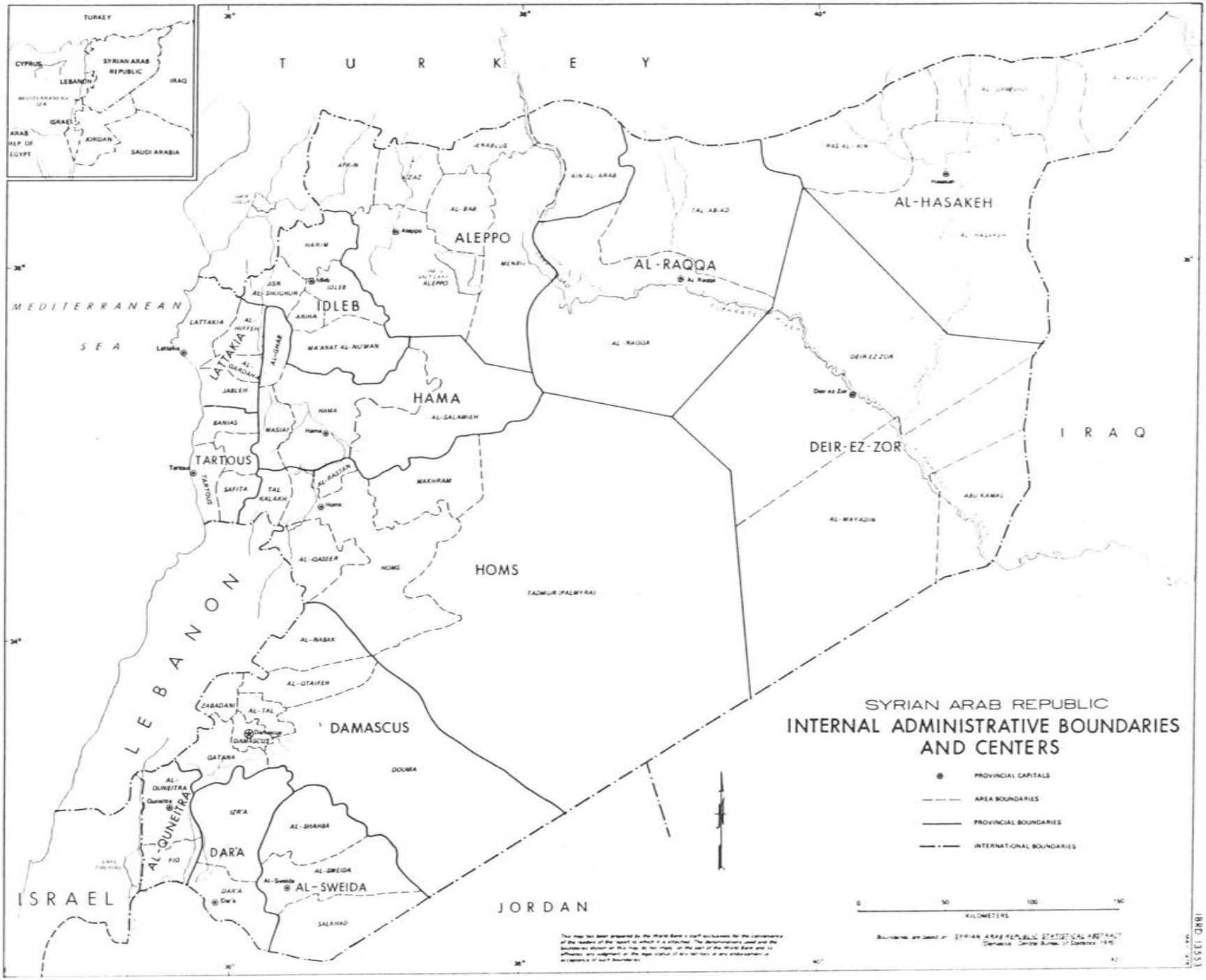
TURKEY
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JORDAN
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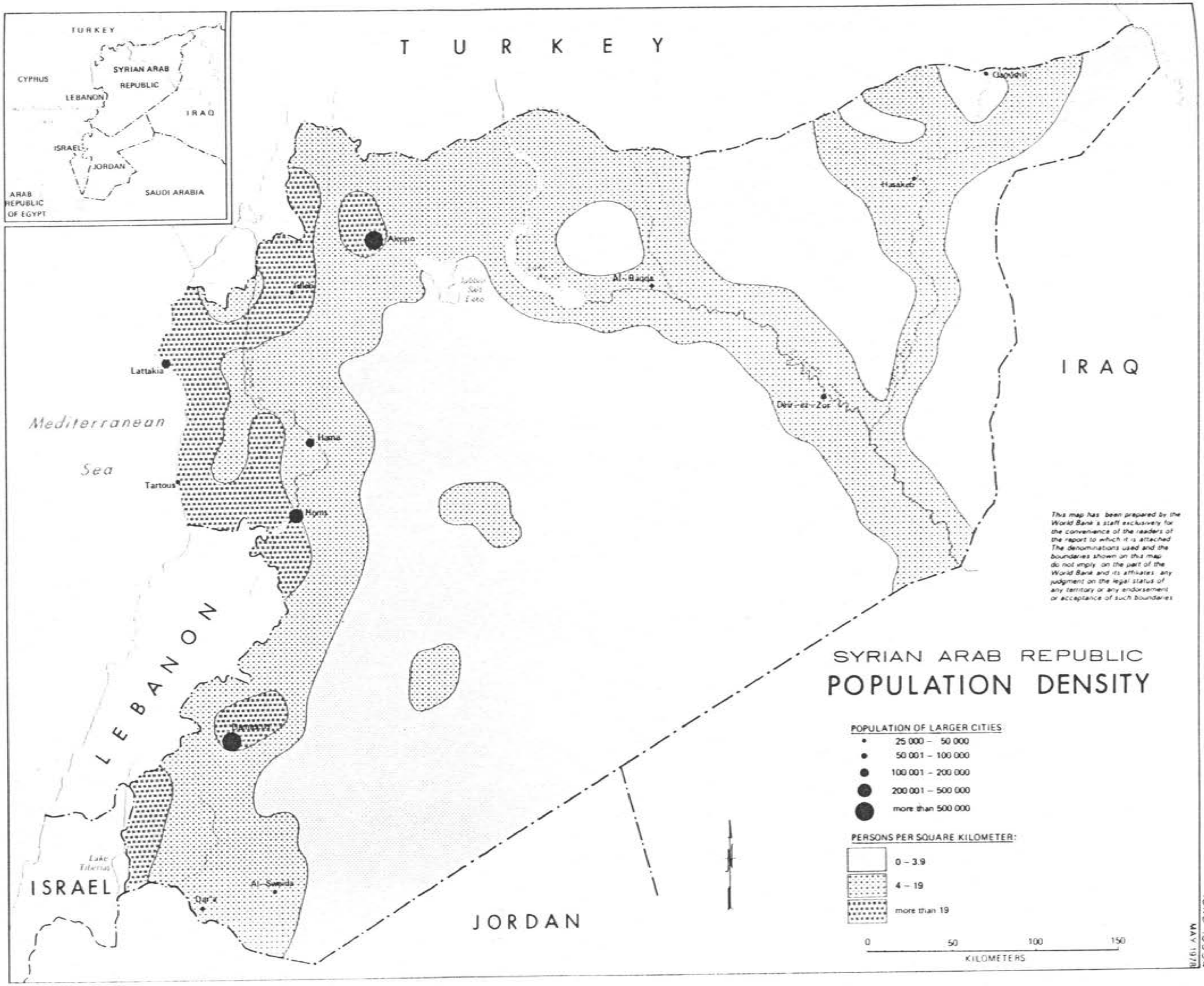
MEDITERRANEAN SEA
ALEPPO
IDLEB
LATTAKIA
HAMA
TARTOUS
HOMS
DAMASCUS
DAR'A
AL-SWEIDA
AL-RAQQA
DEIR-EZ-ZOR
AL-HASAKEH
I R A Q
L E B A N O N
ISRAEL
JORDAN
SYRIAN ARAB REPUBLIC
INTERNAL ADMINISTRATIVE BOUNDARIES AND CENTERS
PROVINCIAL CAPITALS
AREA BOUNDARIES
PROVINCIAL BOUNDARIES
INTERNATIONAL BOUNDARIES
KILOMETERS
IBRD 13553



TURKEY
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ISRAEL
JORDAN
SAUDI ARABIA
ARAB REPUBLIC OF EGYPT
T U R K E Y
I R A Q
J O R D A N
L E B A N O N
ISRAEL
Mediterranean Sea
Lake Tiberias
Aleppo
Lattakia
Hama
Tartous
Homs
Deir-ez-Zor
Hasakeh
Al-Sweida
Dar'a
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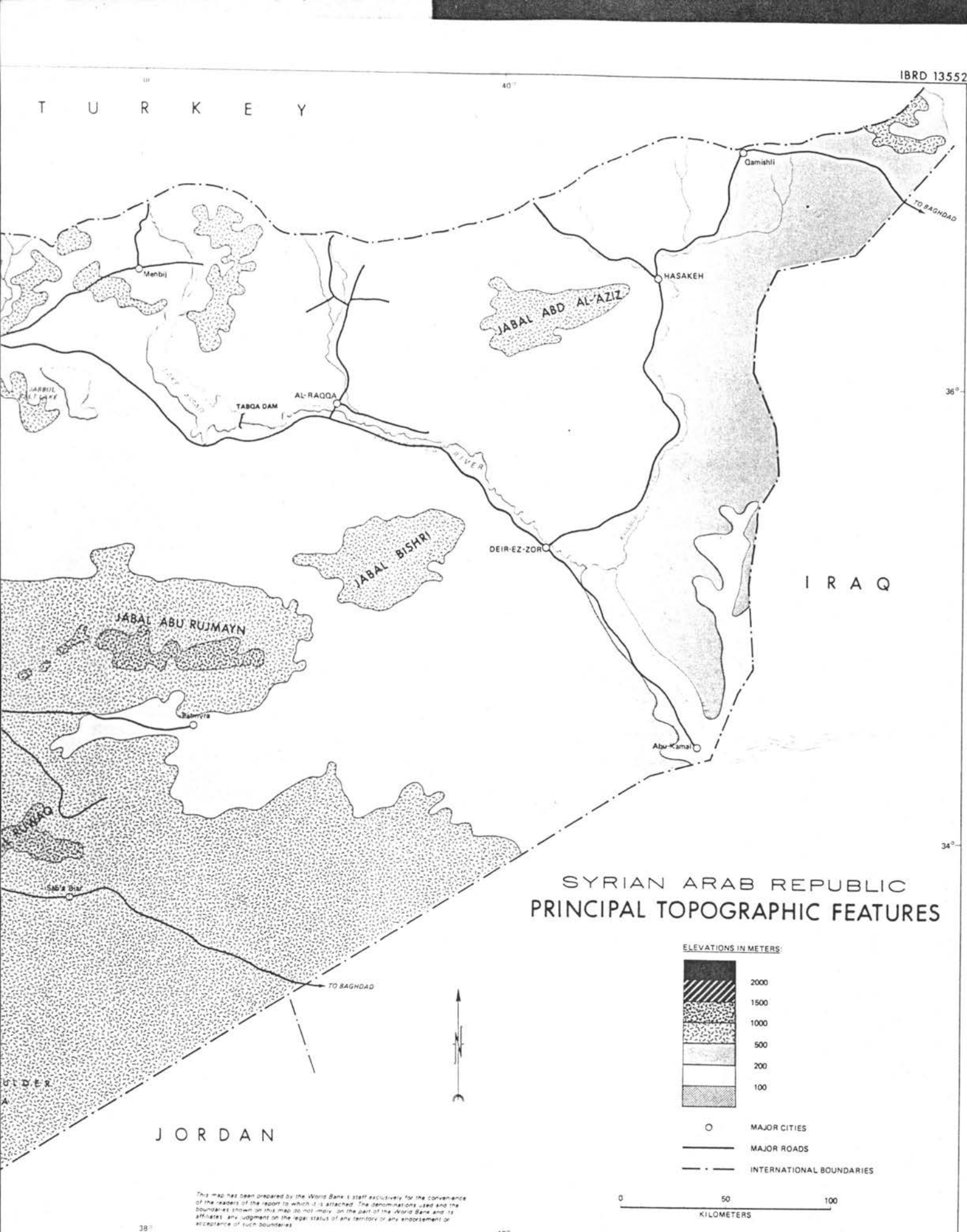
SYRIAN ARAB REPUBLIC
POPULATION DENSITY
POPULATION OF LARGER CITIES
25 000 – 50 000
50 001 – 100 000
100 001 – 200 000
200 001 – 500 000
more than 500 000
PERSONS PER SQUARE KILOMETER:
0 – 3.9
4 – 19
more than 19
0 50 100 150
KILOMETERS
IBRD 13554
MAY 1978

IBRD 13552



SYRIAN ARAB REPUBLIC
PRINCIPAL TOPOGRAPHIC FEATURES

ELEVATIONS IN METERS:

2000
1500
1000
500
200
100

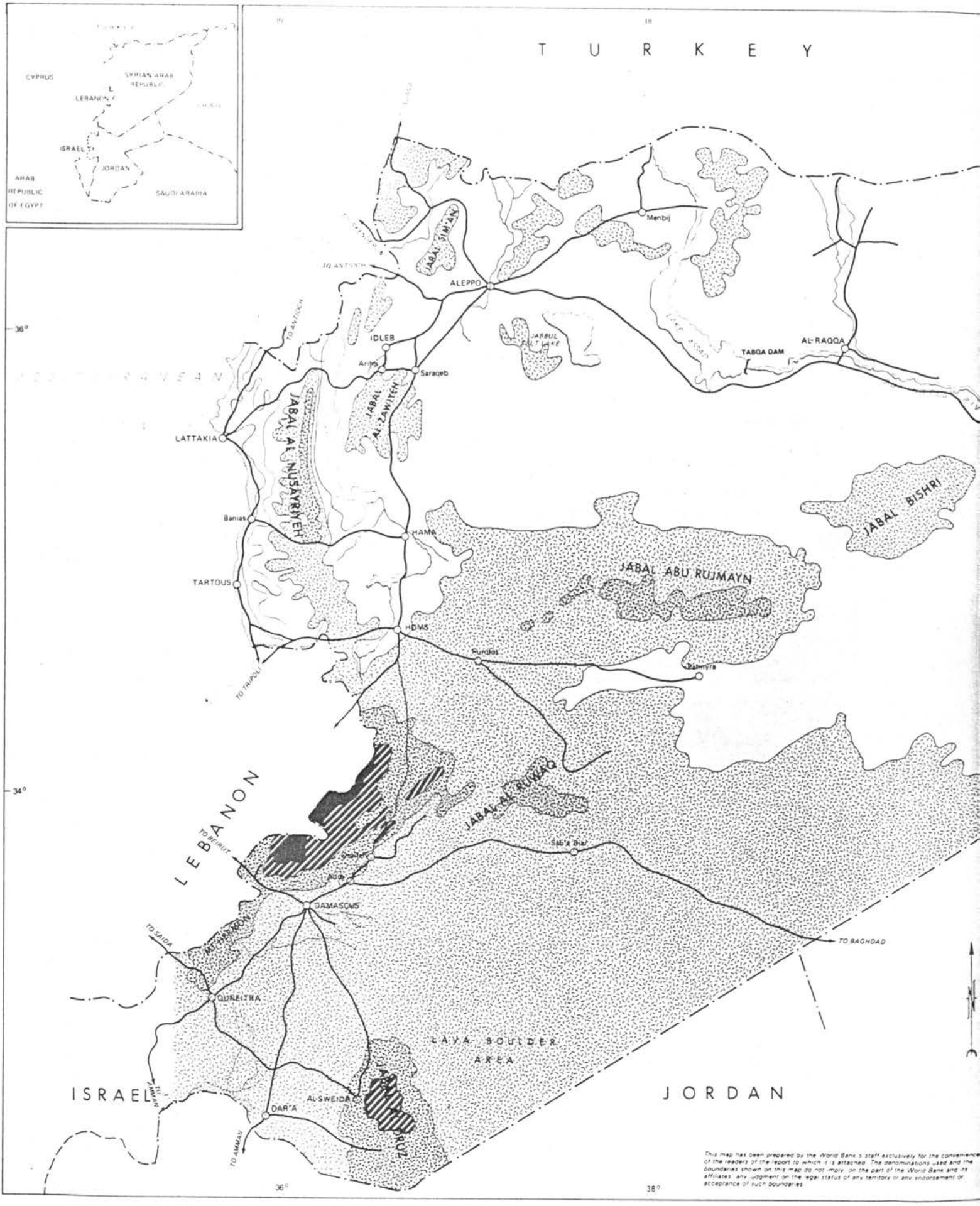
MAJOR CITIES

MAJOR ROADS

INTERNATIONAL BOUNDARIES

0 50 100
KILOMETERS

MAY 1978



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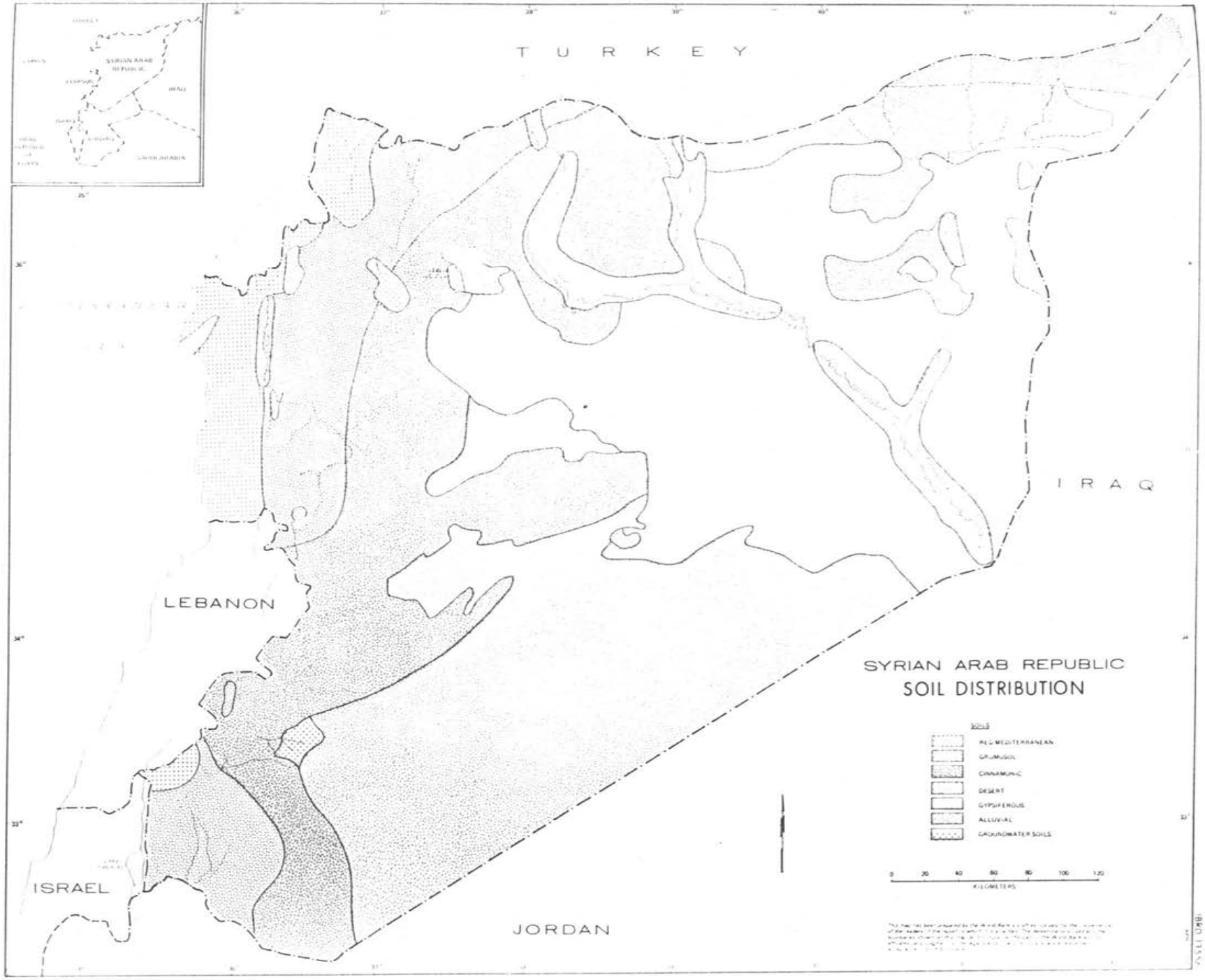
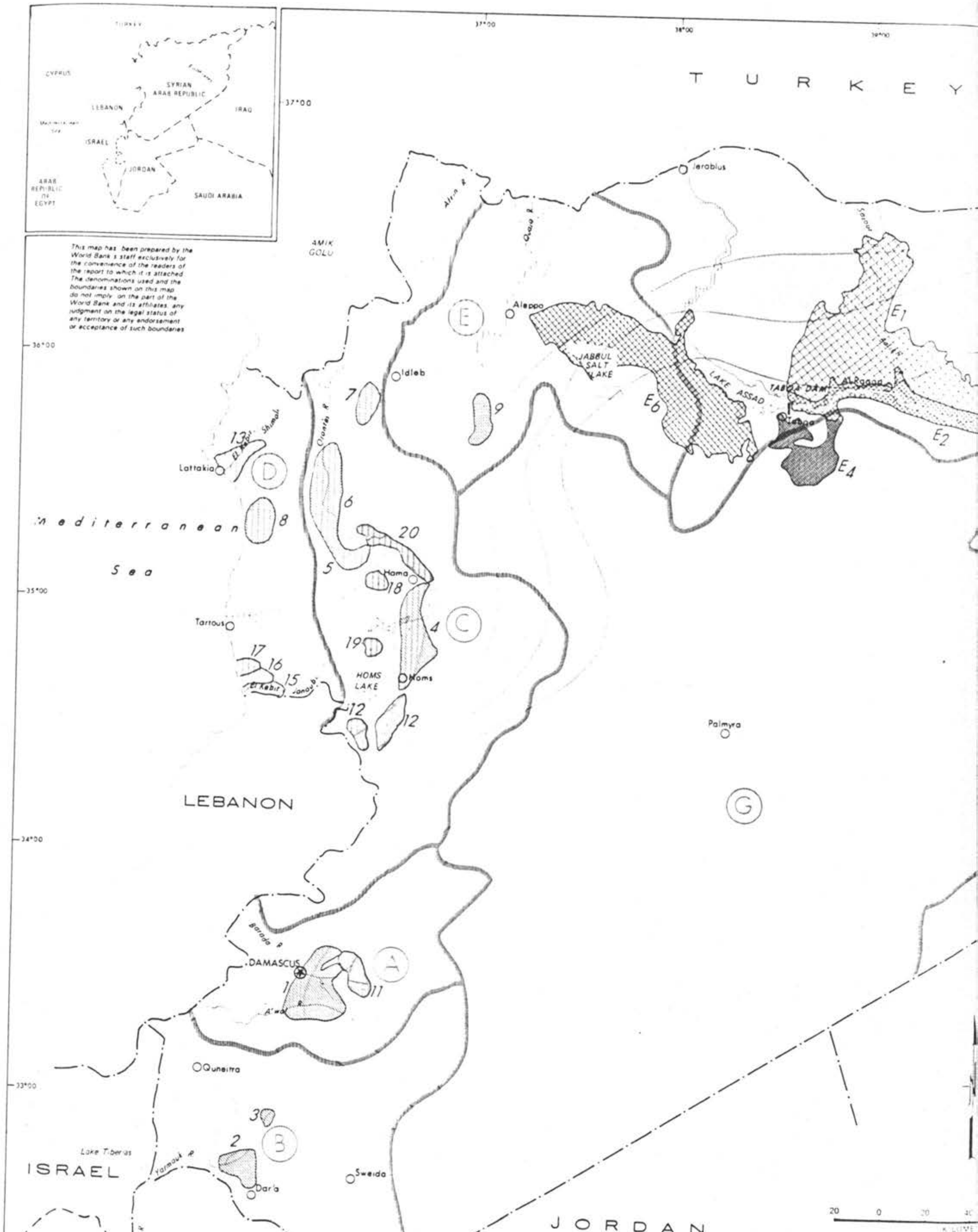

TURKEY
IRAQ
LEBANON
ISRAEL
JORDAN
SYRIAN ARAB REPUBLIC
SOIL DISTRIBUTION
SOILS
ALLUVIAL
KILOMETERS



TURKEY
CYPRUS
SYRIAN ARAB REPUBLIC
LEBANON
IRAQ
ISRAEL
JORDAN
ARAB REPUBLIC OF EGYPT
SAUDI ARABIA
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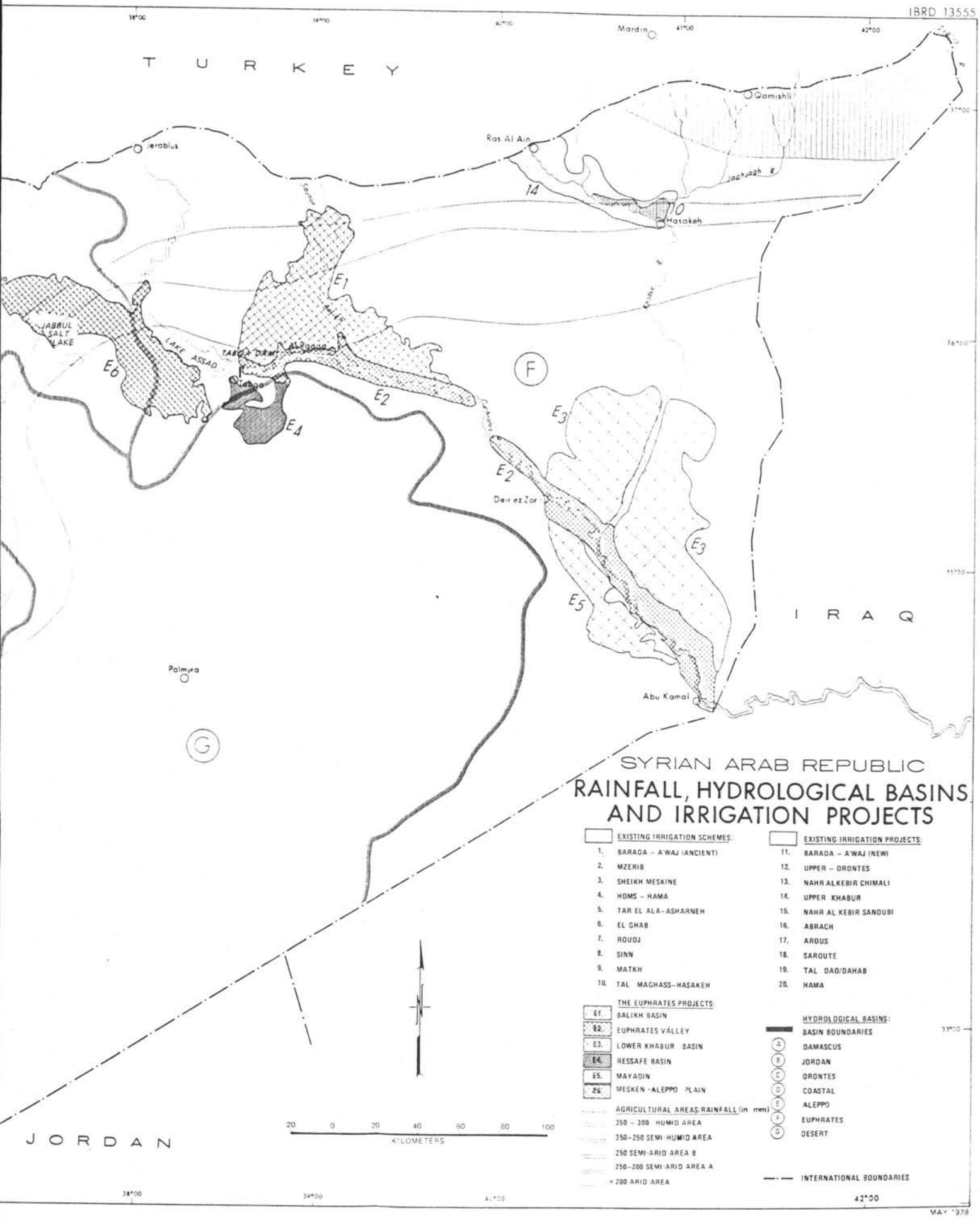
T U R K E Y
Jerablus
AMIK GOLU
Afrin R.
Qoiq R.
Sajour
E
Aleppo
JABBUL SALT LAKE
E6
LAKE ASSAD
TABQA DAM
Al Raqqa
E1
E2
E4
Idleb
7
9
13
El Kebir Shimali
Lattakia
D
8
Mediterranean Sea
Orontes R.
6
20
5
Hama
18
C
4
Tartous
19
17
16
15
El Kebir
Janoubi
HOMS LAKE
Homs
12
Palmyra
G
LEBANON
Barada R.
DAMASCUS
A
1
11
A'waj R.
Quneitra
3
B
2
Lake Tiberias
ISRAEL
Yarmouk R.
Dar'a
Sweida
Jordan R.
J O R D A N
36°00
35°00
34°00
33°00
37°00
38°00
39°00
35°00
37°00

IBRD 13555



SYRIAN ARAB REPUBLIC
RAINFALL, HYDROLOGICAL BASINS AND IRRIGATION PROJECTS

EXISTING IRRIGATION SCHEMES:

1. BARADA – A'WAJ (ANCIENT)
2. MZERIB
3. SHEIKH MESKINE
4. HOMS – HAMA
5. TAR EL ALA–ASHARNEH
6. EL GHAB
7. ROUDJ
8. SINN
9. MATKH
10. TAL MAGHASS–HASAKEH

EXISTING IRRIGATION PROJECTS:

11. BARADA – A'WAJ (NEW)
12. UPPER – ORONTES
13. NAHR ALKEBIR CHIMALI
14. UPPER KHABUR
15. NAHR AL KEBIR SANOUBI
16. ABRACH
17. AROUS
18. SAROUTE
19. TAL DAO/DAHAB
20. HAMA

THE EUPHRATES PROJECTS:

- E1. BALIKH BASIN
- E2. EUPHRATES VALLEY
- E3. LOWER KHABUR BASIN
- E4. RESSAFE BASIN
- E5. MAYADIN
- E6. MESKEN - ALEPPO PLAIN

AGRICULTURAL AREAS/RAINFALL (in mm)

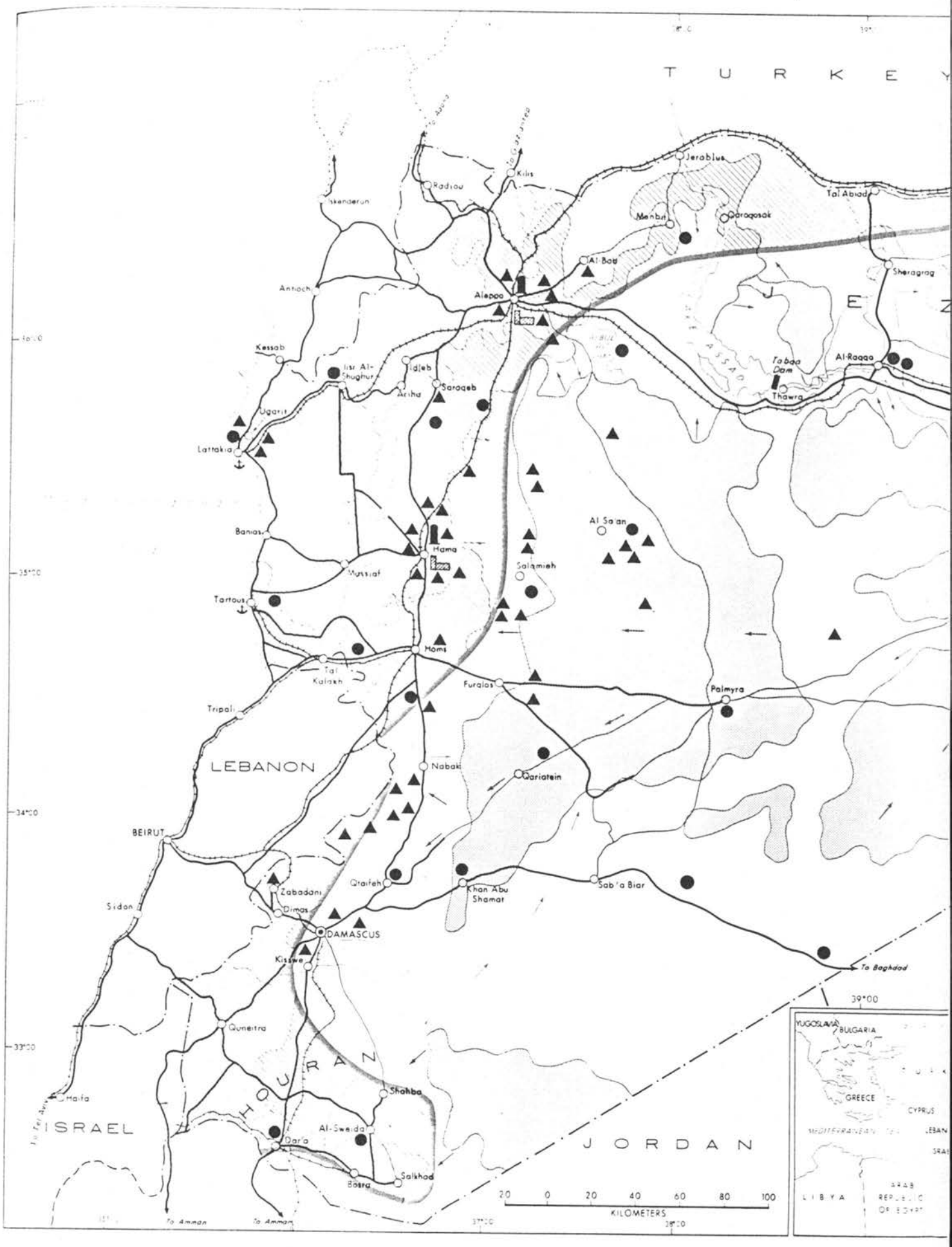
- 350 – 300 HUMID AREA
- 350–250 SEMI-HUMID AREA
- 250 SEMI-ARID AREA B
- 250–200 SEMI-ARID AREA A
- < 200 ARID AREA

HYDROLOGICAL BASINS:

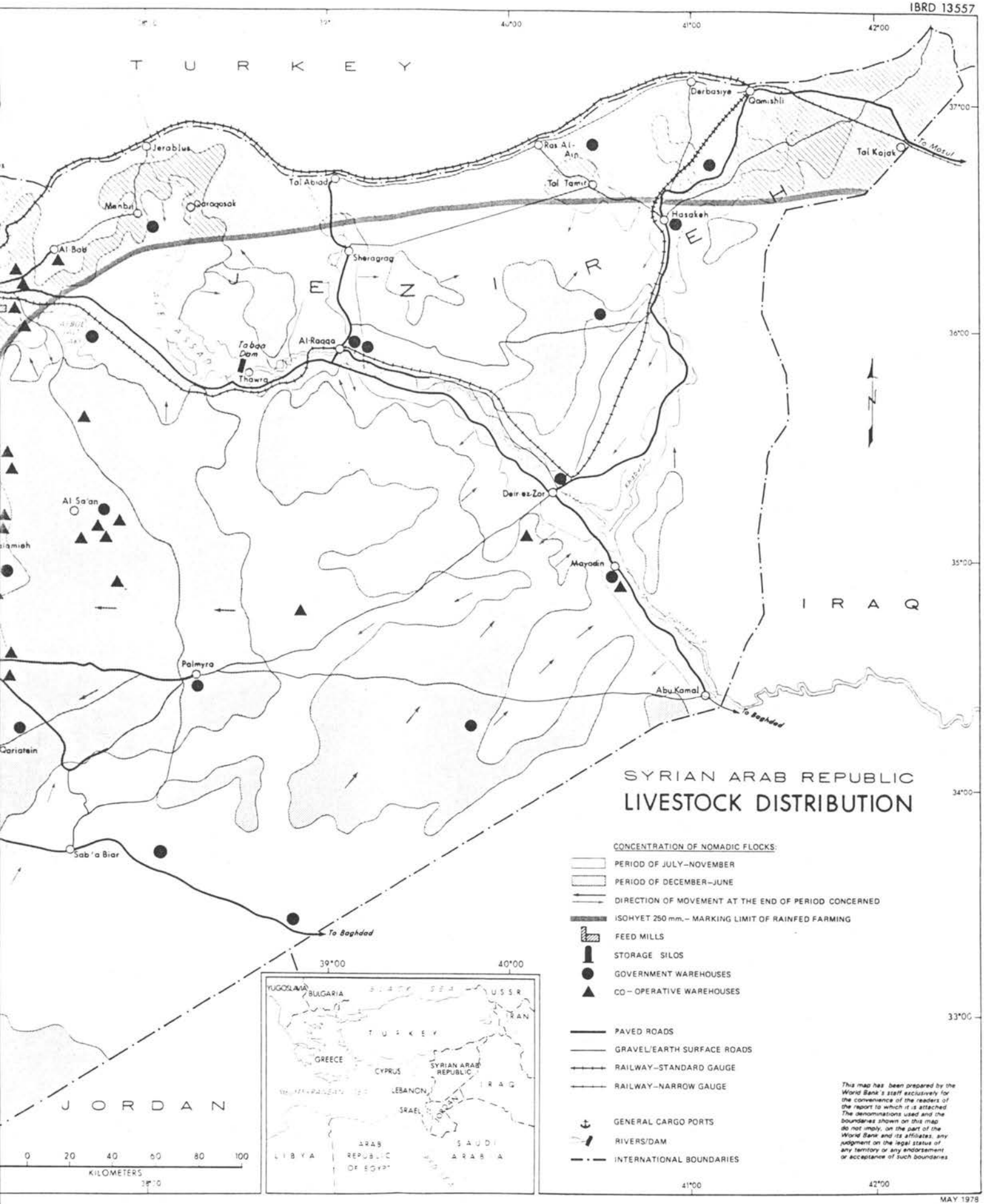
- BASIN BOUNDARIES
- A DAMASCUS
- B JORDAN
- C ORONTES
- D COASTAL
- E ALEPPO
- F EUPHRATES
- G DESERT

INTERNATIONAL BOUNDARIES

MAY 1978


TURKEY
Jerablus
Tal Abiad
Kilis
Radjou
Iskenderun
Menbij
Qaraqosak
Al Bab
Sheragrag
Antioch
Aleppo
Kessab
Jisr Al-Shughur
Idleb
Saraqeb
Arriha
Ugarit
Lattakia
Tabqa Dam
Thawra
Al-Raqqa
Banias
Hama
Al Sa'an
Salamieh
Mussiat
Tartous
Homs
Tal Kalakh
Furglos
Palmyra
Tripoli
LEBANON
Nabak
Qariatein
BEIRUT
Qtaifeh
Zabadani
Khan Abu Shamat
Sab'a Biar
Sidon
Dimas
DAMASCUS
Kisswe
To Baghdad
Quneitra
HOURAN
Shahba
Haifa
ISRAEL
Al-Sweida
Dar'a
JORDAN
Salkhad
Bosra
To Amman
To Amman
20 0 20 40 60 80 100
KILOMETERS
YUGOSLAVIA
BULGARIA
GREECE
CYPRUS
LIBYA
ARAB REPUBLIC OF EGYPT

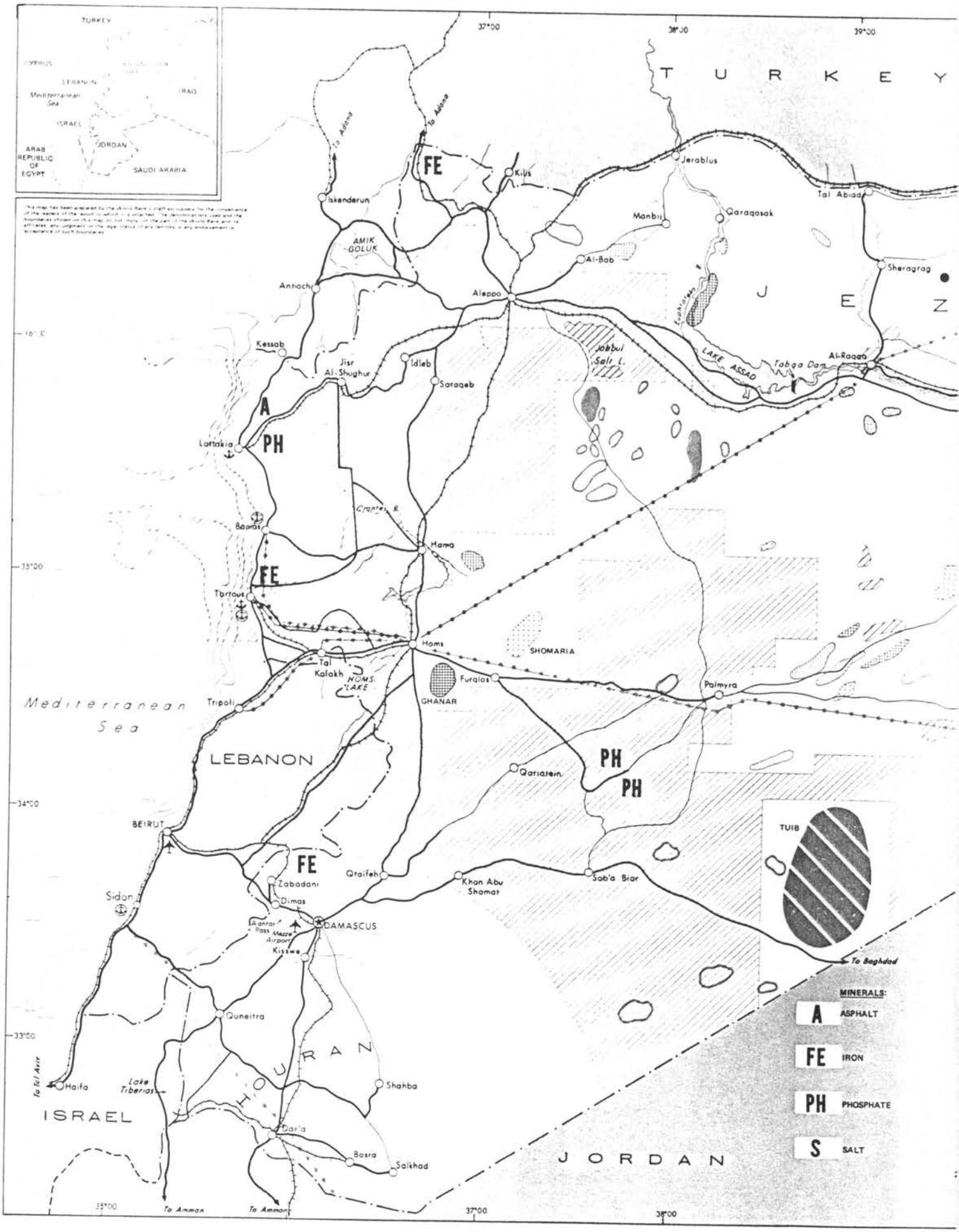
IBRD 13557

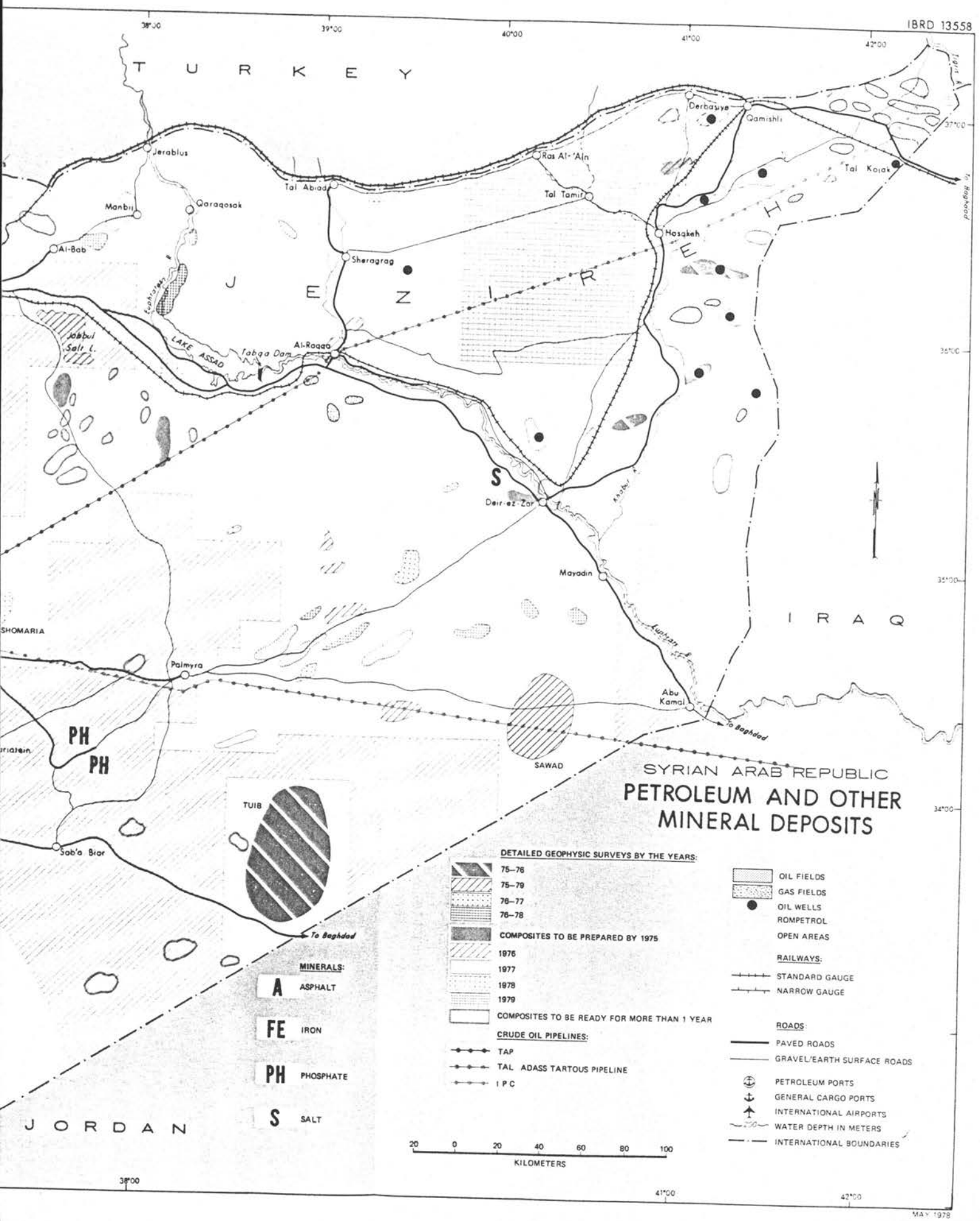


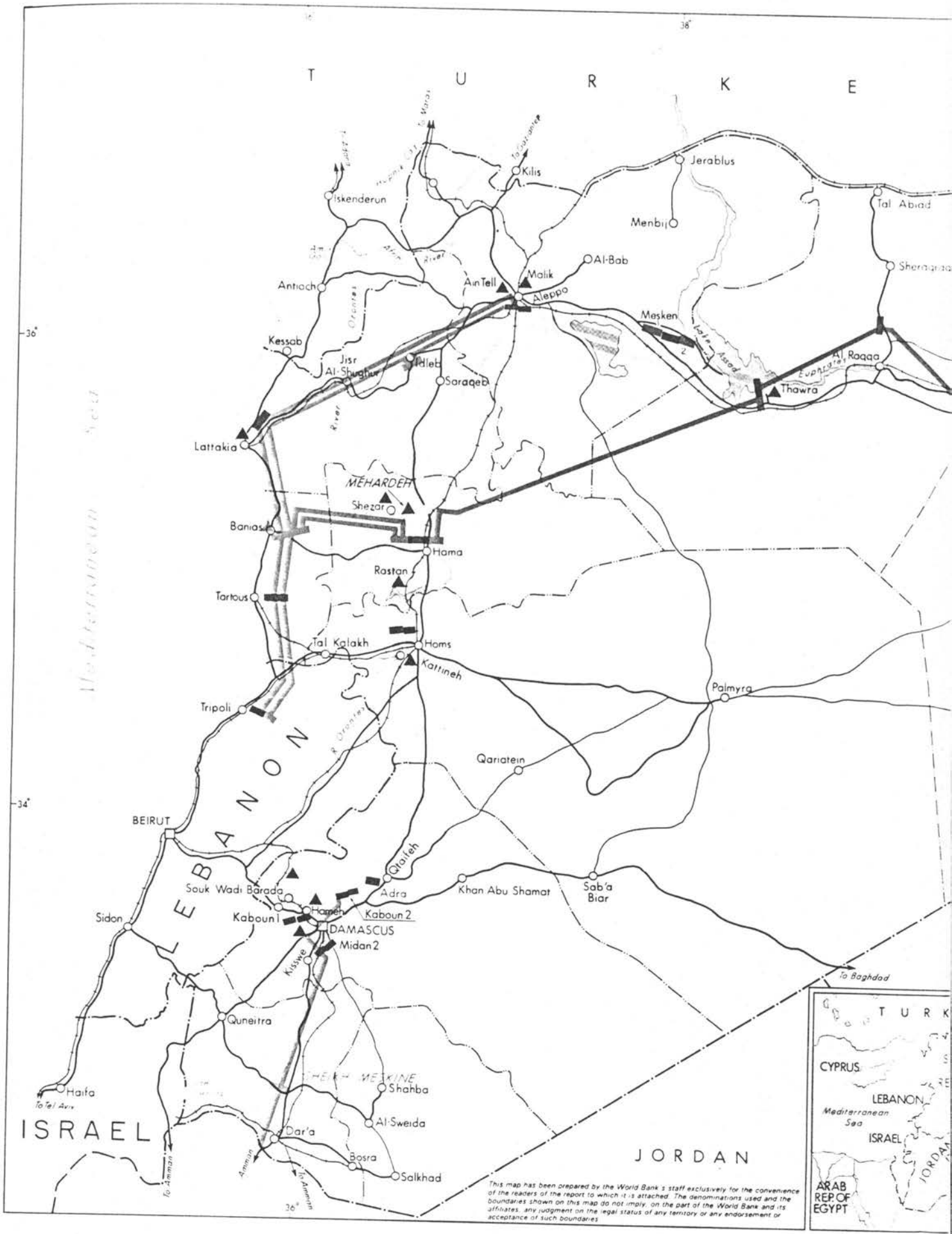
SYRIAN ARAB REPUBLIC
LIVESTOCK DISTRIBUTION

CONCENTRATION OF NOMADIC FLOCKS:
- PERIOD OF JULY–NOVEMBER
- PERIOD OF DECEMBER–JUNE
- DIRECTION OF MOVEMENT AT THE END OF PERIOD CONCERNED
- ISOHYET 250 mm. – MARKING LIMIT OF RAINFED FARMING
- FEED MILLS
- STORAGE SILOS
- GOVERNMENT WAREHOUSES
- CO – OPERATIVE WAREHOUSES
- PAVED ROADS
- GRAVEL/EARTH SURFACE ROADS
- RAILWAY–STANDARD GAUGE
- RAILWAY–NARROW GAUGE
- GENERAL CARGO PORTS
- RIVERS/DAM
- INTERNATIONAL BOUNDARIES

MAY 1978


TURKEY
CYPRUS
LEBANON
Mediterranean Sea
ISRAEL
JORDAN
IRAQ
ARAB REPUBLIC OF EGYPT
SAUDI ARABIA
37°00
38°00
39°00
T U R K E Y
To Adana
To Adana
FE
Kilis
Jerablus
Tal Abiad
Iskenderun
Manbij
Qaraqosak
AMIK GOLUK
Al-Bab
Sheragrag
Antioch
Aleppo
J E Z
Euphrates
Kessab
Jisr Al-Shughur
Idleb
Jabbul Salt L.
LAKE ASSAD
Tabqa Dam
Al-Raqqa
Saraqeb
A
PH
Lattakia
Orontes R.
Banias
Hama
35°00
FE
Tartous
Homs
SHOMARIA
Tal Kalakh
HOMS LAKE
Furqlos
Palmyra
Mediterranean Sea
Tripoli
GHANAR
LEBANON
PH
PH
Qariatein
34°00
BEIRUT
FE
Qtaifeh
Khan Abu Shamat
Sab'a Biar
Zabadani
Sidon
Dimas
Qantar Pass
Mezze Airport
DAMASCUS
Kisswe
To Baghdad
Quneitra
33°00
HOURAN
To Tel Aviv
Haifa
Lake Tiberias
Shahba
ISRAEL
Dar'a
Basra
Salkhad
JORDAN
35°00
To Amman
To Amman
37°00
38°00
TUIB
MINERALS:
A ASPHALT
FE IRON
PH PHOSPHATE
S SALT


IBRD 13558
38°00
39°00
40°00
41°00
42°00
37°00
36°00
35°00
34°00
T U R K E Y
Jerablus
Manbij
Qaraqosak
Al-Bab
Tal Abiad
Ras Al-'Ain
Tal Tamir
Derbasiye
Qamishli
Tal Kojak
Hasakeh
Sheragrag
J E Z I R E H
Euphrates R.
Jobbul Salt L.
LAKE ASSAD
Tabqa Dam
Al-Raqqa
Deir-ez-Zor
Khabur
Mayadin
Euphrates R.
I R A Q
SHOMARIA
Palmyra
Abu Kamal
To Baghdad
SAWAD
PH
PH
TUIB
Sab'a Biar
To Baghdad
J O R D A N
SYRIAN ARAB REPUBLIC
PETROLEUM AND OTHER MINERAL DEPOSITS
MINERALS:
A ASPHALT
FE IRON
PH PHOSPHATE
S SALT
DETAILED GEOPHYSIC SURVEYS BY THE YEARS:
75–76
75–79
76–77
76–78
COMPOSITES TO BE PREPARED BY 1975
1976
1977
1978
1979
COMPOSITES TO BE READY FOR MORE THAN 1 YEAR
CRUDE OIL PIPELINES:
TAP
TAL ADASS TARTOUS PIPELINE
I P C
OIL FIELDS
GAS FIELDS
OIL WELLS
ROMPETROL
OPEN AREAS
RAILWAYS:
STANDARD GAUGE
NARROW GAUGE
ROADS:
PAVED ROADS
GRAVEL/EARTH SURFACE ROADS
PETROLEUM PORTS
GENERAL CARGO PORTS
INTERNATIONAL AIRPORTS
200 WATER DEPTH IN METERS
INTERNATIONAL BOUNDARIES
20 0 20 40 60 80 100
KILOMETERS
MAY 1978


T U R K E
Jerablus
Kilis
Iskenderun
Menbij
Tal Abiad
Al-Bab
Malik
Ain Tell
Aleppo
Antioch
Meskeh
Kessab
Jisr Al-Shughur
Idleb
Saraqeb
Al Raqqa
Euphrates
Thawra
Lattakia
MEHARDEH
Shezar
Banias
Hama
Rastan
Tartous
Tal Kalakh
Homs
Kattineh
Palmyra
Tripoli
LEBANON
Qariatein
BEIRUT
Souk Wadi Barada
Qatifeh
Adra
Khan Abu Shamat
Sab'a Biar
Sidon
Kabouni
Hameh
Kabouni 2
DAMASCUS
Midan 2
Kiswe
To Baghdad
Quneitra
SHEIKH MESKINE
Haifa
To Tel Aviv
Shahba
ISRAEL
Al-Sweida
Dar'a
Bosra
JORDAN
Salkhad
To Amman
36°
34°
38°
CYPRUS
LEBANON
Mediterranean Sea
ISRAEL
ARAB REP. OF EGYPT
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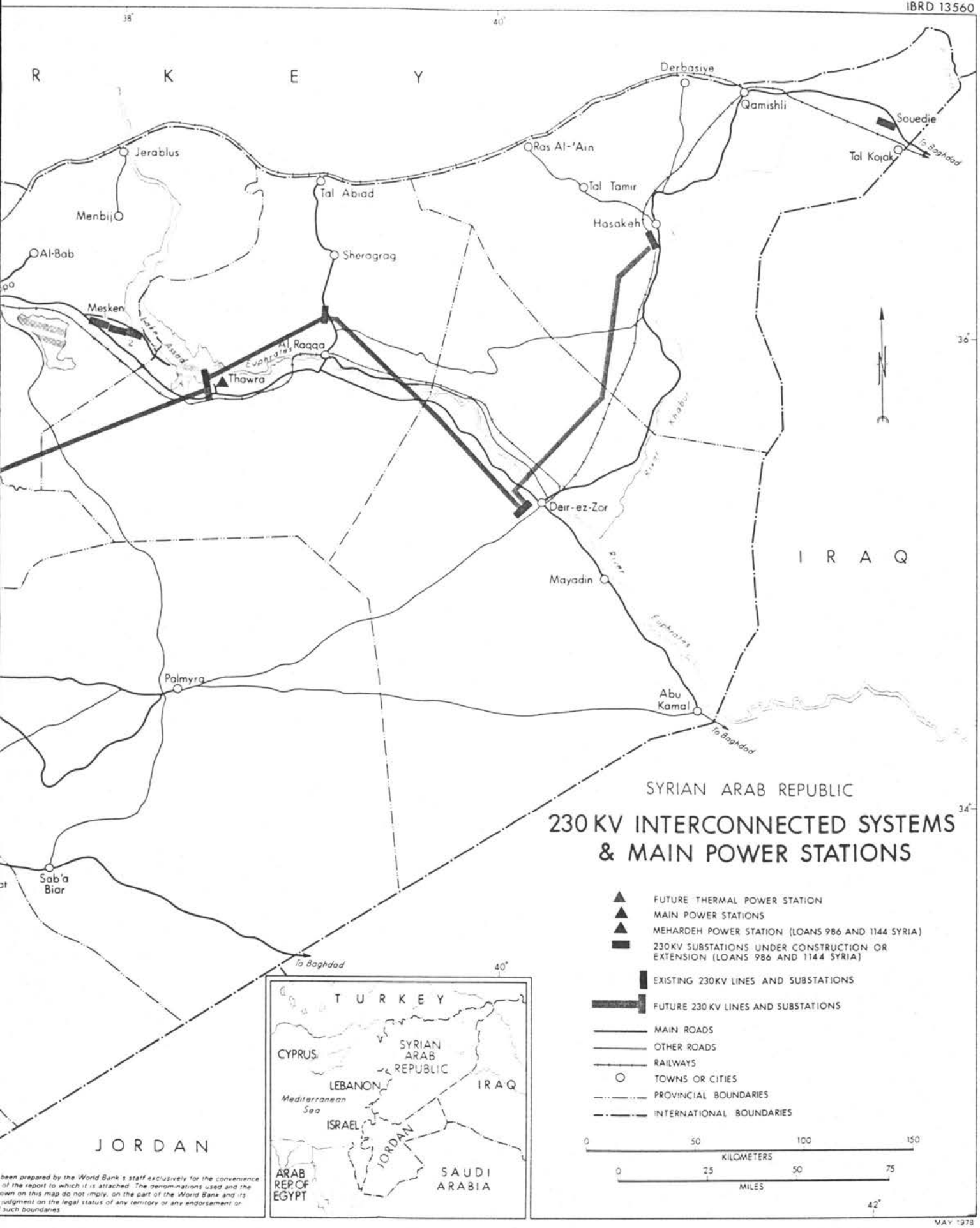

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MAY 1978

Water Supply and Infrastructure

5.54 Water supply and sewerage may be examined briefly as an illustration of one aspect of urban infrastructure. Superficially, Syria appears well served with water, in spite of the aridity of much of the country. As shown in Table 5.6, 83 percent of the urban housing stock had piped water in 1970. However, two important qualifications are the substantial number of people, especially in Damascus, living in unlicensed buildings (i.e. self-built dwellings) not recorded in the Housing Census and the low rural standards (only 10 percent of rural housing has piped water). The strategy of stabilizing the distribution of population dictates a policy of attempting to equalize public service levels per capita, and this in turn requires heavy investments in rural infrastructure, e.g. water supply projects in villages. In spite of this goal, 55 percent of the water supply investment program of the draft Fourth Plan (June 1976 version) was intended for Damascus and Aleppo, though 38 percent was allocated for rural areas (the other municipalities were squeezed). The original idea was to extend a public water supply (initially in the form of public taps) to all villages in the 150-200 size class (about 2,400 in total).

5.55 For several reasons this strategy is unfeasible in the next planning period. The costs of supplying water to rural villages are, in general, approximately double those in the major towns, mainly because of the high pumping costs and frequently long distances involved in servicing a small population. 1/ Although it is customary in Syria only to charge customers the running costs for water not the capital costs, the investment cost for water of a dispersed settlement pattern is very substantial given the capital constraints on the growth of the Syrian economy. Second, even if the problems of investment resources and finance could be overcome, the shortage of technical manpower is acute (the drain of skills to the Gulf) so that the prospects of completing an ambitious program are close to zero. Third, there is an income level problem in the rural areas, particularly from the point of view of raising water supply standards to close to urban levels. The policy is to make water available from public taps free of charge, but to impose fees once house connections are made. This is an obstacle for attaining water service levels comparable to those in urban areas until rural incomes are higher.

5.56 If water supply costs favor the large cities, the reverse is true of housing. The approximate differential for housing plus utilities is SL 1,500 per m2 in Damascus, SL 1,200-1,300 in other cities and only SL 400-500 in villages. This is not a precise comparison because the village estimate includes only electricity and water among utilities, i.e. it excludes roads and sewage. Nevertheless, it suggests that housing goals are easier to fulfill in rural areas.

5.57 As a response to the prohibitively high costs of supporting a very dispersed rural settlement pattern, the Syrian government is attempting to

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1/ An extreme case is the SL 1.5 per m3 involved in pumping water with three pumping stations 500 meters to Al-Sweida and nearby villages.

consolidate villages around rural service centers of about 15,000 people in size. However, as yet this strategy has not had much success. Many of the villages are located in mountainous regions, where inaccessibility rules out the rural service center and satellite villages approach. In some areas, such as the Euphrates Dam region, the population is still too sparse to justify a rural growth center strategy. In other cases, local political pressures have prevented effective consolidation. A more viable prospect is the attempt to promote stable village centers relatively close to the larger cities such as Damascus, Homs, and Hama, but in the long run this will reinforce rather than reduce polarization towards the metropolitan areas.

Transportation 1/

5.58 Although there are projects, either under execution or planned, for rail links between Deir-ez-Zor and Damascus and Homs and between Lattakia and Tartous, the road system dominates Syria's transportation demands, carrying 97 percent of both passengers and freight. Nevertheless, the primary road network is very imperfectly developed, and ill-suited to the needs of a rapidly developing country. The dominant axis is the North-South artery between Aleppo and Damascus. There are reasonably good links to other countries, to Beirut, Amman and Baghdad, but the network to the center and the north-east of the country is very poor. The Fourth Plan which originally had a three-fold increase in investments compared to the Third Plan included steps to rectify this discrepancy between the West and the East by roads between Damascus and Deir-ez-Zor, new roads along the banks of the Euphrates and a critical road across Northern Syria linking Aleppo with Yaaroubiye on the north-east border. These roads are very important from the point of view of regional development, but they can hardly be justified as a response to existing traffic demand.

5.59 There has been a marked bias in road investments in Syria in recent years, with much of the emphasis going to urban roads, somewhat less stress being placed on interregional roads and an almost total neglect of rural secondary roads. Given stated spatial policy objectives, it would be necessary to correct this bias. The rural inhabitants increasingly demand accessibility to a nearby service town. It is only a mild exaggeration to suggest that the Euphrates valley proposals will stand or fall on whether a stable settlement pattern can be devised, and such a pattern depends heavily on an interregional road network. At first sight, the costs of providing such a network would appear enormous. However, a little investigation suggests that something is feasible at relatively low cost. For example, if a new road is built on the west bank of the Euphrates, it would be possible to link up villages to this highway by a succession of transversal roads. A crude estimate of the cost of supplying all villages greater than 2,000 population along this route with feeder roads is SL 10-15 million (based upon a cost of SL 50,000 per kilometer 2/ and a need for 200-300 kilometers).

1/ Background information on the transportation sector is provided in Volume 3, Annex 5.

2/ By comparison, the minimum cost of primary roads used by heavy traffic is SL 500,000 per kilometer.

5.60 In spite of its negligible role hitherto, the rail system should be more important in the future than in the past. This is because the system is being extended to link the agricultural regions of the north-east with the port of Lattakia for the transport of wheat, barley and cotton, the phosphate mines near Palmyra with Tartous and to divert some of the intercity traffic from road to rail.

5.61 The administration of the transport sector in Syria is complicated by the existence of two ministries 1/, the Ministry of Communications with responsibility for roads and bridges and the Ministry of Transport (established in 1974) for co-ordinating policies for all modes and for devising a national transportation strategy and plan. One of the current problems has been a delay in the formulation of this strategy. This is unfortunate since the scale, structure and network of the transportation and communications system may play a substantive role in determining the pace of regional development, especially in previously isolated areas.

Urban Planning

5.62 Using the operations of the Municipality of Damascus Planning Department as the example of "best practice" urban planning in Syria, the conclusion that urban planning is in a primitive state is inescapable. The major problems include:

(i) a stubborn attempt to implement the Master Plan of 1968 for the City of Damascus, even though the pace of events since that date means that the parameters of the Plan bear no relation to reality on the ground;

(ii) a shortage of technical personnel and the spasmodic and piecemeal reliance on short-term foreign consultants;

(iii) the failure to evaluate current and past projects, and the very limited attention given to efficient execution;

(iv) the complete neglect of the interdependence between transportation and land use planning. Although responsibility for urban transportation in Damascus lies with the Municipality rather than with the Ministry of Communications, there are no staff responsible for urban transportation policies and, indeed, no specific policies in existance. The rudimentary traffic management measures in operation have been developed by the Traffic Policy Department of the Ministry of the Interior.

1/ A third ministry, the Ministry of Industry, is responsible for pipelines.

(v) a predilection for grandiose, ambitious projects such as the Mount Kassioun project 1/ with insufficient attention to its implementation 2/, combined with the neglect of urgent problems such as the improvement of utilities and services for the urban poor living in "unlicensed" settlements.

The Euphrates Basin 3/

5.63 The attempt to exploit the huge water resources of the River Euphrates via the construction of the Dam and Lake Assad, the hydroelectric projects and the irrigation works for previously uncultivatable land is by far the most ambitious project in Syria. It is, of course, a very long-term project. Financed by the USSR, the dam and lake were not completed until 1973, the last of the eight turbines is not due to be finished until 1979, and the irrigation projects will extend through the 1980s at least. In the very long run, but only then, the project could prove to be a powerful instrument of regional development by changing the relative contribution of this area to national output, particularly a massive increase in agricultural output for both the home and export markets, and--more speculatively--by its impact on the distributions of population. In the short and medium runs, however, the results of these projects will be small, and the program will be more of a drain on scarce investment resources than a generator of new resources. This is not to argue that the projects are unjustified in the long run: the food requirements of the rapidly growing population and the critical importance of expanding exports should ensure an ultimately high pay-off.

1/ This project, planned for an eight-year time horizon assumes SL 800 million of infrastructure investment and SL 2,000 million investment in housing. The low- and middle-income component of the project includes about 18,000 homes for a population of 80,000.

2/ The projected public sector output of 2,250 houses per year is several times greater than the national output of the public sector in recent years. This situation is unaffected by the plans for prefabricated production since the Kassioun project is intended to make use of local building materials.

3/ The Euphrates Basin is merely the most important element in a more general problem--how to exploit the isolated so-called "island region" of the North-East. The region, which is demarcated by all parts of Syria on the north-east bank of the Euphrates, accounts for a high proportion of the country's resources (40-50 percent) but is relatively underpopulated with less than one-sixth of the population but more than two-fifths of the land area. It has several important urban centers such as Al-Raqqa, Deir-ez-Zor and Al-Hasakeh, but these are unattractive to population because they are deficient in services. The situation of the town of Qamishliye in the far North-East is even worse, partly because of its extreme isolation, partly because its considerable agricultural potential is being neglected as a by-product of the focus on petroleum extraction.

5.64 Nevertheless, the Euphrates Basin's contribution to regional and urban development will remain limited in the foreseeable future. 1/ There has been a significant population expansion at Al-Rakka and on a smaller scale at Al-Thawra, but this has been closely linked to the implementation of the project. The more critical test is the evolution of a rural settlement pattern in the Euphrates Basin. There seems to be a vague idea behind policy that the settlement of the Euphrates region can somehow contribute to relieving the pressures on the cities. Whether thought of in terms of a reverse urban-rural migration or as an alternative opportunity for would be rural-urban migrants, this notion is largely illusory. The population density remains very low (0.70-0.75 persons per hectare), the region lacks basic infrastructure even near the "model" state farm in the Maskaneh region, and the area has hitherto proved unattractive to migrants, especially to the farming population of the relatively overpopulated coastal agricultural belt. Since the agricultural sector as a whole remains short of labor, much of the problem lies in the fact that there is insufficient population pressure in the country as a whole to induce people to the "frontier" region of the Euphrates Valley. Moreover, residents in urban areas have become too accustomed to the level of public services obtainable there to consider the primitive infrastructure provisions of the Euphrates region.

5.65 From the point of view of settlement strategy, there are two options available to the Syrian government, which are not mutually exclusive. The first one is to lower expectations of what can be achieved in terms of population settlement and to plan for a highly capital-intensive agriculture. The second is to develop a comprehensive settlement strategy for the region, including the provision of urban infrastructure, a high level of public services and a secondary network on the one hand and the offer of substantial financial incentives to immigrants on the other hand. Both approaches are very costly in resources. The first has the advantage that, if it could be afforded, it would work. The second is much more socially and politically acceptable, but the risks of failure would remain high even after substantial investments in infrastructure and expenditures on relocation assistance.

5.66 Policies implemented so far fall short of an adequate test of the second strategy. The state farm pilot project is unlikely to attract workers with any alternative since the wages are low (SL 8-12 per day) and the living conditions poor (housing is provided but not in the context of a settlement, either physical or socially; at the time of writing, electricity has yet to be installed). Perhaps the most feasible approach would be to subject the population settlement strategy to an adequate test, via yet another pilot project; the optimal conditions for this might include:

(i) the construction of a village in the full sense, with roads, electricity, piped water, village center, shops and social and cultural services;

1/ For a discussion of the technical problem that the Government faces in the development of irrigation in the Euphrates Basin, see Chapter 7, paras. 7.25-7.27.

(ii) linking this village to the main highway by a high-quality secondary road;

(iii) offering immigrants ownership of land but providing them with extensive technical assistance--this implies the cooperative rather than the state farm model;

(iv) making substantial inducements available to in-migrants, including not only land gifts but relocation assistance, housing subsidies and "start-up" financial assistance in farming (low-rent machinery hire, credit for seed and fertilizer, etc);

(v) offering substantial incentives for higher productivity rather than using the immigrant as a "captive" and passive instrument for implementing a centralized agricultural plan.

5.67 This approach would be too costly to replicate over all the Euphrates Basin and it probably demands some compromise with ideological goals. However, it would be an effective test of whether a rural settlement strategy in the Euphrates could ever work, short of either direction of labor or a collectivist approach following the Chinese model.

Tourism and Regional Development

5.68 Primarily because of its ancient history and culture, Syria has some prospects for tourism. The sites of Roman and other civilizations, the mosques, Arab palaces and citadels combine with some tourist potential on the Mediterranean coast to offer the possibility of mixed cultural/resort holidays. Although the number of foreign tourists has increased in recent years, the total remains small. Current projects include the opening up of a major hotel chain at various locations throughout the country (the Air France chain of Meridien hotels), and the development of some recent facilities on the coast. There is no doubt that the scope for tourism could be increased, and it probably will be.

5.69 There are two important qualifications about recommending this as a course of action. First, the economic and social benefits of tourism have to be kept in perspective. Although tourism can be an important export service, the import content of hotel construction and fixtures and tourist infrastructure generally must be watched. Also, care should be exercised about the degree of foreign ownership of hotels and *a fortiori* on the remittances overseas of profits from tourism. Moreover, a high degree of dependence on tourism (hardly at present a serious risk for Syria) can inject volatility into the balance of payments either in conditions when overseas travel drops or when demand switches to newer or cheaper tourist countries. Apart from the balance of payments impacts, the economic consequences of tourism tend to be less favorable than its protagonists suggest. Tourist multipliers are usually low, seasonal fluctuations can be irksome, the infrastructure for tourism may eat up scarce investment resources, and in many cases it has proved difficult to keep tourism and rural life in balance. Perhaps the best argument for

more tourism in Syria is a more general public relations viewpoint--to increase knowledge about Syria abroad with the possibility of secondary and indirect "benefits" in the form of foreign investment.

5.70 Second, the most critical disadvantage of tourism in Syria from the regional development point of view is that its expansion would probably reinforce the economies of the major cities. Apart from the purely resort holidays on the coast, most of the country's tourist attractions are either to be found in Damascus and Aleppo or are accessible to one of those cities by day trips (e.g. Palmyra, Bosra, Hama). Thus, in the Syrian case a major expansion in tourism would probably conflict with spatial policy objectives.

RECOMMENDATIONS

Regional Planning

5.71 Regional planning in Syria merely consists of a degree of local control over small-scale projects. There is no regional planning in the sense of spatial disaggregation of the national plan or in the form of a decision framework for altering the allocation of resources among different regions. Yet such a component is needed if policy objectives are to continue to stress an improved geographical distribution of industry, a better urban-rural balance and priority towards the underdeveloped regions. To remedy this omission the following recommendations are suggested:

(i) The introduction of a macroregional planning dimension into the planning process, in which the economy is subdivided into five or six regions. This regionalization scheme would be used for technical purposes, i.e. the spatial disaggregation of the national plan, to explore the geographical implications of planned investments. Each region would be aggregated from whole provinces (mohafazat), since these administrative regions must be retained for implementation purposes.

(ii) The explicit use of regional capital budgets, i.e. a comprehensive classification, and subsequent aggregation, of all investment projects (both "central" and "local") by province, as an information aid to attempts to improve the redistributional content of the Plan.

(iii) The introduction of a long-term (say 15-25 years) spatial planning component into the national plan. This should be developed in time to be incorporated into the Fifth Plan (1981-85). The justification is that planning from one five-year planning period to the next is too myopic for the effective implementation of spatial redistribution measures. Running five-year national and sectoral plans and longer-term spatial plans in tandem presents no serious organizational difficulties.

(iv) The development of some regional planning co-ordination machinery, probably in the Prime Minister's Office. At present, the limited regional planning functions are diffused among several ministries, especially the State Planning Commission, the Ministry of Housing and Utilities and the Ministry of Local Administration but also among other ministries such as Communications, Industry and the Euphrates Dam. There is a very low degree of co-ordination among public agencies, and this would severely hamper attempts to strengthen regional planning functions.

(v) Steps to increase the number of trained regional (and urban) planners and to improve the quality of their training. (The Planning Institute has occasionally run regional planning "streams" in its program, but it gives most emphasis to national, financial and industrial planning.)

Regional Policy Instruments

5.72 Instruments for changing the spatial distribution of population and economic activity are either weak or non-existent. The design of effective policy instruments is difficult because they have to be compatible with the institutional environment of the country. Hence, the recommendations made here are general rather than specific.

(i) In view of the policy objective to control the growth of cities and to stabilize the rural population, a first but important step is to abandon the "implicit" subsidies to the big cities. These subsidies include a large share of public industrial projects (i.e. those under the control of the General Organizations), disproportionately high fiscal appropriations and priority in transportation investments and infrastructure. Even in the absence of measures to promote rural areas, the abandonment of these implicit spatial policies would tend to reduce rural-urban migration.

(ii) The private manufacturing sector is small in terms of investment (7 1/2 percent of the total) but it is very cost-effective in terms of job creation (the capital cost per job is only 4 percent of that in the public sector). Also, it is difficult to develop efficient small-scale industrial enterprises within the public sector. Thus, measures to promote the growth of industry in rural areas and small towns should include a locational incentive system for private industry. This might include area-specific (rather than general) tax rebates and loans. In addition, the licensing system of the Ministry of Industry could be used in a more spatially discriminatory way to favor the less developed areas.

(iii) A more general implication of (ii) is the need for measures to promote labor-intensive technologies in manufacturing

and other sectors, partly to relieve investment constraints, partly to alleviate the labor absorption problem. Although there are shortages of many types of skilled labor in Syria, and the unemployment problem is less serious than in many developing countries, there is a general need for more jobs, especially in the rural areas where underemployment is rife. This recommendation applies both to urban and rural areas.

(iv) As yet, very few families have been attracted to the fertile areas near the Euphrates or the far North-East. The institutional arrangements are probably important, with the system of ownership of land in a cooperative framework likely to be more enticing than the state farm concept. However, a successful strategy will also demand the provision of substantial incentives to encourage the rural redistribution of population from low-productivity or relatively over-populated areas. Such incentives might include free land gifts, relocation grants, credit for seed, fertilizer and equipment, and technical assistance.

(v) Evidence, though sketchy, suggests that the costs of infrastructure (water supply, electricity, access roads) are high for small rural settlements. A cost-effective settlement pattern for rural areas will necessitate a high degree of selectivity in areas receiving infrastructure. In particular, it will be necessary to concentrate investments on rural service centers larger than the average village, partly to secure scale economies in infrastructure, partly to provide quasi-urban services at a level roughly comparable to that prevailing in larger towns. Even in this case, however, a secondary road network will have to be built to link nearby villages to the main service center. This approach, a rural growth center connected to satellite villages, offers a much better prospect of developing a viable rural settlement pattern than randomly distributed small villages.

Housing

5.73 The housing situation is critical especially in the large cities, and property market speculation has been endemic. Strong action is needed on several fronts:

(i) measures to raise the capacity and efficiency of the General Housing Authority so that it can improve its efforts to provide public sector housing. Such measures would demand inter alia more financial resources, training programs for construction workers and better supervision and management;

(ii) a reduction in public housing quality and costs so that low-income households may be helped (the recent activities of the General Housing Authority have been confined to rehousing population displaced by the Municipality);

(iii) government assistance to lower income households to enable more of them to participate in the private housing market. Such assistance might include provision for smaller down-payments, lower interest loans and longer repayment periods;

(iv) reform in the tax laws to inhibit property market speculation and to make it unprofitable for people to hold semi-finished houses off the market. Appropriate measures might include taxing properties after a prescribed time has elapsed from the beginning of construction and a substantial capital gains tax on property sales.

(v) the deferment of projects such as the Dimas and Kassioun schemes on the grounds of their high cost and failure to reach "target" low-income groups;

(vi) recognition of the permanence of "unlicensed" settlements in Damascus and other large cities, and the allocation of funds to improve the level of utilities and services in the settlements, to make sites available for "self-help" housing and to provide technical assistance to low-income households in self-help construction techniques. The appropriate methods for achieving migration objectives should not include making housing and living conditions intolerable for new urban migrants.

Urban Planning

5.74 (i) There appears to be no urban planning profession in Syria. Professionals exercising planning functions tend to be either architects or engineers. The planning departments, even in the larger municipalities, tend to be small and overworked. If Syria is to cope more effectively with the problems of urbanization, this situation must be remedied. Of course, this requires resources and training facilities.

(ii) An urban transportation strategy should be developed for Damascus and other large cities to deal with their traffic problems. This strategy should be based upon an appropriate mix of expanding the capacity of the transportation system, more public transportation services and better management of traffic circulation and control.

(iii) Urban planning practice in Syria places heavy emphasis on the formulation and implementation of master plans. However, the master plan concept is too inflexible for a developing country where urbanization is very rapid and where parts of the metropolitan area grow spontaneously (e.g. the unlicensed settlement phenomenon). It is virtually impossible for a master plan to keep up to date with the pace of events. Urban planners in Syria should be trained to cope with current and anticipated pressures rather than perceiving their role in terms of attempting to implement an obsolete master plan.

Other Recommendations

5.75 Fiscal decentralization should be extended beyond the provincial (mohafazat) level to second-grade municipalities, in order to improve local inputs into planning decisions, to create more flexibility for towns that wish to expand (provided that expansion is consistent with national spatial objectives) and to improve the efficiency of implementation of local projects.

5.76 Regional development criteria should influence decisions about interregional and intraregional transportation investment priorities. For example, roads should be built in order to open up priority regions, not necessarily investing first on high density routes. Moreover, the spatial policy objectives have little chance of success unless more resources are devoted to the construction of a secondary road network, especially in the Euphrates basin.

5.77 A national spatial strategy with, say, a twenty-year-plus time horizon should be developed, so that spatial policies are implemented cohesively rather than piecemeal. The strategy should be sufficiently specific to provide a "desired" scenario of the national urban hierarchy and the interprovincial distribution of population and economic activity by the year 2000. This should be compared with the "most likely" scenario in the absence of effective policies to determine the degree of spatial intervention needed to convert the "most likely" into the "desired" outcome.

5.78 Although the benefits of an expansion in tourism are smaller than is often implied, attention should be given to the problem of how the exploitation of Syria's considerable tourist assets can be made compatible with spatial policy objectives. This recommendation implies a focus on coastal resort development rather than "cultural" tourism which probably reinforces the economies of the big cities.

5.79 The goal of reducing inter-provincial migration, especially from rural to urban provinces, should <u>not</u> be promoted by direct restrictions on mobility, since these would be inimical to the improvement of individual welfare, but rather by the gradual process of changing the distribution of infrastructure and relative opportunities between rural and urban areas. Also, the high opportunity costs involved in bringing about such changes should be recognized.

CHAPTER 7

AGRICULTURE AND AGRICULTURAL PLANNING

7.01 Agriculture in Syria has been dominated by climate and rainfall since the birth of cereal cultivation in the country before biblical times. The resulting fluctuations in crop production have in turn played an important part in influencing short-term variations in overall economic growth. Chapter 3 (Development Planning & Performance) has described how the effect of rainfall variations on agricultural production contributed to the satisfactory rate of growth in gross domestic product (GDP) in 1953-57 and to the net decline from 1957 to 1960. Accelerated growth during the period of the First Five Year Plan 1961-1965 was also attributed in part to unusually good crops in 1961 through 1965. Conditions were less favorable, however, under the Second Five Year Plan 1966-1970, and during most of the 1960s the rural sector experienced little growth.

7.02 More recently, the growth rate in GDP has been influenced by poor climatic conditions in 1970, 1971, and 1973 and by the three exceptionally good crop years of 1974-1976. In the period 1970-1976 both total GDP and GDP in agriculture showed a strong rate of growth. Syria has achieved a respectable rate of growth over the last decade. This record is especially remarkable if one considers that this was a turbulent period for Syria due to two wars and the later Lebanese events. The rapid reconstruction of the war damage and the high rate of growth during a period in which the economy was on a war footing is a credit to the tenacity of the Syrian people and the solidarity of the Arab countries, but also to a great extent to two exogenous factors--the unusually good weather of 1974-76 and the steep rise of oil revenues. Since 1973 the quantities of oil produced have doubled, but the proceeds from oil have grown at least eightfold (see Chapter 9, Industrial Organization & Performance). This extraordinary source of revenues has certainly affected the structure of the economy as well as the growth rate. Any attempt to analyze the role of agriculture in Syria's economic development must abstract from such chance elements as oil revenues or the weather in order to discover the systematic components of long-term growth (see Chapter 3 and Tables SA 2C.1, SA 2C.2 and SA 2C.3).

7.03 For example, the above-average rainfall of 1974 and 1975 led to overfulfillment of the Third Five Year Plan's 1975 crop targets for wheat, fruits and vegetables. Conversely, poor performance in certain other crop categories, notably sugar-beet and lentils, was attributed to the drought of 1973. For plan performance in other agricultural categories, see Approaches to Agricultural Planning, this chapter.

This chapter draws upon the work of Mr. Pan A. Yotopoulos (Consultant).

AGRICULTURE AS A LIMITING FACTOR IN SYRIAN ECONOMIC DEVELOPMENT

7.04 Taking the good years with the bad, agriculture has been a limiting factor in the country's economic growth. There has been general concern among policymakers about the sector's lackluster record. That agriculture is slated to receive new emphasis has been evidenced by the creation of the Supreme Agricultural Council and by statements of the Prime Minister in late 1976 and 1977 (see Future Prospects, this chapter).

7.05 The pronounced variability of agricultural production and the lack of analytical data that would permit adjustment for the influence of the weather, make accurate determination of the relevant growth rates extremely difficult. However, it is clear that during the whole period of the 1960s Syrian agriculture was almost stagnant. Taking three-year moving averages of value added in agriculture at constant 1963 factor cost, the compound rate of growth from 1964 to 1976 was less than 2 percent a year, despite the excellent harvests of the last years of the period (see Figure 7.1 Agricultural Production 1964-1974 based on Table SA 7.13).

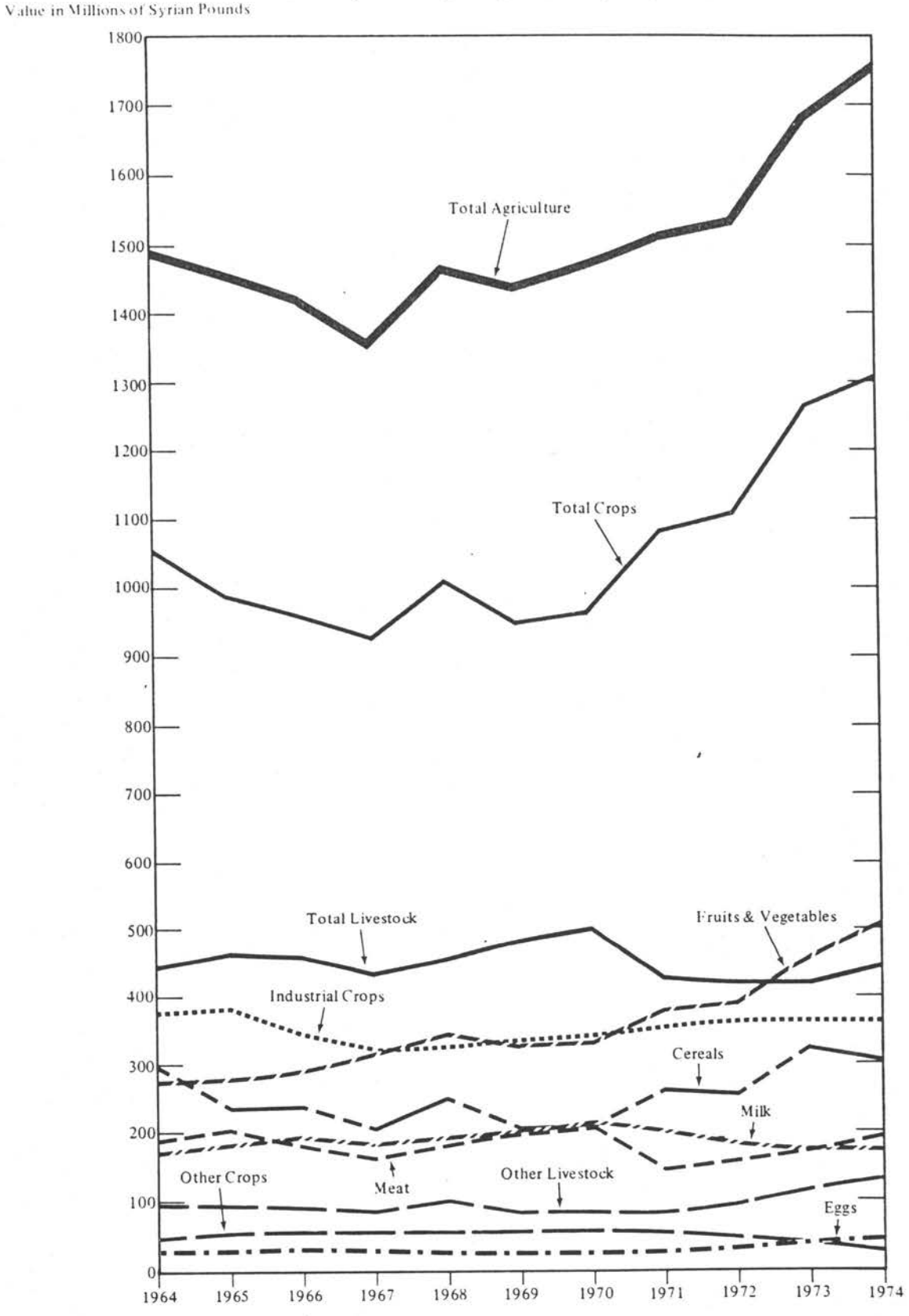
7.06 The rate of population growth, at 3.3 percent a year during 1960-70, exceeded the growth of agricultural production. This trend was amply reflected in declining agricultural exports and in mounting food imports, particularly in poor crop years. The discrepancy between the rate of growth in value added accruing to agriculture and that for the economy as a whole was reflected in the declining share of agriculture in total GDP, as follows:

(percent of total GDP at current factor costs)

	1955-60	1961-65	1966-70	1971-73	1974-76
Agriculture	31.4	32.1	26.1	23.0	18.6
Mining, manufacturing, utilities and construction	15.6	15.7	17.0	24.7	35.8
Other economic activities	47.0	47.2	56.9	52.3	45.6
Total gross domestic product at factor cost	100.0	100.0	100.0	100.0	100.0

A stagnant agricultural sector, in which productivity has failed to increase, is one factor responsible for the above pattern of sectoral shares. The rapid growth in petroleum production is the other factor.

FIGURE 7.1 Agriculture Production, Syria, 1964 -1974[a/]
(Three--year moving average. Million Syrian pounds)[b/]



a/ Value added in agriculture at constant 1963 factor cost.
b/ At constant 1963 factor cost.

World Bank – 18817

Source: Table SA 7.13

7.07 The relative decline in the size and importance of the agricultural sector is a well-established characteristic of the early stages of transformation in a developing economy. This usually does not indicate that agriculture has not grown; it merely means that other sectors have grown more rapidly, and that agricultural growth has been fitted into new patterns of demand where it supplies more materials to domestic industry and into shifting allocation of the factors of production in which capital investment in agriculture increases productivity and labor is diverted into the more rapidly growing sectors of activity.

7.08 A comparison of the role of agriculture in the growth of the Syrian economy during 1960-75, with international experience during 1950-1970, shows that while agriculture's share in employment was not significantly different from international averages, its contribution to GDP was significantly lower: 1/

Percentage Share of Agriculture in:

	GDP		Employment	
	Syria	International Average	Syria	International Average
1970	23	33	50	53
1975	18	30	51	48

7.09 An objective of both intermediate and long-term policy should be to make economic growth more broadly based and diffused through a number of activities instead of concentrating on petroleum production, which absorbs a high ratio of capital to labor. The first step in this direction would be to stimulate growth in the agricultural sector to increase its share in GDP. This would call for a rate of growth in agriculture exceeding the growth rate in total GDP. On the basis of projected rates of GDP growth from 1976 through 1980, of some 6-8 percent per year, an annual rate of growth in agricultural GDP of only 3 percent would further reduce its share in total GDP to 17 percent by 1980. An annual growth rate of 6 percent in agriculture would increase its share slightly to 19.4 percent; to bring its share up to 22.5 percent in 1980 would require 10 percent annual growth in agriculture compared to 7.6 percent for total GDP.

7.10 That agriculture has failed in the past to provide sufficient impetus to Syria's economic growth is further evidenced by the trend in merchandise trade, as follows:

1/ Hollis B. Chenery and M. Syrquin, Patterns of Development, 1950-1970 (London and New York: Oxford University Press, 1975); see also P.A. Yotopoulos and J.B. Nugent, Economics of Development: Empirical Investigations (New York: Harper and Row, 1976) pp. 286 ff.

		1963	1971	1975
Exports				
Total	(Millions of Syrian	720.9	788.9	3,440.9
Agricultural	pounds in current prices)	661.3	519.6	712.4
Agricultural	(As percent of total exports)	91.7	65.8	20.7
Imports				
Total	(Millions of Syrian	897.5	1,703.5	6,172.7
Agricultural	pounds in current prices)	176.3	563.5	633.9
Agricultural	(As percent of total imports)	19.6	33.1	17.3

In future economic development, the contribution of agriculture can be enhanced both by expanding exports and by replacing imports by domestic production. Agriculture is a strategic sector in Syria, and it must receive special attention, lest it act as a potent brake on the process of economic development.

MAIN FEATURES OF LAND USE AND OWNERSHIP

7.11 Most land is cultivated by private farmers, but production units also include state farms and cooperatives (for details, see Volume 3, Annex 2). The state farm sector has remained relatively small, occupying less than 2 percent of land under cultivation in 1975. About 16 percent of the land was farmed by cooperatives. The majority are multipurpose service cooperatives formed to act as intermediaries between farmers and the agricultural institutions. The participating farmers retain ownership of their land. Only about 15 percent of the cooperatives own and farm the land jointly. This jointly-owned land was distributed under the land reform or when irrigation projects were initiated. In 1975 about 15 percent of all cropland was under irrigation, but only 12 percent of rainfed cropland, was farmed by cooperatives. More than 80 percent of the land under cultivation was in private farms. These are found in all areas, but are most predominant on rainfed cropland.

7.12 In 1975 about 25 percent of the land expropriated under the land reform program initiated in 1958 remained undistributed, but the government considered that the redistribution already accomplished (largely after 1968) had achieved equity (for details, see Volume 3, Annex 2). The Agrarian Reform Law (No. 161 of 1958) and subsequent Legislative Decrees accomplished a significant change in the size distribution of landholdings (see Table 7.1). 1/

1/ For references see Ministry of Information, Documents Relating to Socialist Conversion in the Syrian Arab Republic, Damascus, 1966.

Table 7.1: SIZE DISTRIBUTION OF LANDHOLDINGS BEFORE AND AFTER LAND REFORM REDISTRIBUTION, SYRIA, 1958 AND 1971 /a

Size of Farm (Hectares) /b	Before Reform 1958	After Reform 1971
	----(Percent of all farms)----	
Less than 2	1	15
2 - 5	5	28
5 - 7	7	9
7 - 25	17	42
25 - 50	11	5
50 - 100	10	1
100 - 500	24	-
500 - 1,000	9	-
1,000+	16	-

/a See also Table 4.9 in Chapter 4 of this volume, where somewhat different data appear.

/b One hectare is equivalent to 2.71045 acres.

Source: Unpublished data provided by the Government.

7.13 Of the country's estimated 8.0 million hectares (19.9 million acres) of arable land--less than half the total land area--only 516,000 hectares (1.3 million acres) were under irrigation in 1975. Of the remaining 7.5 million hectares (18.5 million acres) thought to be arable, 27 percent was marginal cropland cultivable only under good rainfall conditions (see Table SA 7.2). Only 40 percent was actually under crop during the year; 33 percent had to be left fallow to regenerate the depleted soil. Most of the rainfed cropland receives minimal mean annual rainfall (see map at front of this volume). Even in stability zones I and II, where mean annual rainfall exceeds 250 millimeters (10 inches), the uneven seasonal distribution of the rains and their variability create pronounced fluctuations in agricultural production (see Chapter 8 and Volume 3, Annex 2).

Table 7.2: LAND USE, 1972-1976

Item	1972	1973	1974	1975	1976
Irrigated cultivation	625	619	578	516	547
Rainfed cultivation	2,479	2,778	1,956	3,184	3,702
Subtotal, land under crop	3,104	3,397	3,534	3,700	4,249
Land under fallow	2,899	2,481	2,493	1,776	1,295
Subtotal, land under cultivation	6,003	5,878	6,027	5,476	5,544
Cultivable but unused	2,503	2,067	2,025	479 /a	338 /a
Subtotal, arable land	7,506	7,945	8,052	5,955	5,882
Grazing land	6,065	6,497	6,393	8,631	8,549
Forest	518	481	446	445	457
Other uncultivable land	3,431	3,595	3,627	3,487	3,630
Subtotal, uncultivable land	10,014	10,573	10,466	12,563	12,636

/a Most of the land previously included in this category is considered now as steppe and pastures (grazing land).

Source: Central Bureau of Statistics.

COMPONENTS OF PRODUCTION, 1964-74

7.14 The main impact of the variability in agricultural output is noticeable for cereal crops (principally wheat and barley) produced on rainfed lands and for livestock products and livestock grazed in the semiarid regions (see Chapter 8). Longer-term changes in the composition of Syrian agricultural production over the decade between 1964 and 1974 are shown in the percentage figures of Table SA 7.13. During this period crop production grew by 2.2 percent a year, gaining in importance relative to livestock production, which remained stagnant. Its share went from less than 70 percent in 1965-1970 to about 75 percent in 1974. Within the crop sector, growth in cereal production has kept pace with overall agricultural growth. Cereals accounted for just under 20 percent of total output in 1974. Production of industrial crops

principally cotton, showed no growth and therefore declined in importance from about 25 percent of total output to 20 percent. Fruits and vegetables, the third major component of the crop subsector, experienced the greatest growth from less than 20 percent to almost 30 percent of total output. The livestock sector did not experience growth and its contribution declined from 30 percent of total output in 1964 to 25 percent in 1974. Milk and meat are the two principal livestock products and each accounted for about 10 percent of total output in 1974. Poultry and poultry production showed considerable growth. It is worth noting at this point that the commodities which showed the most rapid rate of growth were in general the ones not subject to official price controls--in particular potatoes, tomatoes, citrus, poultry, and eggs.

7.15 The relatively low rate of growth in agricultural output from 1964 through 1975 was amply reflected in declining agricultural exports and increasing imports (see para 7.10). For example, wheat, once a major export earner for Syria, was exported in sizeable quantities only in an occasional good crop year such as 1972. Similarly, livestock products, another traditional export, show negative trade balances in some years. Even commodities with good growth performance, such as fruits and vegetables, are still unable to meet increased demand. This means valuable foreign exchange must be increasingly allocated to food imports.

APPROACHES TO AGRICULTURAL PLANNING

7.16 In mid-1977 the period of the Fourth Five Year Plan 1976-1980, already one-third over, was overcast by the legacy of the Third Plan and of the abnormal period for Syria which it covered. The Third Five Year Plan for agriculture suffered from the common ailments of Syrian national planning. Although couched in terms of the usual sectoral and subsectoral aggregates, growth targets and performance criteria, it was characterized by the absence of any link between the investments proposed and the growth targets to be achieved and it suffered from lack of correlation among proposed investments (see Chapter 3). The immediate reason for this failing is that the Third Plan for agriculture consisted of a collection of projects based largely on intelligent judgements but lacking the benefit of any underlying economic feasibility studies and of the necessary agronomic, technological and climatic data. Consequently, it failed to provide a feasible and consistent program of interrelated projects that complemented one another and it largely overlooked the policy instruments that were needed for Plan implementation. This background is relevant to subsequent concerns in that the Third Plan did not supply the necessary information basis and experience for the formulation of the Fourth Plan.

7.17 The outcome of the Third Plan was affected not only by its poor conceptualization but by the occurrence of such exogenous factors as the 1973 war, the 1973 drought and subsequent good crop years, and the Lebanese events of 1973. The good rains of 1974-76 meant that wheat production reached 125 percent of target in 1975 (see Table 7.3) and achieved another 10 percent

Table 7.3: QUANTITATIVE AGRICULTURAL PRODUCTION TARGETS OF THE THIRD AND FOURTH FIVE-YEAR PLANS, SYRIA, 1975 and 1980

(Thousand metric tons) /a

	Third Plan					Fourth Plan		
Commodity	1969-71 Average Actual	Base Year 1970	Targeted Percent Increase	1975 Target	1975 Actual	Base Year 1975	Targeted Percent Increase 1976-80	1980 Target
Milk	472	557	23	685	567	794	21	960
Meat	-	79	32	104	-	93	109	194
Honey	0.25	0.23	30	0.30	0.28			
Silk	0.36	0.28	43	0.40	0.28			
Dry Legumes								
Dry Fodder								
Green Fodder								
Cereals								
Wheat	824	820	51	1,241	1,550	1,600	44	2,300
Barley	374	600	17	700	596			
Lentils	80	73	66	121	67/b			
Sugarbeet	216	260	58	410	187	198	960	2,100
Cotton	391	400	28	512	414	392	3	404
Tobacco	8	8	25	10	12			
Groundnuts (peanuts)	18	16	38	22	21			
Tomatoes	210	216	53	330	375	363	31	475
Potatoes	62	50	40	70	125	144	174	395
Onion	68	50	130	135	133	117	62	189
Fruit						675	68	1,133
Apples	25	23	100	46	57			
Citrus Fruit	11	11	157	18	28			
Eggs (millions)	310	240	67	400	656			
Annual Rate of Growth of Agriculture (percent)			5.1	6.2			8.0	

/a One metric ton is equivalent to 1.1023 short ton or 0.984 long ton.
/b Lentil production doubled in 1976 in response to an increase in the farmgate price.

Sources: Adapted from Central Bureau of Statistics, Statistical Abstract of Syria 1976, and Ministry of Agriculture and Agrarian Reform.

increase in 1976, to total output of 1.7 million metric tons. 1/ Production in 1975 was 118 percent of target for vegetables and 132 percent of target for fruits. Production fell short of 1975 targets in several other crop and livestock categories. Only 45 percent of projected development expenditure on agriculture was actually disbursed under the Third Plan. It was left to the Fourth Five Year Plan to do the necessary catching up.

Agricultural Planning in the Fourth Five Year Plan 1976-1980

7.18 The preparation of the Fourth Plan for agriculture came as a reaction to the disappointing performance of the sector through 1973 and sought the answer to agricultural stagnation in an attempt at comprehensive and holistic planning. The new approach was devised in a reputedly voluminous document prepared by the Arab League in Khartoum, and is detailed in Syria's Annual Agricultural Production Plan, an elaboration of the section of the Fourth Plan dealing with agriculture. 2/ The discussion that follows is concerned with the targets and planning approaches set forth in this document. The targets, however, are no longer considered binding, and planning approaches are also destined for eventual revision. In November 1976 the decision was made on the highest level to proceed only with ongoing projects for which investment was already committed, and in 1977 a new Plan document was being prepared (see Future Prospects, below).

7.19 In the initial Fourth Plan document, the targeted annual rate of growth in agriculture during the Plan period is 8 percent, against 5.1 percent in the Third Plan. The 1980 targets for some representative commodities and their projected growth for the five-year period appear in Table 7.2. Of the total planned public investment for 1976-80 SL 10.4 billion or 23.3 percent is to be for agriculture, as compared to 34 percent in the Third Plan. If one excludes the Euphrates portion of the investment, agriculture is to command 6.7 percent of total investment expenditure, as compared to 10.1 percent in the Third Plan. The rest of the resources that the Fourth Plan expects to be devoted to agriculture (such as technical personnel, mechanical equipment, and chemical and biological inputs) are roughly equivalent to those projected under the Third Plan (see Volume 3, Annex 2). Yet the targets of the Fourth Plan are much more ambitious than those of the Third Plan for two basic reasons: first, because significant additions of new irrigated lands are planned; and second, because an attempt is made at rationalizing the use of existing resources by eliminating inefficiencies and achieving full capacity utilization of inputs, especially of land and capital. The analysis of these two aspects would thus be necessary and also sufficient to judge the feasibility of the Fourth Plan, especially since it comes on the heels of the experience with the Third Plan.

1/ One metric ton is equivalent to 1.1023 short ton or 0.984 long ton.

2/ Ministry of Agriculture and Agrarian Reform, Annual Agricultural Production Plan of Syria for 1976/1977 (in Arabic).

7.20 With regard to irrigation, the assumption of the Fourth Plan is that 240,000 hectares of new irrigated lands will be added in the Euphrates Basin, of which 135,000 hectares are to be under cultivation by 1980. 1/ An additional 53,000 hectares will be coming from other irrigation projects. As a result, a net addition of 188,000 hectares of irrigated land is expected by 1980. This expectation is unrealistic (see Policy Instruments, below, and Chapter 8).

7.21 The legal framework for rationalizing agricultural production was set by Law Number 14 of November 9, 1975. The purpose of the law is to dictate and enforce land use, cropping schemes and cultivation practices "consistent with the best agricultural techniques available," so that specified annual production targets are met. The implementation of the law is based on the detailed Annual Agricultural Production Plan prepared by the Ministry of Agriculture, and rests on the Ministry's responsibility for licensing each farmer and certifying his proposed land use as consistent with the Annual Plan. 2/ The policy instruments for the enforcement of this law include a set of incentives and penalties. The penalties for noncompliance with the law include possible jail sentences and fines, loss of crops produced in violation of the Plan and confiscation of the land for an unspecified time, during which the government would operate it and keep the generated revenues. The incentives provided by the law include the preplanting determination of product prices, the determination of input prices, and access to credit for such inputs as seed, fertilizer and pesticides for the licensed farmers who have been certified as complying with the Annual Plan. The inputs will mostly be supplied in kind, to be repaid out of the harvest. The role of the Agricultural Credit Bank in providing credit and inputs becomes crucial under the new law.

7.22 The Annual Agricultural Production Plan for crop year 1976/77 was prepared by the Ministry of Agriculture in conjunction with Law Number 14. It is a detailed document that builds an imposing scaffolding of material balances (balancing available material resources against Plan requirements) as superstructure on an underpinning of relatively scant factual information. The basic data for the Annual Plan are broken down by province (mohafaza), and include cultivable land classified by type as irrigated, unirrigated and idle in five stability zones based on mean annual rainfall (see Table 7.4). Information is also provided for each province on existing land use and on the theoretical yields to be obtained on the basis of recent experience. Once the nationwide targets of the Plan have been reduced to their annual components, production quotas are assigned to each province by land type

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1/ One hectare is equivalent to 2.47 acres.

2/ Licensing is not required for farmers having less than 2 hectares or those on rainfed land where mean annual rainfall is less than 250 millimeters (10 inches).

and stability zone, according to a detailed crop rotation and intensification scheme devised for each province. 1/ An interesting feature--and one which is no mean task in itself considering that the Annual Plan was prepared without the help of computer facilities--is that after all these detailed production quotas are summed up, they are in harmony with the targets of the Fourth Plan, given two assumptions: (i) that an overall cropping index 2/ of 160 is

Table 7.4: SYRIAN ARAB REPUBLIC: DISTRIBUTION OF CULTIVABLE LANDS ACCORDING TO STABILITY ZONES /a

	Irrigated Hectares	%	Non-Irrigated Hectares	%	Idle Hectares	%	Total Hectares	%
Stability Zone I	147,699	27.3	1,358,873	27.5	280,394	59.5	1,786,966	30.0
Percent	8.3		76.0		15.7		100	
Stability Zone II	105,766	19.6	1,837,810	37.2	54,307	11.5	1,997,883	33
Percent	5.3		92.0		2.7		100	
Stability Zones III-IV	286,873	53.1	1,748,091	35.3	136,565	29.0	2,181,529	36
Percent	13.1		80.1		6.8		100	
TOTAL	540,338	100	4,944,774	100	472,266	100	5,966,378	100
Percent	9.1		82.9		8.0		100	

/a See Chapter 8, Table 8.1.

Source: Syrian Arab Republic, Ministry of Agriculture and Agrarian Reform, Annual Agricultural Production Plan of Syria for 1976-1977 (in Arabic).

1/ The detail in which the crop rotation and intensification schemes are laid out often staggers the mind. For example, for the 8,190 hectares of artesian-well-irrigated land of Hama Province the following scheme is prescribed: Mexican wheat 45 percent; vetch 5 percent; fall sugar-beet 20 percent; spring potatoes 3 percent; fall potatoes 1.5 percent; broad beans 3.0 percent; cotton 40 percent; corn 10 percent; onions 2 percent; vegetables 10 percent; string beans 8 percent; soybeans 3 percent; and summer vegetables 4 percent. The total cropping index for this category of land for Hama is 136.5 percent. For the unirrigated land category of Stability Zone I of Sweida Province, which amounts to 6,300 hectares, the following scheme is prescribed: local wheat 50 percent; barley 10 percent; chickpeas 15 percent; lentils 5 percent; fodder 7 percent; and vegetables 13 percent. The total cropping index for this category of land in Sweida is 100.

2/ This is land actually under crop as a percentage of land under cultivation (including fallow).

achieved for irrigated lands, 100 for Stability Zone I and 70 for Stability Zone II; (ii) that significant increases in yields are achieved, up to 30 tons per hectare in sugarbeet (instead of the current yield of 23 tons) and 2.5 tons per hectare instead of 2.0 in cotton.

7.23 The arithmetic of the Annual Plan is consistent with the numbers of the Fourth Plan. The important question that arises is whether the Plan itself is also consistent, and especially whether it is feasible.

The Policy Instruments and the Feasibility of the Agricultural Plan

7.24 Whether the Fourth Plan's targets for agriculture have been set realistically can be readily checked by examining the crucial assumptions we listed above on the expansion of irrigated lands, on cropping intensity and on increase in yields. The consistency of the Plan and its feasibility in general depend upon the relationship between targets and policy instruments.

7.25 Irrigation and reclamation will be discussed in more detail in the next chapter of this report. Here we will refer specifically to the prospects of irrigation in the Euphrates Basin. When development of the Basin is completed, it is to cover 618,000 hectares of irigated lands. Of these, about 167,000 hectares were already irrigated before the construction of the dam. Development of these lands would mainly imply rehabilitation (including flood control and control of waterlogging and salinity) which could greatly enhance their productivity. Development of the rest of the acreage would imply both reclamation of the desert and controlled irrigation.

7.26 The current situation and the prospects for irrigation in the Euphrates Basin by 1980 can be summarized by the following projects:

(1) The pilot project in Balikh to irrigate 20,000 hectares. By 1975 to 1976 there were 16,080 hectares under irrigation or under crop, and by 1980 the remaining 4,000 hectares are expected to be developed. However, severe gypsum problems have arisen with the local collapse of canals, which may make necessary the withdrawal of some lands.

(2) The Model State Farm in Maskaneh with 2,000 hectares under irrigation. Another 2,000 hectares will be added by 1980. In addition 17,000 hectares are expected to be developed by 1980 for other state farms.

(3) A Romanian project of ROMAGRIMEX in the Middle Euphrates involving irrigation of 27,000 hectares to be finished by 1980.

(4) In the Balikh Basin Section I financing has been obtained for 10,000 hectares which could be under irrigation by 1979.

(5) Studies have been completed for two other areas: 30,000 hectares in the Lower Euphrates Valley (French study) and 15,000 hectares in East Maskaneh (Japanese study). Financing for these projects has not yet been committed and, even if it were, they would not be finished by 1980.

7.27 The conclusion is that under the most propitious circumstances the maximum new irrigated area expected by 1980 in the Euphrates Basin would not exceed 60,000 hectares. A more realistic estimate would be 40,000 hectares. The figure in the Plan of 135,000 new irrigated hectares is, of course, unrealistic and the figure of 53,000 hectares for irrigation projects in the rest of the country is also questionable. These reservations are by now widely shared in Syria and it is becoming evident that the undiscriminating development of the whole Euphrates Basin, as initially planned, may not be an economic proposition--not even technologically feasible--in the short run. In any event, no more than 20,000 hectares of new lands a year can be developed under the best of circumstances.

7.28 The cropping intensity prescribed in the Plan varies for irrigated and rainfed land and by stability zone. An overall cropping index of 160 for irrigated lands will be difficult to achieve since it differs significantly from current practice. The 167,000 hectares of previously irrigated lands in the Euphrates Basin, for example, still grow only one crop a year, roughly consisting of 50 percent cotton and 50 percent wheat-barley rotation. The major problems that restrict more general double-cropping are soil salinity and lack of labor. The rainfed areas of Stability Zones I and II are also planned to achieve an overall cropping index of 100 and 70, respectively. Yet of the 3,529,000 hectares of rainfed land under cultivation in the two zones, only 1,958,000 hectares were cropped in 1975, achieving a combined cropping index of 55 (1,958 as a percentage of 3,529).

7.29 The overstatement of the prospects for yield increases in the Plan can be demonstrated with the example of cotton, one of the most dynamic crops of Syrian agriculture. Unstinting local research made substantial increases in cotton yields possible: from 1.3 tons per hectare in 1962, to 1.6 in 1971 and to 2.0 in 1975, with the best-quality land yielding as much as 2,350 kilograms of seed cotton per hectare (2,097 pounds an acre) in 1975. This places Syria among the six countries having the world's highest cotton yields.

7.30 The dramatic increase in yields by 58 percent in just over a decade, and especially the 25 percent increase since 1971, was due to the progressive switch from varieties of Carolina Queen to Aleppo I varieties. As a result, the area under cotton has decreased by about 33 percent from the 1962-63 high of 300,000 hectares with no decrease in total production. Cotton yield increases at such a rate cannot of course be expected to continue in the future. First, by 1973-74, 97 percent of the cotton area was already planted with Aleppo I varieties. Further yield increases will have to come from the Aleppo 40 varieties which will at best result in a marginal improvement in yields of no more than 7 percent. Second, to the extent that the marginal

lands have already been withdrawn from cultivation, the contribution of irrigation or fertilization to increased cotton yields will be more modest in the future. As a result, the Cotton Bureau estimates that at a maximum the average yield by 1980 will be 2,300 kilograms per hectare with the best-irrigated lands yielding as much as 2,500 kilograms. The target of the Plan for cotton yields is, therefore, unrealistic.

7.31 The problem of labor shortages has been mentioned above and employment in general is the subject of Chapter 4. Here it suffices to mention that the problem of availability of labor and labor requirements for agricultural production is entirely overlooked in the Plan, and has been traditionally neglected in Syria. Various labor force statistics are available, and reported elsewhere, but agricultural employment and labor balances have never been estimated, nor has labor utilization been assessed by farm management studies. This area represents one of the weakest points that might make planning for Syrian agriculture entirely futile. The need for new research and data in this area is especially pressing since there is growing evidence, reflected in public statements and policy measures, that the agricultural sector is plagued by bottlenecks and even chronic labor shortages that reach crisis proportions. There is evidence that development of the newly-irrigated lands has been hampered by the reluctance of farmers to leave their present villages for the low wages paid to hired labor on state farms (SL 6 to 12 a day). Even where new lands have been distributed to private farmers, impressionistic evidence and casual empiricism suggest that the social motivation and incentives requisite to build successful agriculture have not been provided. Many newly-settled farmers, therefore, soon become absentee landlords.

7.32 The approach to retaining labor on the farms must be built around increasing agricultural productivity and improving the quality of life. The village, especially the new villages established on lands where nothing existed before, must become organized social units, as distinct from a collection of bare and minimal housing facilities. This takes time and education, but must be started immediately by bringing, as a minimum, the public facilities, the roads, the lights (literally) and the trees to the countryside. The government has recently introduced administrative restrictions to stem the rural exodus. There is an attempt to channel the hiring of nonagricultural employees through the employment offices set up by the Ministry of Labor and Social Affairs in each province. This is coupled with the requirement that a worker must have lived in a particular province for a period of five years before he can register at the employment office. Such administrative devices can only be considered as short-run, stop-gap measures and are bound to fail unless positive reinforcement is provided for staying in the rural areas and working in agriculture.

7.33 The relationship between the targets of the plan and the instruments available to the planners for its implementation revolves around Law 14 of 1975 and the crop rotation scheme. Licensing control of the farmers of irrigated land and of land in Stability Zone I, where mean annual rainfall exceeds 250 millimeters (10 inches), is the major means for enforcing compliance with the crop rotation scheme. Two problems arise in connection with such licensing. First, the cost of enforcement is prohibitive. Second, full compliance with

the rotation scheme of the respective provinces would result in fragmenting farmers' fields into small parcels where a large number of unrelated crops are cultivated. The resulting physical diseconomies of scale constitute a strong incentive for the farmers, especially the small ones, to avoid licensing in order to evade these consequences of the scheme. Presumably in recognition of these constraints, farmers with less than 2 hectares are exempted from the licensing requirements. This exception applies to a large number of farmers since 26.8 percent of all holdings are under 2 hectares (averaging less than 1 hectare each), but they represent only a small portion of cultivable land, 2.3 percent of the total area held by farmers. One can assume that on the better-quality lands where the rotation scheme applies, the area in farms of less than 2 hectares is greater than the national average.

7.34 The other main policy instruments for implementation of the crop rotation scheme are the provision of inputs on credit by the Agricultural Cooperative Bank and the price policies. Both are severely constrained. Added to the problems with enforcement of licensing, these constraints make successful enforcement of the crop rotation scheme very dubious.

7.35 The Agricultural Cooperative Bank is the sole institutional source of agricultural production credit (see Volume 3, Annex 2). Furthermore, it has a virtual monopoly in distribution of fertilizer, insecticides and seed. As, according to Law 14, credit will be allocated only to licensed producers, the bank will exercise major power over the implementation of the crop rotation scheme. In that context the Annual Agricultural Production Plan for 1976/77 provides that new loans to the amount of SL 391 million will be made to agriculture, representing a 49 percent increase over 1975 (see Table SA 7.27). Of this total 70 percent will be in kind, as compared to 40 percent in 1975. It is doubtful that the bank can raise the capital necessary for such an increase in its volume of loans, and even if it can, it is questionable whether it has the facilities and the experience necessary to assume the burden of enforcing the crop rotation scheme.

7.36 The discharge of those duties of the bank that are not purely financial has suffered in the past from the existence of severe bottlenecks in distribution of fertilizer and their inputs, as there have not been enough warehouses to cover the whole country. This and the problem of limited capital resources have been reflected in the limited number of crops that received credit. The greatest share of financing, more than one-third of total loan volume, has been going into cotton (see Table SA 7.29). A swift expansion of the bank's facilities to permit provision of comparable inputs for other crops would probably be very difficult, even if the financial resources become available. Furthermore, one-third of the bank's loans in the past have gone to cooperatives, a small share to state farms, and the balance to private farms. For the implementation of the crop rotation scheme a much increased share would be required for private farms, according to their importance in production, and it is doubtful that the institutional mechanism for such a switch already exists. Finally, the logic of the crop rotation scheme excludes from financing, and therefore from the provision of fertilizer and other inputs, small farmers with fewer than two hectares, or farms on rainfed land

in Stability Zones III and IV, where mean annual rainfall is less than 250 millimeters (10 inches). This will be a major limiting factor for the expansion of agricultural production.

7.37 Prices play a very limited role in the implementation of the Plan by virtue of the fact that they are not allowed any flexibility. Prices of fertilizer and other inputs are fixed at generally low levels that benefit the farmer. It is estimated, for example, that the subsidized price of fertilizer to the farmer is about one-half its import cost; on the other hand, the price of Euphrates tractors, produced at the state factory, seems to be about 75 percent higher than the equivalent world price. Most farmers, however, are unable to take advantage of low prices because the inputs can only be obtained in conjunction with Agricultural Bank credit, which is in very short supply. Producer prices are also fixed, well ahead of planting season according to Law 14, at levels corresponding to the "theoretical cost of production" plus 10 percent profit. Fixing prices in this manner allows for variation in profits of individual farmers, depending on whether they are above or below the average efficiency level. On the other hand, as most agricultural commodities (with the exception of fruits, vegetables, milk, meat and poultry) are "vital commodities" in which the state, through the respective General Organizations, has the exclusive marketing monopoly, rigid prices do not permit automatic free-market adjustment of prices in the course of the year to compensate for any miscalculations or failures associated with the Annual Production Plan. Therefore, when the implementation of the physical plan falls short of the target, the adjustment in supply is made by increasing imports. On the other hand, when the Plan's target has been overfulfilled (as was the case with lentils in 1976) the state expenditure on a specific commodity is greater than budgeted and the adjustment is made by fixing the price at a lower level in the next crop year.

7.38 There is no quarrel with the de-emphasis of the free-market mechanism in Syrian agriculture. This follows the policy imperative of a socialist state that prices must be set on the basis of need for the consumer to be able to buy food for an adequate diet and for the farmer to be able to cover the costs of production. After all, abrogating the role of the unbridled market mechanism with respect to certain commodities (be it through taxes, subsidies, or price controls) may be an operational way of approaching the "basic needs" strategy of development. Nevertheless, one would like to consider prices as just one of the policy instruments available to planners in pursuing the targets of the plan. From this viewpoint, the combination of fixed crop allocations and fixed prices results in an overdetermined system that allows little freedom either to the planners or to the farmers. This is the basic analytical deficiency of the Syrian Agricultural Plan. Combined with the operational deficiencies discussed above--the levels at which the targets were set and the limitations on resources available--it makes implementation of the Plan less feasible.

7.39 Subject to the feasibility of the Plan, the subsidiary question of consistency arises. In relation to prices, it can be formulated in a number of ways: are the given prices likely to provide the incentives necessary to meet

the projected production targets in various sectors, such as livestock production or citrus production? The other side of the same coin is the question of whether the projected output for certain commodities can be absorbed at the prices that are taken as given. This question is of special importance in the case of livestock for the domestic market and of citrus for the export market, since dramatic production increases have been planned for both commodities. Similarly are the postulated prices consistent with the intercommodity substitution that the planners have projected, such as the substitution of sugarbeet for cotton? Similar questions arise in relation to resource availabilities.

7.40 The rigorous way to address these issues would have been to start from a sectoral planning model for agriculture and to perform tests of optimality, feasibility and consistency. This however is impossible since such a model does not exist. Our task, therefore, in the next chapter where these questions will be raised, will have to be limited, ad hoc, and inevitably impressionistic.

FUTURE PROSPECTS

7.41 The preceding evaluation of the Fourth Plan may sound unduly harsh. It is nevertheless realistic, and it is to the credit of Syrian planners that they had realized the fact even before the start of the Plan period. A long debate over the Fourth Plan started in 1975 as the binding constraints within which the Syrian economy since operates became evident. Among these constraints are: the foreign exchange situation which emerged following the drastic decrease in aid from Arab and Eastern Bloc countries; the foreign debt resulting from borrowing policies followed in the past; budgetary considerations; the threat of imported and home-produced inflation; and administrative resources insufficient for extensive exercises in command planning. This debate culminated in the reorganization of the State Planning Commission by Decree number 280/W of November 25, 1976 and in the decision to introduce the Fourth Plan in the People's Assembly to have it ratified on an interim basis, until a new document is prepared. Simultaneously the decision was made on the highest level to cut expenditure on the Plan drastically by shifting all new projects into the "reserve" category and proceeding only with ongoing projects that are continuing or have already been contracted for. The effect of this change is that the targets of the Plan can no longer be considered binding on policymakers. What is even more important, however, is that Syria is currently poised for a basic change in planning approaches, within the context of pragmatic socialism. The end result of this process will not be clear for quite some time but there are some indications of what this change may involve. Important hints in connection with the current rethinking of the institutional economic framework were provided in the Prime Minister's speech of October 1976 to the People's Assembly and in the Symposium on Syrian Agriculture that was convened in Damascus from February 19 to March 1, 1977, and at which the Prime Minister also spoke.

7.42 The impetus for the reexamination of agricultural planning policies has been provided by concern about the sector's development record and by the need to increase self-sufficiency and reduce food imports. In the above-mentioned speeches, the Prime Minister emphasized the need for giving priority

to agricultural development with the view of "doubling the rate of agriculture's participation in national income." It was emphasized that this task may be especially difficult for agriculture which greatly depends on the participation of large numbers of farmers, on their motivation, training and persistence. As a result, it requires good planning and a long horizon--more so than would have been required for the development of industry, for example. The emphasis, therefore, is on reaching a more advanced and scientific level of agricultural planning and on examining more carefully the control variables which can be activated.

7.43 The position that the public sector has claimed as the leading sector in the previous plans was noted and lauded. Certain disappointments with the state farms, the agricultural cooperatives and some government organizations, like the General Organization for Cows and the General Organization for Poultry, were frankly discussed. It appears that the approach being considered is two-pronged. First, it would strengthen the public sector with emphasis on areas of comparative advantage, without necessarily undertaking any new drive to expand it considerably. Second, it would complement the role of the public sector by promoting plan participation by the private sector and encouraging private capital investment in agriculture.

7.44 It appears that this new emphasis on the private sector is intended to take advantage of individual initiative, of private knowhow and of private capital. It would attempt to channel the gains that have been made in the years of rapid economic growth into agriculture, instead of having them go to construction, to speculative activities and to consumer-good imports. To this effect there has been mention of allowing private companies to engage directly in imports of agricultural machinery, and there has even been an invitation by the Prime Minister to Arab and other friendly countries to invest in Syrian agriculture, either directly or through joint ventures. The role of the private sector would be mainly on the production side, where encouragement through pricing policies would receive special attention. Farmgate producer prices for agricultural products are considered generally low, and new pricing guidelines are suggested that would yield a 20 percent return above costs instead of 10 percent, hitherto the rule of thumb. Of the resulting value added in agriculture, 50 percent would go to compensation of labor and 25 percent to return on capital. On the marketing side of agriculture, however, involvement by the private sector has come under attack in instances of speculative profits, as in the case of such perishables as milk, meat, vegetables and poultry. The intention is to set up General Organizations for the marketing of such commodities. This we believe is not of the highest priority for Syrian agriculture. First, the record of private trading in such activities seems in general to have provided substantial incentives for increases in production, as in the case of poultry and eggs, while state marketing has suffered from operating below capacity, at low levels of capital utilization, and has been plagued by deficits, as in the processing and marketing of milk produced by state farms and cooperatives. Second, marketing of perishable commodities would require substantial investment in refrigerator facilities and refrigerated vehicles. The state can more profitably invest these funds in other agricultural projects with higher returns.

7.45 There is some evidence that the production activities of the public sector may be more sharply focused in the future. The substantial increase in the number of state dairy farms, for example, that was contemplated in the initial draft of the Fourth Plan will be scaled down, while cattle will be distributed to private farmers and financed by five-year loans at 5 percent annual interest.

7.46 Agricultural research and extension received special emphasis, and the recommendation was to reestablish the Directorate of Agricultural Extension Service in the Ministry of Agriculture and Agrarian Reform. Should this come to pass, it would also represent a reversal of policy, as extension had been specifically entrusted to the state farms and cooperatives since their inception ten years ago. This measure could have considerable impact, as 90 percent of agricultural holdings are outside the State Farms and Agricultural Cooperatives.

7.47 A large number of other agricultural development policies, which signal a change from the past, have also been mentioned. The functioning of (GADEB) 1/ is being viewed with considerable skepticism and the validity of the policies for reclaiming the lands of the Euphrates Basin at full speed and at all costs was questioned. Alternatives suggested include first extending cultivation on the inframarginal lands around Aleppo and emphasizing dryland (rainfed) and arid zone agriculture by building surface dams, promoting animal husbandry, and protecting pasture. Finally, there has been mention of reorganizing the Agricultural Cooperative Bank to place more emphasis on medium-term and long-term loans for agricultural development.

7.48 One conclusion that can be drawn from the discussion above is that there is general concern about the record of agriculture and that the sector is receiving new emphasis and top priority. This is also evidenced by the creation of the Supreme Agricultural Council under the chairmanship of the Prime Minister and that of a Committee chaired by the Deputy Prime Minister to process the recommendations reached at the Symposium.

7.49 It would, of course, be premature to interpret the stirrings we have mentioned as new imperatives of agricultural policy; and it would be foolhardy to conclude that Syrian agriculture is about to be thrown to the mercy of unbridled market forces. It is more likely that what the present rethinking of economic policies and institutions signifies is that Syria is at the crossroads of evolution into pragmatic socialism. The Fourth Plan for Agriculture and Law Number 14 have been steps in the direction of greater regulation and comprehensive planning of the agricultural sector, presumably with the view to eventually place more lands under state farms or other collective forms of organization. Agricultural planning as of 1977 reflects the Syrian Government's efforts to build the development of agriculture on the points of strength, instead of reinforcing foundations on the weak points, and the search for an eclectic approach to agricultural development.

1/ General Agency for the Development of the Euphrates Basin (GADEB).

CHAPTER 8

STRATEGIES AND POLICIES FOR AGRICULTURAL DEVELOPMENT

8.01 Successful integration of the agricultural sector into the growing Syrian economy will encompass at least three aspects. First, agriculture can make a contribution in reversing the drain of foreign exchange that now takes place in importing food and raw materials. Second, agriculture can develop linkages with the other sectors of economic activity: so-called backward linkages through the purchase of agricultural inputs from other sectors and forward linkages through the supply of agricultural raw materials to the processing industries for domestic consumption or export. A commonplace of development is the agricultural squeeze by which earnings skimmed from agricultural production by means of such devices as compulsory deliveries, disparate sectoral pricing, labor migration, or outright taxation go to augment investment, incomes, and ostensible productivity in the other sectors of activity. Most of these mechanisms appear to have been at work in Syria, although statistical evidence is scant. The third imperative for successful future development in agriculture will be to reverse the flow of net investment so that by growing at a more rapid rate than total gross domestic product, agriculture may increase its structural share in national income.

POLICY OPTIONS ON LAND UTILIZATION BY REGION

8.02 Greatly intensified land use has been chosen as a major strategy for achieving the overriding agricultural objective of increased production. This may require regional strategies involving an intricate weighing of options on the environment and technology to evolve the patterns of land utilization that will give high yields without destroying the ecological balance. The geographic pattern of agricultural growth is greatly influenced by the regional incidence of rainfall and temperature. There is substantial variation in mean annual rainfall among the major agroclimatic stability zones used by Syrian officials as a reference base for agricultural planning (see map at front of this volume). There are also several subzones that can be used to describe more precisely local climatic conditions, potentials and constraints (see Table 8.1).

8.03 The humid and semi-humid areas are the major source of fruit and vegetables. Output in these areas has expanded rapidly and exports of fruit are now being undertaken on a limited scale. The semi-humid areas in the far north have also become limited suppliers of livestock fodder.

8.04 The semi-arid areas are currently devoted primarily to a system of rotation of crop and fallow, with wheat the dominant crop. Recently, incentives have been supplied to add lentils to the rotation as an alternative to wheat. Plans are also being made in the areas with mean annual rainfall of more than 400 millimeters (16 inches) to engage in continuous cropping

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This chapter draws upon the work of Mr. Pan A. Yotopoulos (Consultant).

Table 8.1: DESCRIPTION OF MAJOR AGROCLIMATIC ZONES AND SUBZONES

Stability Zone	Subzone	Mean Annual Rainfall (mm)	Mean Annual Rainfall (Inches)	Area Cultivated 1976 (Thousand Hectares)	Description
Zone I	1. Humid	over 800	over 32	76	Topography of gently rolling to mountainous; deciduous fruits and vegetables grown with terracing; difficult terrain but substantial improvements in management and marketing possible.
	2. Semi-humid	500-800	20-32	602	Coastal region, northern Syria; has high potential along coast for vegetables and fruits. Northern areas easily convertible to continuous cropping. Yields well below potential, higher fertilizer applications on all crops possible. Opportunities for the construction of small-scale catchment reservoirs some additional well irrigation also feasible.
	3. Semi-arid A	350-500	14-20	828	Area of high potential for traditional dryland crops; continuous cropping possible in much of the area; yields below potential; modest fertilizer dosages profitabl
Total, Stability Zone I:				1,506	
Zone II	4. Semi-arid B	250-350	10-14	1,945	Area will probably remain under crop-fallow rotation; not clear that clean fallow[a/] will pay, limited opportunity for increasing fertilizer; herbicides likely to be profitable on wheat.
Zones III, IV	Arid	under 250	under 10	2,035	Grazing areas will need regulation if productivity is to be improved; current demands are eroding the environment; buffer stocks of fodder are needed to assist in reduction of average herd size. Major Euphrates Basin irrigation projects in this area.

a/ For a definition of clean fallow, see para 8.17.

Source: World Bank.

with either lentils or fodder legumes in the rotation to restore the soil nutrients.

8.05 The arid areas of Syria are devoted primarily to nomadic grazing. Sheep, the most important stock, number about 6 million head, and goats rank second in importance with approximately 800,000 head--excluding lambs and kids (see Table SA 7.17).

8.06 Irrigation is practiced in all zones. The largest project, the Euphrates Basin, lies in the arid and Class B semi-arid areas. Another large project, the Akkar Plain, lies in the semi-humid zone along the coast. Small-scale irrigation schemes (catchment reservoirs, low-lift pumps, and wells) contribute nearly half the total irrigated area, and are found in many parts of the country. Of particular importance for a growth strategy in which a rapid development of small-scale irrigation played a part would be a more systematic exploitation of groundwater in the areas around Aleppo and the Akkar Plain along the coast.

8.07 The country is considered to have a Mediterranean climate with the usual pattern of rain during the winter followed by a long dry summer. However, in Syria the distribution of annual rainfall is unusually concentrated in the December-April period. The result is that in all cultivated areas, except the more humid parts with more than 500 millimeters of precipitation, plant maturation is often inhibited by an exhaustion of soil moisture in early summer.

8.08 An example of the general problem is found in the typical semi-arid region around Aleppo. The moisture content of the soil reaches its peak in early February after the substantial rains that ordinarily occur in the months of December and January. The accumulated moisture is then dissipated rapidly and by early April, the normal flowering period for wheat, available soil moisture is approaching zero. Maturation of the plant takes place during May and early June with very little moisture present.

Potential for Increasing Output in Rainfed Agriculture

8.09 The draft Fourth Five Year Plan quite properly placed high priority on increasing the output of dryland (rainfed) agriculture where there is adequate rainfall for increasing cropping intensity. These areas coincide roughly with Stability Zone I, having mean annual rainfall of more than 350 millimeters (14 inches).

8.10 A part of the rainfed area has, of course, much more than 350 millimeters of precipitation. For example, the Akkar Plain lying between the sea and the coastal range varies from 800 to more than 1,000 millimeters in the higher elevations. Currently, the area is the major supplier of fresh vegetables and fruit, including citrus. Because of the strong demand for such income-elastic (responsive to increased income) commodities (and the absence of price controls), it is estimated that supplies have increased by seven to eight percent a year in recent years.

8.11 A major irrigation project scheduled for the Akkar Plain will undoubtedly provide a significant stimulus to regional growth in the future. In the meantime, however, there are several short-run, high-payoff developments that would further accelerate the coastal region's potential. Most important would be the provision of assistance in tapping groundwater sources to provide supplementary irrigation during the summer. Even in the relatively high-rainfall areas along the coast, precipitation ceases in May, leaving problems of winter cereal maturation and inadequate moisture for spring plantings of warm season vegetables.

8.12 Management practices at the farm level also need improvement. Yields are low when measured against the standard of other Mediterranean countries with similar climates. Marketing methods are rudimentary and if the export potential of the area is to be realized, they will have to be systematized to insure better quality and delivery standards, even for regional consumption. In the absence of the private grower organizations that have developed in competing countries over time, additional efforts need to be made in improving the spread and efficiency of cooperatives. The Lebanese crisis has given Syria's fruit and vegetable industry an important impetus. However, as the regional situation stabilizes, competition with Lebanon, Jordan, and other Near East suppliers will place a premium on improving marketing and distribution activities.

8.13 The greatest potential for increasing agricultural output in the northern semi-humid and class A semi-arid lands lies in increasing cropping intensities. There is no technical reason why annual cropping should not be introduced in the areas with more than 350 millimeters of rainfall. At this level of precipitation, increases in fertilizer dosage on improved wheat varieties, especially in areas above 450 millimeters, will yield respectable returns. Based on evidence from the wheat improvement programs in neighboring Turkey and Jordan, the use of herbicides to control weeds in wheat is likely to have even higher rates of return.

8.14 The crop rotation program launched under Law 14 of 1975 emphasizes intensification, which is highly desirable in itself. However, as noted in Chapter 7, the potential cropping systems have not been evaluated in economic terms. An example of this failure is relevant to regional development policies with respect to the cereal-fodder rotation. Not only is the agronomic desirability of such crops as vetch subject to question, but the cost of transporting the hay to consuming centers raises important issues regarding the extent to which the northern region has a comparative advantage in producing fodder. Within the cereal-legume rotations, there are also several potential sequences that need evaluation. For example, it may well be that despite the relative decline in yields of wheat-wheat sequences, such a cereal-oriented rotation would produce higher returns than the simple alternation of wheat and lentils.

8.15 Efforts to increase intensities will, of course, require additional inputs. Ordinarily, doubling the cropped acreage does not require doubling the tractor and implement complement. However, in areas where "weedy" or uncultivated fallow is the usual practice, the increase in tractor and harvester numbers will need to be substantial. Crucial also will be the more

widespread use of tillage and seeding equipment that will produce a relatively level field so that labor constraints in lentil harvesting and hay making can be alleviated through further mechanization. Currently, seedbeds are so rough that subsequent mechanical operations are very difficult to perform well. Uneven fields also cause excessive breakage of equipment, therebv raising down-time and the costs of production.

8.16 How the additional mechanical inputs are to be provided is an important decision facing the Syrian government. It would be natural to strengthen the cooperatives that are already serving many of the villages and either to create the basis of an expanded form of communal tillage for those operations best performed by tractors or to provide tillage services on a rental basis. It must be recognized, however, that placing the control of equipment in the cooperative sector will necessitate reorganizing the cooperative structure that has been faltering, and will take a substantial increase in material and human resources. A comparison of the private machine shops found in virtually every town in Syria with those being maintained under government auspices provides a substantial contrast in capability and efficiency. Such comparisons do not necessarily argue for enlisting the private sector in the care and maintenance of equipment, but they do indicate that the public sector performance will need to be upgraded considerably if the goal of substantially increased cropping intensities is to be met.

8.17 The technical and economic potential for increasing output in the semi-humid and class A semi-arid areas is assured. The potentials of the class B semi-arid areas (250-350 millimeters) are more difficult to assess. In other semi-arid areas, substantial increases in the yield of winter cereals have been obtained with an extensive program of fallow tillage. However in the Middle Eastern environment, these procedures have not been as successful as they were in the Pacific Northwest or in Australia. The practice of clean fallow, in which moisture is carefully controlled in the fallow year to permit early planting in the cropped year, is complicated by at least three important factors: soils, the short period over which the annual rainfall occurs, and the high summer temperatures. The net result is that a question remains regarding the extent to which moisture conservation practices that have proved so beneficial in semi-arid zones in other parts of the world are applicable in Syria.

8.18 The economics of clean fallow are further complicated by the value of so-called "weedy" fallow for the maintenance of animals. Given the lack of fodder during certain times of the year in the arid steppes, weeds growing in cultivated areas represent an important component of the current livestock system. Unfortunately, on the other side of the ledger, experiments in Syria and elsewhere have shown that the appearance of weeds in the cereal crop substantially reduces yields. An extreme example is barley which is commonly severely infected with sinapis. This may explain why the growth in its yield is often not significantly different from zero (Table SA 7.6). Clean fallow is an important element in weed control and, particularly in the absence of well-managed applications of herbicides, the benefits of weeds to animals may

be outweighed by their adverse effect on yields. (The economic returns to clean fallow systems is high on the research priorities of the new International Center for Agricultural Research on Dry Areas (ICARDA) to be located near Aleppo.)

Potential for Developing Irrigated Agriculture

8.19 Syria's basically Mediterranean climate with its long dry season rewards the development of water resources for irrigation. Until recently, the highest priority had been given to the implementation of projects connected with the Euphrates Basin. Such projects still receive the bulk of the resources committed to agricultural development, but planners are also considering raising the priority of other types of small-scale high-payoff projects aimed at rehabilitating low-lift pump schemes and exploiting groundwater potential.

8.20 An example of the change in emphasis is the Akkar Plains proposal being studied by the government in 1977. Comprising some 20,000 hectares of arable land, the Plain is ultimately targeted for surface water development. In the meantime, however, a program is being contemplated that would provide for additional groundwater development in the area. Doubling and tripling of yields is not unusual for warm season crops grown under irrigation. Drilling additional wells would minimize the costs of the distribution system and the lengthy delays that inevitably accompany major construction works. They also provide the kind of precise water control that is crucial to the successful production of fresh vegetables.

8.21 The Akkar Plain needs water. However, it also needs drainage, especially at the micro level. In many areas, surface water tends to collect in low-lying areas and, because of the relative impermeability of the black clay soils, it damages crops before it evaporates. "Bedding", the creation of raised beds on which plants are grown, has been found to be an effective antidote to this condition in other parts of the world and needs to be investigated in Syria. Fertilizer trials are also badly needed in the area. While black soils have a high latent fertility if properly managed, intensive vegetable production is demanding of soil nutrients. Currently, there is relatively little information available on optimum fertilizer use under sustained multiple cropping. Lastly, there is an immediate need for more and better windbreaks to counteract the strong winds that are characteristic of the coastal area.

8.22 Reconsideration of immediate priorities for investment in irrigation is quite properly being extended to activities in the Euphrates Basin. Currently, 20,000 hectares in the Basin are under cultivation in a series of pilot state farms. An additional 60,000 hectares are in various stages of construction and initial reclamation (see Chapter 7).

8.23 The difficulties that have been encountered in bringing the land into production are not unexpected and range all the way from the management of the individual production units to engineering problems arising from the high gypsum content of the soil. (It has been hard to keep channels and canals in working order when leakages dissolve the base on which the distribution system has been constructed.) There is also some question about the wisdom of the basin type of irrigation system that is currently in use. It does have the virtue of being relatively simple to operate but has the serious disadvantage of creating a series of ridges or bunds that are extremely hard on machinery and produce a high degree of variation in water application. Both foreign and local agricultural experts have recommended that additional resources be spent on the kind of micro-levelling that would make it possible to dispense with the basin system. Given the improvements in irrigation efficiency that would result, as well as the improved performance of the implements and equipment assigned to the project, this suggestion is well worth detailed investigation.

8.24 The relatively low productivity of the pilot projects is as much a function of the scarcity of skilled planners, farm managers, and equipment operators as anything else. This suggests that serious consideration should be given to emphasizing activities that improve the capacity of the projects already constructed rather than attempting to accelerate further large-scale capital investments. There is no doubt about the desirability of eventually irrigating at least a goodly proportion of the 600,000 arable hectares that lie within the Basin. However, there is much to be learned about the most appropriate approach to farming systems in the current project area. Developing a firmer foundation of knowledge concerning optimal long-run cropping patterns as well as on the best approaches to the more immediate problems of reclamation would appear to have a high payoff. A similar argument could be made concerning the provision of additional training activities that might be associated with the areas already under cultivation.

8.25 One of the most interesting developments in the area of irrigated agriculture relates to groundwater exploitation in the Aleppo Plain. Wells are being sunk in substantial numbers and roadside observations indicate that some farmers are introducing sprinklers. These are used primarily for summer vegetables, vines and melons, although in bad years wheat and lentils are irrigated during the maturation period. The overall potential for a rapid expansion of this form of development is currently being hampered by a lack of knowledge concerning the recharge capacity of the local acquifers. Estimates of the groundwater situation range from "abundant" to "relatively limited", but judging from the rate at which wells are now being sunk, additional study of the area's water balances should have a high priority.

Potential for Range Management and Livestock Production

8.26 Improving the productivity in the arid grazing areas presents a conundrum characteristic of all unregulated pastoral regions. Significant deterioration of Syrian rangelands has occurred as a result of the encroachment of settled cultivation on the marginal areas with 200 millimeters mean annual rainfall, and the increasing population of people and animals on the remainder.

Experience with rangelands in other arid areas has shown that a deteriorated area has an amazing ability to recover when adequately managed. However, improvements have inevitably involved short-run reductions in use. This is particularly true when the rejuvenation program involves the seeding of atriplex and other nonindigenous drought-and-salt-tolerant plants. The establishment of these species requires that lands be withdrawn from use for a period of from two to four years depending on land quality and local precipitation. Moreover, after the vegetation is established, controlled grazing must be practiced. It is therefore unrealistic to expect that the benefits of a more effective integration of livestock and sedentary agriculture in Syria will be realized without a comprehensive range management plan and a substantial commitment of material, administrative, and political resources to implement it. Indeed, there is a real danger that responding to the perceived needs of the area's inhabitants--for example, by drilling wells so that the flocks do not have to trek so far to water--will only exacerbate the situation.

8.27 The same might be said of proposals to provide buffer storage of fodder against drought years. Such programs would indeed diminish the wasteful sacrifice of herds when, in a bad year, grazing is not available. However, if the reserve is not also accompanied by a management program that holds the total number of animals relatively constant, it may merely increase the rate of deterioration of an already overburdened ecology. On the other hand, reducing the fear of drought may also reduce the propensity of the Bedouins to build up herd size in anticipation of forced sales.

8.28 Rainfed cropping systems are dictated almost entirely by agroclimatic conditions. To some extent this is also true of livestock, the grazing activities on the steppe being a case in point. However, Syria has recently embarked on an ambitious program of expansion in production of milk, meat, eggs, and poultry. Because such facilities can be located with less concern about the agroclimatic conditions than crops, the issue of regional comparative advantage in agriculture becomes more crucial.

8.29 Until recently, it was assumed that substantial amounts of hay would be produced in the areas of northern Syria with more than 400 millimeters of rainfall. However, transportation costs from such areas appear to be prohibitive even if the technical difficulties of hay making are overcome. For example, the limited information available suggests that dairymen around Damascus are able to obtain fodder from nearby farmers at much less than they would pay if it were coming from, say, the Qamishliye area. This suggests that it may be necessary to develop livestock activities in the fodder producing area and ship high density products such as slaughtered meat, condensed milk, and butter to the major points of consumption.

8.30 Most livestock investments currently being planned are relatively intensive and rely on confined herds and flocks. However, increases in the output of certain types of livestock products could be brought about by an improvement in the integration of nomadic and sedentary agriculture. For example, if it were possible to reduce the grazing period and the density of

Bedouin flocks in the desert by treating them as an intermediate input into livestock fattening activities, it might be possible both to improve range management and to provide a low-cost source of young animals.

8.31 In a subsequent section we take up the question of the types of incentives needed to insure that regional comparative advantage is being exploited. The current policy of ensuring uniform input and output prices throughout the country clearly has adverse effects on the efficiency of resource use, however desirable its distributive effects might be. As long as transportation cost differentials among regions are not reflected in relative prices, efforts at regional integration will continue to produce sub-optimal solutions.

The Equity Impact

8.32 It is obvious that any set of development priorities will have differential effects in terms of the benefits conferred by region. With supplementary irrigation, substantial increases in cropping intensity and yields per hectare can be achieved in the high-rainfall areas. However, the same irrigation projects that have relatively quick payoffs, clearly create imbalances with those parts of the country having an unfavorable resource endowment. Equally obvious is the fact that investment expenditures applied indiscriminately to areas of low and high potential would have severe adverse effects on the productivity of investments. Experience in other parts of the world has shown that attempts to create participation in the country's development by ensuring equal development for all regions are prohibitively expensive.

8.33 There are several alternatives to equal development in all areas once the mobility of the human agent is recognized. Ordinarily, backward regions are also the last to receive the benefits of improved educational opportunities, social services and the like. As a result, migrants are poorly prepared to enter the job markets in the more rapidly growing regions and a cycle of relative poverty and low expectations is perpetuated.

8.34 In many parts of the world, especially in advanced industrial countries, exporting people and skills from the country's backward regions would have only the merit of a more efficient use of national resources. However, in Syria, as in many other developing societies, family and village ties remain strong. There is much evidence to suggest that those who migrate to growth centers in Syria or neighboring countries have consistently returned a substantial portion of their earnings to their place of origin. Indeed, in some countries of the Middle East, remittances from nationals working abroad form a major item in the country's balance of payments. Mechanisms for insuring some equity in income distribution among regions with disparate resource endowments are few; it would be well to consider how the strong family and territorial allegiances that exist in a traditional society can be used to support broad-based regional participation in development.

POLICY OPTIONS ON PRICES

8.35 Within any economic system, prices function at once as a mechanism for allocation of resources and as a mechanism for distribution of income. The efficiency and the optimality with which these functions are discharged by prices is only weakly, if at all, related to whether prices are free or controlled. It is a misconception based on the figment of perfectly competitive markets that a free-market system will automatically achieve allocative efficiency and distributional equity--even though equity may be narrowly defined as rewarding according to marginal productivities. In fact, prices may distort both the allocative and the distributive mechanism when, for example, they are systematically biased within an imperfect market framework so that the poorest socioeconomic groups happen to pay higher prices (for credit or fertilizer, for example) and receive lower prices (for output that they have to sell immediately after harvest). It is also a misconception that by rigidly controlling prices a planner will cancel the allocative and distributive functions they perform and will leave these to be discharged through other instrument variables, such as plan allocations and profits of public enterprises. In fact, fixed prices operate by default to create unplanned distortions both in allocation and in distribution.

8.36 The discussion in the previous chapter of the functioning of agricultural costs and producer prices within the planning mechanism in Syria made it abundantly clear that the role of prices is suppressed and an attempt is made to cancel their allocative function and to deemphasize their operation as a mechanism for distribution. The result has been an overidentified system that was not allowed sufficient freedom to operate. In this section we will examine more closely the allocative and distributive implications of the price system that exists in Syria, specifically for the agricultural sector.

The Institutional Framework

8.37 Of the four-tier price system described in Chapter 5 and its Appendix A, the categories that become especially applicable for agriculture are the ones under central control (direct and indirect) and to a limited extent the free-market price category. The producer prices of the majority of agricultural commodities are within the first category, fixed and centrally controlled. This system is enforced through state agencies (such as the Milling and Marketing Organization for Cereals) that become the sole purchasing and marketing agents for these commodities. The fixed producer prices apply at the central purchase points, of which there are several in each province. As an adjunct to the implementation of the system, private transport of these commodities across provincial boundaries is prohibited, and the state bears the cost of transportation from the collection points to the processing or consumption centers. The farmer, however, pays the cost of transportation to the collection points, and this free flow of commodities within provinces implies that there is a free market for these commodities within the provinces which has been recognized as a market that can cater to local use and that becomes operational when the controlled price is below the "equilibrium price".

Occasionally such trade transcends the limits of a province and an active black market develops. This, for example, happens with barley especially in drought years when demand is strong. Moreover, it is a simple extension of this system to have the local free market also cater to "border trade" for the provinces adjacent to neighboring countries, especially Lebanon, Jordan, Iraq and Turkey. Predictably, there are no data on border trade, but it appears that at times it is brisk, especially for live animals and also for commodities subject to price control at prices lower than those in neighboring countries, such as cotton, sugar and occasionally wheat.

8.38 A subset of these commodities that are considered "vital" receive a direct subsidy that makes their consumption price lower than their producer prices (see Chapter 6 and its Appendix 6A). Examples are bread, sugar, rice and vegetable oil. The consumer prices of the rest of these commodities vary, and in some cases, such as cotton, they are significantly higher than the producer prices.

8.39 Perishable agricultural commodities are the second category and on these free-market pricing prevails. They are typically fruits and vegetables, meat, milk, poultry and poultry products. The exceptions are meat, controlled to some extent in Damascus by a State Meat Marketing Organization which is the sole supplier of mutton to butchers; and milk produced by state farms and cooperatives, sold to the processing plants, which are all state-owned. This last exception creates an interesting oddity in Syria, since milk-processing plants work below capacity and sell their products, such as homogenized milk, at prices lower than the free-market prices for unprocessed products.

8.40 Agricultural inputs are generally subject to price control and some of them, like fertilizer, are sold to qualifying farmers at substantial discounts.

8.41 This brief description of the institutional framework is sufficient to suggest that the price structure in Syrian agriculture is enormously confused. There exist controlled prices of major commodities, with differentials added on for quality and as incentive payments--usually for early delivery to the collection center. There are controlled prices of inputs, with subsidization of credit (which varies for state farms, cooperatives and private farms), subsidies on certain inputs (such as fertilizer) and implicit taxes on others (such as agricultural machinery which sells at times at prices 75 percent above the equivalent prices in world trade). There are also consumer subsidies, black markets, capital rationing, uniform prices without respect to transport costs, and control over profit margins and wholesale and retail markups.

8.42 Examination of Table 8.2 suggests that controlled producer prices have been characterized by great stability, at generally low levels, for the greatest part of the past decade. Prices of wheat, cotton, barley, lentils and sugarbeet were virtually unchanged from 1967 to 1971. However,

the recent substantial increases in world grain prices have been reflected in a significant increase for these commodities in Syria as well, and prices have more than doubled since 1971, except for that of cotton.

Table 8.2: CONTROLLED PRODUCER PRICES FOR MAJOR AGRICULTURAL COMMODITIES, SYRIA, 1967-77
(Syrian Pounds per Metric Ton) /a

Year	Wheat	Cotton	Barley	Lentils	Sugarbeet
1967	250	800	200	-	-
1968	260	800	160	-	-
1969	265	800	168	370	65
1970	250-265	800	125-130	450	65
1971	275-335	800	175-230	400	68
1972	315-365	840	225-230	440	65- 70
1973	365-435	900	275-340	500- 530	80- 88
1974	440-500	1,150	350-380	600- 636	115-130
1975	532-570	1,350	400-455	1,150-1,250	125-140
1976	468-565	1,450	440-468	1,250-1,350	130-145
1977	500-545	1,700	440-468	1,000-1,100	130-145

/a For the dollar value of the Syrian pound, Table SA 3F.1. One Metric ton is equivalent to 1.102311 short ton or 0.984206 long ton. Prices vary by grade. Where a range is not shown prices are for most common variety and top grade and the average price would be somewhat lower.

Source: Ministry of Agriculture and Agrarian Reform.

The Resource Allocation Function of Agricultural Prices

8.43 One--and probably the weakest--aspect of the allocative function of prices appears at the international level and relates to the pursuit of a country's comparative advantage in world trade. In a world of foreign exchange controls, balance of payments deficits, and barter trade agreements, what appear as disequilibria in domestic and world prices have to be carefully studied--by calculating domestic resource costs or effective rates of protection--in order to draw the definite conclusion that resources are being misallocated. Such data do not exist for Syria. But even if they did exist and indeed revealed an actual disequilibrium, domestic price distortions, within limits, could still be justified by invoking the political objective of self-sufficiency or as an attempt to insulate the national economy from the vagaries of international trade and world price fluctuations. As a result, the small divergence of Syrian prices from world prices that shows in Table 8.3 is not considered alarming. Sugarbeet are the exception because the divergence is significant and especially since Syria has launched an ambitious program for increasing production which creates higher opportunity costs for domestic cotton production and which, if successful, is likely to overshoot

the self-sufficiency target and aim at exports of sugar at lower world prices and with uncertain market outlets. This case will be discussed in detail below. The cotton price to Syrian producers is significantly below world prices, with the difference representing a tax on producers that will also be discussed below (see Table 8.3).

Table 8.3: SYRIAN PRODUCER PRICE, WORLD PRICE AND RETAIL PRICES IN NEAR EASTERN CAPITALS, 1976

	World Price	Syrian Producer Price		Retail Price SL Per Kilogram			
	US$ per ton	US$ per ton /a	SL per kilogram	Damascus	Beirut	Baghdad	Amman
Wheat	110 /b	132	.52	.67	.70	.66	.38
Barley	103 /c	108	.42	.57	.59	.59	.32
Cotton	592 /d	372	1.45	-	-	-	-
Sugar Beet	21 /e	35	.41	-	-	-	-
Sugar	-	-	-	.85	1.23	1.71	1.22
Flour	-	-	-	.85	.62	.51	.46
Vegetable Oil	-	-	-	1.60	3.70	2.20	-

/a Internal price converted at SL 3.90 = $1.00.
/b November 1976 price f.o.b. USA.
/c December 1976 price f.o.b. Minneapolis for No. 3 or better quality.
/d Assuming a 30 percent ginning outturn and based on January-June 1976 average c.i.f. N.E. Europe for lint of equivalent grades to Syrian cotton.
/e Assuming 12 percent extraction and based on a December 1976 raw sugar price of 8 cents per kilogram f.o.b. Caribbean port.

Source: Central Bureau of Statistics; Ministry of Agriculture and Agrarian Reform.

8.44 The table's comparison of Syrian prices to those of neighboring Arab countries has some implications for resource allocation and income distribution. The producer prices of wheat and barley are lower in Syria, and so is the retail price of sugar. There are indications that there is substantial border trade in these commodities. This means that Syrian resources are misallocated and the Syrian consumers (and the state, through the General Organization for Sugar in the case of sugar) subsidize the consumers of the neighboring countries.

8.45 At the national level, the maintenance of uniform prices creates fundamental regional distortions and misallocations. The maintenance of regionally uniform prices for agricultural outputs and inputs throughout the country is laudable as an equity measure. Moreover, it is necessary, if centralized control and state marketing of agricultural commodities are to be made viable by eliminating the incentive for private trading. The mechanism

for the maintenance of regionally uniform prices is the elimination of transport cost differentials. Most commonly, government trucks are used for transporting agricultural commodities, without cost to the farmer. This creates severe bottlenecks especially in the harvest months, when farmers are allowed to use private transport and get a flat-sum refund that is actually lower than the cost of transportation. As a result of this system, the use of resources does not reflect a locational comparative advantage. For example, hay is trucked from the northern areas to the vicinity of Damascus in order to supply the fattening stations located there. It would, of course, have been cheaper if animals were fed to more acceptable weights close to the source of the feed supply and were transported to the consumption centers only for finishing purposes. Similarly, the regions closer to the population centers would have a comparative advantage in the production of perishables and commodities with high transport costs, whereas under the present system they are locked into fixed crop patterns with no regard to transport costs. A review of price and subsidy policies that would move the country in the direction of exploiting locational advantage ought to be high on the Government's list of agricultural priorities. Such policies, it must be noted, are not inconsistent with government control or ownership of the means of transport.

8.46 We have already noted in the previous chapter that prices are not generally used as allocation mechanisms in planning agricultural production, and this deprives planners of an important control variable. The example of fertilizer, among inputs, has been mentioned before, as being allocated on the basis of purely agronomic norms reflected in the input balances, and no flexibility is given to the farmer to use more or less as the individual conditions of his field would dictate on the basis of marginal productivity considerations. Water is another example of input that may be misallocated, as its price varies from SL 70 to SL 250 per hectare on the basis of the amortization cost of the waterworks rather than on the basis of usage and marginal productivity of the water. A similar case involves the rental of land, which varies from a nominal 5 percent of total output for state lands to 20 percent for private nonirrigated lands and 25 percent for irrigated lands (although different share arrangements are also common as long as they are not disputed by the contracting parties).

8.47 It is the physical targets of the plan rather than relative price ratios that are relied upon for determining substitution among commodities and the output mix. This poses two problems. First, the prices may be fixed at levels that are not consistent with the allocations prescribed by the plan, and as a result may provide an incentive to violate them. This is evidently a common occurence. In 1974 the declared objective of expanding wheat planting on irrigated land, at the expense of cotton, was accompanied by a contradictory decision to raise cotton prices relative to wheat in comparison with the previous year. Similarly, the current emphasis on sugar beet production at the expense of cotton is not coordinated in terms of relative prices and rates of return to the two commodities, as we will suggest below. The case of lentils, the price of which almost doubled between 1974 and 1975 and increased by another 10 percent the following year, demonstrated the responsiveness of Syrian farmers to price incentives. They abolished fallow and used lentils for 70 percent of their intercropped area to increase output by 100 percent

over the normal levels of recent years, thus creating costly carryover stocks for the Milling and Marketing Organization for Cereals. In view of this situation, the price of lentils was set 20 percent lower in 1977. These examples illustrate that central market control provides price stability at the cost of a considerable sacrifice of flexibility in the planning process.

8.48 The second problem that arises concerning the impact of prices on intercommodity substitutions is that the commodities which remain outside central control provide the only haven for unrestricted private initiative and may as a result reflect the forces of unfettered competition magnified. Fresh fruit, vegetables, meat to a certain extent and especially poultry have become dynamic branches of Syrian agriculture in the 1970s because they are largely free from centralized controls. Their contributions in increased output are welcome, yet serious concern has surfaced about the existence of huge profit margins; especially at the marketing level. Data do not exist to analyze profit margins, but if it appears that market pricing is a problem, it is unlikely that it will be solved through centralized marketing of these commodities. Besides the specialized equipment that the government would have to purchase for such marketing, it would also introduce delays, inefficiencies and non-market-clearing rigidities in the perishable commodities that can least afford them. An alternative approach that has proven successful in the experience of other countries is for the government to establish "model units" that compete with the private sector and thus set the effective price ceilings. Efficient state farms could serve as model units in production, setting the benchmark on cost levels, and they could also serve as research, experiment and extension stations to aid the modernization of private farms. State farms and cooperative marketing would complete the circuit by establishing profit margins and putting pressure on prices to stay within certain limits. This situation, however, may be beyond present capabilities in Syria. State farms are the laggards rather than the leaders in agricultural development and the experience with cooperatives has been disappointing in general. If these institutions cannot be revitalized to assume the "model unit" function, the present system is still the second-best alternative and the option of creating marketing boards for meats and vegetables would be an inferior solution.

The Income Distribution Function of Agricultural Prices

8.49 The distributive function of prices may encompass several aspects, such as intrasectoral distribution (among branches within a given sector of economic activity), intersectoral distribution (among sectors of economic activity) and income redistribution. It is discharged through taxes and subsidies that are built into the price system and through characteristics of the price system that are not "neutral" in their tax/subsidy impact on different social groups and economic sectors. Analysis of the distributive function of prices always poses difficulties, and especially so in Syria where a large number of prices are centrally controlled and many taxes and subsidies are concealed, both for consumers and for producers. The discussion that follows, therefore, will be more impressionistic than definitive.

8.50 The intrasectoral transfer takes place through administered prices of output to the extent that they diverge from market-equilibrium prices and through administered prices of inputs, as long as they vary depending on the input use. An example of intrasectoral transfer through control of the price of output is the case of cotton. The Cotton Board realizes a significant surplus through the substantial difference between producer prices paid and revenues received from export sales at world prices. Most of this surplus is returned to the general fund, from which in turn resources are drawn to cover input subsidies to agriculture. In effect the process implies that the more productive cotton subsector is "taxed" to subsidize cultivations of lower productive potential and projects of high administrative cost. This form of implied taxation of agriculture is broadly based since about 20 percent of all farming households are cotton growers and are subject to this "tax".

8.51 On the input side, the intrasectoral transfer favors the crops that qualify for preferential distribution of materials and credit. Similarly, state farms and cooperatives are also given preferential or subsidy consideration over and above that extended to private farms which are in otherwise identical positions. Another form of intrasectoral transfer has to do with the distribution of the factor incomes comprised in value added. The share of labor in agricultural value added in Syria has hitherto been estimated at around 30 percent which is lower than what one would have expected from comparable experience in other countries. Where employment in agriculture does not coincide with the ownership of land, as is the case for large operations or state farms, this squeeze of labor also has implications for personal income distribution that favors recipients of profit or rent. In the case of state farms and cooperatives this aspect is especially important since labor is paid roughly SL 10 per day, as compared to a wage rate in the private sector of SL 20 per day.

8.52 This transfer of surplus out of agriculture, which subsidizes the other faster-growing sectors of the economy, takes place through a number of instruments: compulsory deliveries, prices controlled below equilibrium levels, decline in terms of trade between agriculture and non-agriculture, taxes specific for the sector, and outflow to the urban sector of labor for which agriculture had borne the cost of sustenance and education. It appears that in Syria all of these mechanisms have been in operation. The agricultural sector has been a net exporter of capital to the rest of the economy. Any attempt, however, to assess the relative magnitude of these net flows from the agricultural sector would rest on unsupported assumptions concerning quantities of inputs and outputs and equilibrium prices.

8.53 Of special importance for the present discussion would have been the precise calculation of the price relationships between agriculture and other activities. This is impossible, however, because we lack detailed price information on the items that rural households produce and the sectors of origin of those they consume. If the conversion factors used to arrive at constant 1963 price series for gross domestic product originating in agriculture are calculated as a percentage of those used for GDP originating in industry, the following relationships emerge (prices in industry equal 100):

	1970	1971	1972	1973	1974	1975	1976
Agriculture	100.0	108.6	115.7	96.2	69.2	64.4	61.5

The inflation of industrial prices in relation to agricultural prices suggests an accelerated flow of surplus out of agriculture that, if not offset, will further stem the sector's growth.

8.54. Income redistribution takes place as producers are "taxed" by receiving lower than equilibrium prices and consumers are subsidized by the same stroke, with an added subsidy provided by the state when the consumer price is lower than the producer price, as is the case with the greatest number of "vital commodities" (see Chapter 6, Resource Allocation and Pricing). In this situation the producers become poorer by the amount of the "tax" while the consumers become richer by both the amount of the "tax" and the extra state subsidy. Inflation that may be caused by fiscal deficits to finance the subsidy can lead to another round of redistributive effects.

AGRICULTURE AS A LEADING SECTOR

8.55 The balanced development of agriculture within the growing Syrian economy would encompass at least three aspects upon which we have already touched. First, agriculture will benefit from the growth of the other sectors and will also contribute to their development through the creation of linkages: The backward linkages connect agriculture with the other sectors through the purchase of inputs; while the forward linkages make agricultural output available to other sectors as raw materials for further processing. Second, agriculture is also normally viewed as contributing "surplus", or investible funds, for the development of the other sectors of a growing economy. Our preceding analysis of the agricultural squeeze suggested that agriculture has most probably been drained for the benefit of the other sectors in Syria, and the exclusive emphasis on agricultural development in the Euphrates basin in recent years has starved agriculture for operating capital and has neglected alternative investments. A net capital inflow into the sector would be necessary in order to catch up and satisfy the unmet capital needs of agriculture. The third aspect of successful agricultural development consists of stemming the import of vital foodstuffs and raw materials and the ensuing drain of foreign exchange. The drive to self-sufficiency and the attempt to identify areas of "import savings" for the primary sector are at the center of this role for agriculture. The following paragraphs deal with this role of agricultural development.

The Drive for Self-Sufficiency

8.56 Achieving agricultural self-sufficiency is one of the development objectives in Syria, and in successive Five-Year Plans relevant targets for agricultural production have been set. Yet an aspect of the legacy of the past that has neglected agriculture is the underinvestment in data. No household budget studies have ever been conducted. As a result the notions about

price and income elasticities of demand for agricultural commodity groups are vague. The targets of self-sufficiency are commonly set on the basis of assuming population elasticity for food consumption equal to unity 1/ which is the best that can be done since consumption data do not exist and estimates of domestic disappearance 2/ on a commodity basis are derived as a residual. Similarly, farm survey studies have never been conducted and production elasticities, especially for labor, are totally lacking. As a result, the means for achieving self-sufficiency are usually described in terms of material balances that focus exclusively on land, machinery capital, and chemical-biological inputs.

8.57 The Syrian government should assign high priority to the collection of more detailed data at the farm and household level. Given the importance of administered prices for economic planning and for the conduct of social welfare policy in Syria, it is imperative that more accurate information be used about price and income elasticities of demand for agricultural commodities by socioeconomic group. These could form the basis for intelligent judgements on the extent to which manipulation of demand may enter the objective of achieving self-sufficiency. They would also form the basis for differentiating the subsidy policies for "vital" commodities so that only those socioeconomic groups whose basic needs would be unmet without the subsidy will be favored. Similarly, production elasticities at the farm household and agricultural commodity level would help decide the output mix of a viable self-sufficiency policy.

8.58 Over the two decades 1955-1975 the growth of agricultural output has not kept pace with population growth. Between 1960 and 1975 overall production of cereals grew by 1.4 percent per year, while population was growing by 3.3 percent per year. As a result Syria has turned from being a net exporter of cereals in the beginning of the period to importing substantial quantities of wheat.3/ The deficit in the basic foodstuff, along with imports of other agricultural products, such as fruits and vegetables and sugar has contributed directly to increased government subsidies and the worsening of Syria's international merchandise trade balance, and indirectly to the deterioration of the budgetary and balance of payments position. If these trends should continue, Syria's prospects for achieving self-sufficiency in food requirements (including cereals) while not impossible, do not appear very bright.

1/ The population elasticity for food consumption is defined as the ratio of percentage change in population, to that in food consumption.

2/ Domestic disappearance refers to domestic consumption, in the estimation of food balances.

3/ As an example, in 1963 Syria exported 181,300 tons of wheat and 401,800 tons of barley, whereas in 1975, despite a bumper crop, neither barley nor wheat were exported (Table SA3D.2).

8.59 An attempt to evaluate directly the prospects of Syrian self sufficiency in food by 1990 is hampered by the lack of data mentioned earlier and by the widely fluctuating record of agricultural production that makes the choice of a base period difficult. One set of projections, made by the International Food Policy Research Institute (IFPRI) suggests deficits of 41 to 52 percent of cereal consumption requirements by 1990 (see table 8.4). These projections are based entirely on international evidence which tend, however, to overlook the Syria specific situation, particularly with respect to production. As a result, the World Bank projections for self-sufficiency in cereals are based on the estimates of the International Food Policy Research Institute (IFPRI), as modified to reflect more accurately the Syrian situation. The assumptions made in World Bank projections are presented in detail so that the reader can do his own evaluation of the plausibility of the results.

TABLE 8.4: INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE PROJECTIONS ON CEREAL PRODUCTION AND CONSUMPTION PROSPECTS FOR SYRIA

A. The 1960-1975 trend data for 1975 was used as the basis of the projections instead of the actual 1975 data.

	1975	
in '000 metric tons	Estimated Actual	1960-1975 Trend Estimate 1/
Production	2,201	1,554
Consumption	2,445	2,000
Population	7,410	7,378

1/ The historical trend growth rates for 1960 to 1975 were derived from equations based on the log of the values:

1960-1975	Production	Area	Yield
Cereals	1.38	-0.22	1.60
Wheat	2.46	-0.07	2.53
Rice no data for 1960, 1971, 1972, 1973	4.29	0.02	4.09
Coarse grains, barley, millet, sorghum,...	-1.45	-0.97	-0.48

B. The 1990 estimates for production and consumption are:

	Consumption 1/	Cereal Production 2/	Deficit	Cereal production growth rate necessary to meet domestic cereal consumption demand
	'000 metric tons			
a. Constant 1975 per capita cereal consumption levels	3,257	1,910	1,347	5%
b. Low per capita income growth	3,482	1,910	1,572	5.5%
c. High per capita income growth	3,555	1,910	1,642	5.7%
d. Based on 110% of FAO per capita dietary requirements	3,991	1,910	2,081	6.5%

1/ The historical growth rate 3.3% per annum was assumed for the projection of population. Two per capita income growth variants were used for the projection of consumption:

A high variant based on a 1.5% per annum GDP/capital growth rate and a low variant of 1.125% per annum GDP/capital growth rate (i.e. 25% lower than the high variant).

2/ The historical trend growth rate of 1.4% per annum was assured for the projection of cereal production.

Source: International Food Policy Research Institute, Food Needs of Developing Countries: Projections of Production and Consumption to 1990 (Washington, D.C.: International Food Policy Research Institute, December 1977), Tables 19, 20 and 21.

8.60 In projecting production of cereals from 1975 to 1990 two alternative assumptions were made as to the base-year output. First, the actual 1975 output of 2,151 thousand m.t. is probably an optimistic base since it reflects the extremely favorable weather conditions of that year. Second, a more moderate estimate, the average of the years 1963, 1970, 1974 and 1975, of 1,759 thousand m.t. (Table SA7.42) was used.1/ The base-year output is assumed to grow at an annual rate of 1.38 percent, which is the trend value for the period 1960-1975. The results of the two alternative projections appear in Table 8.5.

8.61 The consumption of cereals was projected on the assumption of an annual rate of growth of population of 3.3 percent, which makes for a population estimate of 11,863,000 in 1990. The per capita consumption of cereals in 1975 was estimated on the basis of two alternative assumptions. First, by assuming per capita consumption constant at the 1975 levels. The actual value, however, of the 1975 per capita disappearance of 334 kg (Table SA7.42) is high by international standards and undoubtedly includes a quantity of cereals that leaks to "border trade" in a bumper crop year (see para. 8.44 above). As a result, the per capita consumption of 271 kg was used instead, which is the trend value of the 1960-1975 consumption base and assuming an annual rate of growth in per capita income of 3.0 percent and an income elasticity of demand for creals of 0.05.2/ These are the standard assumptions also used in the IFPRI calculations. The results of the two projections appear in Table 8.5.

1/ The base-year output of the IFPRI projections is the 1960-1975 "trend-line" output of 1,554 thousand m.t. This is considered an extremely low base.

2/ If the 0.20 income elasticity of demand based on FAO data (Table SA7.43) were used the magnitude of the deficit would be larger than estimated in the World Bank projections but still smaller than estimated in the IFPRI projections.

Table 8.5: WORLD BANK PROJECTIONS FOR PRODUCTION AND CONSUMPTION OF CEREALS, 1975-1990
(thousand metric tons)

1990	Constant 1975 Consumption per Capita /c	Production base 2151 /e	Production base 1759 /f	Consumption Function Estimate /d	Production Base 2151 /e	Production Base 1759 /f
Consumption /a	3216			3386		
Production /b		2641	2160		2641	2160
Deficit		575	1056		745	1226
Rate of growth in production required to cover deficit (percent per annum)		2.7	4.1		3.1	4.5

/a Annual rate of growth of population, 1975-1990, was assumed at 3.3 percent. The 1990 population figure is 11.9 million.

/b Annual rate of growth of production, 1975-1990, was assumed at 1.38 percent.

/c The base-year per capita consumption was 271 kg. This is the estimated value from the logarithmic trend-line fitted to the actual data of 1960-1975.

/d The per capita consumption of the base-year is assumed to change as a result of changes in per capita income, given the income elasticity of demand for cereals. The consumption function used is $C_{1990} = C_{1975} (1+gn)^{15}$ where g is the rate of growth in per capita income of 3 percent per year and n is the income elasticity of demand of 0.05. Note that this income elasticity of demand is a quarter of the 0.20 income elasticity of demand estimated by FAO for 1972-74.

/e The base-year production is the actual 1975 value.

/f The base-year production is the average of the years 1963, 1970, 1974 and 1975 of Table SA 7.42.

Source: Table SA 7.42 and International Food Policy Research Institute, Food Needs of Developing Countries: Projections of Production and Consumption to 1990 (Washington, D.C.: International Food Policy Research Institute, December 1977), Tables 19, 20, 21.

8.62 The combination of the consumption and production projections for 1990 yields a deficit that ranges from 575 to 1,226 thousand m.t. which amounts from one-fifth to one-half of the domestic production (Table 8.5). At the upper limit this is equivalent to a three-fold increase over the 1975 cereal deficit. If per capita consumption levels are maintained the total deficit would have to be imported with adverse consequences on the balance of merchandise trade.1/

8.63 To ensure that the 1990 per capita domestic consumption requirements of cereals can be met from domestic production alone, output must grow at an annual rate ranging from 2.7 to 4.5 percent, instead of the rate of 1.38 percent that was assumed.2/

8.64 Such an increase, however, while difficult to achieve, is not impossible. The increase in cereal output is a function of the increase in the area devoted to cereal cultivation and the increase in yield per unit area. It is obvious that a significant net increase in the overall area available for cereal cultivation added to yield increases will contribute substantially more to increasing output than would relying on the relatively slow increase in yields alone. Although there is some evidence that the statistics for 1960 are not accurate, between 1960 and 1975, the trend was for the area devoted to cereal cultivation to decrease marginally by 0.22 percent per year, partially offsetting the increase in yield of 1.60 percent per year, leading to a net increase in output of only 1.38 percent per year. The irrigated area devoted to cultivation of cereals, particularly wheat, increased steadily throughout this period both in absolute area and in its share of total irrigated land under crop, reaching one third of the latter in 1976. The overall decline in cereal acreage was due to an absolute decline in the rainfed area devoted to wheat and barley.

8.65 In the decade 1967-76 the area devoted to wheat and barley cultivation, by far the most significant cereals grown in Syria, occupied three quarters of total rainfed land under crop and perhaps 37 percent of rainfed land in cultivation (crop and fallow). The total cultivated rainfed land area

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1/ The corresponding projections of IFPRI place the 1990 deficit from 1,703 to 2,437 thousand m.t. The main difference in the projections is due to the different base adopted for production.

2/ A more detailed analysis of Syria's future cereal requirements would have to take into account the income elasticities of various food crops. With increasing per capita income it is likely that higher protein food items will be substituted for cereals in the average diet. The reduction per capita in direct cereal consumption may be partially or totally offset, however, by the indirect cereal consumption requirements, in the form of fodder for the livestock (meat) and chicken (eggs) industry. In particular, the per capita consumption of wheat may increase as barley is gradually phased out of the diet of the rural poor (and of others during draught periods). Thus, the upgrading of the diet of the poor may compensate for any decline in the per capita cereal consumption of the non-poor.

in turn accounted for two-thirds of total unirrigated cultivable land in 1972-74 (Table SA 7.1). The 50:50 ratio of land under crop cultivated to fallow land represents an alternating cultivated-fallow cropping sequence of one year under fallow and the next under crop.1/ To increase the rainfed area available for cereal cultivation the cropping intensity on unirrigated cultivable land would have to be increased by shifting to a sequence of two years under crop to every year under fallow, resulting preferably in a 70:30 crop to fallow ratio in any given year. To retain the continued fertility of the soil in this sequence it will be necessary to increase substantially the quantity and quality of fertilizers applied to the soil. To retain the 1976 ratio of land under cereals to total rainfed land under crop, three-quarters (850,000 hectares) of the approximately 1.1 million hectares could be allocated to the cultivation of wheat, the crop in which the deficit is likely to be most severe. This increase in the area under wheat cultivation would produce an additional minimum of 520,000 m.t. of wheat at the 1975 yield levels. This is sufficient to cover at least the low estimate of the 1990 deficit.

8.66 The intensity of farming could also be increased to raise yields. However, as in the case of the area devoted to cereal cultivation, this too will require a substantial modification of past practices. In particular, the organization and timing of the production process (the appropriate allocation and sequence of the inputs) would have to be improved first, by direct intervention in the form of price and income incentives that would ensure compliance with an overall production plan and second, by the provision of appropriate extension services and credit facilities.

8.67 Despite the crudeness of these projections they suggest that with appropriate planning and policies the objective of self-sufficiency in cereals is not an impossibility, in the case of Syria, as the country is endowed with substantial cultivable land areas (not all of which can be brought under cultivation by the end of the century) that have not been developed sufficiently.

Agroindustries

8.68 Special emphasis is being placed on agroindustries that utilize domestic raw materials for the purpose of import substitution and export expansion. As examples, the sugar industry and the textile industry hold a prominent place in the Fourth Five Year Plan for agriculture. The sugar industry and the textile industry are specifically analyzed in the relevant Industry chapters of this report. The purpose of this section is to look further into these industries, especially from the point of view of the utilization of agricultural raw materials.

1/ Note: Barley is not a significant irrigated crop. Only 14 thousand hectares were under barley in 1975.

Cotton and Textiles

8.69 Cotton is one of the predominant crops in Syria, by any number of criteria. With roughly 200,000 hectares under cultivation, it occupies only 4 percent of the cultivated area, but 44 percent (180,000 hectares) of the total irrigated lands of the country. Syrian cotton is of high quality; 90 percent of ginned cotton is grade zero/extra or zero. Cotton cultivation has been one of the most dynamic segments of Syrian agriculture. This has been reflected in dramatic increases in yields that made it possible for one-third of irrigated land to be withdrawn from cotton production since 1962-63 without appreciable decrease in total output. Increased yields of the magnitude experienced in the past are not expected to continue in the future (see Chapter 7). This places a limit on the possibilities of increasing irrigated lands for other crops by withdrawing from cotton. As an example, the provision of the Fourth Five Year Plan that 40,000 hectares are to be switched by 1980, mainly from cotton, to sugarbeet with cotton output remaining constant at the 1975 level of 400,000 tons is unrealistic. It is estimated that such a switch will result, at a minimum, in a decrease in cotton production to 368,000 metric tons, an 8 percent decrease from the 1975 level.

8.70 Cotton is also a predominant crop in providing employment and as a source of foreign exchange earnings. It is estimated that 90,000 families, or about half a million peasants, are involved in the production of cotton, and that more labor is employed in ginning and manufacturing (see Chapter 9). Cotton exports in 1972 were valued at about $100 million, contributing the largest share, 34 percent, of total Syrian exports. This total further increased to $112 million in 1975 (and as much as $183 million in the peak-price year of 1974) but due to the increase in oil exports its share dropped to second place with 12.8 percent in 1975. Furthermore, textile exports contributed another $22 million in 1975, being the most important commodity group in the export of manufactured goods with 32 percent of the total.

8.71 The successive Syrian Five Year Plans have consistently emphasized export promotion and import replacement to achieve greater self-sufficiency in consumer and intermediate goods industries. Accordingly, expansion of the textile industry received special attention in the Third Plan and also in the Fourth. During the Third Five Year Plan the output of cotton yarn increased from 20,000 tons in 1970 to 32,000 tons in 1975, which, however, was short of the target of 48,000 tons. The Fourth Plan is even more ambitious, as Table 8.5 illustrates.

8.72 The strategy of the Fourth Five Year Plan is centered on increasing yarn production, both for the domestic market and for export (see Table 8.6). To achieve that, exports of ginned cotton will decrease by 1980 by more than 50 percent of their 1975 levels. Yarn production, on the other hand, will increase by 160 percent, while exports of yarn will grow from 12,400 tons in 1975 to 74,200 tons in 1980, increasing sixfold. Since the production of yarn takes place almost exclusively in the public sector, the increase in yarn exports will come by expanding public sector fabric production. For this purpose 13 percent of the total investment in public manufacturing in

the Fourth Five Year Plan will go to the textile sector (which thus ranks third after chemicals and cement in proposed investment outlays). A massive expansion of spinning capacity is planned, from 285,000 spindles in 1975 to 735,000 spindles in 1980. The proposed expansion of spinning capacity aims at processing 75 percent of the expected cotton output into yarn by 1980, as compared to only 25 percent in 1975.

Table 8.6: COTTON AND COTTON YARN, SELECTED DATA, SYRIA, 1975 AND TARGETS FOR 1980

Seed Cotton	Area (hectares)	Yield (tons per hectare)	Production (tons)
1975	208,000	2.0	414,000
1980-Fourth Plan Target	160,000	2.5	400,000
1980-World Bank Estimate	160,000	2.3	368,000

Raw Cotton (Ginned)	For Domestic Processing (ton)	For Exports (ton)	Total (Ton)
1975	33,000	102,000	135,000
1980-Fourth Plan Target	116,000	48,000	164,000

Yarn	For Domestic Market (ton)	For Exports (ton)	Total (ton)
1975	30,000	12,400	43,000
1980-Fourth Plan Target	40,000	74,200	114,200

Source: State Planning Commission.

8.73 The following observations are appropriate in connection with the approach to cotton and the textile industry:

(i) There are severe reservations as to whether it is feasible to increase production of yarn to 114,000 tons by 1980. These are outlined in Volume 3, Annex 2.

(ii) Given a 3 percent annual increase in population (total of 8.6 million by 1980) and assuming an equal increase in purchasing power, an increase in domestic demand for yarn from 30,600 tons in 1975 to 40,000 tons in 1980 seems realistic.

(iii) It is feasible to increase exports of yarn, accepting the constraint of total yarn output. The strategy for that is outlined in Volume 3, Annex 2, where it appears that the main Syrian customers will be the known markets, including the neighboring Arab countries, the Eastern European countries with which Syria enjoys clearing agreements and the Common Market countries to which Syria has preferential access.

(iv) Exports of yarn are not competing with exports of raw cotton. Given the real constraint that exists in increasing the production of yarn, the optimum policy would be not to neglect the known markets for the export of raw cotton.

(v) In fact, even if domestic processing of yarn could expand to the levels anticipated in the Plan, the decrease in ginned cotton exports from 102,000 to 48,000 tons is unwise. We would recommend that cotton acreage not be shifted to sugarbeet and that cotton production expand, or at least not decline, over the 1975 levels. This recommendation is based on the analysis of the relative profitability of cotton and sugarbeet that follows.

Sugarbeet and the Sugar Industry

8.74 Syria has been relying on imports to meet the demand for sugar, with a significant burden on the balance of payments as a result. The small sugarbeet output that has existed up to now is processed in three sugar mills:

(i) A mill operates at Homs with the capacity to process 1,200 tons of beets per day for 100 days (total 120,000 tons) and operating with total beet requirement of 100,000 tons.

(ii) A mill at Damascus with capacity of 500 tons for 100 days and operating with total beet requirement of 22,500 (50 days at 450 tons a day).

(iii) A mill at Ghab with capacity 2,000 tons for 100 days and operating with total beet requirement of 60,000 (50 days at 1,200 tons a day). Total refined sugar output is equal to 22,800 tons (182,500 x 12.5% sugar content).

8.75 The ration-supplied quantity of sugar at 1.5 kilogram month per capita for a population of 7.4 million amounts to 133,000 tons. Actual consumption of sugar is evidently greater than the ration-supplied quantity; it was 156,000 metric tons in 1965 and it is estimated at 160,000 metric tons for 1976. The excess of domestic requirements over domestic production are supplied by imports of raw sugar. However, as the table below indicates, the imports of raw sugar vary greatly from year to year, suggesting that there may be a certain elasticity in consumption demand. Imports of raw sugar have been as follows:

Year	Quantity (Tons)	Price (Per kg)
1974	63,000	SL 1.63 ($0.42)
1975	128,000	2.90 ($0.74)
1976 (est.)	140,000	1.27 ($0.33)

8.76 Raw sugar is refined at local mills, and its conversion ratio to refined sugar is 96 to 97 percent. By refining raw sugar the local mills remain in operation during the off-season period for another 200 days a year. Total utilization of existing mill capacity is, as a result, 250 to 300 days a year. Correspondingly, labor employment at the existing mills is also provided roughly on a year-round basis. (The Homs factory, for example, employs 240 workers for 300 days and an additional 120 workers during the 100-day peak season).

8.77 There is at present (1977) a commitment to import another four sugar mills with a processing capacity of 4,000 tons of beets per day each for a season of 100 to 120 days. The four mills are to be located as follows: (i) a Belgian mill in Mesken; (ii) another Belgian mill in Raqqa; (iii) a Czechoslovakian mill in Deir-ez-Zor; (iv) an Italian mill in Ghab which will serve the Homs and Ghab area. The import cost of each mill is about $50 million.

8.78 The total of seven sugar mills that are planned to be in operation by 1980 will require a sugarbeet crop of 2 million tons. This represents an increase of 1.8 million tons over the current sugarbeet production of 200,000 tons, and at yields of 30 tons per hectare, it will amount to an additional 60,000 hectares of irrigated land being cultivated with sugarbeet. The Fourth Plan provides that 40,000 hectares will be shifted, mainly from cotton, to sugarbeet cultivation while the remaining 20,000 hectares will come from newly irrigated lands.

Economic Analysis of Sugarbeet Relative to Cotton

8.79 Since sugarbeet and cotton production compete in the most direct sense, the evaluation of the plans for either agroindustry must involve production analysis for the two crops. The private profitability of cotton and sugarbeet is estimated as:

	Cotton		Sugarbeet	
Cost of Production per hectare	SL 2940		SL 3340	
Yield per Hectare in kilograms	2350		30,000	
Cost per kilogram	SL 1.25		SL 0.11	
Sales Price per kilogram	SL 1.45-1.70		SL 0.13-0.145	
Gross Revenues per hectare I	3407		3340	
Gross Revenues per hectare II		3995		4350
Total Cost per hectare	2940	2940	3340	3340
Net Revenue	467	1055	560	1010
Rate of Return	15.9%	35.9%	16.8%	30.2%

8.80 In the above calculations the costs of production per hectare are the "hypothetical average costs of production" for the 1976/77 season, estimated by the Ministry of Agriculture. They include operating costs, material inputs costs, rent of land and interest on capital - but no profit. The producers' prices per kilogram are officially fixed and range for cotton between SL 1.70 for first grade to a low of SL 1.45 and for sugarbeet from SL 0.145 for the summer crop (harvested in August-September) to SL 0.13 for the winter crop (harvested in June-July).

8.81 The above data reveal that the private rates of return for both crops are very close, slightly favoring sugarbeet in the lower price ranges while favoring cotton in the higher ranges. The rate of return of sugarbeet, however, is most likely overestimated. Sugarbeet must be processed soon after harvest, otherwise its sugar content decreases radically. In countries with cooler climate and refrigeration facilities, processing can be postponed for as long as 30 days after harvest, while in Syria this time is reduced to three days. It is planned that the farmers adhere to a rigid schedule. They will be provided with coupons that entitle them to bring to the mill each day during the season a specified quantity of beets for processing. If they do not keep up with the schedule, they will bear the cost of the reduction in sugar content--a provision that the General Union of the Peasants has vigorously protested. Be this as it may, the rigid schedule to which the farmer is subjected and the cost, in case he is unable to adhere to it (whether for his fault, transportation bottlenecks or factory down-time, have as effect the decrease in the private rate of return to sugarbeet compared to cotton.

8.82 The conclusion of the comparison of the private profitabilities of the two crops is that, at first sight, current costs and returns are roughly consistent with the Plan's aim of increasing sugarbeet production relative to cotton. Further examination, however, reveals significant indirect costs of sugarbeet, such as adhering to a rigid schedule of production and delivery, that the farmers will consider seriously before they expand their acreage. Under the circumstances it appears very doubtful that the level of incentives provided will be adequate for reaching the targets of the Fourth Five Year Plan.

8.83 Aside from calculations of the respective private profitabilities, the social profitability of the two crops must also be considered. Sugar is currently an import commodity. Cotton is the main Syrian export commodity, which, moreover, seems to be facing an elastic demand in the international market, while domestic demand is also increasing. This is evidenced by the fact that no cotton stocks have been accumulated in recent years. Social profitability calculations, therefore, should also include import and export considerations. The relative calculations appear in Table 8.7.

8.84 Three alternatives are compared in the table. The two refer to sugar output of 160,000 metric tons that adequately covers the current levels of sugar consumption. Moreover, if the ration-priced sugar at SL 0.85 per kilogram (as compared to the free market price of SL 3.00 per kilogram) becomes in the future selectively available only to the low-income families,

total consumption levels will probably decrease below 160,000 metric tons. The third alternative refers to the Plan's sugar production of 250,000 metric tons by 1980. Therefore, it assumes that the three existing and the four planned sugar factories will be in operation. In comparison Alternative I is based on the existing capacity and imports of raw sugar while Alternative II is a combination of I and III in relying on existing capacity, two new mills and imports of raw sugar.

8.85 The direct costs of meeting target sugar production are estimated on the basis of two import prices of raw sugar: The current cif price of $0.33 per kilogram and the historically high price of the 1975 Syrian imports of $0.74 per kilogram. Alternative III leaves a residual of at least 70,000 metric tons of sugar for export. Given the current world demand and supply situation, it is questionable whether Syria will be able to actually export that quantity. For the purposes of the calculation, however, we have optimistically assumed that exports will be feasible at the current world price of $0.25 per kilogram.

Table 8.7: ALTERNATIVES FOR REACHING SELECTED SUGAR PRODUCTION TARGETS

I. Sugar Production:		160,000 mt
Technology: Existing Mill Capacity and Imports of Raw Sugar		
Processed sugarbeet output produce on 6,700 has		200,000 mt
Sugar equivalent		25,000 mt
Sugar from imports		135,000 mt
Raw sugar import equivalent (96%)		140,000 mt
Total cost of raw sugar imports:		
(i) at current import prices $0.33 kg	$46,200,000	
(ii) at high price of $0.75 kg	$103,600,000	
II. Sugar Production:		160,000 mt
Technology: Existing Mill Capacity, Two New Factories and Imports of Raw Sugar		
Processed sugarbeet output produced on 36,700 has		1,100,000 mt
Sugar equivalent		137,500 mt
Sugar from imports		22,500 mt
Raw sugar equivalent (96%)		23,400 mt
Total cost of raw sugar imports:		
(i) at current import prices $0.33 kg	$7,722,000	
(ii) at high prices of $0.74 kg	$17,316,000	
Total opportunity cost of cotton on 30,000 has of irrigated land:		
(i) 75,000 mt (yields 2,500 kg/ha) Exported at current price of $0.70 kg	$52,500,000	
(ii) 75,000 mt (yields 2,500 kg/ha) Exported at low price of $0.20 kg	$15,000,000	
III. Sugar Production		
Technology: Existing Mill Capacity and Four New Factories		
Processed sugarbeet output produced on 66,700 has		2,000,000 mt
Sugar equivalent		250,000 mt
Sugar from imports		none
(Sugar exports		70,000 mt)
Total opportunity cost of cotton on 60,000 has of irrigated land		
(i) 150,000 mt (yields 2,500 kg/ha) Exported at current price of $0.70 kg	$105,000,000	
(ii) 150,000 mt (yields 2,500 kg/ha) Exported at low price of 0.20 kg	$30,000,000	

Total Cost of Alternatives Compared:	I	II	III
(i) At current prices	$46,200,000	60,222,000	105,000,000
(ii) At extremes of unfavorable prices	$103,600,000	32,316,000	30,000,000
(iii) Sugar exports at current export prices of $0.25/kg	$		-17,500,000

Source: World Bank estimates.

8.86 The indirect costs of sugar production are the export proceeds of cotton. They have been estimated by using the current world price of $0.70 per kilogram and the alternative low price of $0.20 per kilogram that appears highly unlikely for the Syrian quality of cotton.

8.87 These alternatives are summarized at the bottom of the table. At current prices, the utilization of existing capacity with imports of raw sugar is clearly the dominant strategy. On the extreme assumption of most unfavorable prices for Syria, both for raw sugar imports and cotton exports, and the optimistic assumption of Syrian exports of sugar (at current world prices) Alternative III becomes slightly better than Alternative II.

8.88 There is merit in buying self-sufficiency to a certain extent and insulating the country from the vagaries of wild fluctuations in world market prices for some vital commodities. Under these considerations Alternative II with only two new sugar mills in operation is probably the optimum combination of forgoing relatively small current revenues (loss of $14,000,000 compared to Alternative I) in order to buy substantial insurance against adverse price changes in the future (gain of $70,000,000 compared to Alternative I). Alternative III should be discarded since it can only buy additional insurance against adverse price moves at exorbitant cost compared to the other alternatives.

8.89 Some additional qualitative considerations that have not been included in our estimates further strengthen the choice of Alternative II: (i) The capital cost of the new factories has not been considered. Alternative II saves $100 million in foreign exchange or, in case the purchase of the two new factories cannot be cancelled, it saves the portion of that amount which can be recouped by reselling the factories or even scrapping them. It also saves the installation and operation costs of the two factories in local currency. (ii) Alternative III would result in complete idleness of all seven factories over nine months of the year. This underutilization represents wasteful use of scarce capital. Alternative I, and to a certain extent also Alternative II, would stretch the utilization of capital over the year by processing imported raw sugar. An additional benefit of these alternatives is that severe cyclical unemployment of labor is avoided. (iii) The direct comparison of the cost of production of sugarbeet and cotton has not accounted for the fact that the former has higher water requirements than the latter. Water being the especially scarce resource in Syria, the alternative that favors cotton production should be preferred. (iv) The exact timing that production and processing of sugarbeet requires would place further demands on the Syrian transportation network and will necessitate further additions to expansive capital in terms of trucks, and eventually refrigerator facilities.

CONCLUSIONS AND RECOMMENDATIONS

8.90 Agriculture has been a laggard sector in Syrian economic development and its growth in the recent past has not kept up with the rate of population growth. The high rates of growth in GDP achieved since 1970 were narrowly based on a few industries (mainly oil) and as a result, the basic structural transformation necessary for sustained economic growth has not been achieved.

Rapid rates of growth in the agricultural sector, approaching or even exceeding the overall rates of growth in GDP, would be necessary in order to restore a sectoral balance in the economy. While such rates of growth are feasible in Syrian agriculture, the sector is now severely constrained by economic policies, allocation of resources and institutional factors. The recommendations that follow focus on these constraints.

Agricultural Planning

8.91 There is an ambivalence in Syria about the direction of agricultural planning. Law Number 14 of 1975 and the Annual Agricultural Production Plan 1976/77 move in the direction of more centralized and comprehensive planning. On the other hand, the ratification of the Fourth Five Year Plan with a limited scope and on an interim basis, together with official pronouncements would promote participation of the private sector and channeling of private capital into agriculture. Ambivalence causes indecision, which contributes to adopting policy measures spasmodically and to making decisions by default. In this way it forecloses permanently alternative options of development that would otherwise have been feasible.

8.92 Should the decision be to move towards centralized and comprehensive planning, the logical conclusion would be to organize agriculture around state farms and agricultural cooperatives. In this event a concerted and urgent effort should be made to reorganize these institutions, as their performance to date does not allow them to become the foundation for the major effort needed for agricultural development.

8.93 Should the decision be to move the other way, the foundation is already there in the form of a vigorous sector of private farming that makes up about 80 percent of Syrian agriculture. Within the context of pragmatic socialism, the private sector should be regulated but should be freed from the shackles of futile and unnecessary bureaucratic control.

8.94 The "crop rotation and intensification scheme" produced to implement Law Number 14 is an example of such a futile attempt for control. As a policy instrument to implement the Plan it cannot be enforced, and if it were to be enforced it would be more likely to lead to the decrease, rather than increase, of production because it subjects the farmers to severe diseconomies by forcing them to forgo specialization in favor of achieving an arbitrary and rigid crop mix on their land.

8.95 The fundamental stumbling block for agricultural planning in Syria is the lack of data. There has not been a complete agricultural census nor have there been any major farm management studies. The rate of return on investment in such data collection will be high. Together with the land classification survey, which must be speeded up, they will provide the backbone for effective agricultural planning.

8.96 The institutions for data collection and for agricultural planning must be strengthened. The competent mechanism that the Central Bureau of Statistics has built for data collection must be complemented in order to

handle the agricultural sector by creating efficient data collection and processing units at the Ministry of Agriculture and at the regional Directorates of Agriculture. Furthermore, the students of agriculture at such Universities as Aleppo will receive valuable agricultural experience, along with providing an important service, if they are used for conducting surveys and for collecting data at the farm level.

Resources for Agriculture

8.97 At the beginning of the 1970s, agriculture was absorbing as much as 27 percent of fixed capital formation--a share which had declined to 13 percent by 1975. Yet this figure is misleading since the major share of gross capital formation has gone into the Euphrates project. To the extent that the building of the Dam fixed the pattern of public investment in the agricultural sector it had the unfortunate effect of foreclosing alternative development options. The choice of agricultural strategies has been limited by the need to reap the full agricultural benefits of the original investment in the Euphrates Dam and by the need to invest heavily in drainage works. As a result, technical problems (such as plant hygiene, land surveying, and crop improvement), institutional problems (land fragmentation, extension services), policy aspects (administered prices and other investment priorities) and structural problems (the relation of agriculture to the rest of the economy, projected demand for agricultural commodities and its relation to policies of self-sufficiency) were largely overlooked. These problems must now receive priority attention.

8.98 The cost of bringing new lands into cultivation is higher than expected and their agricultural potential is lower than anticipated--an experience not inconsistent with parallel situations in other countries, notably Egypt. Plans for bringing 135,000 hectares under irrigation in the Euphrates Basin by 1980 are unrealistic; between 40,000 and 60,000 is a more likely estimate. In the meantime, it is not premature to shift emphasis from expanding agriculture at the extensive margin and to work at the intensive margin instead. This would require focusing on technical, institutional, policy and structural problems that have been neglected.

8.99 As the emphasis is being shifted away from large scale irrigation schemes in the Euphrates valley or basin, high payoffs may come from smaller projects for construction of catchment reservoirs, for rehabilitating low-lift pump schemes and for exploiting ground-water potential, especially in areas with precipitation above 350 millimeters.

8.100 Fertilizer application is now limited to a few crops (mostly cotton). However there is substantial potential for increasing yields through fertilizer application in areas with mean annual rainfall of more than 500 millimeters. Modest fertilizer dosages would also be profitable in the areas with rainfall of 350-500 millimeters.

8.101 Fertilizer distribution has been hampered by the constraints facing the Agricultural Cooperative Bank, the sole distributor. Similarly, credit

allocation has suffered both because it is tied to the adoption of the crop-rotation scheme and because of the limitations of the Agricultural Cooperative Bank. The institutions that serve agriculture, and the Agricultural Cooperative Bank in particular, need to be reorganized and revitalized.

8.102 There is evidence that a shortage of labor may be appearing in Syrian agriculture. This will have an important impact on decisions concerning the crop mix and intensification, mechanization, and organization of agriculture in general. Yet there is no information on labor as a factor of production and on the agricultural household as a production unit. This is among the most severe gaps in the data resources necessary for planning agricultural development in Syria.

8.103 Crop rotation patterns must be studied in detail by considering both agronomic and economic criteria. As examples, the chief limitation on the cereal-fodder rotation scheme is probably the cost of transportation of the fodder; a wheat-wheat sequence may still be more profitable than the wheat-lentils rotation, despite the lower wheat yields in the former. Similarly, the potential of developing clean fallow, as compared to the alternative of weed cover, and the integration of the livestock and the crop system, are examples of policy decisions that cannot be made without considering economic criteria, especially scarcity prices, together with the agronomic factors.

8.104 Despite the public fixed capital formation that went into agriculture, there are reasons to believe that on balance resources have flowed out of agriculture over the fifteen years 1960-1975. The major instrument for what is equivalent to a hidden tax on the agricultural sector is the operation of the price system. Agriculture will continue to be a serious limiting factor in Syrian economic development unless this flow is reversed and net resources, both private and public, on balance go into the sector.

Institutional Factors and Policies

8.105 The pricing mechanism in Syria is rather complicated and in agriculture in particular it appears to have provided disincentives more often than incentives. Yet on occasions when prices did not become constraining factors, as for example in perishables and poultry, significant increases in output were obtained in relatively short periods. The pricing system needs to be rationalized, especially if the private sector is to play a more important role in agricultural development.

8.106 The attempt in the past to deemphasize the role of prices as an allocative and distributional mechanism has led to results not always consistent with developmental goals. Examples are the border trade, the regional distribution of certain production activities or the commodity substitution in production.

8.107 A specific case of commodity substitution that must be reexamined by considering economic factors and world prices is the expansion of sugar-beet at the expense of cotton production. World prices of both commodities have fluctuated widely in recent years, but at 1977 price levels (and also

within a realistic range of expected future world prices) cotton seems to dominate as an export commodity and the advantages of substituting domestic sugar for imports rapidly vanish.

8.108 The planned expansion of sugarmilling capacity by the addition of four new factories should be reevaluated in the light of current and expected levels of prices. If possible, two of the four planned new factories should be cancelled. If not possible, serious efforts should be made to procure elsewhere the sugarbeet for their operation, especially since at current prices private farmers' profitability favors cotton as opposed to sugarbeet. In any event, it will not be feasible for the three existing factories and all four new ones to operate at full capacity for the 100-day season and if they do, the quantity of sugar produced will exceed the local demand with unclear prospects for exports. Another social cost of the addition of the four sugar factories is that the off-season idleness of all sugar mills will be nine months of the year, while currently the existing mills operate nearly on a year-round schedule by refining imported raw sugar during the off season.

8.109 The role and functions of public institutions, such as general organizations, state farms and cooperatives, should be coordinated with the role of the private sector in the areas of production and marketing. An efficient public sector of production could provide "model units" that would be reference points for regulating prices for the private sector. Public farms and cooperatives, however, will have to be reorganized in order to discharge this function. Similarly, institutions in the public agricultural sector, such as the General Organization for Cows, should also assume important research and extension functions to service both the public and the private sector.

8.110 In marketing similarly, the private sector should complement the activities of the public marketing boards. The marketing of perishables would become an expensive endeavor if it were entrusted to the public sector. A solution in between what currently exists and the proposed creation of a general organization for the marketing of meats and vegetables would be to organize effective private grower organizations to undertake that marketing function.

8.111 The Agricultural Cooperative Bank is now primarily responsible for the distribution of operating inputs for agricultural production. The Bank must be strengthened in order to perform that function effectively and it should also be complemented by private organizations in this task. An objective in the reorganization of the Agricultural Cooperative Bank should be to lighten the burden it now carries. There is no reason, for example, for it to have the monopoly on the distribution of fertilizers, and there is no need to have the Bank license the crop mix of the farmers, because no such license is necessary.

8.112 A decision has to be made as to the agency that will be responsible for the distribution of the services of fixed inputs, especially mechanical equipment. It would be natural to strengthen the cooperatives for this role and either to create the basis of an expanded form of communal tillage or to provide tillage services on a rental basis. This would necessitate reorganization of the cooperative structure that has been faltering. Here also the private sector machine shops, which are ubiquitous in virtually every town in Syria, should be used to complement the public sector activities.