since then cotton has been No. 1. The United States has been Turkey's major tobacco customer, consistently taking approximately three-fifths of the crop by value.
3. During 1966, 1967, and 1968, the United States accounted for approximately 17% of Turkey's total exports, at an annual value of around \$80 million. Besides tobacco, the United States imports hazelnuts, some preserved fruits, dried figs, spices, sheep skin (without wool) and some cotton linters. In 1968, West Germany replaced the United States as Turkey's largest market for agricultural exports. The six European Community countries took about one-third of all of Turkey's exports.

Notes and Assumptions Regarding Major Agricultural Exports

4. Fruits and Vegetables. Exports of hazelnuts in 1969 (US\$107.6 million) were more than 90% above 1962 exports (US\$56.0 million). During this period (1962-69), they averaged US\$68.3 million annually. Given rising Turkish production from new trees and improved yields and the likelihood of continued increases in external demand (from both Western and Eastern Europe), exports in 1977 are projected to increase by about 45% over the average (US\$89.2 million) of 1967-69 levels.
5. Turkish exports of raisins increased steadily from US\$16.3 million in 1962 to US\$22.8 million in 1969, an average increase of about 5% annually. The same rate of increase is projected for 1970-77, on the assumption that external demand continues to expand at the same rate and that Turkey maintains its current share of exports.
6. Exports of dried figs increased about 20% during 1961-69. The same rate of increase is projected for 1969-77, giving an export figure of between US\$8 and US\$9 million for 1977.

7. Exports of citrus (lemons, mandarins, satsumas and oranges) are projected in the BASICO study to rise from US\$10.2 million in 1969 to US\$31.1 million in 1975. These exports are largely to Western Europe. Assuming that the project for increasing fruit and vegetable exports is implemented approximately on schedule, citrus exports are projected at US\$14 million in 1972, US\$29 million in 1975 and US\$37 million in 1977. Other fruits and vegetables (also to Western Europe), mainly grapes, early potatoes, onions, peaches and bell pepper and capsicum, are projected to increase from approximately US\$14 million in 1969 to US\$16 million in 1972 and US\$43 million in 1977. The potential in Western Europe for these Turkish fruits and vegetables supplied early and late in the season is substantial. In order to realize this potential, however, serious problems of organizing production and marketing in Turkey, including the supply of suitable nursery stock, extension, credit, handling and transport, will have to be overcome.

8. Tobacco exports between 1962 and 1969 show little trend. During this period they averaged US\$92.8 million annually, but ranged from a high of US\$117.7 million in 1967 to a low of US\$66.5 million in 1963. USAID projects 1972 exports at between US\$108 and US\$120 million in 1972. Based on uncertainties surrounding the growth in future demand because of the cigarette health hazard and possible limitations on Turkish production, however, exports during 1968-72 are projected to rise about 2.7% per annum, reaching US\$120 million in 1977. This figure is about 30% above the annual average during 1962-69.

9. Cotton. World exports are projected to grow by 1.5% annually during 1968-75 and 10% annually thereafter. Turkey's exports of cotton are projected to increase from 204,000 tons in 1969 to 230,000 tons (US\$125.4 million) in 1970 and 270,000 tons (US\$120 million) in 1977. The 1977 figures would represent 6.0% of world exports, compared with 4.1% average during 1963-65, 6.1% in 1966 and 5.6% in 1968. The export price of cotton is assumed to decline from US\$608 per metric ton in 1968 and US\$545 in 1969 and 1970 to US\$541 in 1972 and US\$450 in 1977.

10. Between 1962 and 1969 exports (by volume) rose 94% and in 1966, the peak year, they were more than double 1962 exports. Projected 1977 exports by volume would be 32% over 1969 levels.

11. In order to achieve this level of exports, it is assumed that 700,000 ha of cotton are grown with an average yield of 743 kg per ha, giving production of 520,000 tons. About 52% of production would be exported, the remainder being consumed domestically as raw cotton and textiles and/or exported as textiles.

12. The production level of 520,000 tons in 1977 on 700,000 ha of land would mean a reduction in area of cotton from 718,000 ha (1967) and an increase in yield per ha of about 35% over the 1967 figure of 550 kg. For comparison, yields per ha more than doubled between 1955 and 1967, rising from 250 kg to 550 kg.

13. Animal Products and Fisheries. Exports of live animals and meat, estimated at US\$11.3 million (US\$14.4 million in SPO Annual Program for 1970), are projected to remain relatively static at about US\$12 million in 1972 but rise to US\$25 million in 1977. Such an increase assumes a marked improvement in the Turkish livestock situation, particularly in the supply of feedstuffs for fattening improved breeds. An "Integrated Livestock Development Project", aimed at improving overall livestock development, including dairy production, currently is underway. However, given the nature of the problem, successful implementation likely will require several years. In the meanwhile, Turkish domestic demand for meat and other livestock products is expected to rise rapidly. The SPO projects meat consumption during the Second Plan (1968-72) to increase 5.2% per annum and milk 4.6% per annum. Reflecting such pressures on a somewhat static supply, prices of animals and animal products have risen sharply over the past six years. Such pressures can be expected to increase during the next plan period.

14. Assuming that the livestock development program is able to make headway and break the supply bottleneck, exports to Middle Eastern countries, the principal market at present, could expand substantially. Given the preferences of this market, such exports would be mainly live animals and sheep rather than cattle. 1/ If beef consumption in Turkey increases, more live sheep and/or mutton could be freed for export. Failing marked improvement in supply, however, it is doubtful that Turkish production will even be able to satisfy domestic demand at present price levels. In fact, the FAO (Agricultural Commodities - Projections for 1975 and 1985) projects imports ranging as high as 221,000 tons of meat in 1975 to meet Turkish requirements.

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1/ The projection of meat exports largely disregards the current large (estimated by some as much as US\$45 million annually) illegal exports of animals from Turkey to neighboring Middle Eastern countries.

Notes and Assumptions Regarding Agricultural Imports

15. Crops. Coffee imports are assumed to increase 4.5% per annum during 1970-75 and 4.1% per annum during 1975-85 (per FAO). Cocoa imports are assumed to increase 5.2% per annum during 1970-75 and 4.7% per annum 1975-85 (per FAO).

16. Cereals. No imports of cereals are projected during 1972-77.

17. Livestock Products. Imports of merino wool for 1972 are from Second Plan and are projected to remain roughly constant 1972-77. Imports of other livestock products, mainly breeding stock, are from Second Plan for 1972 and are projected to decline by 1977.

AGRICULTURAL EXPORTS  
(US\$ million)

|   | 1967         | 1968         | 1969         | 1970<br>(Program) | 1972       | 1977       |
|---|--------------|--------------|--------------|-------------------|------------|------------|
| <u>Cereals and Pulses</u>                         | <u>8.7</u>   | <u>9.7</u>   | <u>6.8</u>   | <u>7.0</u>        | <u>7</u>   | <u>7</u>   |
| Canary seed, chick peas,<br>lentils, cowpeas      | -            | 6.8          | -            | 7.0               | -          | -          |
| <u>Fruits and Vegetables</u>                      | <u>132.6</u> | <u>126.8</u> | <u>161.7</u> | <u>127.5</u>      | <u>153</u> | <u>250</u> |
| Hazelnuts   | 82.7         | 76.0         | 107.6        | 70.0              | 90         | 130        |
| Raisins   | 22.7         | 22.6         | 22.8         | 25.0              | 26         | 32         |
| Dried figs  | 7.2          | 7.0          | 6.8          | 7.0               | 7          | 8          |
| Citrus  | 6.6          | 8.6          | 10.2         | 13.5              | 14         | 37         |
| Others <sup>a/</sup>                              | 13.4         | 12.7         | 14.2         | 12.0              | 16         | 43         |
| <u>Industrial Crops and<br/>Forestry Products</u> | <u>254.1</u> | <u>240.1</u> | <u>204.1</u> | <u>271.0</u>      | <u>244</u> | <u>262</u> |
| Tobacco   | 117.7        | 94.8         | 81.5         | 118.0             | 105        | 120        |
| Cotton  | 128.5        | 139.1        | 113.6        | 145.0             | 129        | 130        |
| Forestry products                                 |              | 1.9          | 2.3          | 7.0)              |            |            |
| Others  | 7.8          | 4.3          | 6.7          | 1.0)              | 10         | 12         |
| <u>Animal Products<br/>and Fisheries</u>          | <u>25.4</u>  | <u>30.0</u>  | <u>32.5</u>  | <u>44.5</u>       | <u>37</u>  | <u>64</u>  |
| Livestock   | 8.8          | 10.7         | 11.3         | 21.5              | 12         | 25         |
| Wool  | 2.1          | 1.9          | 1.2          | 3.5 )             |            |            |
| Mohair  | 6.4          | 6.8          | 5.3          | 7.5 )             | 10         | 15         |
| Fish (fresh)                                      | 2.5          | 4.4          | 5.9          | 8.0               | 7          | 10         |
| Others <sup>c/</sup>                              | 5.7          | 6.3          | 8.8          | 4.0               | 8          | 14         |
| Sub-total   | 420.8        | 406.6        | 405.1        | 450.0             | 441        | 573        |

a/ Other fruits and vegetables:

|        |   |   |   |   |   |    |
|--------|---|---|---|---|---|----|
| Grapes | - | - | - | - | 9 | 19 |
| Others | - | - | - | - | 7 | 24 |

b/ Others:

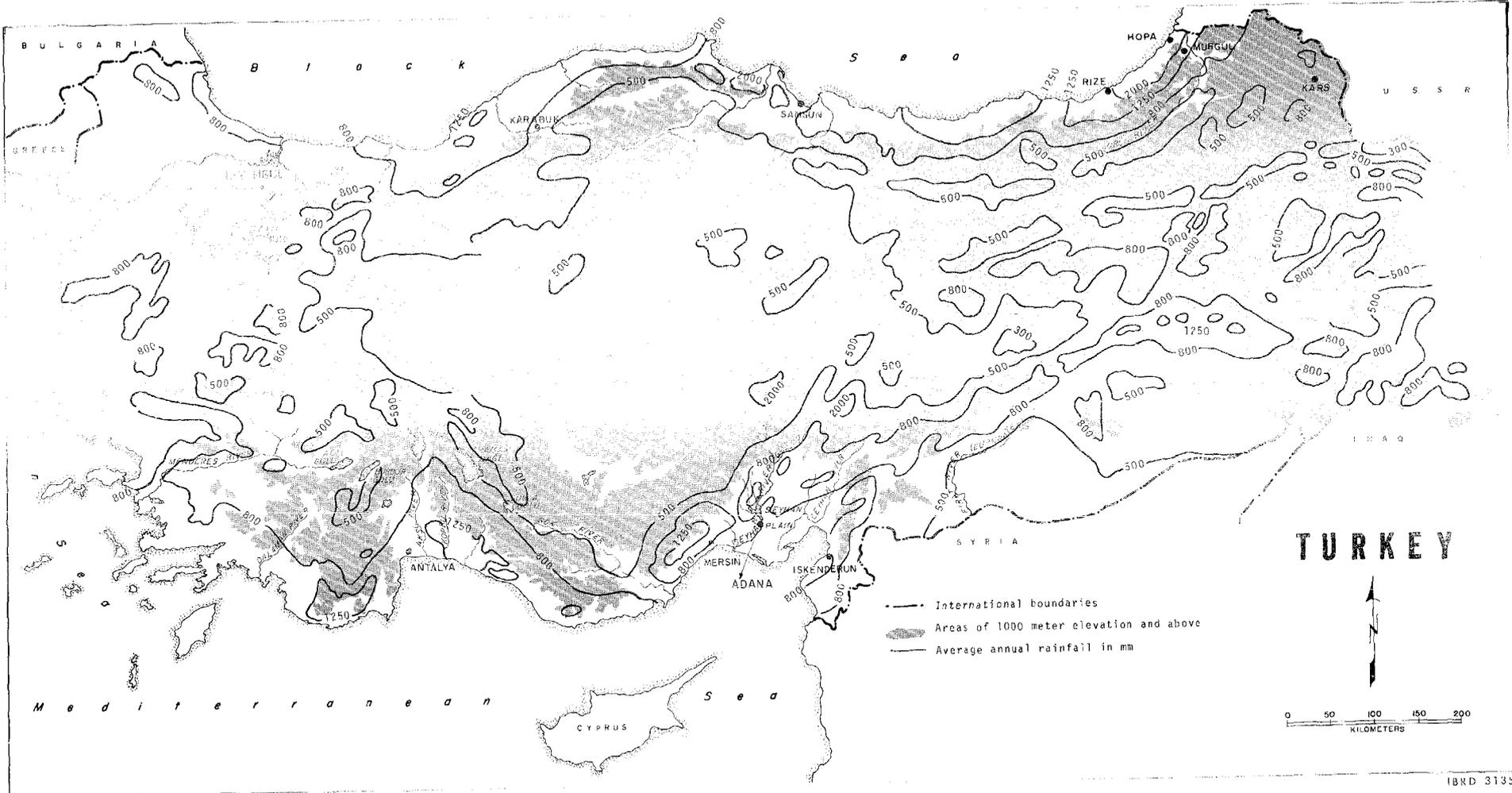
|                             |     |     |   |   |  |  |
|-----------------------------|-----|-----|---|---|--|--|
| Oilseeds, oil nuts, kernels | 1.4 | 1.4 | - | - |  |  |
|-----------------------------|-----|-----|---|---|--|--|

c/ Others:

|                 |     |     |     |   |   |    |
|-----------------|-----|-----|-----|---|---|----|
| Hides and skins | 5.7 | 6.7 | 7.0 | - | 8 | 10 |
|-----------------|-----|-----|-----|---|---|----|

Source: State Planning Organization.

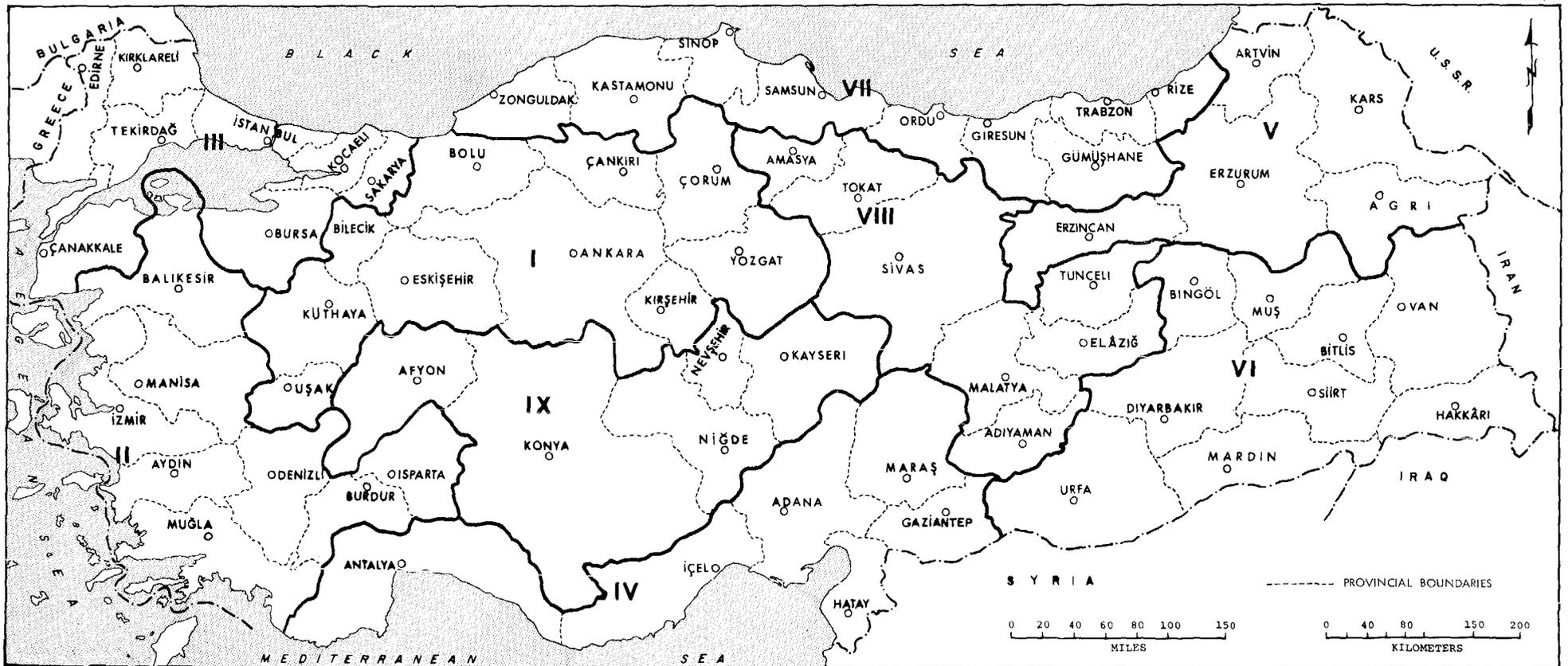


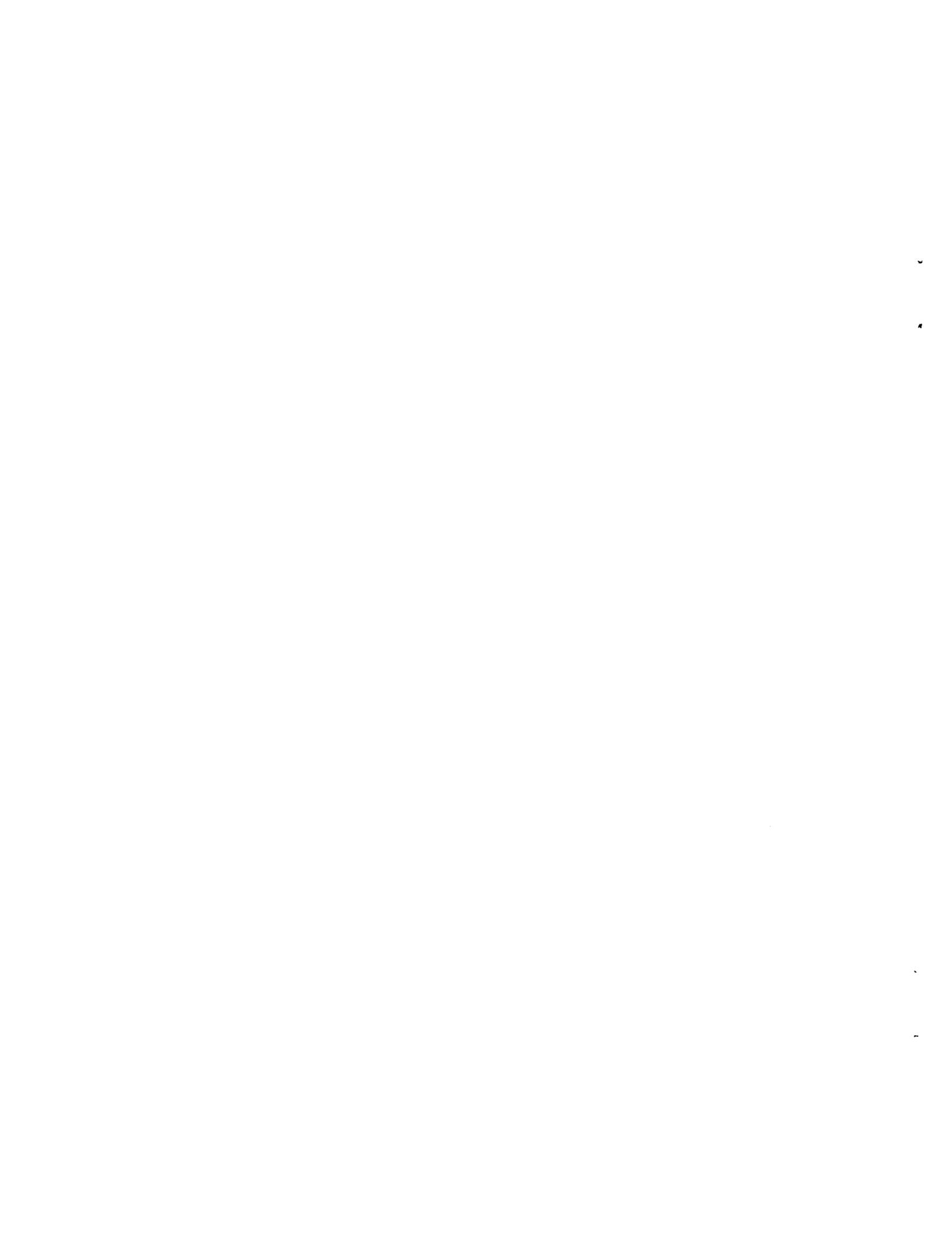




# TURKEY AGRICULTURAL REGIONS

MAP 2





# GENERAL AGRONOMIC AND CLIMACTIC CHARACTERISTICS OF AGRICULTURAL REGIONS OF TURKEY

| REGION I CENTRAL NORTH |             |            |                           |             |
|------------------------|-------------|------------|---------------------------|-------------|
| CROPS                  | Ha.         | DOM. CROP  | PLANTING / HARVEST        |             |
| CEREALS                | 2736040     | Wheat      | Sep. - Dec. / July - Aug. |             |
| PULSES                 | 42340       | Dry bean   | Apr. - May / Sep. - Nov.  |             |
| IND. CROPS             | 81200       | Sugar beet | Mar. - Apr. / Sep. - Nov. |             |
| FRUITS                 | 167580      | Vineyard   | / Sep. - Nov.             |             |
| VEGETABLES             | 46090       | Melon      | Mar. - Apr. / Aug. - Sep. |             |
| FEED CROPS             | 59560       | Cow vetch  | Mar. - Apr. / June - July |             |
| TOTAL                  | 3132810     |            |                           |             |
| IRRIGATED AREA         | 251760      |            |                           |             |
|                        | DEC. - FEB. | MAR. - MAY | JUNE - AUG.               | SEP. - NOV. |
| TEMPERATURE (C°)       | 1.1         | 9.9        | 20.7                      | 12.0        |
| RAINFALL (mm)          | 159         | 148        | 63                        | 82          |
| HUM.% EVAP. mm         | 77-79       | 65 - 258   | 54 - 526                  | 65 - 259    |

| REGION II AEGEAN |             |                    |                           |             |
|------------------|-------------|--------------------|---------------------------|-------------|
| CROPS            | Ha.         | DOM. CROP          | PLANTING / HARVEST        |             |
| CEREALS          | 1149140     | Wheat              | Nov. - Dec. / June - July |             |
| PULSES           | 68040       | Chick peas         | Mar. - May / June - July  |             |
| IND. CROPS       | 449460      | Cotton             | Apr. - May / Oct. - Nov.  |             |
| FRUITS           | 786980      | Olives             | / Oct. - June             |             |
| VEGETABLES       | 110940      | Melon              | Apr. - May / June - Sep.  |             |
| FEED CROPS       | 29290       | Wild vetch         | Feb. - Mar. / May - June  |             |
| TOTAL            | 2643850     |                    |                           |             |
| IRRIGATED AREA   | 426150      | Cotton, Vegetables |                           |             |
|                  | DEC. - FEB. | MAR. - MAY         | JUNE - AUG.               | SEP. - NOV. |
| TEMPERATURE (C°) | 6.5         | 13.4               | 24.8                      | 16.4        |
| RAINFALL (mm)    | 345         | 169                | 37                        | 144         |
| HUM.% EVAP. mm   | 75-105      | 64-277             | 48 - 531                  | 63 - 244    |

| REGION III MARMARA |             |            |                           |             |
|--------------------|-------------|------------|---------------------------|-------------|
| CROPS              | Ha.         | DOM. CROP  | PLANTING / HARVEST        |             |
| CEREALS            | 1004180     | Wheat      | Oct. - Dec. / June - July |             |
| PULSES             | 16990       | Dry bean   | Apr. - May / Aug. - Sep.  |             |
| IND. CROPS         | 271860      | Sun flower | Apr. - May / Aug. - Sep.  |             |
| FRUITS             | 175250      | Olives     | / Oct. - June             |             |
| VEGETABLES         | 75330       |            |                           |             |
| FEED CROPS         | 10400       | Cow Vetch  | Oct. - Nov. / May - June  |             |
| TOTAL              | 1554010     |            |                           |             |
| IRRIGATED AREA     | 104900      |            |                           |             |
|                    | DEC. - FEB. | MAR. - MAY | JUNE - AUG.               | SEP. - NOV. |
| TEMPERATURE (C°)   | 5.8         | 21.1       | 22.8                      | 15.2        |
| RAINFALL (mm)      | 235         | 161        | 99                        | 179         |
| HUM.% EVAP. mm     | 79 - 97     | 73 - 90    | 65 - 371                  | 74 - 213    |

| REGION IV MEDITERRANEAN |             |            |                          |             |
|-------------------------|-------------|------------|--------------------------|-------------|
| CROPS                   | Ha.         | DOM. CROP  | PLANTING / HARVEST       |             |
| CEREALS                 | 1129070     | Wheat      | Nov. - Dec. / May - June |             |
| PULSES                  | 57530       | Chick Peas | Nov. - Dec. / May - June |             |
| IND. CROPS              | 546680      | Cotton     | Feb. - May / Aug. - Oct. |             |
| FRUITS                  | 434040      | Vineyard   | / June - Nov.            |             |
| VEGETABLES              | 132550      |            | Mar. - Apr. / May - June |             |
| FEED CROPS              | 18510       | Wild vetch | Feb. - Mar. / May - June |             |
| TOTAL                   | 2318180     |            |                          |             |
| IRRIGATED AREA          | 543580      | Cotton     |                          |             |
|                         | DEC. - FEB. | MAR. - MAY | JUNE - AUG.              | SEP. - NOV. |
| TEMPERATURE (C°)        | 8.3         | 15.8       | 25.4                     | 19.3        |
| RAINFALL (mm)           | 439         | 179        | 23                       | 135         |
| HUM.% EVAP. mm          | 72 - 160    | 66 - 342   | 59 - 640                 | 61 - 374    |

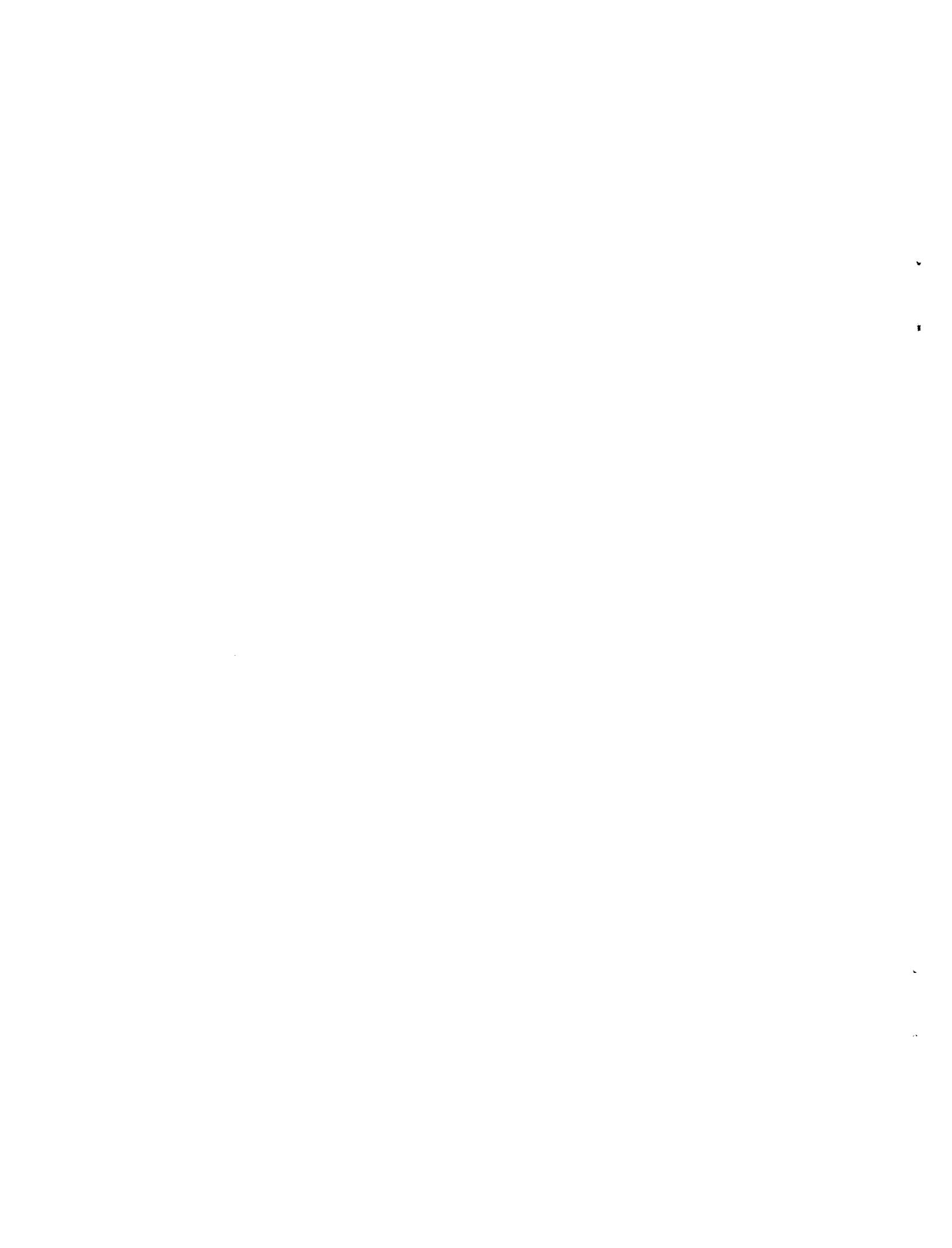
| REGION V NORTH EAST |             |            |                           |             |
|---------------------|-------------|------------|---------------------------|-------------|
| CROPS               | Ha.         | DOM. CROP  | PLANTING / HARVEST        |             |
| CEREALS             | 672240      | Wheat      | Sep. - Oct. / July - Sep. |             |
| PULSES              | 8260        | Dry Bean   | Apr. - May / Sep. - Oct.  |             |
| IND. CROPS          | 28020       | Potatoes   | Apr. - May / Sep. - Oct.  |             |
| FRUITS              | 80140       |            |                           |             |
| VEGETABLES          | 5250        | Melon      | Apr. - May / Aug. - Sep.  |             |
| FEED CROPS          | 8390        | Cow vetch  | Apr. - May / July - Aug.  |             |
| TOTAL               | 802300      |            |                           |             |
| IRRIGATED AREA      | 144650      | Wheat      |                           |             |
|                     | DEC. - FEB. | MAR. - MAY | JUNE - AUG.               | SEP. - NOV. |
| TEMPERATURE (C°)    | -4.2        | 7.6        | 20.2                      | 10.6        |
| RAINFALL (mm)       | 112         | 154        | 99                        | 106         |
| HUM.% EVAP. mm      | 71 - 38     | 65 - 179   | 56 - 516                  | 64 - 285    |

| REGION VI SOUTH EAST |             |               |                           |             |
|----------------------|-------------|---------------|---------------------------|-------------|
| CROPS                | Ha.         | DOM. CROP     | PLANTING / HARVEST        |             |
| CEREALS              | 1292820     | Wheat         | Sep. - Nov. / June - Sep. |             |
| PULSES               | 57120       | Lentils       | Oct. - Dec. / June - July |             |
| IND. CROPS           | 30130       | Cotton        | Apr. - May / Sep. - Nov.  |             |
| FRUITS               | 194480      | Vineyard      |                           |             |
| VEGETABLES           | 21600       | Melon         | Apr. - May / Aug. - Oct.  |             |
| FEED CROPS           | 15470       | Wild vetch    | Nov. - Dec. / May - June  |             |
| TOTAL                | 1611620     |               |                           |             |
| IRRIGATED AREA       | 105700      | Wheat, cotton |                           |             |
|                      | DEC. - FEB. | MAR. - MAY    | JUNE - AUG.               | SEP. - NOV. |
| TEMPERATURE (C°)     | 0.8         | 11.1          | 26.1                      | 15.4        |
| RAINFALL (mm)        | 248         | 219           | 12                        | 115         |
| HUM.% EVAP. mm       | 72 - 117    | 60 - 368      | 36 - 1118                 | 50 - 530    |

| REGION VII BLACK SEA |             |            |                           |             |
|----------------------|-------------|------------|---------------------------|-------------|
| CROPS                | Ha.         | DOM. CROP  | PLANTING / HARVEST        |             |
| CEREALS              | 1058030     | Wheat      | Oct. - Dec. / June - Aug. |             |
| PULSES               | 26780       | Dry bean   | Apr. - May / Sep. - Oct.  |             |
| IND. CROPS           | 111720      | Tobacco    | Apr. - May / July - Sep.  |             |
| FRUITS               | 323940      | Hazelnuts  | / Aug. - Sep.             |             |
| VEGETABLES           | 12790       |            | Apr. - May / July - Oct.  |             |
| FEED CROPS           | 20400       | Cow vetch  | Oct. - Nov. / May - June  |             |
| TOTAL                | 1553660     |            |                           |             |
| IRRIGATED AREA       | 126900      |            |                           |             |
|                      | DEC. - FEB. | MAR. - MAY | JUNE - AUG.               | SEP. - NOV. |
| TEMPERATURE (C°)     | 6.5         | 10.9       | 21.3                      | 15.3        |
| RAINFALL (mm)        | 323         | 210        | 214                       | 353         |
| HUM.% EVAP. mm       | 73 - 145    | 76 - 162   | 76 - 257                  | 76 - 185    |

| REGION VIII CENTRAL EAST |             |            |                           |             |
|--------------------------|-------------|------------|---------------------------|-------------|
| CROPS                    | Ha.         | DOM. CROP  | PLANTING / HARVEST        |             |
| CEREALS                  | 1071790     | Wheat      | Sep. - Oct. / July - Aug. |             |
| PULSES                   | 28780       | Dry Bean   | Apr. - May / Sep. - Oct.  |             |
| IND. CROPS               | 73760       | Sugar Beet | Mar. - Apr. / Sep. - Oct. |             |
| FRUITS                   | 158790      | Vineyard   | / Aug. - Oct.             |             |
| VEGETABLES               | 20550       |            |                           |             |
| FEED CROPS               | 25400       | Cow vetch  | Mar. - Apr. / June - July |             |
| TOTAL                    | 1379070     |            |                           |             |
| IRRIGATED AREA           | 241300      |            |                           |             |
|                          | DEC. - FEB. | MAR. - MAY | JUNE - AUG.               | SEP. - NOV. |
| TEMPERATURE (C°)         | 1.2         | 11.2       | 22.9                      | 13.6        |
| RAINFALL (mm)            | 135         | 153        | 41                        | 85          |
| HUM.% EVAP. mm           | 75 - 56     | 61 - 257   | 47 - 623                  | 60 - 303    |

| REGION IX CENTRAL SOUTH |             |                 |                           |             |
|-------------------------|-------------|-----------------|---------------------------|-------------|
| CROPS                   | Ha.         | DOM. CROP       | PLANTING / HARVEST        |             |
| CEREALS                 | 3018190     | Wheat           | Sep. - Nov. / July - Aug. |             |
| PULSES                  | 40930       | Dry bean        | Apr. - May / Sep. - Oct.  |             |
| IND. CROPS              | 82800       | Potato, S. Beet | Mar. - May / Sep. - Nov.  |             |
| FRUITS                  | 229150      | Vineyard        | / Aug. - Oct.             |             |
| VEGETABLES              | 33030       | Melon           | Apr. - May / Aug. - Sep.  |             |
| FEED CROPS              | 27110       | Wild vetch      | Apr. - May / June - July  |             |
| TOTAL                   | 3431210     |                 |                           |             |
| IRRIGATED AREA          | 237400      |                 |                           |             |
|                         | DEC. - FEB. | MAR. - MAY      | JUNE - AUG.               | SEP. - NOV. |
| TEMPERATURE (C°)        | 1.1         | 10.1            | 21.0                      | 12.0        |
| RAINFALL (mm)           | 118         | 134             | 55                        | 69          |
| HUM.% EVAP. mm          | 74 - 91     | 61 - 294        | 46 - 575                  | 57 - 287    |



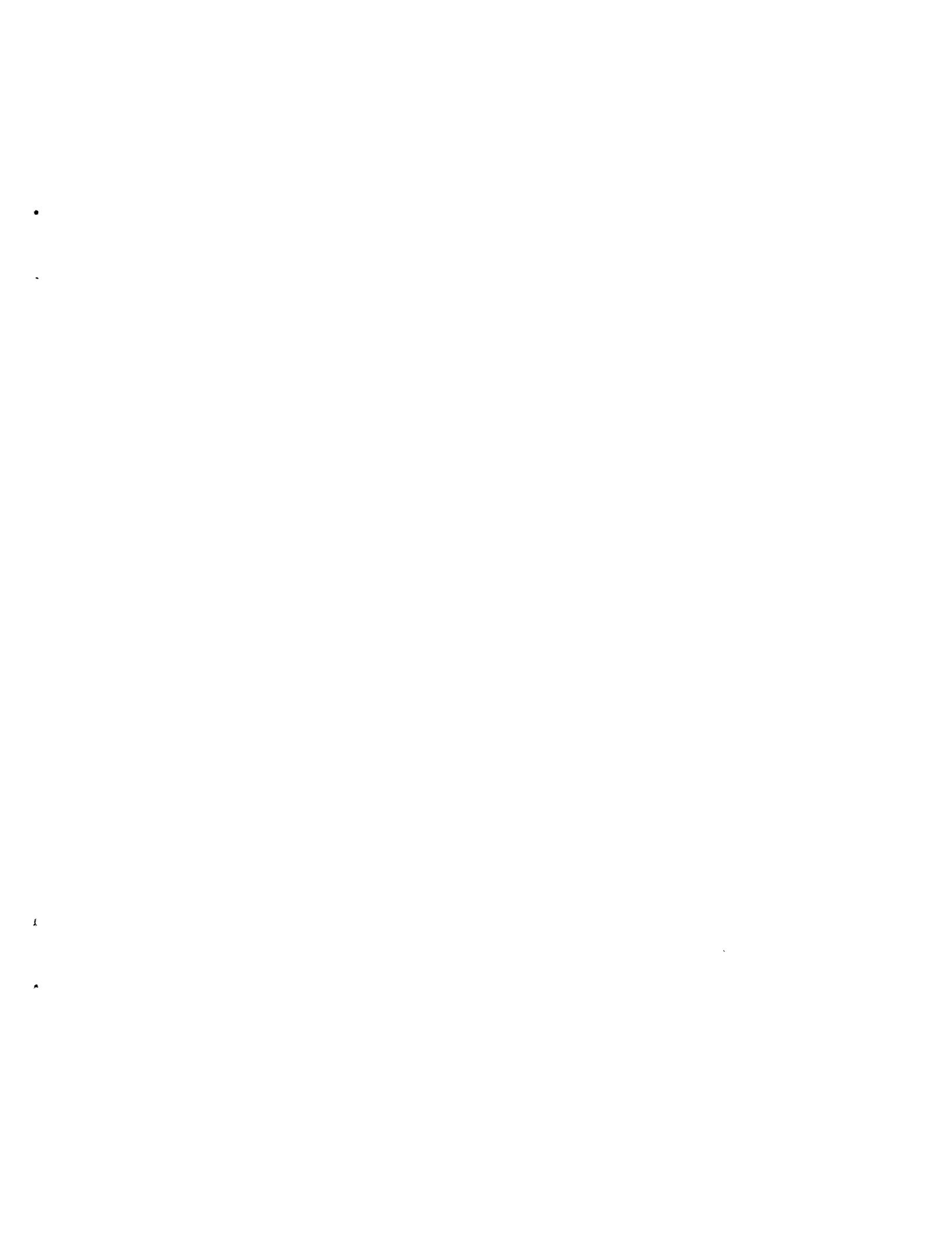
# TURKEY LOCATION OF IRRIGATION PROJECTS

MAP 3



DECEMBER 1970

IBRD - 3065



Irrigation Projects in Turkey

This list includes: E.C.I. Projects comprised in 5 years programme

Irrigation projects larger than 10,000 ha, for which studies are being prepared.

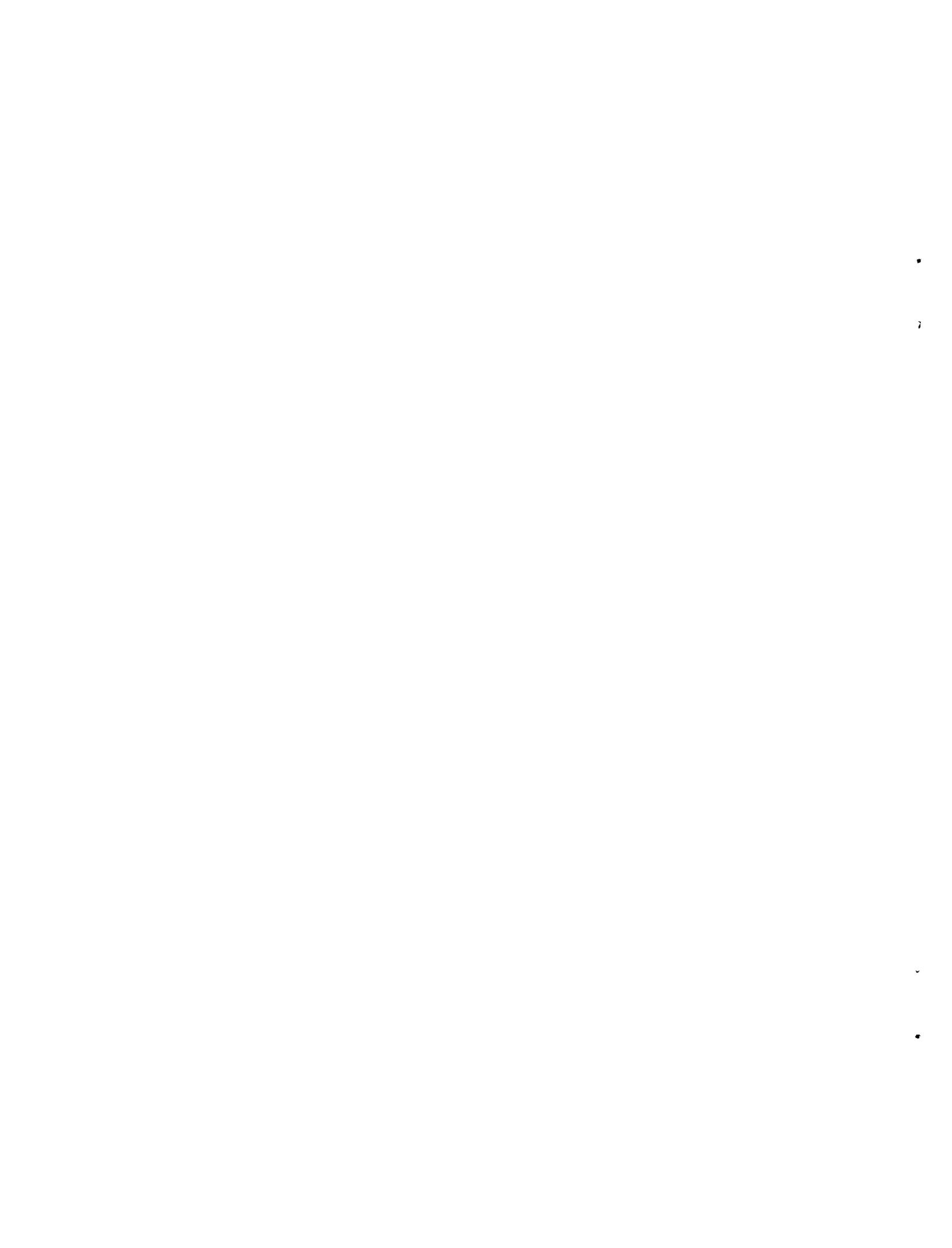
Irrigation projects larger than 10,000 ha, for which feasibility studies have been completed.

Irrigation projects visited by mission members.

| Project No.<br>(See Map No.3) | Name of Project                                 | Province       | Total Cost of D.S.L.<br>1,000 T.L. | Storage<br>million m <sup>3</sup> | Irrigation<br>Area in ha | Flood Control<br>Area in ha | Drainage<br>Area in ha | Domestic<br>Water Supply<br>million m <sup>3</sup> /year | Power<br>Mw | Remarks<br>S: under study<br>F: feasibility report completed<br>U: under construction |
|-------------------------------|---|----------------|------------------------------------|-----------------------------------|--------------------------|-----------------------------|------------------------|--|-------------|---|
| 1                             | Çanakale Atıkhisar                              | Çanakale       | 877,726                            | 61.7                              | 4,470                    | Town                        |                        |  |             | U   |
| 2                             | Çaygören (Menent) 2nd stage                     | Balıkesir      | 168,236                            | 162                               | 13,920                   |                             |                        |  |             | U   |
| 3                             | Mustafakemal Paşa                               | Bursa          | 93,770                             |                                   | 19,610                   | 13,500                      |                        |  |             | U, S  |
| 4                             | Apolyont  | Bursa          | 37,263                             |                                   | 6,200                    |                             |                        |  |             | U   |
| 5                             | Biga, 1st stage                                 | Çanakale       | 45,677                             | 285                               | 10,539                   |                             |                        |  |             |   |
| 6                             | Biga  | Çanakale       | 739,000                            |                                   | 15,000                   |                             |                        |  |             | F   |
| 7                             | Cayirkoy  | Bursa          |                                    |                                   | 17,000                   |                             |                        |  |             | S   |
| 8                             | Aşağı Gediz                                     | Manisa, İzmir  | 950,714                            | 1,995                             | 96,000                   |                             |                        |  | 69          | U   |
| 9                             | Aşağı Büyük Menderes                            | Aydın, Denizli | 2,273,340                          | 4,058                             | 125,040                  | 62,435                      |                        |  | 152.2       | F   |
| 10                            | Essen Konak, 2nd stage                          | Miğla          | 64,271                             |                                   | 6,620                    |                             |                        |  |             | U   |
| 11                            | Lower Dalaman River                             | Miğla          |                                    | 900                               | 14,000                   |                             |                        |  | 327         | S   |
| 12                            | Porsuk Eskişehir, 1st stage<br>(Eskişehir Alpu) | Eskişehir      | 263,951                            | 545                               | 35,000                   | 8,680                       | 5,000                  |  |             | Present area 22,000, U<br>Extension 13,000 ha.  |
| 13                            | Düzce Efteni                                    | Bolu           | 289,424                            | 106.5                             | 25,230                   | 8,100                       | 308                    |  |             | U F   |
| 14                            | Gerede Dörtdivan                                | Bolu           |                                    |                                   | 16,500                   |                             |                        |  |             | S   |
| 15                            | Orta Sakariya Vadisi                            | Bilecik        |                                    |                                   | 10,000                   |                             |                        |  |             | S   |
| 16                            | Sakariya Islanhi                                | Eskişehir      | 87,000                             |                                   | 10,000                   |                             |                        |  |             | F   |
| 17                            | Eregli, 2nd stage                               | Konya          | 84,155                             |                                   | 17,585                   |                             |                        |  |             | U   |
| 18                            | Konya Çumra, 1st stage                          | Konya          | 621,568                            | 238.1                             | 63,625                   |                             |                        |  |             | U, F, According to feasibility<br>report irrigation area 74,000 ha.                   |
| 19                            | Ilgin   | Konya          | 120,000                            | 160                               | 11,870                   |                             | 1,500                  |  |             | U, S  |
| 20                            | Hotanlı   | Konya          | 82,000                             |                                   | 10,875                   |                             |                        |  |             | F   |
| 21                            | Aksaray Ovası                                   | Niğde          |                                    |                                   | 35,000                   |                             |                        |  |             | S   |
| 22                            | Karaman   | Konya          |                                    |                                   | 25,000                   |                             |                        |  |             | S   |
| 23                            | Ankara flood-control                            | Ankara         | 56,426                             |                                   |                          |                             |                        |  |             | U   |
| 24                            | Ankara, 1st and 2nd stages                      | Ankara         | 372,258                            | 137.5                             | 5,080                    |                             |                        | 105.5  |             | U   |
| 25                            | Gökirmak Karacömek                              | Kastamonu      | 59,989                             | 23                                | 2,500                    | 1,094                       |                        | 3  |             | U   |
| 26                            | Kesik Köprü Köprüköy                            | Ankara         | 74,237                             |                                   | 8,710                    |                             |                        |  |             | U   |
| 27                            | Bartın  | Zonguldak      |                                    |                                   | 15,000                   |                             |                        |  |             | S   |
| 28                            | Sakariya Kavunau Çaglayih                       | Ankara         |                                    |                                   | 15,000                   |                             |                        |  |             | S   |
| 29                            | Berdan, 1st stage (includes<br>Mersin Gardens)  | İçel           | 83,025                             |                                   |                          |                             |                        |  |             | U   |
| 30                            | Aşağı Seyhan, 2nd stage <sup>a/</sup>           | Adana          | 322,000                            |                                   | 42,300                   | 144                         |                        |  |             | U   |
| 31                            | Anik Tahtakopru, 1st stage                      | Hatay          | 225,962                            | 743                               | 8,450                    | 9,440                       | 20,000                 |  |             | U   |
| 32                            | Aşağı Ceyhan Asianta <sup>b/</sup>              | Adana          | 1,401,144                          | 2,250                             | 119,760                  | 57,460                      |                        |  | 135         | F   |
| 33                            | Ortaçeyhan Kartalkaya                           | Maras          | 236,737                            | 195                               | 30,665                   |                             | 2,100                  |  |             | U, F  |
| 34                            | Aşağı Ceyhan Kesiksuyu                          | Adana          | 136,379                            | 55                                | 8,600                    |                             |                        |  |             | U   |
| 35                            | Aşağı Ceyhan Kozan, 1st stage                   | Adana          | 111,732                            | 163                               | 9,750                    |                             |                        |  |             | U   |

a/ IBRD - financed

b/ Scheduled for IBRD appraisal.



| Project No.<br>(See Map No.3) | Name of Project                                 | Province                            | Total Cost of D.S.I.<br>1,000 T.L. | Storage<br>million m <sup>3</sup> | Irrigation<br>Area in ha | Flood Control<br>Area in ha | Drainage<br>Area in ha | Domestic<br>Water Supply<br>million m <sup>3</sup> /year | Power<br>Mw | Remarks:<br>S: under study<br>F: feasibility report completed<br>U: under construction |
|-------------------------------|---|-------------------------------------|------------------------------------|-----------------------------------|--------------------------|-----------------------------|------------------------|--|-------------|--|
| 36                            | Aşağı Yözer (Zilifke)                           | Işel                                |                                    |                                   | 11,900                   |                             |                        |  |             | Partly completed,  |
| 37                            | Cevizliya                                       | Maraş                               | 352,000                            |                                   | 119,760                  |                             |                        |  |             | F  |
| 38                            | Yukarı Yesirilmek<br>(includes Tokat Kazova)    | Tokat                               | 339,103                            | 951.75                            | 28,836                   | 1,125                       |                        |  | 29.5        | U  |
| 39                            | Aşağı Yesirilmek, 1st stage<br>(Çarşamba Plain) | Samsun                              | 1,691,586                          | 1,080                             | 80,000                   | 67,030                      |                        |  | 900         | Flood control under construction<br>F  |
| 40                            | Niksar  | Tokat                               | 60,967                             |                                   | 6,000                    | 4,500                       |                        |  |             | U  |
| 41                            | Safran  | Samsun                              | 357,477                            |                                   | 34,330                   | 55,000                      | 31,470                 |  |             | F  |
| 42                            | Dogan kent                                      | Giresun                             | 130,495                            |                                   |                          |                             |                        |  | 24.6        | U  |
| 43                            | Erbaa   | Tokat                               | 55,000                             |                                   |                          |                             |                        |  |             | U  |
| 44                            | Suluova   | Amasya                              | 15,000                             |                                   |                          |                             |                        |  |             | S  |
| 45                            | Erzincan, 1st stage                             | Erzincan                            | 402,502                            | 179                               | 35,500                   |                             |                        |  |             | Other stages under study U   |
| 46                            | Iğdir   | Kars                                | 336,774                            | 525                               | 59,854                   |                             |                        |  | 2.75        | U  |
| 47                            | Kars Çildir, 1st stage                          | Kars                                | 68,700                             |                                   |                          |                             |                        |  | 15          | U  |
| 48                            | Kars Alabalik                                   | Kars                                | 24,348                             |                                   | 3,800                    |                             |                        |  |             | U  |
| 49                            | Diyadin   | Agri                                | 46,208                             |                                   | 4,200                    |                             |                        |  | 2.5         |  |
| 50                            | Pasinler  | Erzurum                             |                                    |                                   | 18,000                   |                             |                        |  |             | S  |
| 51                            | Kars Bayburt                                    | Kars                                |                                    |                                   | 20,000                   |                             |                        |  |             | S  |
| 52                            | Tuzluca   | Kars                                |                                    |                                   | 10,000                   |                             |                        |  |             | S  |
| 53                            | Tercan Pakeriş                                  | Erzincan                            | 118,700                            |                                   | 11,300                   |                             |                        |  |             | F  |
| 54                            | Sarısu  | Agri                                |                                    |                                   | 10,000                   |                             |                        |  |             | S  |
| 55                            | Aşağı Fohma Medik<br>(Yezihan)                  | Malatya                             | 92,183                             | 22                                | 10,000                   |                             |                        |  |             | U  |
| 56                            | Bingöl, 1st stage                               | Bingöl                              | 9,615                              |                                   | 1,700                    |                             |                        |  |             |  |
| 57                            | Akşadag   | Malatya                             | 104,400                            | 71                                | 10,000                   |                             |                        |  |             | U  |
| 58                            | Karakoçan Kalecik                               | Elazığ                              | 35,890                             | 12.5                              | 1,300                    |                             |                        |  |             | S  |
| 59                            | Malatya Çat                                     | Malatya                             |                                    |                                   | 15,000                   |                             |                        |  |             | S  |
| 60                            | Adiyaman Goksu                                  | Adiyaman                            |                                    |                                   | 15,000                   |                             |                        |  |             | S  |
| 61                            | Malatya Derne                                   | Malatya                             |                                    |                                   | 3,000                    |                             |                        |  |             | C C  |
| 62                            | Sahmahan  | Malatya                             |                                    |                                   | 9,000                    |                             |                        |  |             | Part completed, no further<br>construction.  |
| 63                            | Mardin Derik Dumlucu                            | Mardin                              | 46,948                             | 13.6                              | 3,762                    |                             |                        |  |             | U  |
| 64                            | Batman Silvan                                   | Diyarbakir                          | 56,136                             |                                   | 8,660                    |                             |                        |  |             | U  |
| 65                            | Devegeçidi                                      | Diyarbakir                          | 142,251                            | 195                               | 10,166                   |                             |                        |  |             | U  |
| 66                            | Ceylâmpinar                                     | Urfa                                | 102,220                            |                                   | 4,000                    |                             |                        |  | 30.7        | 461 wells and 461 pumps to be<br>installed. U  |
| 67                            | Batman  | Diyarbakir                          |                                    |                                   | 20,000                   |                             |                        |  |             | S  |
| 68                            | Lower Euphrates (Firat)                         | Diyarbakir, Rufe,<br>Mardin, Elazığ |                                    |                                   | 670,000                  |                             |                        |  | 2,600       |  |
| 69                            | Meriç, 1st stage                                | Edirne                              | 52,213                             |                                   | 3,400                    | 13,012                      | 9,018                  |  |             | U  |
| 70                            | Ipsala, 1st stage                               | Edirne                              | 148,639                            | 32                                | 8,626                    | 24,140                      |                        |  |             | U  |
| 71                            | Ipsala Kadiköy                                  | Edirne                              | 53,217                             | 70.71                             | 4,150                    | 1,890                       |                        |  |             | U  |
| 72                            | Hayrabolu                                       | Tekirdag                            | 13,336                             |                                   |                          | 2,500                       |                        |  |             | U  |
| 73                            | Kirklareli                                      | Kirklareli                          |                                    |                                   | 12,000                   |                             |                        |  |             | S  |
| 74                            | Teke  | Kirklareli                          |                                    |                                   | 13,500                   |                             |                        |  |             | S  |
| 75                            | Kirşehir Çoğun                                  | Kirşehir                            | 53,924                             | 18.5                              | 2,759                    |                             |                        |  |             | U  |
| 76                            | Urgup Damsa                                     | Nevşehir                            | 19,987                             | 6.5                               |                          |                             |                        |  |             | U  |



| Project No.<br>(See Map.No.3) | Name of Project    | Province  | Total Cost D.S.I.<br>1,000.T.L. | Storage<br>million m <sup>3</sup> | Irrigation<br>Area in ha | Flood Control<br>Area in ha | Drainage<br>Area in ha | Domestic<br>Water Supply<br>million m <sup>3</sup> /year | Power<br>MW | Remarks:<br>S: under study<br>F: feasibility report<br>completed<br>U: under construction |
|-------------------------------|--------------------|-----------|---------------------------------|-----------------------------------|--------------------------|-----------------------------|------------------------|--|-------------|---|
| 77                            | Finike             | Antalya   | 61,526                          | 80                                |                          | 2,216                       |                        |  |             | U   |
| 78                            | Kirkgözler Düden   | Antalya   | 108,080                         |                                   | 9,828                    | 2,683                       |                        |  | 26.4        | U   |
| 79                            | Korkuteli          | Antalya   | 51,835                          | 44.5                              | 5,986                    |                             |                        |  |             | U   |
| 80                            | Aşagi Köprüçay     | Antalya   | 128,028                         |                                   | 22,000                   |                             |                        |  |             | U   |
| 81                            | Aşagi Aksu         | Antalya   | 185,000                         |                                   | 13,000                   |                             |                        |  |             | Partly completed  |
| 82                            | Istanbul Ümerli    | Istanbul  | 350,000                         | 180                               | -                        |                             |                        | 180  |             | U   |
| 83                            | Terkos Ali Bey     | Istanbul  | 268,000                         | 39                                | -                        | 150                         |                        | 120  |             | U   |
| 84                            | Göksekaya          | Eskişehir | 698,659                         | 910                               | -                        |                             |                        |  | 300         | U   |
| 85                            | Keban              | Elazığ    | 1,329,724                       | 31,000                            | -                        |                             |                        |  | 620         | U   |
| 86                            | Bulanık Kazangözü  | Muş       | 11,883                          |                                   | 3,014                    |                             |                        |  |             | U   |
| 87                            | Bulanık Ulusu      | Muş       | 64,842                          |                                   | 6,950                    |                             |                        |  |             | U   |
| 88                            | Muş Arincik        | Muş       | 68,427                          |                                   | 10,150                   |                             |                        |  |             | U   |
| 89                            | Van Muradiye       | Van       | 18,105                          |                                   | 4,670                    |                             |                        |  |             | U   |
| 90                            | Nasik Gölb         | Bitlis    | 23,000                          |                                   | 3,000                    |                             |                        |  |             | U   |
| 91                            | Muş Çalaktepe      | Muş       |                                 |                                   | 50,000                   |                             |                        |  |             | S   |
| 92                            | Yalvağ             | Isparta   | 41,102                          | 8.9                               | 1,518                    |                             |                        |  |             | U   |
| 93                            | Ergridir Senirkent | Isparta   | 62,575                          |                                   | 7,420                    | 1,500                       |                        |  |             | U   |
| 94                            | Boscay Karmanlı    | Burdur    | 27,110                          | 14                                | 3,000                    |                             |                        |  |             | U   |
| 95                            | Atabey İslanköy    | Isparta   | 100,822                         |                                   | 13,000                   | 150                         |                        |  |             | U,F   |
| 96                            | Kovada II          | Isparta   | 102,982                         |                                   |                          |                             |                        |  | 53          | U   |
| 97                            | Yapraklı Gölhisar  | Burdur    |                                 |                                   | 20,000                   |                             |                        |  |             | S   |

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