

FAO / Government of Italy Cooperative Programme



Food and Agriculture Organization
of the United Nations



Ministry of Agriculture
and Agrarian Reform



Italian Cooperation

Project GCP/SYR/006/ITA
Assistance in Institutional Strengthening and Agricultural Policy

Agricultural Development Strategy for Syria: Background Reference Paper

Alexander Sarris
FAO International Consultant

Damascus – Syria, December 2001

- Opinions and judgments expressed are the authors' only. FAO proposes the text as basis for starting the discussion among scholars and policy makers on the issues related to the subject of the study.

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Abbreviations

ACB	Agricultural Co-operative Bank
CBoS	Commercial Bank of Syria
CBS	Central Bureau of Statistics
CeBS	Central Bank of Syria
CPI	Consumer Price Index
DASR	Department of Agricultural Scientific Research
DIWU	Department of Irrigation and Water Use
EU	European Union
FDI	Foreign Direct Investment
GAO	Gross Agricultural Output
GATT	General Agreement on Tariffs and Trade
GCM	General Company for Meat
GCVF	General Company for Vegetables and Fruit
GES	General Establishment for Sugar
GET	General Establishment for Tobacco
GEZA	Foreign Trade Organisation for Import of Chemicals and Foodstuffs
GER	General Establishment for Retail
GFF	General Federation of Farmers
GOCGM	General Organisation of Cotton Ginning and Marketing
GOCPPT	General Organisation for Cereals Production and Trade
GOFI	General Organisation of Food Industries
GOS	Government of Syria
GOSM	General Organisation for Seed Multiplication
GOVF	General Organisation for Vegetables and Fruit
Ha	Hectare
HBS	Household Budget Survey
IB	Industrial Bank
IDB	Industrial Development Bank
IMF	International Monetary Fund
MAAR	Ministry of Agriculture and Agrarian Reform
MEFT	Ministry of Economy and Foreign Trade
MPS	Market Price Support
MSIT	Ministry of Supply and Internal Trade
NA	National Accounts
NPC	Nominal Protection Coefficient
PCB	Popular Credit Bank
PDF	Public Debt Fund
POSF	Post Office Saving Fund
PSF	Price Stabilisation Fund
REB	Real Estate Bank
SAC	Supreme Agricultural Council
SMP	State Ministry for Planning
TRQ	Tariff Rate Quota
WTO	World Trade Organisation

INTRODUCTION

This report is written within the framework and objectives of FAO project GCP/SYR/006/ITA "Assistance in Institutional Strengthening and Agricultural Policy in Syria". The Terms of Reference (TOR) for this part of the project are exhibited in Annex 1. The project for this consultant envisioned six visits to Syria. The first visit took place in the two-week period from September 10, 2000 until September 24, 2000. The second visit took place during the period October 24 to November 4, 2000. The third visit took place from January 26 to February 8, 2001. The fourth visit took place from April 3, 2001 to April 10, 2001. The fifth visit took place between September 13 and September 17, 2001.

During these missions, the consultant had extensive discussions with the Deputy Minister of Agriculture, the National Project Director (NPD), the Country Technical Advisor (CTA), and the national project co-ordinator (NPC). He also had extensive discussions with personnel from the Ministry of Agriculture and Agrarian Reform (MAAR), other ministries, private sector entities, and farmers. In addition, the consultant met and had extensive discussions with most of the FAO consultants who worked on various topics relevant for the agricultural sector strategy. As part of the project, the consultant made field visits to several regions in Syria. During these field visits the consultant had many discussions with the staff of the MAAR, agricultural and irrigation research centers, farmers, and private sector operators. In addition the consultant collected and reviewed several studies relevant to agricultural sector in Syria, as well as appropriate data. Finally, the consultant organised a small survey of 100 farm households that was conducted by 10 trainees of the National Agricultural Policy Center in Damascus. The lists of the many people met throughout the project have been attached in the appendices of the first four mission reports.

The consultant would like to thank the many people who have helped the work underlying this report. In particular the consultant would like to thank Mr. Arfan Alloush, the Deputy Minister of Agriculture, Mr. Atieh El-Hindi, the National Project Director (NPD), Mr. Emad El-Hawary, the Country Technical Adviser (CTA), Mr. Ciro Fiorillo, the project economist and current CTA, Mr. Nassouh Keilani, the computer specialist, and the project trainees who conducted the survey (Widad Shehadeh, Almuhammad Melhim, Yihia Dehesh, Bashar Nahas, Samir Jrad, Hajar Baghasa, Akram Shhaideh, Mayyada Hammoud, Majd Abdullah, and Rola Diab). He is grateful to the FAO consultants that worked on the various reports, on the results of which much of this report is based. He is also very grateful to the two project translators Ms. Rola Diab and Ms. Asma Mattar. He would also like to thank the two project drivers Mazen Boukai and Suhail Maila. Finally the consultant is grateful to the many Ministry of Agriculture specialists and employees, as well as the many public and private sector people, including many farmers, met in the course of the project.

MAIN FINDINGS AND CONCLUSIONS

1. Background

The SAR situated on the Eastern coast of the Mediterranean, covers a land area of 185,180 km², and is divided administratively into 14 governorates or provinces (Mohafaza singular, Mohafazat plural), 60 districts (Mantika), and 192 counties (Nahia).

Each Nahia is in turn composed of several villages. Cities and towns are part of Mantikas (in the sequel the English plural for most Arabic words will be utilised). Three Mohafazat (Homs, Deir-Ez-Zor, and Hassakeh) account for over 50% of the land area and include large segments of sparsely populated areas, while from a population perspective the largest Mohafazat are Damascus, Aleppo and Homs, that include the respective cities and account for over 50% of the population. During recent decades the SAR has exhibited one of the highest population growth rates in the world, currently estimated at around 3.3% p.a. The mid-year population estimate for 1999 was 17,460 thousand. For the last three decades the economy of the SAR has been operating under a socialist style system of centralised planning. Five year development plans started been implemented in 1961, and by the end of the 1960s the current central planning apparatus had been organised, with several Supreme Planning Councils, consisting of the Prime Minister and the respective ministers and heads of general organisations, responsible for the plan's design and implementation in the various areas. While earlier five year plans were implemented rigorously, setting quantitative targets, investment allocations etc., the last three five year plans have had only indicative status. Agriculture has always received considerable importance in the various five-year plans.

In the past, agriculture used to be Syria's main industry. However, starting from the 1970's, trade and later on mining and to a lesser extent industry, started to grow at higher rates than agriculture, and currently contribute more to the economy. Nevertheless, agriculture will continue to be a major sector of the economy for a long time. Agriculture accounts for about 30 percent of the GDP, and total employment, hence agricultural strategy and policies are intimately related to the developments in the overall economy.

The major feature of the Syrian rural economy before 1960 was considerable inequality. The great body of farmers earned little more than a bare subsistence. Only about one third of them cultivated their own patches of land or tended their own small fruit gardens, or merely had a right to share in the periodic distribution of little strips under the old system of *musha'* or communal ownership, that was still in use in the central plains. The greater number of other peasants were sharecroppers and legally tenants at will (*muzari*), their occupancy being terminable at the pleasure of the landlord, who, however, rarely broke with the custom of hereditary succession of tenants (Batatu, 1999). The origins of this form of tenancy go back to several centuries BC. However, the income discrepancies that the system implied were very large, with the tenants barely earning enough for subsistence, with the consequence that they had to hire themselves out for wages. On the other end there were few large and powerful landlords, that controlled vast amounts of land.

It is this extreme inequality that spurred the successive land reforms, that started with the land reform law of 1958, which was amended several times, and the law on agrarian relations of 1958. By 1969 4,500 landowners whose individual property, including that of wives and children, exceeded 120 hectares (Ha) of irrigated or 460 Ha of rainfed land, had been stripped of about 1.5 million Ha, which amounted to about half their property (except for the land that had been sold or distributed before the implementation of the law), or 17 percent of Syria's total cultivable land at the time. The land was to be distributed within the villages so that the property of beneficiaries would not exceed 8 Ha of irrigated, or 45 Ha of rainfed land. Land reform was heritable, but it could not be sold or rented, nor fragmented by inheritance, and beneficiaries were obliged to work the land themselves, to become members of a co-operative, and to pay the co-operative a transfer

fee for the land in 20 annual instalments. About 100,000 families benefited from the land redistribution, but there were still a large number of peasant families (about 180,000) that remained landless.

The land reform and the external political environment of the 1950s and 1960s, namely the international alliances dictated by the cold war, the insecurities imposed by the Middle East developments, and the uncertainties inherent in the international trade system, were what shaped the agricultural strategy and policies of Syria from 1960 onwards, large parts of which remain today.

The major development paradigm, that has governed Syrian development policy in general and agricultural development in particular since 1970, has been that of state-led import substituting industrialisation. Socialism, which was the driving paradigm in the late 1950s and 1960s was redefined in the 1970s to mean increasing industrial employment, an expansion of the role of the public sector, and at the same time an activation of the private sector via productive but non-exploitative investments. Economic development and self-reliance, was the key to national strength, and development was understood to mean fast growth and modernisation. Syria was to cease being an agricultural economy, and become a mainly industrial one. Lack of indigenous technical capabilities was to be compensated for by importing complete, turnkey projects, and financing was to be secured by means of increasing the exports of oil, foreign borrowing, and Arab aid.

The consequences for agricultural strategy, of this overall development strategy were the following. First, a strategy of self-sufficiency in major food staples was adopted. Second the state undertook a major role in production and trade, especially with respect to the major products and inputs. Third, foreign trade became almost completely a state monopoly. Fourth, several publicly owned industrial plants were established for food and other agro-processing activities.

All throughout the 1990's the economy of Syria has been growing at a healthy pace, according to official statistics. In fact the average annual GDP growth during the period 1990-95 was 8 percent, with the per capita GDP growth during this period at 4.6percent. During the period 1995-98 the average annual total GDP growth was 5.8 percent, with the average annual per-capita GDP growth at 2.5 percent. During this period the average annual rate of change of the retail price index was only 3.4 percent. By international comparisons, these are very satisfactory numbers, and, if the benefits are widely distributed, suggest a continuous process of real income growth for the average Syrian during the period. During the last two years, it is not clear what the GDP developments have been, as the statistics is not yet available, but the rate of inflation has been minimal and even negative. Furthermore, the world price for oil, a commodity that accounts for the bulk of Syrian foreign exchange earnings, has increased considerably, manifesting a beneficial impact on foreign exchange revenues and overall income. However, general drought has had very negative impact on agricultural production. For instance in 1999, total production of wheat was down by 35 percent compared to that of the previous year, the production of barley was down by 50 percent, and it was only the production of sugarbeet that was up by 10.6 percent. The production of most other products was also significantly diminished.

It is clear that on the one hand the world oil situation must have given a boost to the economy, or at least to government finances, while the domestic agricultural situation

must have had a negative impact. It is not clear, however, what has been the overall impact on the economy, as it is not known how the extra oil revenues were spent.

The opinions of several officials, as well as private sector agents, suggest that according to their market experience the general incomes and purchasing power of most people in Syria have declined in the last two years. This suggests that agriculture has a more important role in the overall macroeconomic situation of Syria, while oil is less well connected to the overall economy. This can be explained by the fact that all oil production and exports are publicly controlled, and hence any revenue windfall can be managed according to government desires, and the fluctuations in external income does not necessarily filter to the general economy, while agriculture influences the lives of most Syrians, either through production, marketing and processing activities, or through consumption of foods.

If the oil sector is exempted, it can be said that the economy of Syria is primarily agricultural based, as apart from the basic agricultural production, the bulk of exports are agriculture based, the bulk of manufacturing is based on agroprocessing, a large share of trade and commerce is based on agriculture, and many services are also linked to agricultural production. Furthermore, a large share of employment is provided by agriculture. Therefore, one cannot separate the overall strategy for agricultural development from the overall economic situation and macroeconomy.

The links between agriculture and the macroeconomy can be summarised as follows. First, while agricultural production is almost totally privately based, and carried out by a large number of relatively small farm units, the bulk of marketing and processing for the main products (wheat, cotton, and sugarbeet), as well as fertiliser distribution, are publicly controlled. Via the process of public control of the upstream and downstream activities relevant to agriculture, the government can exercise considerable control on production and distribution of the agricultural products, especially those deemed as strategic ones¹. It can also generate considerable income through explicit and implicit taxation, as well as foreign exchange earnings through exports or import substitution. It can also use its control of agriculture to conduct domestic welfare policy, especially as it concerns food subsidies. One could argue that in an economic system of open exchange, taxation or protection of agriculture could be effected by an indirect price based mechanism, but in Syria the economic system is not open. The foreign exchange through official channels has always been severely limited, and hence control of trade in strategic agricultural products implies that the government can capture much better the implicit tax involved in the overvaluation of the currency. It thus appears that a major factor in the orientation of agricultural sector strategy and policies in the past was the severe lack of foreign exchange, and the importance of agriculture in generating foreign exchange or saving foreign exchange via import substitution.

The economy of the SAR is currently under transition from one that is largely centrally planned to a more liberal one. The general objectives of policy have been and will remain the achievement of a sustainable level of economic abundance, social welfare, and equity. However, some of the past overall themes underlying planning and policy might change. These themes have included the following:

- The state assures full employment of all labour force

¹ Currently strategic products include wheat, barley, cotton, tobacco, sugarbeet, lentils and chickpeas.

- The state undertakes measures to adjust income distribution in favour of labourers and small farmers
- Production of goods and services are supreme objective of the society
- Price stability has high priority
- All major resources are state owned
- The state plays a major role in domestic production and trade, especially with respect to major consumed products and inputs
- Prices are fixed by the state and strictly controlled
- Foreign trade is almost completely a state monopoly, and
- Private sector plays a limited role in the economy, mostly in agriculture, services and domestic trade, under strictly controlled conditions

While elements of the above themes are evident in most areas of public policy, there have been a series of changes that suggest a general shift of emphasis. These include the following;

- Foreign exchange reform since 1989;
- Law No. 10 of 1991 for the encouragement of investment;
- Granting a wide range of incentives for mixed private-public companies;
- Decrees encouraging private sector participation in several sectors; and
- Ministerial Decrees granting the private sector the right to import agricultural inputs from retained proceeds of own private exports.

The various reforms pertaining to the agricultural sector will be reviewed below in the context of the overall performance of agriculture and the rest of the economy.

Syrian agricultural development strategy has been guided by international considerations that seem to have changed in the 1990s. Such considerations were the international alliances dictated by the cold war, the insecurities imposed by the Middle East developments, and the uncertainties inherent in the international trade system. The Syrian agricultural policies that have been in place since the 1960s, were developed with these considerations, and were implemented by a centrally planned system. The radical changes in all these political fronts over the last decade, the gradual world-wide realisation that central planning has some inherent weakness, and the conclusion of the GATT that has created new rules for the world trading system, have led the Syrian government to change many aspects of its agricultural policies, but in essence, the principles and underlying assumptions on the basis of which agricultural strategy and policies have been exercised have not undergone much change. Nevertheless, there is a growing awareness within Syrian policy circles that the old strategy has led to problems and a new agricultural development strategy is needed. The aim of this report is to contribute towards the formulation of such a new agricultural development strategy, by reviewing the performance of several older policies, and identifying key areas where reforms are needed.

The objective of this report is to understand the structure and performance of the Syrian agricultural sector, within the Syrian economy, so as to set the stage for an informed

discussion of agricultural sector strategy as well as appropriate recommendations. First, it will try to view agricultural performance in the wider context of the overall economy, in order to highlight the interactions between agricultural and non-agricultural policies. Second it will review several aspects of agricultural sector structure and performance, with an aim to identify problems or areas of potential future policy emphasis or reform. Third, it will review some of the current policies of the Government of Syria (GOS), in order to analyse their consistency with the overall development objectives. Given the limits of the current exercise, the report will discuss mainly the crop and livestock portion of the agricultural sector, with the forest and fishery sectors given limited consideration. Given its size, this report does not continue with recommendations for an agricultural sector strategy, a task that is reserved for a separate report.

2. The macroeconomic context of Syrian agriculture

2.1 Structure and evolution of aggregate production, capital formation, and prices

In 1999, agriculture was the largest productive sector, accounting for 27.3 percent of official GDP, with wholesale and retail trade second at 21 percent of GDP, and mining and manufacturing third at 18.5 percent (table 2.1.1). Mining, mainly oil and gas, accounted for 40 percent of the mining, manufacturing and utilities GDP, or 5.8 percent of total GDP. The growth rate of the various sectors has been quite uneven, with substantial growth during the last decade exhibited by the mining and manufacturing, the agricultural, the transport and communications sectors, the private services, and the finance and insurance sectors, while the other sectors have grown at much smaller or even negative rates.

Table 2.1.1. Structure and growth of real GDP (at 1995 market prices) for various sectors from 1985 to 1999

	Share in real GDP of different sectors					Average annual growth rates of sectoral real GDP				
	1985	1990/91	1995/96	1997/98	1999	1985-90	1990-95	1995/98	1999	1990-99
Agriculture	26,8	29,6	29,2	30,5	27,3	0,6	6,8	10,8	-17,2	5,5
Mining & manufacturing	8,0	12,8	14,8	17,4	18,5	8,3	9,5	13,7	6,2	15,5
Building & construction	9,5	4,1	4,3	4,4	4,1	-17,0	9,3	5,1	-5,4	-4,3
Wholesale and retail trade	26,5	24,6	24,6	20,8	21,0	-3,1	9,3	-2,9	2,3	2,5
Transport and communication	8,3	10,1	11,6	12,1	13,0	3,0	10,4	5,7	10,2	10,6
Finance & insurance	4,1	4,2	4,5	4,3	5,1	-0,8	10,6	1,4	17,8	7,7
Social & personal services	3,3	2,2	1,8	2,1	2,5	-9,7	5,7	8,8	20,6	2,3
Govt. services	13,4	12,4	9,1	8,4	8,4	-3,5	2,5	1,3	1,1	-0,1
Private non-profit services	0,0	0,0	0,0	0,0	0,0	6,7	8,3	11,5	14,1	14,0
GDP at market prices	100,0	100,0	100,0	100,0	100,0	-1,5	8,0	5,8	-1,8	5,2

Source. Central Bureau of Statistics. Statistical Abstract 2000.

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In 1999, the nominal GDP fell by 3.9 percent, due to the significant drought related fall in agricultural GDP (a fall of 15.3 percent). Given that retail prices actually fell in 1999 by 2.1 percent (see below), the real GDP seems to have fallen by around 1.8 percent. Assuming, however, that the population grew at the average trend rate of 3.3 percent, the real GDP per capita appears to have fallen by about 1.5percent.

Table 2.1.2 exhibits the per capita real GDP figures, computed by dividing the aggregate figures by officially estimated population figures. These in turn were taken from the midyear projections of the population living in Syria in the 1999 Statistical Abstract. The table suggests that real per capita GDP in 1995 was lower than that of 1985 or 1980, but has improved substantially since 1995. For 1999, the table suggests that the real per capita GDP was 4.4 percent lower than in 1998. In 1999, real per capita GDP stood at lower levels than those of 1980, having fallen by 4.4 percent from the previous year. Table 2.1.3, that computes the average annual growth rates, shows that the biggest decline was in the period 1985-90, while for the period 1990-95 considerable growth was achieved, which however slowed in the period 1995-99.

Noticeable from the table is the result that real per capita private consumption expenditures have exhibited stagnation since 1985, never having surpassed the level of that year during the last fifteen years. Assuming that income distribution has not changed much, this suggests an increased number of families with very low incomes. Compared to 1980, the real per capita private consumption in 1999 was 12.7 percent lower, while it was 23.4 percent lower compared to the figure in 1980.

Table 2.1.2. Evolution of real per capita expenditures on GDP (SP at 1995 prices)

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Per capita real GDP	42853	40863	32145	33542	36800	37448	39176	39970	41779	41693	43682	41765
Per capita real private consumption expenditure	32803	28804	26402	25502	28728	28128	25551	26519	26897	25976	26865	25135
Per capita real private investment	5749	5195	4378	4403	6607	6215	6501	6120	5530	4105	4066	3867
Per capita public consumption expenditures	8595	8541	5474	6107	5731	5619	5390	5370	5242	5168	5145	5173
Per capita public investment expenditures	9725	10248	3251	3246	3197	3406	4784	4719	5038	5669	5767	5481

Source. Computed from Central Bureau of Statistics. Statistical Abstract 2000.

The figures of table 2.1.3 also show that while real private investment exhibited considerable growth during 1990-95, most likely due to the passage of law 10 of 1991, its growth turned significantly negative during 1995-98, for a negative average annual growth rate for the decade of the 1990s. On the other hand, real per capita public consumption has declined almost steadily in the 1990s, undoubtedly due to the efforts of the Syrian government towards stabilisation, while real per capita public investment has increased considerably.

It is somewhat surprising that with such strong increases in public investment expenditures, as well as significantly positive real per capita GDP growth the growth of real per capita expenditures have not grown. However, a major issue in Syria is the accuracy of the National Account (NA) figures. The IMF in its most recent review of the Syrian economy (IMF, 2000a) reviews the state of macroeconomic statistics in Syria, and indicates that the GDP statistics suffer from undercoverage of the trade and private services sectors. This is because while the NA cover comprehensively the activities of the public sector and public productive enterprises, they do not cover adequately the activities of the private sector. Given that the private consumption expenditures figure in the GDP statistics is computed as a residual, and also includes inventory changes, the IMF indicates that there are likely significant errors in the estimates of this variable.

In order to probe this issue further, an indication of the relevant magnitudes can be had by comparing the per capita expenditure from the NA with the directly observable per capita expenditure derived from the recent 1996-97 Household Budget Survey (HBS) of the CBS. The information in that survey indicates that the average yearly per capita total private consumption expenditure is equal to 25140 SP in 1996-97 prices (the average in urban areas is 26688, while the average in rural areas is 23616). It is not clear whether the HBS figures include the imputed expenditure on food from products grown on people's own farms, and other imputed expenditures. Nevertheless, this figure is slightly below the average figure reported in table 2.1.2, and suggests that the NA figure may not be too far from the truth.

Table 2.1.3 Average annual growth rates of real per capita expenditures on GDP

	Growth rates of various categories of real per capita expenditures				
	1980-85	1985-90	1990-95	1995-99	1990-99
Per capita real GDP	-0,95	-4,69	4,45	1,10	2,95
Per capita real private consumption expenditure	-2,57	-1,73	0,09	-1,33	-0,54
Per capita real private investment	-2,01	-3,36	6,93	-10,84	-1,37
Per capita public consumption expenditures	-0,13	-8,51	-0,38	-0,93	-0,63
Per capita public investment expenditures	1,05	-20,52	7,74	3,81	5,97

Source. Computed from the data of table 2.1.2.

Table 2.1.4 exhibits the shares of the various types of expenditures on GDP from 1980 until 1999. It can be seen that the shares of both consumption as well as investment in GDP have declined considerably by about 14 and 13.7 percentage points respectively in the last twenty years, while the share of net external transactions has increased by an amount almost equal the sum of the declines in consumption and investment. This has been achieved through both an increase in the share of exports, as well as a decline in the share of imports.

Table 2.1.4. Shares of expenditures on GDP (in percent)

	1980	1985	1990/91	1995/96	1997/98	1999
Total consumption	96,6	91,4	96,7	78,4	74,0	72,6
Private	76,5	70,5	79,1	65,4	61,9	60,2
Public	20,1	20,9	17,6	13,0	12,1	12,4
Gross Domestic Investment	36,1	37,8	23,3	26,2	23,0	22,4
Private	13,4	12,7	13,4	14,3	9,6	9,3
Public	22,7	25,1	9,9	11,9	13,4	13,1
Net External Transactions	-32,7	-29,2	-20,0	-4,6	3,1	5,0
Export of Goods & Services	14,0	14,3	28,0	31,4	34,0	36,4
Imports of Goods & Services	46,7	43,5	48,0	36,0	31,0	31,4
Gross Domestic Product	100,0	100,0	100,0	100,0	100,0	100,0

Source. Computed from Central Bureau of Statistics. Statistical Abstract 2000.

Table 2.1.5 exhibits the allocation and growth rates of gross fixed capital formation by sector and component. The most noticeable pattern is the increase in the share of total investment allocated to mining and manufacturing, and the decline in the share of investment for dwellings. While the share of investment devoted to agriculture has increased only slightly in the past fifteen years (after a major increase in the 1990-91 period, the fact that the overall share of investment in GDP has declined (re table 2.1.4) implies that the real investment in agriculture has not increased by much. In fact the average annual growth rate of real investment in agriculture during the period 1990-99 has been the lowest of all sectors, and was negative for the recent period 1995-99. This is

an important observation and has implications about the long run growth performance of agriculture.

Table 2.1.5. Distribution and growth of real gross fixed capital formation by sector and component.

	Distribution of gross fixed capital formation (percent of total)					Average annual growth rates (percent)			
	1985	1990/91	1995/96	1997/98	1999	1985-90	1990-95	1995-99	1990-99
Distribution by sector									
Agriculture, forestry, & fisheries	13,0	22,0	14,9	15,3	14,3	0,31	2,07	-2,15	0,17
Mining & manufacturing	18,7	20,7	28,4	31,2	30,5	-7,46	16,26	1,55	9,48
Transport & and communication	11,6	9,1	13,8	13,9	17,6	-15,97	23,30	4,60	14,61
Dwellings	26,7	23,2	18,9	16,4	15,1	-12,91	7,26	-7,13	0,61
Other sectors	30,1	25,0	24,1	23,1	22,4	-13,94	10,85	-3,00	4,46
TOTAL	100,0	100,0	100,0	100,0	100,0	-10,23	10,96	-1,14	5,41
Distribution by type									
Dwellings	26,7	23,2	18,9	16,4	15,1	-12,91	7,26	-7,13	0,61
Industrial & commercial buildings	11,7	6,9	6,2	7,3	6,6	-20,62	9,08	2,05	5,90
Constructions	37,5	24,6	20,6	26,8	26,3	-18,05	5,65	7,77	6,59
Transport equipment	6,5	8,2	19,1	13,8	14,2	-12,09	41,40	-9,00	16,25
Machinery & other equipment	17,5	37,1	35,2	35,6	37,8	6,41	8,34	-0,19	4,46
Total	100,0	100,0	100,0	100,0	100,0	-10,23	10,96	-1,14	5,41

Source. Computed from Central Bureau of Statistics. Statistical Abstract 2000.

Prices are difficult to monitor in Syria, as there are few published statistics on prices. The retail price index published in the CBS annual Statistical Abstract is one published index, while the GDP deflators have to be inferred from the published figures for real and nominal magnitudes. The wholesale price index, also published in the Statistical Abstract reflects mostly public enterprise prices, and is hence not representative of prices in all the economy. Table 2.1.6 indicates the evolution of retail food price indices, as well as the non-food price index (estimated from the published series of the Statistical Abstract, and the average weight of food in the overall index, which is 0,596), and the estimated GDP deflators for private consumption as well as total GDP. The last column exhibits the average annual growth rate of prices in various periods during the last decade.

It can be seen from the table that there are considerable discrepancies between the published retail price index, which has grown by an average annual rate of 7.01 percent during 1990-99, and the GDP deflator for private consumption, which has grown by an annual average of 10.6 percent during the same period. The inflation in food prices, at 5.5 percent annually during 1990-99, has been much lower than that of non-food items, which was near 9 percent annually during the same period. Inflation, which was considerable during the period 1990-95, appears to have slowed down considerably during the last few years, with the general retail price index growing at only 2 percent annually, and the food price index growing at only 1.1 percent annually during 1995-99. In 1999 in fact, the general retail price index fell by 2.1 percent, while the food price index fell by 4.1 percent. In 1999 average incomes must have dropped because of the major drought, as indicated above. If one considers the domestic supply demand situation for food, the decline in production should have led, if incomes were unchanged, to significant rises in

domestic prices. The actual decline in the price index of food suggests that the income effect of the decline of per capita incomes on demand was stronger than the price effect, leading to overall price declines. Notice, also, that there are substantial variations in annual price changes among the different types of food items, and especially so in the most recent period.

The estimation of implicit price deflators for different sectors allows one to estimate the domestic terms of trade between agriculture and other sectors. Table 2.1.7 presents estimates of the domestic terms of trade between agriculture and the main sectors with private sector activity. These terms of trade are supposed to illustrate the relative incentives afforded to various domestic sectors by the policies followed. It can be seen that until 1995, agriculture was been favoured in terms by the evolution of the domestic terms of trade. However, from 1995 onwards, the domestic terms of trade have turned against agriculture in almost all sectors.

Table 2.1.6. Retail price indices for food and non-food items, GDP deflators, and respective average annual percentage growth rates (1990=100)

ITEMS	1993	1994	1995	1996	1997	1998	1999	1990-95	1995-99	1990-99
	1- Foodstuff	126	145	155	169	173	169	162	9,16	1,11
A- Cereals	136	187	213	216	222	226	227	16,33	1,60	9,54
B- Legumes	107	113	149	151	145	147	146	8,30	-0,51	4,29
C- Meat, fish and eggs	130	139	141	149	149	145	140	7,11	-0,18	3,81
D- Oils	129	130	136	181	180	177	159	6,34	3,98	5,29
E- Sugar and Sweets	126	190	216	222	220	219	218	16,65	0,23	9,05
F- Milk and dairy products	116	122	135	148	144	136	140	6,19	0,91	3,81
G- Vegetables	105	154	138	138	178	165	140	6,65	0,36	3,81
H- Fruit and nuts	116	137	144	165	160	153	149	7,57	0,86	4,53
I- Other food stuff	124	135	147	169	170	169	166	8,01	3,09	5,79
J- Non-alcoholic drinks	111	157	191	170	173	176	166	13,82	-3,45	5,79
K- Alcoholic drinks	146	173	189	196	198	200	204	13,58	1,93	8,24
L- Cigarettes and tobacco	147	178	207	212	212	212	212	15,66	0,60	8,71
2. Non-food items (implied index)	153	167	192	209	213	216	216	13,95	3,03	8,96
General retail price index	137	154	170	185	189	188	184	11,20	2,00	7,01
GDP deflator for private consumption	138	169	173	210	222	222	248	11,59	9,39	10,60
GRP deflator overall	120	136	145	164	172	171	180	7,74	5,47	6,72

Source. Computed from Central Bureau of Statistics. Statistical Abstract 2000.

Table 2.1.7. Internal terms of trade between agriculture and other sectors (1995=1)

Agriculture versus	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Mining & manufacturing	0,40	0,60	0,74	0,95	0,96	0,92	1,00	0,67	0,65	0,68	0,60
Building & construction	1,07	1,01	1,10	1,05	0,93	0,88	1,00	1,02	1,08	1,02	1,06
Wholesale and retail trade	0,92	1,02	1,20	1,08	0,99	0,97	1,00	0,97	0,97	0,95	0,99
Transport and communication	0,65	1,04	1,03	0,99	0,93	0,96	1,00	1,02	0,98	0,93	0,90
Total non-agriculture	0,71	0,93	1,06	1,05	1,00	0,96	1,00	0,89	0,87	0,87	0,84

Source. Computed from data in Central Bureau of Statistics. Statistical Abstract 2000.

2.2 Population, labour force, employment and wages

The most recent estimate of the population actually living in Syria in 2000 was, according to the CBS Statistical Abstract, 16320 thousand. However, according to civil registration records the registered population of Syria at the start of 2000 was 17938 thousand. This leaves an estimated 1.6 million Syrians living abroad in 1999, or 9 percent of the registered population, a very large share by international standards. Of the population living in Syria in 1999 44.8 percent was estimated to be of age less than or equal to 14 years, and only 3 percent was older than 65 years. Of the total population 51.1 percent is female.

The Statistical Abstract does not mention figures for the labour force, or employment but they can be inferred from the figures of the total governmental employment at the end of 1998 (833981 persons), and the reported percentage of the labour force (which in fact must mean employment) that this accounts for in 1999(26 percent). Hence, the implied labour force is 3207 thousand. If we consider those above 15 years and less than 65, as potential members of the labour force, and this amounts to 9202 thousand in 1999 from the figures in the Statistical Abstract, and if we add in this implied potential labour force the number of those aged less than 14 years and more than 65 years that are actually employed (and these can be estimated from the age specific activity rates and the respective population figures to be equal to 299 thousand), then the estimated potential labour force is equal to 9500 thousand.

If we take the employment implied above and divide it by the estimated potential labour force, the implied labour force participation rate seems to be a very low 34.6 percent. The published statistics mention that the labour force participation rates (or activity rates as mentioned in the statistics) by different age classes are between 29.1 percent for those aged 15-19, rising to 59.1 percent for those aged 30-34, and then declining to 41.3 percent for those aged 60-64. This suggests an average activity rate (including the participation rates of those aged 10-14, and over 65) of about 39.1 percent, which is much higher than what is estimated above, suggesting a labour force of 4702 thousand. This suggests that the proportion of the government employees in total labour force is overestimated, or that the published proportion includes also the employment of public enterprises.

Incidentally the IMF in another report (IMF, 2000b) mentions that total Syrian employment is around 4.6 million, which is not far from this estimated figure. They also mention that total public employment, including employment of public enterprises is 1162, which is only 17.3 percent of the estimated above total employment of 4702 thousand persons.

The relatively low labour force participation rate is accounted for by the very low labour force participation rate of females (3.8 percent), compared with the high male labour force participation rate of 49.4 percent. These rates, however for 1999 are much lower than those reported for 1998 in the 1999 Statistical yearbook, which are 18.4 percent for females and 80.3 percent for males. If the figures are correct they suggest a substantial decline in employment in 1999, a major drought year, and highlight the importance of agriculture in the economy.

The average activity rates in 1999 seem to be higher in rural areas (42.1 percent) compared to 24.5 percent in the urban areas (in 1998 the rates were 53.1 percent and 48.3 percent respectively). It is interesting that a very high 51.1 percent of the female active labour force in 1998 was occupied in agriculture and forestry, while the corresponding proportion of the male labour force was only 23.2 percent. If we take these percentages, and combine them with our estimates of the labour force, then it can be estimated that the total labour force employed in agriculture in 1999 was equal to 828 thousand people (114 thousand female and 704 thousand male). This amounts to 17.6 percent of the estimated above active labour force, and compares with 1081 thousand in 1998 and 918 thousand people in 1991, or 28.2 percent of the total employment then. The significant decline of agricultural employment in 1999 by 23.5 percent, and which was mostly accounted for by declines in female agricultural employment is interesting. Women in Syria account for a large share of seasonal agricultural workers, who in turn largely come from low-income households. The large decline in that type of employment suggests that the drought must have affected considerably those poor households that depend of agricultural wages for part of their income. Incidentally, the IMF (IMF 2000b) estimated the employment in agriculture in 1998 at 1233 thousand (1200 private, and 33 thousand public), which is about 14 percent higher than what is estimated above, and accounts for 29 percent of the total employment.

Out of the total number of people employed in agriculture in 1991, 361 thousand were unpaid family workers (148 thousand male, and 213 thousand female), 145 thousand were paid workers (84 thousand male and 61 thousand female), 280 thousand were self employed (266 thousand male and 14 thousand female), and 132 thousand were employers (126 thousand male and 6 thousand female). It is quite clear that the bulk of females working in agriculture in 1991 were unpaid family workers, and of the rest, the overwhelming share was paid workers. It is not clear what the corresponding picture is now.

The statistics do not allow a classification of the labour force or population by rural and urban areas. Earlier studies (Sarris, 1995) estimated the proportion of the population living in rural areas at 49.1 percent in 1993, down from 53 percent in 1981, with annual growth rates in urban and rural areas of 4 percent and 2.7 percent respectively for the period 1981-93. Nevertheless, it is estimated that with the growing population, there are about 150,000 to 200,000 new entrants to the active labour force each year, and

absorption of these is becoming an increasing problem with the slowdown of the economy.

The above statistics are only a rough indication of the actual employment situation. Many public employees have more than one job. Many more people working in agriculture are unpaid and uncounted family members. In addition, there is seasonal migration of workers depending on the harvests, and of agricultural workers seeking casual work in the towns during the off-peak seasons. There has also been a substantial migration of people to neighbouring oil-rich Arab countries. In mid-1990 it was estimated that the number of Syrian national living abroad was about 2 million. This is higher than the 1600 thousand Syrians estimated to be living abroad in 1999, and may have to do with the decline in economic activity in the oil rich Arab countries during the past five years. This must have had significant implications for the size of private transfers from abroad.

Private wages are related to the public sector wages. These in turn are legally mandated to increase every two years by 9 percent, and in addition ad hoc additional increases are given. In 1994 there was a 30 percent such increase, and in 2001 another 25 percent. In real terms (namely deflated by the retail price index , which in Syria is the definition of the CPI), average real wages of civil servants have fallen between 1992 and 1999 by 21 percent (IMF, 2000b, table 33), at the same time that total civilian employment has risen by 13.9 percent (to an estimated 834 thousand persons in 2000. This must have led to increasing pressures on civil servants to seek additional income earning activities.

2.3 The productive sectors

Agriculture is the largest productive sector, as seen above, and its direct and indirect impact on the economy is considerable. Syria has achieved self-sufficiency for the main agricultural products, and the government sets procurement prices for the strategic products at prices that are deemed to be attractive to farmers. Exporters of agricultural products are allowed to retain 100 percent of their export proceeds, unlike other exporters. There was an agricultural production tax, applied to agricultural products at the processing stage at rates that ranged from 10 to 12 percent. This was cancelled two years ago for fruits and vegetables and was cancelled for other products in 2001. Commercial credit and inputs are provided to farmers through the Agricultural Co-operative Bank (ACB), and the state plays a significant role in setting the cropping patterns through the planning mechanism. While these policies have been successful at diversifying the production structure, and increasing production, in recent years of declining international prices they have been putting an increasing strain on the budget. Of particular importance from a macroeconomic perspective is the high level of stocks (cotton, sugar beet, and wheat), that may be placing a high cost on the budget.

The **industrial** sector (comprising mining, manufacturing, and utilities) is dominated by mining, which accounts for about 60 percent of the sector's value added. Manufacturing accounts for 35 percent, and utilities for the remaining. The **petroleum** sector boomed in the past fifteen years with oil production more than doubling between 1988 to 1993, due to discovery and production of light crude oil. In 1995 oil output was at its highest at 617,000 b/d but has been declining ever since. Syria became a net oil exporter in the late 1980s, but due to increasing domestic consumption and stagnant production, is facing the prospect of becoming a net oil importer by 2010.

Considerable recent **natural gas** finds have led to expanding production, and the construction of several plants to manufacture gas using products, such as cement and

nitrogenous fertiliser. All gas is consumed locally, with two thirds used by gas-fired power stations, and the rest as fuel in industrial plants and for fertiliser production.

In manufacturing, the main activities are based on food processing, cotton, textiles, sugar, and fertilisers. Hence agriculture is an important provider of raw materials for this sector. Manufacturing provides 15 percent of total employment (about 605 thousand jobs in 1998), and 81 percent of this is in the private sector.

Construction activity boomed between 1991-1995, and slowed markedly since then. This is the result of overconstruction in the preceding years, particularly high-income housing, as a result of remittances and other foreign capital inflows, in expectation of future demand and incomes that did not materialise. As a result many buildings are vacant or unfinished in many parts of Syria. A contributor to this slowdown is the rental law, that renders it unprofitable for landlords to rent their properties, and results in many houses being empty rather than rented.

The services sector accounts for 45 percent of GDP. 38 percent of service GDP is accounted for by public sector activities, including government administration. The private services are dominated by wholesale and retail trade, as well as transport and communications.

2.4 Public finance

The public sector of Syria consists of central, regional and municipal governments, a number of non-financial public enterprises, and financial institutions. The budgetary accounts consolidate the gross financial transactions of the central government with the net transactions of the regional and municipal governments, as well as the operating surpluses of some public enterprises. Military expenditures are included in the budget as current expenditures for military and security. Some significant public sector operations are not included in the budget. These include (a) the consumer subsidies effected through the Price Stabilisation Fund (PSF); some operations of the Public Debt Fund (PDF); and (c) borrowing by the public sector enterprises. To a large extent borrowing from the banking system finances losses of public enterprises.

Table 2.4.1 summarises the fiscal operations of the Syrian government. The following major observations obtain. First, the oil related revenues make up about 45 percent of total revenues. Second, the biggest contributor to the overall fiscal negative balance is the deficit of the PSF. Third, the bulk of the financing of the overall deficit has come from the external sector, largely through borrowing to finance development projects.

On the revenue side, of the non-oil tax revenues, taxes on business (mostly public which make up 70 percent of these taxes) make up about 32 percent of the total, taxes on wages and salaries only 6.6 percent (again these represent mostly taxes on public sector employees), and taxes on imports 16.2 percent. Export taxes are small making up only 1.3 percent of total non-oil tax revenues. Since 1999 export taxes on fruits and vegetables have been abolished and they are refundable for cotton. Of the remainder, the majority comes from non-petroleum surcharges on natural gas, tobacco and construction materials, and stamp fees. The non-tax revenues consist mostly of public enterprise surpluses. Taxes related to agriculture include the unimproved land tax, the livestock tax, and the tax on agricultural products (applied at the processing stage and ranging from 10 to 12 percent). This tax has recently been cancelled. All these taxes accounted in 1998 for only 3.5 percent of all non-oil related tax revenues, or only 1.4 percent of all revenues.

Table 2.4.1. Syria. Summary of Fiscal Operations 1994-99

	1994	1995	1996	1997	1998	1999 (est.)
	(percent of GDP)					
Total revenue	24,1	25,4	24,6	26,5	25,7	24,5
Oil related revenue	9,5	9,2	10,6	11,2	10,7	11,1
Non-oil tax revenue	10,6	11,9	9,5	10,7	10,3	10,0
Non-oil nontax revenue	4,0	4,3	4,4	4,6	4,7	3,4
Total expenditure	27,3	26,7	24,8	25,6	26,2	24,9
Current expenditure	14,5	14,9	13,4	13,4	14,4	14,8
Development expenditure	12,8	11,9	11,5	12,1	11,9	10,1
Budget balance	-3,2	-1,4	-0,2	0,9	-0,5	-0,5
Total financing	3,2	1,4	0,2	-0,9	0,5	0,5
External	5,0	3,5	2,5	2,1	1,5	2,5
Domestic bank financing net	-1,7	-0,7	-2,8	-2,6	-1,2	-5,5
Nonbank financing	-0,1	-1,3	0,5	-0,4	0,3	3,4
Memorandum items						
PSF deficit	2,8	2,4	3,0	2,9	2,7	2,3
Overall fiscal balance	-6,0	-3,8	-3,2	-2,0	-3,2	-2,8
Nominal GDP (billion SP)	506,1	571,0	690,9	745,6	795,7	795,5

Source: IMF 2000b

The share of import taxes in total taxes has been declining since 1994, basically because the valuation of imports is still done at highly overvalued exchange rates. In spite of a weighted average nominal tariff rate of 35 percent, the import duties accounted for only 2.1 percent of GDP in 1998. This is low, given that imports amounted in 1998 to about 30 percent of GDP. This suggests that there are considerable exemptions from the tariffs or that there is some tariff avoidance.

Concerning public expenditures, about 67 percent of current expenditures are for wages and salaries, of which more than half is for defence and security. Subsidies, mostly transfers to the PSF, rose from 1.5 percent of GDP in 1994 to about 3 percent of GDP in 1999. In 1997 and 1998 a large amount (about 0.6 percent of GDP) was transferred to the General Organisation for Cereals Production and Trade (GOCPT) for exports of surplus wheat at world prices, which were much below prices paid to producers. Concerning development expenditures, agriculture has been receiving amounts ranging from 1.86 percent of GDP (in 1994) to 2.29 percent of GDP in 1995, and is the third largest recipient of development funds after utilities (2.5-4.5 percent of GDP), and the social sector (2.6-2.95 percent of GDP).

The management of public finances has been conservative, and this along with the availability of external financing, has allowed the government to reduce its domestic debt since 1994. Steady sources of financing for the government include the sale of investment certificates to the public, the build-up of household savings through deposits to the Post Office Savings Fund (POSF), and the obligation of commercial and specialised banks to invest in government paper an equivalent of 7.5 percent of their deposits.

2.5 The monetary sector and developments

The financial sector of Syria consists of the central bank (CeBS), one commercial bank (the Commercial Bank of Syria (CBoS)), four specialised banks (the Agricultural Co-operative Bank (ACB), the Popular Credit Bank (PCB), the Real Estate Bank (REB) and the Industrial Development Bank (IDB)), and the POSF. All financial institutions are state

owned. The ACB finances all agricultural production activities, deals directly with farmers, and organises the distribution of inputs to farmers according to detailed plans drawn by the Ministry of Agriculture and Agrarian Reform (MAAR).

Monetary policy is conducted mainly through an annual credit plan formulated by a ministerial committee, that establishes credit ceilings for the central government, the public enterprises and the private sector. The plan is implemented flexibly to allow for unforeseen developments. Instruments such as discount rates and reserve requirements have not been used in recent years. All interest rates are set administratively and have not changed for many years.

Foreign assets make up a substantial part of total monetary assets of the banking system. Claims on public enterprises are the second largest item, accounting for about 70 percent of outstanding loans. The money supply (consisting of money, (currency outside banks and demand deposits) and quasi-money) has grown between 1994 and 1999 at an average annual rate of 9.4 percent, with the currency outside banks growing at 6.2 percent annually. This may account partly for the inflation observed between 1995-98 (see table 2.1.6).

Public enterprises receive more than two thirds of total bank credit. During 1994-99, ninety percent of credit to the public sector was allocated to the two largest public companies, which are both agriculture related, namely the General Organisation of Cotton Ginning and Marketing (GOCGM), and the GOCTP. In 1999 the GOCGM accounted for 40.9 percent of the total outstanding credit to public enterprises, 23 percentage points more than its share in 1995. The GOCTP, whose share of total credit to public enterprises declined by more than 20 percentage points over 1995-99, still had over 50 percent of the outstanding credit to the public sector. By contrast total credit to the agricultural sector in 1999, the bulk of which is ACB loans to farmers, amounted to only 16 percent of the total credit to these two organisations. This situation implies that the marketing and price policies towards cereals and cotton, which include three of the seven strategic crops, and the corresponding marketing organisations have significant monetary implications for the economy, as well as implications about the availability of credit to the rest of the economy. Diminished requirements for credit to these two sectors will most likely release considerable amounts of credit for use by other public and especially private sectors.

The share of currency outside banks in total broad money stock has been on a declining trend since 1994, but still accounts for more than 40 percent of the total, indicating a low degree of financial intermediation, and that cash is the principal means of payment in Syria's payment system, as the bulk of deposits is by public enterprises. This is characteristic of financially repressed economies. The computed per capita currency outside banks declined in real terms (deflated by the retail price index) between 1994 and 1997 by 12 percent, but then recovered during 1997-99. Still in 1999 the real per capita currency outside banks was 3 percent below its peak (between 1994-99) in 1994. As this indicator is a proxy for domestic economic activity, and should increase when economic activity is growing, its decline in real terms suggests that the Syrian economy has been in stagnation for the past few years.

The other major feature of the banking system is the meagre incentives it offers for private formal savings. As real interest rates have been negative for much of the last two decades, the private individuals have found other ways to utilise their savings. These include investments in gold, investments in land, investments in agricultural operations

(by the so-called “entrepreneurs” that will be analysed later), deposits abroad, etc. This tends to deprive the economy of much needed formal capital for domestic investments. It is clear that formal private savings mobilisation has still a long way to go, and substantial room to grow in Syria.

2.6 The external sector

Syria’s external position has improved substantially in the last few years, with both the current and capital accounts exhibiting surpluses in 1998 and 1999. The major factor in this development was the increase in oil related exports, while private exports have remained steady. While the trade balance has been positive in the last few years, the service account has been negative for a long time, and is largely counterbalanced by workers remittances. The capital account has been positive all throughout the period 1994-99, largely because of substantial receipts of short term and long term loans. Foreign direct investment (excluding the large natural gas related project in 1999) has averaged about US\$ 80 million a year since 1996.

On the **export** side, crude oil accounted for 63 percent of total exports, with fruit and vegetables second at 10.7 percent of exports, and raw cotton third at 4.5 percent of exports. Other primary agricultural products (mainly lentils, raw hides and skins, wool, and tobacco) accounted for another 3.3 percent of exports. Thus, about 82 percent of total exports is accounted for by primary products, a very high ratio by world standards. Among non-primary products 7.2 percent of exports are textiles, and these in turn are based on cotton. Thus the bulk of non-oil exports are agricultural raw materials or based on agricultural inputs. Non-oil public sector exports (mainly raw cotton and miscellaneous manufactures) comprised 31 percent of total exports during 1997-99. However, in 1999 the private sector share of non-oil exports reached 80 percent.

A number of incentives to stimulate private sector exports were introduced during 1996-99, such as the permission to import a larger number of inputs used in export production, the depreciation of the neighbouring countries exchange rate used to value the surrendered portion of the non-agricultural export proceeds, and the removal of the tax on exports of many agricultural products. However, these incentives have not been sufficient to generate significant growth of exports, because exporters are still constrained by cumbersome administrative procedures, the absence of a duty drawback scheme for imports used in export production, the inability to import goods that are produced domestically at higher cost (such as cotton yarn), and the 25 percent foreign exchange surrender requirement. These restrictions have led to substantial increases of “suitcase exports”, which are personal exports allowed without restriction since 1997, and consist mostly of textile and artisan products. These have been estimated (IMF 2000b) at around US\$ 300 million annually, equivalent to about 20 percent of non-oil exports.

The European Union (EU) is Syria’s main export market, accounting for more than half of total exports, consisting mostly of oil and non-agricultural products. Agricultural exports are directed mainly to Arab countries. There seems also to be considerable border trade with Lebanon and other neighbouring countries that is unrecorded.

Imports have gradually been liberalised, and this along with the increased availability of foreign exchange due to workers remittances and loans, has led to a surge in imports, especially private ones, that amount to 62 percent of the total. Foodstuffs accounted in 1999 for 19 percent of all imports. The main source of imports (30 percent) is the EU. The other major sources of imports were the former CMEA countries, China and Yugoslavia

(17 percent). However, these shares do not consider the large volume of informal trade with Lebanon.

2.6.1 Exchange rate regime and policy²

Syria's **exchange rate** policy is likely to be the single most important macroeconomic policy affecting the development of the country's agricultural sector. In fact, it has the potential to counteract or overcompensate the effects of various sector-specific policies. Therefore, an assessment of the exchange regime and the effects of various exchange rate policies is imperative.

The exchange rate system has undergone considerable changes in the last decade. Generally, Syria has implemented a system of multiple fixed exchange rates. For agriculture, separate exchange rates were specified for the imports of agricultural inputs, for the imports, and for the exports of agricultural commodities. However, in many cases these were accounting rates only. For instance, imports of agricultural food staples had to be made at the market exchange rate while the total value of imports in SP was recorded at the designated exchange rate for agricultural imports. Furthermore, the use of foreign currency has been restricted by controls (see below). During the most recent period Syria has made substantial progress in reducing the exchange rate distortions. The respective policies consisted of a unification of the various exchange rates, and secondly, a devaluation of all exchange rates, thereby, bringing them closer to the prevailing market exchange rate.

The use of foreign currency revenues on both the import and the export side has been controlled in the 1990s. Foreign currency earning from exports, for instance, could be used either for the imports of products which are not on the list of products prohibited to be imported, or could be sold to other dealers or the Commercial Bank of Syria, or it could be saved in a foreign currency account and used later on. At the same time, an exporter was obliged to exchange 25% of foreign currency earnings at the official exchange rate which at 11.25 SYR/US\$ was far below the respective black-market or neighbouring country rate during most of the 1990s and therefore constituted a clear discrimination of exporters.

On the import side each importer had to prove that the foreign currency needed for imports were earned from exports. Another peculiarity was applied to imports of important food staples such as wheat, sugar, rice etc. While the exchange rate at which the foreign currency had to be bought was the market exchange rate (about 50 SP/US\$), the calculation of import tariffs was based on the exchange rate for agricultural imports which was equivalent to the official exchange rate (11.25 SP/US\$ between 1990 and 1999). Hence, the product-specific tariffs were calculated on a much lower import value (in SP). This effectively reduced the level of import tariffs and thereby effectively subsidised agricultural imports. Such exchange rate and currency regulations reduced the transparency of the trade regime. While it has to be acknowledged that the exchange rate unification and realignment that has been implemented during the last two years has reduced the respective distortions there are still several regulatory constraints, which need to be abolished.

The unification of the exchange rates, which are relevant for agricultural trade, started in the early 1990s. In 1992 the exchange rate at which pesticides had to be imported was

² This and the next section draw on the report of Wehrheim (2001)

increased from 11.25 to 40 SP/US\$. In 1994, an adjustment of similar magnitude followed with respect to the exchange rate at which fertilisers were imported. Finally, in the year 2000 all remaining exchange rates were adjusted from the previous value of 11.25 to 46.5 SP/US\$. Hence, it is obvious that the unification of exchange rates has also resulted in a significant (nominal) devaluation of the Syrian Pound in relation to the US\$ and other western currencies.

The unification of exchange rates was mostly done by one major first adjustment, which was followed by gradual steps of further devaluation. In fact, this process continues and in May 2001 a decree has been prepared with which a further devaluation of the official exchange rate to 48.5 SP/US\$ is to be made. By doing so the gap that still exists with respect to the market exchange rate and the neighbouring countries exchange rates has been further reduced. If one considers the trade weighted official nominal exchange rates, then a substantial nominal devaluation seems to have occurred in the past five years (see table 2.6.1). Because of relatively moderate inflation rates the substantial nominal devaluation which has been implemented during the last years appears to have resulted also in a real devaluation of the exchange rate. However, the various official nominal exchange rates do not reflect the underlying fundamentals in the foreign exchange market. One rate that is considered as more representative of the market situation is the Beirut exchange rate, which is the same as the Damascus black market rate. This rate has remained largely constant since 1994. Given the differences between the inflation rates in Syria and EU or other trade partner countries, the IMF has estimated that this open market exchange rate has appreciated between 1994 and 1999 by something like 9 percent (see table 2.6.1), and this gives an opposite picture than the one suggested by analysis of the real nominal effective exchange rate.

Table 2.6.1. Exchange rate developments in Syria (all rates in SP per US \$, except where indicated)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Official exchange rate (ER)	11.25	11.25	11.25	11.25	11.25	11.25	11.25	11.25	11.25	11.25	46.5
ER for agricultural inputs fertilizer	11.25	11.25	11.25	11.25	43	43	43	45	46.5	46.5	46.6
ER for agricultural inputs pesticides	11.25	11.25	40	40	43	43	43	45.5	46.5	46.5	46.7
ER for agricultural exports	11.25	11.25	11.25	11.25	11.25	11.25	11.25	11.25	11.25	11.25	46.8
ER for agricultural imports	11.25	11.25	11.25	11.25	11.25	11.25	11.25	11.25	11.25	11.25	46.9
Black market ER in Damascus	46.45	45.84	50.48	49.67	51.2	50	51	51	51	51	51
ER in Beirut	46.45	45.84	50.48	49.67	51.2	50	51	51	51	51	51
ER in neighboring countries	42	43	43	43	43	43	44	45.2	46.5	46.5	46.5
Promotion ER	22	22	22	22	22	22	22	22	22	22	22
Real effective exchange rate index (1993=100) (increase=appreciation)				100,0	99,4	103,0	107,7	113,0	104,9	108,7	
Trade weighted ER (increase=depreciation)	19.2	25.1	28.1	29.9	33.3	34.4	39.2	45.1	49.4	48.9	48.1

Source: Wehrheim, 2001, and IMF, 2000b.

One interesting puzzle is why, given the inflation rate differentials between Syria and most of its (officially) trading countries, such as the EU and the Arab countries, the open market exchange rate has stayed nominally constant, and in real terms appreciated. If the parallel market reflects unobserved supply and demand forces for foreign exchange, then the parallel rate should, under balanced supply and demand for foreign exchange, have depreciated. The fact that it has not, is attributed by IMF to the balance of demand and supply of foreign exchange in the parallel market, but this is not sufficient, under differences in inflation rates. An explanation may be that while most calculations of real and effective exchange rates consider as trade weights those indicated by official trade statistics, the existence of a large parallel market may suggest trade weights that are markedly different than those recorded officially. Given that Lebanon may be the largest unofficial trade partner of Syria, and given that the exchange rate in Lebanon has been overvalued, as estimated by the IMF, then the Beirut rate may in fact reflect an exchange rate between two overvalued currencies, and hence may not reflect the true fundamentals. Hence real effective exchange rates computed on the basis of the Beirut “free market” rate may not in fact reflect the real free market. This is, nevertheless, a hypothesis that needs further investigation.

The current exchange rate, if overvalued, as seems likely, is likely to be the most important factor that discriminates against (taxes) the agricultural sector of Syria. Further nominal devaluation would offer the possibility to reduce this form of discrimination (taxation). Further devaluation could, in fact, open “windows of opportunities” for Syria’s agricultural sector for various reasons. For export oriented sectors such as agriculture a gradual devaluation of the national currency has shown positive effects in the past in other countries. In many countries of Latin America, for instance, the devaluation of the domestic currencies has removed the effective taxation of agriculture and kick-started agricultural development. This because a devaluation enhances not only the competitiveness of domestic agricultural raw products but also that of domestically processed food commodities from domestically produced raw materials.

2.6.2 The trade regime

Before 1985 all import and export operations were controlled by the state. Since 1985 private traders have been allowed to import industrial inputs. After 1987 more substantial

reforms were implemented in an attempt to liberalise Syria's trade regime. One part of these reforms was to allow private traders to export agricultural commodities. Today trade for some agricultural products such as fruits and vegetables is dominated by private traders. Trade in strategic crops, particularly, cereals cotton, tobacco, and sugar, remains widely in the hand of state organisations. In 1991 law No 10 was passed, which gave more concessions to foreign traders. Because of these changes exports diversified substantially as private traders were successful in exporting fruits, vegetable, and other food commodities to Arab Gulf countries and garments to European countries. However, in the second half of the 1990s the Syrian economy experienced a depression and foreign trade policies became less liberal again. Only at the end of the 1990s new reforms were initiated designed to liberalise further the trade regime. However, they were not sufficient to remove all the trade restrictions, which are still in place today.

Imports are regulated through three lists. These are: (a) the "restricted list", comprising products whose import remains a monopoly of the public sector, such as medicines, automobiles, oil, wheat, and cotton. (b) The "negative list", encompassing prohibited imports because of security, health, and religious reasons, but also to protect domestic industry (finished clothing, shoes, and various electric appliances). The number of items on this list has been reduced over the last few years. (c) The "permitted list", including goods whose imports by the private sector are allowed, subject to restrictions on methods of financing. This list has been expanding, and currently includes more than 10,000 items.

Imports of agro-food commodities are subject to two types of **tariffs**. First, importers have to pay a 'product-specific import tariff' which varies between 1 and 100%, and which has been effective throughout most of the 1990s. The highest import tariff rates are applied for luxury food items such as caviar (100%). The major issue here is the extreme variation of tariffs. More uniform tariffs have been shown in other countries (e.g. Chile) to reduce the incentives for corruption and to contributed to export growth. Recently decision have been made to eliminate these tariffs, particularly the decisions related to imports custom tariff reductions and elimination of the agricultural production tax upon exports.

Second, importers have to pay an additional 'general import tariff'. This is in the range 6-35% and increases positively (but in a less than proportional fashion) with the level of the product-specific import tariff. This additional tariff is supposed to collect fees that in turn are used for various government expenditures (e.g. defence, consumption, schooling, harbours, transportation etc.). Law No.1 of 1980 specified some exemptions from the need to pay the 'general import tariff'. Imports of important consumer products such as flour, for instance, were exempted from these additional tariff payments.

The data on the extent of annual tariff revenues that have been collected from these two types of tariffs have not been made available, but the discussion in section 2.4 indicated that the actually collected tariffs are much smaller than what is indicated by the statutory rates, possibly because of the use of overvalued exchange rates or exemptions.

From an economic point of view the application of such a 'general import tariff' reduces the transparency of Syria's trade system. If revenue objectives were the major reason for imposing this additional customs tariff it would have been more beneficial from the to raise product-specific import tariffs instead of imposing an additional tariff.

Because of the obvious disadvantages inherent in the 'general import tariff' scheme it has been liberalised in early 2001. A first decree reduced the level of the 'general import

tariff” for all product groups to 1%. A second decree, which at the time this study was written has not been signed yet, foresees the complete abolition of the ‘general import tariff’.

These measures are significant steps towards further liberalisation of Syria’s trade regime. As long as this reduction in trade protection is not compensated for by increasing the product-specific import tariffs, the economic effects should be measurable immediately. The difference between domestic and world market prices should narrow. Furthermore, domestic prices for imported commodities should decrease, which in turn will be particularly beneficial for those consumers who rely on imported food commodities.

Non tariff import constraints for agricultural commodities abound in Syria, with the most obvious example that of import bans. In an attempt to protect producers of fruits and vegetables – which is likely to be one sub-sector of agriculture, which enjoys relatively high comparative advantages – a total import ban for fruits and vegetables has been in force during the 90s. In the course of negotiating the Free Trade Agreement with Lebanon and Jordan, imports of vegetables and fruits were allowed in certain periods of the year according to an agricultural production calendar. Furthermore, “Five Star Hotels” were allowed to import tropical fruits, some of which can be found today in food retail markets of Damascus. Bans for imports of other agricultural and processed products still exist. Nevertheless, the Arab Free Trade Agreement has facilitated the trade flow of agricultural products.

Apart from the bans there is another set of trade restrictions related to **imports tied to exports**. After 1987 the private sector was allowed to import production inputs and agricultural raw materials and processed foodstuffs subject to the condition of having earned the mandatory foreign exchange in export operations. However, the exporter was allowed to use a specific share of his export earnings only for importing commodities. This share differs according to the exported commodity. For example, in the case of wool exports (from sheep) 75% of export earnings may be used only for importing agricultural commodities. Resolutions, which became effective in 1999 allowed such “import-export-ties” also in the case of flour. Private mills and pasta factories were allowed to import flour but had to earn the foreign exchange by exporting the respective commodities again.

Another example is related to trade in sheep meat. Syria seems to have a comparative advantage in the production of Awas sheep, which enjoys high demand particularly in Gulf countries. The export value of Awas sheep was US\$ 46 million in 1997, 49 million in 1998, and 55 million in 1999. However, exports of the Awas sheep were substantially constrained by imposing an “imports tied to exports” system. For every Awas sheep exported the exporter had to import the double number of sheep meat of lower quality (the so-called 2 for 1 rule). The rationale for this arrangement was determined by food security concerns. Recently, this regulation was abandoned, allowing the exporters to export any amount they wish (Decision No. 1 of the Prime Minister, April 7th, 2000). However, it is obvious that such constraints prevent the best exploitation of Syria’s comparative advantage. Another example for an obligatory “import tied to export” was imposed when bananas were imported. Such imports were subject to exports of apples and citrus fruits in similar quantities.

One of the major recent objectives of Syria’s foreign trade policy is to encourage the **exports** of commodities and services and to diversify the structure of exports. In an attempt to support this objective, the Export Committee was established in 1986. This

Committee co-ordinates the work of the Ministry of Economics and Foreign Trade, the Supreme Agricultural Council and various other government institutions. The Export Committee is responsible in designing export policies, identifying the commodities to be exported by each parastatal or ministry, and supervising the export operations. More recently it also attempted to change the general export strategy: instead of merely disposing of surplus quantities not needed for domestic consumption on international markets, it encouraged the production of commodities specifically tuned for international markets. This seems to be particularly important because in export markets quality standards matter today more than ever before.

Ever since the liberalisation of the Syrian economy has been initiated in 1987, the **Export Committee** in accordance with the guidelines designed by the Government of Syria started to ease export restrictions of agro-food products by the private sector. Today the private sector is allowed to engage in the following export operations: fruits and vegetables; all other minor agricultural crops; strategic crops (including wheat, cotton, sugar, and tobacco) except flour exports which need specific approval; live animals except wild birds which have been domesticated; meat, and other animal products contingent on the approval of the MAAR.

However, various restrictions are still in force, which constitute serious constraints for private export operations. For most products mentioned above, the exporter needs to get an export license. Only exports of fruits and vegetables are permitted without getting an export license.

However, the single most important factor discriminating against private agricultural exporters is the exchange rate system that has been applied in the 90s (see previous section on exchange rates).

There is a variety of **export taxes** that are levied on various agricultural commodities. They can be categorised as follows:

Products on which an export tax of 12% of their average price at the time of export is levied. This product group includes fresh and processed vegetables and fruits, olives, olive oil and other products made from olives (a total of 88 commodities). However, there have been various exemptions from these export taxes in the recent past. Particularly dry and frozen vegetables of superior quality standards, olives and olive oil products as well as cotton and cotton products have recently been exempted from export taxes.

Products on which an export tax of 9-9.5% of their average price at the time of exports is levied.

An “income tax” of 1% of all export revenues is levied on all earnings from exports.

Tax on foreign currency earnings of 50 Piasters per dollar.

These policies were valid until 2001. However, in the meantime a new reform package has been passed by the Government of Syria which envisions the discontinuation of the payment of export taxes and fees on foreign currency earnings from export operations.

In compliance with the government’s objectives, the Export Committee initiated various measures to **encourage exports** of agricultural commodities. The following measures seem to be particularly relevant:

Export taxes imposed on cotton were eliminated. At the same time, cotton, cottonseeds, yarns and cloth for textiles were exempted from agricultural production taxes when being processed by domestic textile plants.

Production taxes on exported agricultural products were eliminated.

While no explicit export subsidies were used, exports of vegetables and fruits were supported via various “encouragements”:

Exports of vegetables and fruits were exempted from agricultural production taxes.

The income tax on export profits was reduced from 1.9% to 1%.

The tax on export earnings was reduced to 10 Piasters per Dollar.

Elimination of the commission of 5% imposed by the local administration on sales in the wholesale markets (Suk El Hal).

Other measures of “export encouragement” included a reduction of airfreight rates for vegetables and fruits, especially citrus fruits. Furthermore, imports of machines used for packing, grading, and sorting of fruits and vegetables were made easier.

Furthermore, olive and olive oil exports were supposed to be encouraged. For this purpose various working groups were established to explore the options of enhancing olive oil exports.

2.7 Macroeconomic and growth policies

After a period of protectionist and inward-oriented economic policies in the 1970s and 1980s, the Syrian government started changing these policies towards the late 1980s and early 1990s. The most important elements of the reforms were the provision of fiscal incentives to private investors via law number 10 of 1991, exchange rate depreciation and simplification, price and foreign trade liberalisation, increases in administered prices including those for agricultural products, and opening up several areas of hitherto public monopoly to private activity. Between 1990 and 1995, these reform policies along with a high level of oil output, elicited a strong supply response, evidenced by a high rate of economic growth, increases in private sector exports and imports, large increases in agricultural production, and substantial increases in private sector activity. Output growth, however, slowed down in the second half of the 1990s, primarily because of recurring droughts, the levelling off of oil output, a decline in private sector investment, and the absence of a well articulated growth-oriented development strategy. The economy is still characterised by a large but stagnant public sector, and a resilient but constrained private sector, a cumbersome regulatory regime, continuation of many state controls, and a complicated trade and exchange rate system.

In response the new government has recently implemented a set of measures to encourage private and foreign investment and reform the currency laws. These measures include the extension of the tax exemption period for investments to a total of 13 years, allowing non-Syrian to own land and buildings, and allowing businesses to exchange foreign currency at the free market exchange rate and retain all foreign exchange proceeds. In addition, in an effort to stimulate economic activity that had suffered because of the drought, and after a period of tight demand management policies and favourable oil prices, the government pursued an expansionary fiscal policy in year 2000, with a large projected increases in

public investments, and the public sector deficit. It is not clear, however, whether the fiscal stimulus can substitute for structural reforms in encouraging private sector activity.

The current government growth strategy is to develop private initiative while maintaining a strong public sector. The strategy is to maintain a gradual pace of reforms consistent with Syria's social and political systems. Of particular importance is private export growth, driven by exports of agriculture, a sector where the government considers that Syria has comparative advantage.

In the exchange regime, the possession of foreign exchange was legalised in 2000, but penalties were maintained for unofficial (outside the banking system) foreign currency trading. The trade regulations which remain cumbersome, are to be simplified. All sectors of economic activity except are now open to private sector initiative, with the most recent decision being to allow the operation of private banks. Many amendments to law 10 have been recently instituted, with the purpose to provide a more attractive private sector investment environment.

Consistent with the above macro growth strategy, as of 2001 a **new export strategy** by the Ministry of Economy and Foreign Trade (MEFT) aspires to increase exports, employment in export-oriented sectors, and a better integration of Syria into the global trading system. To meet these objectives various activities are being pursued.

First there have been several **negotiations of regional trade agreements**. The Arab Free Trade Agreement which 14 Arab countries, including Syria was formally established in 1997 and tariff reductions were supposed to start as of January 1, 1998. A bilateral agreement with the European Union is being negotiated, similar to that of other non-EU Mediterranean countries (e.g. Morocco, Tunisia, etc.). The agreement tries to ensure better market access for Syrian products to the EU, particularly agro-food products and textiles, through bilateral export quotas.

The export strategy of the MEFT proposes several changes in the non-tariff import constraints. These include the following:

- Currently a positive list indicates which products are allowed to be imported by private traders. This list should be replaced by a negative list which specifies only those products which for public health or safety reasons are not supposed to be imported by private traders.
- Elimination of the obligation to have the foreign currency in advance.
- Elimination of the public monopoly on imports of strategic crops

Furthermore, the following exchange rate reforms which, when implemented, would be very important measures in liberalising Syria's trade regime, are being proposed:

- Allowing private exporters to keep 100% of their export earnings
- Allowing private exporters to exchange 100% of export earnings at the prevailing market exchange rate
- Unify the various exchange rates

Furthermore, various institutional reforms were proposed to improve the efficiency of trade operations. These include the adoption of the international trade classification system of the WTO, facilitating custom clearance, computerising the customs department work, enhancing financial support services for export operations by government agencies

or institutions, enhancing the transport infrastructure particularly with respect to exports to Gulf countries and to the European Union, and creating a Syrian export promotion centre which provides information on foreign marketing opportunities, export facilities, export insurance, and quality standards of importing countries as well as training and technical assistance on export operations.

It is worth noting that the export strategy of the MEFT does not propose the use of export subsidies as a means of stimulating exports of agricultural commodities. It should be clear that any export subsidies which would be paid by the Syrian government to agricultural exporters constitute effectively a subsidy of foreign consumers by Syrian taxpayers. Furthermore, the practise of agricultural export subsidies of major western exporters in the industrialised countries is under significant pressure within the WTO and is likely to be further restricted by the on-going round of the WTO's trade negotiations. Generally the same is true for insurance schemes for agricultural exports.

2.8 Conclusions and assessment of macroeconomic constraints on agricultural development

The above brief assessment leads to the following conclusions about the macroeconomic environment and constraints on Syrian agriculture. First, the greater part of the Syrian economy is directly or indirectly agriculture based. Agriculture is a very important sector from a macro perspective. Its production variations influence considerably the overall economic activity and GDP, hence its growth is intimately tied with the growth of the Syrian economy. Second, the foreign trade of Syria depends to a very large extent on primary commodities. This implies that the economy is vulnerable to international price variations, as well as domestic production variations. Third, the economy is seriously financially repressed. The financial system is dominated by public enterprises and serves primarily the public sector. Hence, one of the key requirements for private sector growth, namely the existence of financial services for the private sector is largely missing in Syria.

The current government strategy is favourable to the private sector, and to export promotion, but with the continued presence of a strong public sector. The current government growth strategy considers agriculture as a leading sector. This, however, is not obvious from the recent public investment figures, which (as table 2.1.5 indicated) show that agriculture in the recent period has received a declining share of public investment funds, that in real terms have grown much slower than the economy, or the sector itself.

3. Review of past agricultural strategy and policies

3.1 The origins and historical context of past and current agricultural strategy and policies

In the years just after the Second World War, the proportion of the population (which in 1946 was estimated at 2,950 thousand) living in rural areas was 68 percent, and of the total active population, 683 thousand were active in agriculture, animal husbandry and forestry. At the time of the 1960 census, of a total population of 4353 thousand, 61.3 percent lived in rural areas, and 514 thousand, or 52.1 percent of the economically active population were engaged in agriculture, animal husbandry, and forestry. In the 1991 census, of the total population of 12529 thousand, 49.4 percent lived in rural areas, and 924 thousand, or 28 percent of the estimated active population were engaged in agriculture, animal husbandry and forestry.

The sharp increase in total and rural population is associated with the significant improvements in rural as well as urban living conditions in the last forty years, such as improved sanitation, public health facilities, improved diets, child health care, and wider utilisation of antibiotics. While the crude birth rate fell only marginally between 1960 and 1991 (from 47 per thousand in 1960 to 44 in 1991), the crude death rate fell by two thirds (from 18 per thousand in 1960 to only 6 in 1991). The life expectancy at birth during the same period increased from 50 to 67, and the infant mortality rate declined from 132 to 37. A major factor in these developments was a strong pro-rural policy of the government.

The fast increase in total and rural population put significant pressure on land, and led many rural residents to migrate to the cities, and after 1981, to the oil rich Gulf countries. The official records show that between 1975 and 1989 there was an absolute decline in the population active in agriculture, animal husbandry and forestry. Since 1990, with the onset of better weather, more favourable agricultural prices, and the decline in income opportunities in the cities and the Gulf, the rural to urban or foreign migration slowed down. According to some the migration out of rural areas even reversed, with the consequence that the population active in agriculture increased in the 1990s. Thus one of the factors that conditioned the agricultural policies of the 1980s and 1990s was the demographic problem, and the need to keep the rural to urban migration at manageable levels.

The era of the modern agricultural sector policies in Syria started with the land reform of 1958. The rationale for that reform was the extreme land ownership inequality that existed at the time. In 1958 before the first land reform it is estimated that the 8000 large holders (defined as those that owned more than 100 hectares of cultivable land) or only 2.7 percent of the total number of holders, controlled through ownership 37.1 percent of the total cultivable area. By 1970, after the two land reforms of 1958 and 1963, the number of such large landowners had been reduced to 3150, and their share of cultivable area had declined to 17.8 percent. The first and major agrarian reform of 1958 affected 3247 individuals who controlled one third of Syria's cultivated land. The 1963 land reform affected another 1372 additional landowners. By 1975 a total of 1401.3 thousand hectares of agricultural land had been expropriated, of which 1147.8 thousand was rainfed, 68.0 thousand was irrigated or land planted with trees, and 185.5 thousand was uncultivated.

The land reform had significant impact in the Mohafaza of Quneitra (where 63.8 percent of the total cultivated land was expropriated), Damascus (with 38.7 percent of the cultivated land expropriated), al-Hassakeh (34.5 percent) and Homs (25.1 percent). In al-Raqqa, Aleppo, Idlib, and Hama about 20 percent of the cultivated land was expropriated, while minimal expropriations (less than 7 percent of the cultivated land) occurred in Lattakia, Tartous, Dara'a and Sweida. Up to 1975, the State had redistributed 33.5 percent of the area of expropriated lands to peasants, sold 23.5 percent, and allocated 18.1 percent to co-operatives and various government ministries. The rest remained undistributed, and much of it was apparently leased out.

The land reform was aimed at evening out the rural distributional inequalities. At the same time distrust of the private sector and the markets, that was part of the government's socialist ideology of the early 1960s led to the adoption of central planning as the major way of economic development in the 1960s.

Apart from the land reform, the other major stimulus to policies toward agriculture was the political uncertainty of the 1960s and 1970s, with the insecurities imposed by the

Middle East developments, and the uncertainties inherent in the international trade system. These considerations led to an inward looking mentality, as indicated above, and their manifestation in the agricultural sector was a drive towards self-sufficiency in the major food staples.

3.2 Objectives and instruments of agricultural policies

Agricultural policies and plans are designed within national development policies, explicitly stated in the form of resolutions adopted at regional conferences of the Ba'ath ruling party. Past and current **objectives of agricultural policies** have included the following:

- Establish a strong agricultural-industrial economy
- Securing a high degree of food self-sufficiency, especially for major food staples.
- Utilising fully and improving productivity of natural agricultural resources.
- Increase labour productivity in agriculture
- Achieving equitable levels of income distribution, of satisfactory targets of poverty alleviation in rural areas, and of containment of rural-urban migration.
- Securing adequate levels of employment to the agricultural labour force.
- Guaranteeing adequate and affordable levels of food consumption to urban and rural populations.
- Prevent the exploitation of the population by private monopolies
- Providing adequate supply to domestic processing plants.
- Increasing agricultural exports.
- Promoting investments as a major instrument for achieving development.
- Supporting Arab economic integration through selecting joint projects and benefiting from Arab capital;
- Developing and expanding economic relations with foreign countries with a view to promoting exports and acquiring new technologies;
- Co-operating and co-ordinating public, private and mixed sector, and ensuring competitive atmosphere to improve quality and increase quantity of products;
- Assuring full employment of labour force;
- Improving the transportation and communication sectors to overcome marketing problems;
- Developing of projects to utilise water resources for irrigation and generation of electricity;
- Developing manpower productivity through training;
- Designing a population strategy commensurate with development possibilities to ensure population stability and control rural-urban migration;
- Achieving balance with foreign economies through promotion of exports; and
- Developing research to meet development requirements.

The **general policies** implemented to achieve the above objectives have included the following.

- Land redistribution
- Organisation of public authorities around a central planning system
- Licensing of production plans of farmers
- Public monopoly of input distribution
- Restriction of trade in strategic crops to state companies
- Pricing policy for inputs and outputs
- Restriction of processing of major agricultural products to state-owned companies
- Public control of international trade
- Land reclamation and irrigation
- Research and extension

The highest authority responsible for agricultural policies and planning is the Supreme Agricultural Council (SAC) which was established in 1975. The SAC is chaired by the Prime Minister, with the Chairman of the Economic Committee as Vice Chairman. Its members are Ministers concerned with agricultural and rural development, the Chairman of the National Farmers Bureau, and the Chairman of the General Federation for Farmers. SAC is the only central authority that has the right to approve agricultural annual production plans, determine prices for major agricultural products and agricultural inputs, and the policy for agricultural finance. MAAR acts as secretariat for SAC and follows up the execution of its resolutions and decisions. A special committee of SAC was established by the same Law for the continuous follow up of the production plan. A Branch Agricultural Council parallel to SAC was established for each governorate (Mohafaza), chaired by the Governor, to deal with plan affairs at the governorate level. An Agricultural Committee parallel to the Branch Agricultural Council was established for each area, chaired by the Director of the Area, to carry out the same functions of the Branch Council at the area level. A Branch Committee parallel to the Agricultural Committee was established for each Nahia, chaired by the representative of the Administration, to carry out the same function of the Committee at the Nahia level. It can thus be seen that planning of agricultural production occurs and is controlled at the lowest possible local level.

The **annual production plan** for agriculture is formulated as follows. The indicative figures for the production of crops, livestock and fisheries, especially major crops, are determined in co-ordination with MAAR and the State Ministry for Planning (SMP), based on studies for perspective demand and production possibilities, along with follow up reports on the execution of previous plans. This is undertaken according to the following steps:

- MAAR states production objectives at the governorate level based on the indicative figures, resources and production possibilities for each governorate;
- MAAR unifies the plans received from all governorates, after discussion and scrutiny.

- The plan proposal is then presented to SAC including measures and arrangements for plan implementation, identifying the role to be played by different public sector institutions, along with a summary follow-up report on the previous plan;
- Costs of production for different crops are estimated by a special committee and presented to SAC for approval and determining product prices and declare them to the farmers before the beginning of the season.

The **investment plan** is confined to the public institutions. Investment programs for the ministries of agriculture and irrigation, including planned projects, their material and financial requirements as well as time span for execution, are discussed with the Department of Agricultural Planning of SMP with a view to determine priorities. Agreement is reached on the total amount of investment required, after discussing projects completed and under completion as well as new project proposals, taking into consideration financial and execution possibilities.

Before 1987 agricultural planning was centralised, while after 1987 several actions were taken to decentralise the planning process. In particular government intervention was limited to the following:

- identification of indicative objectives for the production of strategic crops such as wheat, barley, cotton, sugar beet, tobacco, chickpeas, and lentils, according to the demand and the technical capacity of each area;
- identification of agricultural rotations and cropping patterns on the basis of the soil structure and water resources;
- definition of sowing calendars on the basis of indicators related to peak production;
- provision of farm inputs, such as pesticide and disease control and technical assistance.

Production plans are designed by the agricultural councils at the governorate level so as to fulfil the livestock and plant production targets, and presented to the Supreme Agricultural Council. Government intervention is limited to the identification of major crops and cultivation areas. All farmers are allowed to freely choose minor crops to be planted, while the agricultural council at the governorate level can exempt small farmers (with less than 1 ha of irrigated area or 2.5 Ha of rainfed land) from the requirement of holding a license.

Before 1987 most **agricultural prices**, including cereals, fodder, industrial crops, potatoes, onions, garlic, and some fruits, were centrally determined and remained fixed for long periods of time without reference to production cost growth. In order to compensate farmers, farm inputs were increasingly subsidised.

These interventions created increasing pressure on external balances, growing difficulties in meeting local demand, and stimulated the emergence of the black market, characterised by prices well above the official ones. Farmers tended to violate production plans, preferring to cultivate supplementary products not priced by the government. For instance there was an expansion of cumin and aniseed, while other summer crops such as soybeans, sunflower, and maize did not expand. This resulted in sharp price fluctuations, especially for supplementary crops, and in shortages of the main food crops.

Concerning **marketing policy**, before 1987 heavy restrictions were imposed on farm output marketing. The role of the private sector in marketing was extremely limited. Farmers were obliged to deliver wheat, barely, lentil, chickpeas, maize, sorghum, cotton, sugar beet, tobacco, garlic, and peanut to the government marketing organisations. In mid 70s, similar regulations were instituted for apples, oranges, and dry onions, under the supervision of the General Organisation for Vegetables and Fruit (GOVF).

The government took heavy measures to ensure farmers' compliance with these rules. Transportation of these products between different districts was forbidden. Private marketing of seeds, fertilisers, and pesticides was limited to the local markets. International trade of all farm outputs and importation of all farm inputs and foodstuffs, including vegetables and fruits, were controlled by government organisations.

These regulations seriously affected agricultural production and marketing. Huge product losses were common, particularly for fruits. Government organisations faced increasing difficulties in fulfilling demand on local markets, as well as in exporting. They also accumulated large deficits, putting public budget under increasing pressures.

In 1987 the government initiated a reform of the agricultural marketing system aiming at reducing product losses, protecting consumers, improving marketing services, and promoting private sector involvement in agricultural marketing. In particular, compulsory delivery of the agricultural product was eliminated, with the exception of crops processed by state plants such as cotton, sugar beet, and tobacco. New wholesale markets were created, allowing individuals to buy or rent shops and storage facilities, and several SAC resolutions relaxing trade restrictions were issued.

Agricultural credit is basically provided by the Agricultural Co-operative Bank (ACB). The ACB is an organ of the MEFT implementing the agricultural development plans. It finances the agricultural production plan designed by the government as well as the agricultural development projects. ACB derives its resources from government funds, external debts, and private savings. ACB acts as a public monopoly providing long, medium, and short term subsidised credit to private, co-operative, and government sectors through its branches scattered in the agricultural areas.

Credit is provided in cash as well as in kind (farm inputs such as fertilisers, seeds, pesticides, etc.) according to quantities, qualities, and delivery dates indicated in the schedule held by the Bank and its branches. Other inputs like tractors, harvesters, threshers, sprayers, bee hives, and imported cows are delivered to the borrowers under delivery orders issued by the creditor branch and sent to the company that deals with the required input. The creditor companies are comprised of government companies specialised in agricultural input production, marketing, co-operatives, and the MAAR. These organisations interact according to a set of regulations aiming at improving the social and economic situation and increasing production.

Credit repayment is guaranteed by the crop marketing mechanism. Indeed, borrowing farmers deliver their crops to the public marketing organisation, such as the GOCMT, and the GOCGMT which after deducting the credit plus interest of the ACB loans, deliver the remaining balance to farmers. For this reason production is considered the main collateral for credit. However, land ownership or lease titles, as well as ownership of means of production, can be used as collateral. Long, medium, and short-term credit is provided at specific ceilings according to the value of the collateral. Technical departments of ACB monitor the credits provided for investment projects. Projects are evaluated before the

credit is granted and supervised during the implementation and operation to ensure compliance with the stated objectives.

Interest rates paid for ACB loans are relatively low. They range between 4% for the co-operative sector, and 5.5% to the private sector. Interest rates for seasonal (short-term) credits, exceeding SP 50 thousand, is 6% for public and co-operative sectors and 7.5% for the private sector. Credits provided to fruit bearing trees projects executed by all sectors are given a 5-year grace period. Total credit provided by the ACB increased from SP 8595 million in 1990 to SP 15062 million in 1996.

The **water policy** in Syria aims at: preservation of water resources from pollution, and maximising efficiency of water resources. Before 1982, several public organisations were entrusted with water resource control. In 1982 the Ministry of Irrigation was established. The ministry was entrusted with controlling the water sector, managing and planning water use, and supervising all the organisations and administrations related to water use and irrigation, as well as the operation of land reclamation projects.

The government is actively involved in managing a number of **agricultural support services**. Concerning plant protection from diseases and insects, the policy has been towards a decline in pesticide use. To that end biological pest control was adopted in 1993 against the white fly, which infected citrus trees in the coastal areas. The disease was completely eliminated, and use of chemical pesticides on citrus trees was substituted by biological control. Biological control was also adopted for olives and cotton as a first step for wider application. Instructions were given to restrict the use of pesticides in order to preserve environment and human health and to save foreign currency needed for pesticides importation.

Concerning **veterinary care and artificial insemination**, the MAAR developed veterinary centers and mobile veterinary units to provide various services to the livestock sector around the country. Immunisation of cows was increased. Local production of vaccines and medicines was increased to fully meet local demand and to export. Importation is now limited to some internal and external parasite controls and apthous fever vaccines.

The public sector is fully responsible for the **agricultural training and extension** activities, Agricultural extension services have developed as follows:

- The number of extension units were increased from 168 in 1986 to 869 in 1999;
- Extension staff was increased from 1062 in 1986 to 5916 in 1999 out of whom 45% were male agriculture engineers, 11% female agriculture engineers, 5% veterinarians, and 37% agricultural supervisors;
- Five training centers have been established (a national one for agriculture, one for extension, two for agricultural machinery, and one for cattle and poultry breeding);

The MAAR is giving significant attention to agricultural training, as it carries a large number of training programmes for both farmers and trainees. Despite these developments, the extension system is still considered not fully adequate. Finding the convenient institutional framework to connect the agricultural extension and training to the scientific research centers on the one hand and the agricultural credit systems on the other, is considered one of the major challenges.

Agricultural research in Syria is carried out by the Department of Agricultural Scientific Research of the MAAR, the Cotton Bureau, the Department of Lands, the Department of Irrigation and Water Management, the Citrus Bureau, the Olives Bureau, the Apple Research Center, and the Sugar Beet Bureau. There are several scientific research centers, and 86 field research stations distributed throughout the country under the coordination of the directorate for agricultural scientific research of the MAAR. This directorate is supported by several directorates specialised in cotton, olives, and irrigation. Other organisations such as universities, the General Establishment for Remote Sensing, and the Atomic Energy Commission also provide a contribution.

Currently the agricultural research staff includes 63 PhD holders, 39 MS degree holders, 98 diploma holders, 738 agricultural engineers, and 1820 technicians. In 2001 there were 977 research projects carried out, of which 102 were in collaboration with Syrian universities. The genetic bank of the research establishment includes 28000 seed samples and 1075 fruit species. Notable accomplishments of agricultural research have included the introduction of 8 durum wheat and 8 soft wheat varieties that improved irrigated yields from 1.9 ton/Ha in the 1970s to 3.8 tons/Ha in the 1990s. Similarly the yield of rainfed wheat has increased from 0.7 tons/Ha in 1970s to 1.5 tons/Ha in the 1990s. Seven cotton varieties have been introduced that have led to increases in cotton yields from 1.6 tons/Ha in the 1970s to 3.8 tons/Ha in 1999. Also agricultural research has introduced 4 barley varieties, 2 maize varieties, 3 winter chickpea varieties, and one broad bean variety.

With the aim of improving agricultural research, law 42 of 2001 was recently passed, that established the Agricultural Scientific Research Commission, which includes all departments working in the field of scientific agricultural research under one management.

4. Structural aspects of agriculture in Syria, relevant for strategy formulation

4.1 Functional structure of farm operators

The figures of the agricultural censuses of 1981 and 1994 show that during this period there has been a considerable (26 percent) increase in the total number of holders, or farmers, from 485691 in 1981 to 613657 in 1994. Given that the total cultivable land has not changed by much during this period, the inevitable conclusion is that there has been considerable fragmentation and subdivision of farms. Tenure in the cultivated areas is characterised by the importance of holders whose main occupation is not farming. This includes absentee owners as well as part time farmers with a prevalent non-farming occupation. Census figures indicate that in 1981 only 63.8 percent of all holders had farming as a predominant occupation. In 1994 the proportion had increased to 71.4 percent, and because of the increase in the total number of holdings, the actual number of holders with main job farming had increased from 261 thousand to 409 thousand (table 4.1.1). The number of holders with main job not farming has increased in number from 148 thousand in 1981 to 164 thousand in 1994. This category can be considered to be composed mostly of absentee owners.

The number of holders without land was 15.7 percent of total in 1981 and 6.6 percent in 1994. Holders without land, in the census, reflect mainly livestock holders without a fixed land base, a likely underestimate of the total production units in the Badia. It is

interesting, however, that the number of this type of holders has declined substantially since 1981, and it is important to know whether the policies followed for the Badia have had anything to do with this decline.

Table 4.1.1. Total farm holdings and proportion of holders with main job farming in 1981 and 1994

	Census year	
	1981	1994
Total number of holders (1)	485691	613657
Holders with land (2)	409492	573193
Holders without land (3)	76199	40464
Holders with land with main job farming (4)	261386	409142
Holders without land with main job farming (5)	11224	22860
(4) as share of (2) (%)	63,8	71,4
(5) as share of (3) (%)	14,7	56,5

Source. 1981 and 1994 census of agriculture

Several waves of migration have swollen the number of absentees. In fact the latter include members of the urban middle classes with some agricultural property, but also relatively poor farmers unable to make a living out of agriculture and attracted by better opportunities in neighbouring countries or in the cities. In the 1980s increasing availability of infrastructure brought improvements to the basic livelihoods in rural areas. This took place for instance through electrification and improved road links. Such improvements permitted a gradual return to the villages of many holders as part time farmers who regularly commute to cities, even at substantial distances. Such a phenomenon is typical of all peri-urban areas in the country. Part-time farmers enjoy all the benefits of full time farmers in terms of government services and subsidised inputs. The return to their home base of many part-time farmers may also be a partial explanation to increasing conflicts between owners and operating farmers where the former want to recover possession of their property and the latter are not willing to terminate the existing sharecropping or labour agreements. Hence the phenomenon of return to the land may have side effects on an already saturated land and labour market.

The proportion of holders with main job agriculture varies considerably by region, as table 4.1.2 illustrates. The proportions are generally higher among those holders that have land, and also higher in regions that are mostly rural like Al-Rakka, Deir-ez-Zor, and Al-Hassakeh. This supports the thesis that proximity to urban areas, leads to more part time farming.

The educational status of holders is very low. More than 83 percent of all holders have education less than or equal to elementary, and a large share of those (44 percent) are illiterate, with significantly lower education exhibited by holders in the mohafazat of Aleppo, Al-Rakka, Deir-ez-Zor, and Al-Hassakeh.

Table 4.1.2. Regional distribution of holders by main job and education in 1994

MOHAFAZA	Total number of holders in 1981	Total number of holders in 1994	Holders having no land in 1994	Holders having land in 1994	Proportion of Holders with main job Agriculture in 1994		Proportion of holders with elementary or lower education in 1994	
					without land	with land	without land	with land
Total Country	485691	613657	40464	573193	56,5	71,4	85,8	82,2
Damascus		7367	293	7074	55,3	46,0	75,4	52,6
Damascus Rural	37608*	41492	4473	37019	57,4	64,9	83,3	81,9
Homs	40107	50370	4383	45987	53,3	65,3	81,3	76,4
Hama	51063	65909	5030	60879	57,4	75,9	83,9	81,3
Tartous	42278	58773	694	58079	54,0	53,5	69,6	69,4
Lattakia	36525	48208	774	47434	49,1	60,7	75,7	73,5
Idleb	46985	55654	2476	53178	52,2	73,3	82,2	84,2
Aleppo	85927	96832	7465	89367	51,4	78,7	91,9	91,1
Al-Rakka	21598	27824	2300	25524	58,0	85,2	90,2	92,7
Deir-ez-Zor	29525	42042	2787	39255	63,2	88,4	91,2	93,0
Al-Hassakeh	55162	61089	6061	55028	62,1	86,0	90,0	89,8
Al-Sweida	15792	23286	1128	22158	64,5	61,0	78,2	73,9
Dara'a	20857	30432	2074	28358	57,8	59,8	81,2	78,4
Quneitra	2264	4379	526	3853	46,6	55,4	66,3	73,8

* Includes Damascus city

Source. Computed from 1994 census of agriculture

With the practical disappearance of traditional large-scale landowners families in the wake of the agrarian reform, Syrian agriculture is characterised mainly by small and medium sized holders whose main occupation is farming, but also by a substantial number of small owners who do not directly operate their farms. These owners are often of farming origin themselves but have moved away from farming as they have entered other activities. They cannot be compared to the absentee owners of the past, who relied on a layer of intermediaries, because of their more direct involvement in management, and thus their greater potential in promoting innovation and investment. However, owners on the one hand and sharecroppers and tenants on the other increasingly compete for more control over the land they respectively own and operate. This is expressed in increasing conflict which calls for some improved regulations.

While the total number of farm holders with and without land is known, there are many categories within these broad groups. It is possible to group households partaking in farm operations, and agricultural production in general, into many overlapping functional categories. These are:

- (i) landed holders whose main occupation is not farming (mainly absentees);
- (ii) landed holders with farming as a main occupation, i.e. owner-operators;
- (iii) landless holders whose main occupation is not farming (mainly absentees);
- (iv) landless holders with farming as a main occupation, i.e. owner-operators without land;
- (v) sharecroppers and tenants on private land having a written or oral agreement with the owner of the land;

- (vi) land reform beneficiaries and state land distribution beneficiaries that do not yet fully own their land. These are ownerslike possessors of holdings assigned to them, for which they pay a yearly fee up to concurrence of one fourth of the value of the assigned land;
- (vii) tenants on public land, renting in lands belonging to the old state land establishment or to the expropriated land reform areas not distributed to beneficiaries;
- (viii) squatters on public land -a category of workers aiming at becoming legal tenants and for which regularisation is on-going;
- (ix) squatters on private land, who are mainly sharecroppers whose contract has expired and whose rights are awaiting arbitration;
- (x) labourers in state farms, joint ventures or larger private farms with a permanent contract, which is a very small category as most contracts are for short term casual labour;
- (xi) landless and near landless labourers, mainly descending from small owner or sharecropping households with inadequate land base to redistribute to children.
- (xii) Agricultural entrepreneurs, these operators rent or own large areas of land, especially in the Northeast part of the country.

However, these groups can be overlapping. For instance one household's members may be owner operators in one holding and sharecroppers in another, or farm labourers. That is the groups are not discrete and also their interests often overlap. From the management point of view, apart from absentee owners in categories (a) and (c), and categories (j), and (k), who are permanent and casual labour working under instructions, all other categories function as farm operating households with different degrees of independence from the ultimate owner of the land.

The importance of different types of tenure is exhibited in table 4.1.3. It can be seen that among holders that have land, the overwhelming proportion (90 percent) consists of holders that own all their land. However, the average size of land operated by landed holders differs according to types of tenure. The largest average land holdings are operated by holders who either rent all land, or operate under a multitude of tenure arrangements. Nevertheless, the conclusion seems to be that the dominant type of holder in Syria is the landed owner operator. These owner operators include those that have received land under the land reform, but have not as yet fully paid for it.

Table 4.1.4 exhibits the size distribution of holdings with land according to the type of tenure. It can be seen that the size distribution of holdings operated by other than fully owned land is much more skewed towards the larger classes. This must reflect the importance of the farming entrepreneurs and other joint stock farming companies.

Table 4.1.3 Holders and their average land size by different types of tenure.

MOHAFAZAT	Holders having land	Holders that own all land		Holders that rent all land		Holders by other types of tenure		Holders with more than one type of tenure	
		No. of holders	Average area per holder	No. of holders	Average area per holder	No. of holders	Average area per holder	No. of holders	Average area per holder
			(Donum)		(Donum)		(Donum)		(Donum)
Total Country	573193	514752	76,1	19310	141,7	18713	93,7	20418	156,6
Damascus	7074	6707	28,3	180	21,4	88	19,5	99	34,4
Damascus Rural	37019	34058	31,0	603	39,8	1333	43,1	1025	82,8
Homs	45987	40832	71,4	2102	162,4	1028	66,0	2025	225,8
Hama	60879	52817	62,9	2426	110,2	2918	54,9	2718	123,1
Tartous	58079	56631	18,0	224	11,9	482	16,5	742	28,6
Lattakia	47434	45399	19,5	285	13,6	920	13,9	830	28,6
Idleb	53178	50487	53,4	337	58,9	958	69,3	1396	72,3
Aleppo	89367	83373	118,7	2542	140,4	1929	114,0	1523	190,5
Al-Rakka	25524	18002	280,0	2507	180,2	2891	181,6	2124	259,6
Deir-ez-Zor	39255	32331	33,6	2577	190,1	548	39,5	3799	119,6
Al-Hassakeh	55028	41943	176,4	4836	156,0	5328	112,5	2921	262,0
Al-Sweida	22158	21925	74,7	33	61,6	39	28,8	161	143,0
Dara'a	28358	26770	70,2	605	27,2	108	55,1	875	83,7
Quneitra	3853	3477	47,1	53	47,5	143	45,0	180	81,1

Source. Computer from 1994 census of agriculture

Table 4.1.4. Size distribution of holdings with land according to types of tenure

Holding area size classes (in ha)	Holders own all land		Holders rent all land		Holders by other types		Holders by more than one type		All holders	
	No. of Holders	Proportion In total	No. of Holders	Proportion in total	No. of Holders	Proportion in total	No. of Holders	Proportion in total	No. of Holders	Proportion in total
<0.5	47483	9,2	590	3,1	865	4,6	247	1,2	49185	8,6
0.5-2	146642	28,5	2769	14,3	3592	19,2	2583	12,7	155586	27,1
2-10	214285	41,6	6695	34,7	8507	45,5	8859	43,4	238346	41,6
10-50	97383	18,9	8289	42,9	5368	28,7	7386	36,2	118426	20,7
>50	8959	1,7	967	5,0	381	2,0	1343	6,6	11650	2,0
Total	514752	100,0	19310	100,0	18713	100,0	20418	100,0	573193	100,0

Source. Computed from the 1994 census of agriculture

4.2 Size distribution of holdings

The number of holdings in Syria has been increasing along with population growth and consequent pressure on land. The notion of holding stretches across private and public land, it includes a large number of small farms but also large-scale state farms as well as commercial type joint ventures. Seven joint ventures with mixed private and public financing existed in year 2000 with a total of 7242 ha and an average of 1035 ha. Nonetheless the bulk of holdings is small in scale and traditional in system of management with more than a third (37.7 percent) of all holdings having an area of 2 ha or less (table 4.2.1) These holdings account for only 4 percent of the total area operated.

The average size of holdings has been decreasing over time, but there is some discrepancy on the actual size levels reported in different sources, all derived from elaboration of census data. Area of holdings can in fact be measured in terms of total area, cultivable area, or actually cultivated area, and lead to different results. In addition the total number of holdings may or may not include holdings without land. However, in order to illustrate general trends, the direction and level of change is more important than precise average size. The data derived from the three existing censuses on holding size evolution (for all holders and for total land) are summarised in table 4.2.2.

Table 4.2.1 Percentage distribution of land holdings by major size class in 1994

Size classes	Percentage distribution of holdings	Percentage distribution of total area
Up to 1 ha	19,5	1,2
1-2 ha	16,2	2,8
2-4 ha	19,7	6,8
4-6 ha	10,3	6,0
6-10 ha	11,5	10,5
10-20 ha	12,3	20,4
20 and more ha	10,4	52,3

Source. Computer from 1994 census of agriculture

Table 4.2.2 Average total area of all holdings by Mohafaza in 1970, 1981 and 1994 (ha)

Mohafaza	1970	1981	1994
Country Total	11.8	9.6	7.6
Damascus city	6.9	6.9	2.7
Damascus rural	3.8	4.7	2.9
Homs	12.6	8.4	7.5
Hama	10.0	7.9	6.2
Tartous	2.7	2.2	1.8
Lattakia	2.4	1.9	1.9
Idleb	6.7	5.4	5.2
Aleppo	14.2	10.9	11.1
Al Rakka	22.1	30.0	23.6
Deir-ez-Zor	9.5	4.4	4.9
Al Hassakeh	36.9	25.5	15.6
Al Sweida	12.2	8.4	7.2
Dara'a	13.2	9.6	6,5
Quneitra	8.6	5.2	4.3

Source. Forni (2001). Sarris (1995), and elaboration from agricultural census 1994.

The situation is differentiated over the national territory. Against a decrease between 1970 and 1981 and then a further decrease in 1994 of average farm size, there are examples of dramatic decreases as in Damascus rural, Homs, Hama, Deir-ez-Zor, Al Hassakeh, Sweida, Dara'a and Quneitra where average holding size decreased substantially between 1970 and 1994. On the other hand in the coastal region very small holdings were and continue to prevail. In Tartous for instance the already small average holding of 2.7 ha in 1970 only decreased to 1.8 ha in 1994, meaning that some sort of minimum threshold of

operation had been reached. There are however also cases such as Rakka, where an above national average of holding of 22.1 ha in 1970 increased to 23.6 in 1994, probably indicating some land consolidation.

The average number of land parcels for the whole country, and for holders having land in 1994 was 3.1 parcels per holding with a predictable minimum (1.1 parcels) in the very small holdings of up to .1 ha, and maximum of 4.6 parcels in the largest size class of 300 ha. There are however also peaks of 3.7 parcels in the 6 to 10 ha category. What is more noteworthy however is the geographical dimension. In Tartous the average number of parcels per holding were 4.8, and in Sweida 4. On the other hand parcels per holding with land were fewer in the Northeast (1.7 in Al-Hassakeh and 1.8 in Al-Rakka). In the areas where small scale mixed cropping is predominant, fragmentation in several plots is, predictably, higher than in the grain areas of the Northeast. For instance in Rakka the average size of parcel was 14.3 ha. In Tartous by contrast the average size of parcels is 0.38 ha.

The size distribution of holdings in different mohafaza, as well as Syria, and the percentage of land operated by each class, is shown in table 4.2.3. It can be seen that the size distribution of holdings is quite skewed. In 1994, 37.7 percent of holdings that had land, operated land less than 2 ha, but they accounted for only 4 percent of total land operated. By contrast the 2 percent of the largest holdings, namely those with land larger than 50 ha, operated land that amounted to 23 percent of total land of all holdings. The next largest class, namely those operating land sized between 10 and 50 ha, while constituting 20.7 of all holders, operated on almost half the total land. The geographical size distribution of holdings is quite marked, with Tartous and Lattakia being characterised by distributions concentrated on small holdings, while Aleppo, Al-Rakka and Al-Hassakeh are characterised by distributions that are markedly skewed toward larger size classes.

Table 4.2.3. Size distribution (percentage) of holdings that have land, and total land operated in 1994

	Holding size classes (ha)	<0.5	0.5-2	2-10	10-50	>50	Total	Total number of holders and area (ha)
Damascus City	Holders	30,6	36,2	25,5	7,1	0,6	100,0	7074
	Area	2,7	10,8	31,8	40,4	14,4	100,0	19868
Rural Damascus	Holders	20,4	37,5	35,6	6,2	0,3	100,0	37019
	Area	1,7	12,3	45,8	31,7	8,4	100,0	122041
Homs	Holders	7,4	28,3	43,0	18,9	2,4	100,0	45987
	Area	0,3	3,8	23,2	46,4	26,2	100,0	378195
Hama	Holders	5,1	25,3	52,7	15,3	1,6	100,0	60889
	Area	0,2	4,1	32,5	45,0	18,1	100,0	408241
Tartous	Holders	18,9	51,7	28,3	1,0	0,0	100,0	58079
	Area	3,1	30,3	55,8	8,0	2,9	100,0	105225
Lattakia	Holders	18,4	48,9	31,2	1,5	0,0	100,0	47434
	Area	3,1	27,3	58,1	10,3	1,2	100,0	92752
Idleb	Holders	5,8	31,0	48,9	13,7	0,6	100,0	53078
	Area	0,3	6,6	40,8	44,5	7,8	100,0	288235
Aleppo	Holders	1,4	11,7	49,5	34,8	2,6	100,0	89367
	Area	0,0	1,2	21,9	58,3	18,6	100,0	1076526
Al-Rakka	Holders	0,9	11,5	35,1	39,2	13,3	100,0	25524
	Area	0,0	0,2	2,5	73,5	23,8	100,0	1635855
Deir-ez-Zor	Holders	11,5	37,1	37,9	12,5	0,9	100,0	39255
	Area	0,6	7,7	29,5	46,0	16,2	100,0	205206
Al-Hassakeh	Holders	0,3	3,2	34,0	57,7	4,7	100,0	55021
	Area	0,0	0,2	11,2	66,5	22,1	100,0	951705
Sweida	Holders	4,8	22,0	51,1	21,1	1,0	100,0	22158
	Area	0,2	3,7	33,8	51,9	10,5	100,0	166449
Dara'a	Holders	9,4	19,2	52,1	18,7	0,5	100,0	28358
	Area	0,4	3,6	40,3	49,5	6,2	100,0	197504
Quneitra	Holders	7,8	30,3	46,2	15,3	0,3	100,0	3853
	Area	0,5	6,9	40,6	48,4	3,6	100,0	18727
Syria	Holders	8,6	27,1	41,6	20,7	2,0	100,0	573193
	Area	0,3	3,7	23,3	49,7	23,0	100,0	4687546

Source. Computed from 1994 census of agriculture

Table 4.2.4 presents the distribution of different size classes across different geographical regions in 1994. It can be verified, as in the former table that the bulk of small farms are in rural Damascus, Tartous and Lattakia, while the bulk of the largest holdings are in Aleppo, Al-Rakka, and Al-Hassakeh.

The total area operated by the private holders of table 4.2.3 in 1994 according to the census was 4687.5 thousand ha, of which 4609.2 thousand ha was cultivable. This contrasts with the figure for total area held by agricultural holders, reported in the Annual Statistical Abstract of 1999 (re. table 5/4) which can be calculated (by multiplying the number of holders by the average area) to be equal to 5197.7 thousand ha, of which 5105.6 thousand is cultivable. The Annual Statistical Abstract 1999 also reports that the total cultivable land in Syria is 5981 thousand ha, of which 5484 thousand is cultivated. Clearly there are some major discrepancies between these data, as for instance the difference between the total cultivable land reported in the Statistical Abstract and the total cultivable land of census respondents is about 1372 thousand ha, while the difference

between the total cultivated land reported in the Statistical Abstract and the total land cultivated by census respondents (which is 4525.3 thousand ha) is 960 thousand ha.

Table 4.2.4 Distribution of different sizes of holdings across mohafazat in 1994

Holding classes by size (ha)	<0.5	0.5-2	2-10	10-50	>50	Total
Damascus City	4,4	1,6	0,8	0,4	0,4	1,2
Rural Damascus	15,3	8,9	5,5	2,0	1,0	6,5
Homs	7,0	8,4	8,3	7,3	9,5	8,0
Hama	6,3	9,9	13,5	7,9	8,1	10,6
Tartous	22,4	19,3	6,9	0,5	0,2	10,1
Lattakia	17,8	14,9	6,2	0,6	0,1	8,3
Idleb	6,3	10,6	10,9	6,1	2,6	9,3
Aleppo	2,6	6,7	18,6	26,3	19,7	15,6
Al-Rakka	0,5	1,9	3,8	8,4	29,1	4,5
Deir-ez-Zor	9,2	9,4	6,2	4,1	3,2	6,8
Al-Hassakeh	0,4	1,1	7,9	26,8	22,4	9,6
Sweida	2,2	3,1	4,8	3,9	1,9	3,9
Dara'a	5,4	3,5	6,2	4,5	1,2	4,9
Quneitra	0,6	0,8	0,7	0,5	0,1	0,7
All Syria	100,0	100,0	100,0	100,0	100,0	100,0
Total number of holdings with land in Syria	49185	155586	238346	118426	11650	573193

Source. Computed from 1994 census of agriculture

There is more arable land that is not reported in the census, mostly owned by the government. According to 1984 data, of public agricultural lands a small proportion was cultivated by 8 production co-operatives (about 3000 ha). These were established by the government through relocation of farmers displaced by the filling of lake Assad. In 2001 twelve state farms occupied another 112420 ha, of which 70977 ha were cultivable, and 50588 ha were actually cultivated, and of these 19904 were irrigated. Another 12 state farms occupied another 6340 Ha in 1993 and produced largely livestock products. Seven joint ventures with mixed private and public financing existed in year 2000 with a total of 7242 ha. Apart from the private landowners, co-operatives, and state farms, there are another 39.4 thousand Ha currently utilised by G.O.E.D.E.B. of which 24.8 thousand Ha are cultivable. The total area of the above classes, that are most likely not included in the census, amounts to 168 thousand ha, of which about 85 thousand ha are cultivable. This still leaves a large gap between reported official total cultivable and cultivated area, and land operated by various types of holders. The discrepancy suggests that there is a considerable amount of land, that is public land, and which is farmed under some type of unspecified tenure (squatters, etc), or that the number of those that have leased public land is much larger than what was reported above.

To some extent the discrepancy might be accounted for by the distribution of expropriated lands. According to the 1993 Annual Statistical Abstract, by 1975 there were 1401.3 thousand Ha that had been expropriated, of which 351.4 thousand were not distributed, 254 thousand Ha were allocated to co-operatives, ministries and other organisations, 329.8 thousand was excluded and sold land, and 466.1 thousand were distributed lands. If it is assumed that the distributed lands are included in the holdings of the 1994 agricultural census, and that half of the land allocated to co-operatives, ministries and

organisations is not included in the census, then the above figures result in about 808 thousand ha that are public land, and have either been distributed to organisations, ministries, etc, or have been not distributed. This is a figure that comes close to bridging the gap between the reported figures in the census and the Statistical Abstract. Since this land represents about 14 percent of the total cultivable land in Syria, it is interesting to inquire as to the current uses of this land. If, as is reported informally, there are many squatters that utilise public land for private cultivation, without any formal arrangement, then it would be important to find out how many there are, how much land they cultivate, what they produce, if they benefit from any public policies, such as subsidised inputs and credit, and what types of income sources they have. This suggests that the issue of land tenure might still be a very live one, despite years of land reform.

4.3 Land tenure issues³

The basic characteristic of the Syrian land tenure system is the co-existence of formalised systems of tenure side by side with customary institutions (“*urf*”). A strong emphasis on legal structures is traditional in Syria as in other Mediterranean countries, but there is a long history of tenure systems. The current land tenure system in Syria was, for instance, influenced by the mass peasant uprisings of 1889-90, during Ottoman rule, when the peasants wanted the reduction of the sheikhs share to land to one eighth, the parcelling out of the rest of the land to the peasants as well as the elimination the right of the sheikhs to evict peasants.

State land today is a partial remnant of land under different types of state and communal tenure that existed up to the end of the 19th century. Communal farming systems (*musha*) existed in wide tracts of the Syrian countryside until 1858, when under the Land Code, hundreds of villages became ownership of the Sultan and a handful of powerful Syrian families. This started a process whereby personal title of ownership to much of these *musha* lands came to be given to powerful absentee owners. However, to this day *musha* land exists and is at the disposal of the communities for activities such as grain threshing or grazing as well as distributed to households for agricultural operations. After the Turkish revolution of 1908 crown land became state land. Later, under the French mandate, state land came partly under the personal control of the sheikhs. In the *badia*, grazing areas were recorded as state land, with pastoralists maintaining customary access rights.

During the French rule the peasants revolted again in 1925-27, because many small-owners were suffering under the weight of taxation, and the rural population at large was resentful of the extensive use of compulsory labour. In the post World War II period the most important changes were brought by legislation which was enacted during the union with Egypt: in 1958 (the Agricultural Relations Law no 134 and the Agrarian reform law no 161). Policies started to focus on the hitherto underprivileged peasants who benefited from land distribution acquiring owners-like possession to the distributed land. On the other hand through the Agricultural Relations Law farmers obtained fairer shares of production in the case of sharecropping.

Currently **state land** consists of 11464 thousand ha and includes:

- 1) agricultural land rented or allocated to individuals, for instance to land reform beneficiaries, and which is privately operated;

³ This section is adapted from Forni (2001)

- 2) state farms;
- 3) forest land;
- 4) pasture land in the steppe used by herders under traditional rights of access;
- 5) state land used for roads or any other public purpose as well as uncultivable areas such as wastelands, rivers and lakes.

Lands under categories 1 and 2 are used for agricultural production purposes and managed in the form of holdings, (i.e. each production unit irrespective of system of management and ownership is included under the total number of holdings in censuses and other statistics). category 3 land is managed by the state with limited rights of use by certain population groups. Category 4 according to some statistics accounts for as much as 55 percent (10.2 mill ha) of total land area, and includes the desert and semi-desert area or *badia* to which mobile herders have traditional access rights, but also some marginal agricultural areas in zone 4.

The specifically Syrian definition of state lands warrants some further attention. Based on characteristics of access, legal delimitation of the territory and type of management, the first two categories above -rented or allocated agricultural land and state farms, tend to coincide with cultivable land under the category of registered state property, whereas all the rest falls under the category of unregistered open access and communal resources.

Registered state land includes areas registered under state property prior to the land reform of 1958, out of which some were distributed, with land use rights, or rented to individual operators. In the subsequent pages these areas will be sometimes referred to as original state lands (as opposed to the land reform areas expropriated from private owners and put under state control for reallocation). Registered state land also includes areas expropriated from private owners above ceilings defined by the land reform of 1958 and later amendments, and subsequently distributed, rented or transferred. Registered state land consists of 3789 thousand ha, of which 2399 thousand is original state land, and 1390 is land confiscated through land reform.

Unregistered state land, which amounts to 7675 thousand ha, includes communal resources for general use of the population and not registered against an individual or collective name. Within this general category are included areas open to the whole population, such as lakes or rocky areas as well as pastoral areas. From the tenure point of view this would include open access areas as well as common property traditional access areas. From the land use point of view it tends to overlap with categories 3, 4, and 5 above, namely forests, grazing areas, public utilities and unproductive natural resources.

Traditional communal access rights to pastoral areas have often come under threat. Pastoral areas are officially considered state land and the population use rights to them are not codified. Also, the border between land suitable or non suitable for cultivation, based on rainfall, is not rigid and there have been many attempts to extend the cultivated areas and to acquire private rights to formerly communal land. Already in Ottoman times about 550 thousand ha of pastures were registered with individual titles. This trend continued with creeping privatisation in the course of the last decades. Lands with at least some agricultural potential were put into barley cultivation with erratic production.

The expansion of the land frontier has been particularly noticeable in the sixties, when most of the arid zones pastures located in the 200 to 350 mm of rainfall zone were put under cultivation and came under private possession. The putting under cultivation of marginal land, mainly for barley, continued being the way for acquiring private rights up

until the early nineties when legislation was enacted for the protection of rangelands. This legislation banned cultivation under both irrigated and non irrigated conditions in the steppe, but still recognised the private possession on the areas previously cultivated. This means that at present there are portions of the *badia* which are under private possession even if not open to cultivation but only to grazing.

For most of the rangelands communal rights are traditionally recognised by the users, who are at least nominally part of the country's co-operative system, but free riding cannot be legally sanctioned as communal rights are not officially recognised. The situation is particularly critical where pasture users come from different groups with sometimes conflicting claims. As these claims emerge from the customary system, government monitoring tends to ignore them. A greater role might be played by the co-operatives in sorting out local situations before agreements on grazing management programmes.

Law 134 of 1958, usually referred to as the Agricultural Relations Law, gives the overall legal framework for all relations between employers and workers in the agricultural sector as well as between land owners and tenants. The labour-employer relations described in the law comply with advanced international labour legislation, but they may not totally reflect the current employer/labourer relations in Syria where the percentage of labour contracts actually registered is low. In the land related section the level of detail prescribed by the law, with reference to sharecropping and leasing regulations, is rather high and may not always reflect actual agreements prevailing in the field.

As for leasing, this is actually foreseen as a legal contract between the owner of the land and an operating farmer. There is no clear indication of limitations to enter into such agreements although they are not frequently used. One shortcoming may be identified in the duration, one year renewable, which is common both to renting and sharecropping contracts. This is not locally perceived as a problem as contracts are renewable. It is nonetheless likely to affect any longer term planning and may be at the root of insecurity for both partners. The law also states that oral contracts are not valid after the enactment of the law, which may explain the many cases in which the occupier claims rights to possess the land. Agreements between owners and farmers are rarely registered and therefore the law functions only as a general frame of reference, with many disputes occurring in cases of no contract. While arbitration committees exist for conflict resolution at the Governorate and higher levels, the problem with non-compliance may not be in the letter of the law but rather in the lack of clarity and insufficient social control over the implementation of contracts.

Passing from the private to the public sector, law 252 of 1959 regulates state properties and defines the management of the state lands, and law 161 of 1958 deals with land reform, the modalities for expropriation and for distribution to farmers. The ceilings for expropriation were later amended by a number of decrees, the latest of which was in 1980. The ceilings for ownership are related to land potential and take into account irrigation and rainfall. They go from a minimum of 15 ha in highly productive irrigated and tree cropping areas, 45 in well-irrigated areas, 55 ha in high rainfall (exceeding 500 mm) rainfed areas, and up to 200 ha in the marginal rainfed areas of the north east.

The land reform law gives the beneficiaries owners-like possession but no right of sale, and ties them to government pronounced cropping systems. The size of distributed plots was related to size of households and was thus aiming at covering basic needs of the households. The holding was expected to remain one undivided management unit, but no

mechanism for compensation between heirs of the household was foreseen. With respect to land ceilings established by land reform, as of early 2001, they legally exist and exception to ceilings in operation are possible only for joint ventures. Ceilings apply to ownership and not to operation and therefore there is no legal obstacle to establishment of larger scale operations, except that the short duration of contracts for land leasing has implication for insecurity and high transaction costs, if the terms of the contract have to be frequently renegotiated.

Since the late fifties 303 thousand ha of original state land have been distributed to farmers with a possibility of redemption after 10 years of registration. This took place mainly in rainfed, lower quality, land areas of zone 4. In a similar way 554 thousand hectares were distributed to users out of the expropriated private lands following the 1958 land reform. These latter lands can be redeemed after twenty years of registration. Land reform distribution took place mainly in better agricultural areas in zones 1,2, and 3. In both cases yearly fees paid by the recipients are meant as partial payment for the land received. According to limited information beneficiaries of state land distribution, if paying and redeeming the land, obtain an 'ownership' title allowing sale and subdivision. This is not the case for land reform beneficiaries whose rights do not include sale and subdivision.

At any rate land distributed to operating farmers accounts for only part of the total stock of registered state lands. Table 4.3.1 gives the breakdown of the total registered state land, according to destination and type of users.

From among original state land 444 thousand ha in addition to 6 thousand from the land reform areas were sold. These lands were sold mainly to help in land consolidation and to farmers who were not able to obtain allocation under the general distribution rules. They have however a land use tied to the plan, and their operators should be included in the broad category of ownerslike possessors rather than owners. The total registered state land distributed to farmers, sold, and rented, amounts to 2247.3 thousand ha, or 37.5 percent of the total officially recognised cultivable land of 5996.9 thousand ha. Since the state has control of the production pattern on this land, it can be seen that the land tenure system and the restrictions on full land ownership render to the state considerable control over production.

Table 4.3.1 Allocation of original state land and land expropriated according to land reform law

Type of allocation	Land reform land (ha)	Percentage allocation	Original state land (ha)	Percentage allocation
Distributed to farm beneficiaries	554 744	40	303 444	12
Public sector (includes municipalities)	140 491	10	307 196	12
Sold	5 685	0	444 812	19
Rented	448 094	32	490 584	20
Vacant wasteland	240 685	17	852 936	36
Total (errors due to rounding)	1 389 699	100	2 398 972	100

Source. Forni 2001

The current policies in early 2001 are in favour of allocating most of the total registered state land, i.e. land reform and original state land, to individual farmers. The structure and priorities for past distribution used for land reform beneficiaries would apply also for future distribution. As the table shows only 40 percent of the land reform land was distributed to farmers. This happened mainly before 1974, at which time increasing attention was given to the needs of public organisations, for production as well as for research and development purposes, and this emphasis is changing.

The land reform law was to be implemented in a way to create small holdings not to exceed 8 ha in irrigated or tree crop areas, 30 ha in rainfed conditions with more than 350 mm, and up to 45 ha in rainfed areas with 350 mm or less. One problem faced by land reform beneficiaries are the high transaction costs to apply for final title. In any case, this refers to usufructory rights and not to fully disposable private property. Registration is the first step needed. Applications for final title can be made twenty years after registration and after payment of the yearly dues. The prescribed path seems to be fraught with difficulties. This is especially true because the share of the assets within the household of the original beneficiary, and his heirs, needs to be sorted out first.

Fragmentation of holdings is a serious problem in Syrian agriculture because of the traditional inheritance systems giving equal rights to each son. But the situation is further exacerbated in land reform areas where exchanges and sales between heirs are not permitted. Taking the example of Hama, in land reform areas the ceiling was put at 2.5 ha per household in 1968 when the distribution took place. It is now down to .4 ha (4 donum). The ceiling was based on existing children at the time of distribution, i.e. each member of the household counted in establishing the total household allocation. Each individual child had a theoretical share. This had abnormal developments. For example, upon death of the father, his individual share of the total allocation was divided among all his children. Those who were already born at the time of the land distribution received their part of the father's share plus their own share; those who were born after received only a part of the father's share. The holding is eligible for inputs as one unit but the existence of separate beneficiaries is recognised. Those who are no longer on the land get 20

percent of the production of their share as if they were giving their land to sharecroppers (brothers in this case). According to the law women get their share like men. According to 'Urf they do not. Hence the brothers usually occupy the sisters' land, unless the latter renounce their rights under social pressure. It is difficult to apply for final title of possession which permits selling. Clarification of the individual rights within the household at this point has a high transaction cost. In the meantime there are limited transactions in the parallel market to sell shares of the land to other beneficiaries. Full title acquisition in these conditions is not an easy objective.

In addition to distribution to private beneficiaries and to public sector organisations, original state and land reform land was also rented out to private operators. The priorities for obtaining land for rent are analogous to the requisites to become a beneficiary of land distribution. In year 2000 there were 69 thousand households renting a total of 969 thousand ha of state land, while 99 thousand households had benefited from distribution of 858 thousand ha.

Concerning the **land market**, the land cadastre, established in 1926 during the French mandate, is said to be relatively up to date, in terms of formal and registered transactions. However, the land market is largely informal, that is many transactions are not registered. Turkish and later French attempts to set up a land registers had unwanted consequences, as they were used by the local notables and sheikhs to register vast amounts of land under their name. This is what gave rise later to the land reforms.

The current land market in Syria in theory only concerns fully owned private holdings, as redistributed reform land is not open for sale since possession does not correspond to legal ownership. In actual fact, there are parallel land markets regulated by custom also for land reform areas and for *musha*, collective, land. As there is no possibility of registration and the land remains collectively owned, what is transacted in the market are actually land use rights. These transactions are sanctioned by local social institutions and are invisible to the law.

The market for fully owned land is extremely variable because of the tendency to invest in land as a security and for social purposes. For instance, in some areas migrant remittances are said to inflate land prices. Land for sale is costly also because it is scarce. Land purchase is not a preferred strategy for larger entrepreneurs or "investors", partly because it would absorb large amounts of capital which could be invested elsewhere, but also because there is a history in Syria of a series of land ceilings under which expropriation took place without owners having the time to dispose of the excess areas. Land purchase, on the other hand, is a preferred strategy for very small owners or landless households desiring a minimal security. However prices of land and lack of an adequate credit system discourage acquisition of property by many such potential buyers. Table 4.3.2 exhibits some land prices in year 2001 from limited observations from a field survey.

Table 4.3.2 Selected land market prices, (000 SP per ha)

Location (Mohafaza)	Irrigated	Rainfed
Hama	80-700	8-400
Idleb	400-500	150-350
Al-Hassake	150-300	100-120

Source Forni, 2001

Finally, market values of land are also affected by the potential for reclamation or development. In some potentially good areas such as in Al-Hassake where the tendency is to convert rainfed areas to irrigation, investors are trying to obtain large plots in the size of 10 to 20 ha each in view of the public investments for irrigation systems and possibilities for mechanical cultivation. This is reflected in the prices of land which are higher per ha in the case of larger consolidated plots.

In land reform areas a land market cannot officially exist. In these areas sales are said to take place but mainly between brothers and other legal heirs to the holding. There are statistics in each governorate of beneficiaries losing their rights because of illegal sales. In these cases the holding is confiscated by the state and reallocated. However, this does not seem to be enough of a deterrent to sales. Limited information suggests that land values in some land reform areas are 30 percent lower values of fully private than similar land. This may mean that prices are affected by the local perception of the risk involved in the transaction. In fact, beside the risk implicit in these transactions, one should also consider that what is sold is not full property but rather rights of use.

In spite of the existence of a detailed legal framework **contractual agreements** between owners of the land and tenants are often of a general nature and oral only. Specific clauses are not discussed and agreed. Duration of contracts is set by the law at one year only, although renewable. On the one hand this signifies precariousness for the farmer who fears eviction. On the other hand, renewability tends to make these short and precarious contracts a continuing feature where the owner of the land fears usurpation by the tenant. Hence a vicious cycle emerges which leads to insecurity and conflict and diverts attention from production and investment.

There are mainly three types of contracts involving land and labour. The first occurs where an owner contracts in labour. The second occurs when the land owner is not directly operating his land, but rather he is renting it out to an operating farmer. The third occurs when an owner enters into a sharecropping agreement with an operating farmer whereby each will receive a portion of the product obtained.

The situation of squatters, currently at the centre of the debate in Syria, does not fit in theory into any of the types of contracts described above since squatters are by definition illegal occupiers. In the traditional systems of access to land prevailing during the Ottoman Empire, there were traditional access rights for the landless to unused land. These were temporary agreements, which could be equated to customary contracts, justified by the need to ensure subsistence for the whole community. These traditional access rights were extinguished with the formalisation of individual rights.

Tenure relations in Syria are rarely of one type only. Multiple tenure is common in the villages. It is not unusual for one household to operate one small piece of land in private ownership, be a squatter on another, and be a land reform beneficiary on a third.

Sharecropping systems are extremely varied in Syria, and they have evolved over time. They are common particularly in the better lands where there is an interest for investment by non-operating farmers. According to the agricultural relations law different cropping systems in irrigated or rainfed area are supposed to correspond to different sharing agreements. While the intention of the law is to establish control on as many type of agreements as possible, local customs can hardly be all covered in a legal instrument. In the actual operation of the system the shares of the owner and of the farmer vary widely over the territory and are even fluctuating year by year depending on anticipated market

values of the main crops grown. In addition the share of the crops is closely linked with the sharing of inputs, which varies.

Widespread land occupation is reported in several governorates, for instance in Hama. The so called squatters seem to be in fact mainly sharecroppers whose (yearly) contracts have expired and who refuse to leave. The land relations law regulates termination of sharecropping contracts. This however leaves some loopholes for continued occupation by tenants or sharecroppers whose contract has expired. For instance the terminated farmer can return to the land if the owner has not been operating the land himself or with his family for a year after termination. This implies that the owner can only get the land back if he wants to operate himself i.e. he cannot change tenants except for grave negligence of the latter. In this context some consideration needs to be given also to the nature of the landowners whose land is occupied. There seem to be few absentee landowners in the traditional meaning of the word, the current absentee is often a non operating peasant who has another job. Therefore the picture of a classical confrontation between absentee landlords and invading landless would be misleading, and the potential role of local institutions in guaranteeing agreements could be high as they all belong to similar social strata.

Tenancies or leases, i.e. the renting of land by an owner to a farmer -against a fixed amount in cash or kind unrelated to yields, imply occupation rights for the farmer for a given period of time. The important issues involved are duration and security as well as the degree of permissible involvement of the owner in the management of the land once it is leased out. The agricultural relations law indicates the legal framework for renting, in the same way as for sharecropping. However in Syria renting is common when the renting out partner is the state but rather uncommon when both parties are private. The lack of popularity of rent in private areas is mainly connected to risk and to perceived loss of control by the owner in favour of the renting farmer.

In principle, frequent presence is needed by the owner in the case of labour contracts and, for at least the major operational decisions, in the case of sharecropping. This presence is not necessary in case the land is rented out. However, the Syrian owner, even when living elsewhere and unable to participate in the day to day operations, tends to be reluctant to rent out his land. This may in fact be perceived as absenteeism and an opening for illegal occupancy, which is not easy to reverse. According to local perception and experience, when a contract involves only labour the 'farmer' is easier to evict. It is less easy when it involves an agreed relation with land as it is the case with sharecropping, and it is most difficult in the case of land rented out.

It should be underlined that the common problem in all these cases is the **lack of a written contract** which makes provision of evidence of agreement difficult to prove during later conflicts. As a result, renting as a way to invest in agriculture by an entrepreneur wishing to increase his land operation without investing scarce capital in land purchasing, is unusual. An exception is the situation of the so called 'investors' contracts popular in the Al-Hassake area and the North East in general. Investors' contracts are normally registered in the civil courts and do not come under the jurisprudence of the arbitration committees co-sponsored by MAAR and the Ministry of Social Affairs. In case of harvest failure due to natural conditions the investor does not pay, i.e. the owner participates in the risk

Leasing contracts are widely used in the public sector both in the original state land and land confiscated in compliance with the land reform regulations. Leasing is also often used as a tool for regularisation of state land occupation, thereby providing a title of occupancy sanctioned by the payment of a limited rent.

Rental payments for different types of land refers to rental price on public land either with a regular contract or without a contract, by tolerated squatters. Table 4.3.3 exhibits the rental values for public agricultural lands in year 2000. The total rental income computed from the table is 800 million SP per year. Which is a substantial amount of public revenue.

Table 4.3.3 Rented area and average rental values by origin of registered public land*

Type of registered public land	Rented area with contract (ha)	Average rent per year per ha (SP)	Rented area without contract (ha)	Average rent per year per ha (SP)
Original state land	247 300	579	295 874	1 082
Land reform land	370 488	790	77 606	558
Total	617 788	706	373 480	973

Source Forni 2001

*The total area of original state land under contract, 543174 ha in this table, diverges from the information provided in table 4.3.1, which was 490,534 ha. This does not however affect the value of this table for a comparison of rental levels with and without contract.

There is a total of 69 000 households currently renting state land. Since well over one third of the rented state area is occupied by paying squatters it may be assumed that about one third of the said total agricultural households, or some 23 000, may be in the category of paying squatters. In view of the government concern to solve this problem the speed at which land occupation was taking place in the past is likely to diminish because of increased controls. Notice also that the total number of holders that rent land from the state (69000) is larger than the total number of land having holders that are listed in the census as operating land under other than fully owned tenure (namely under rental or other mixed forms of tenure), which is 58261 holders. Clearly there is a large discrepancy that needs to be explained, but it suggests either that the holders operating under non-fully owned land arrangements are many more than officially listed in the census, or that the above figure of the number of holders renting state land is overestimated.

In terms of amount of rent the average does not vary very much between original state land and land reform land but rather between tenants with or without contracts. Where there is no contract the rent is calculated on similar types of land in the vicinity, but there are cases where this amount is doubled as it contains an element of fine for illegal occupation and of disincentive to further occupation. The doubling of the rent in some cases refers also to change of land type after reclamation.

The other interesting observation concerns the values of rental payments relative to purchase values of land shown in table 4.3.2. It can be seen that purchase values even for rainfed land are 9-40 times the rental values above, while for irrigated land they appear to be much higher. This suggests first that the state rental values are quite low compared to land market values, and also perhaps that the free market land values incorporate a high

premium for security, rather than productive value. Limited survey observations also suggest that rental values for private agricultural land are at least twice as high as those for state land. This difference may be also due to the fact that eventually state contracts tend to be written and remain stable, whereas contracts among private agents are more risky in the sense that they are often renegotiated.

4.4 Agricultural labour

Gainful employment in agriculture is important for many categories of workers, such as owner operators, permanent labourers, and occasional farm labourers. It is particularly important for the category of landless agricultural labourers. Agriculture employs considerable numbers of workers. Table 4.4.1 below shows that the total number of family members employed in private agricultural holdings is 1.94 million, of which the overwhelming portion (96 percent) is unpaid family labour. This number constitutes about 40 percent of total Syrian labour force, but does not consider the fact that many family members are only partly employed in the family holding. The table indicates that the average number of family members per holding is relatively stable over different land size classes, at about 3.7.

The table also indicates the number of permanent workers, as well as the number of full time equivalent temporary workers (computed by dividing the number of days worked by all temporary workers by 250). It can be seen that hired labour of all types accounts for only about 88.5 thousand full time equivalent person-years, of which permanent workers constitute 58 percent. The reason is that while there are 1.6 million temporary workers employed by all holders, the average number of days each temporary worker works is only 5.9. The amount of hired labour increases with the size of holding, as expected, but the amount of both family, as well as hired labour per ha of cultivated land decreases as farm size increases. This suggests that larger farms are more capital intensive than smaller ones, and that labour productivity is much higher on larger size farms.

Availability of employment opportunities either for full time workers or in terms of occasional labour varies throughout the country and is affected by seasonality factors. In many parts of Syria, in the Hama countryside, as an example, a situation of labour shortage during harvesting co-exists with relative labour abundance throughout the year. The number of totally landless labourers in that governorate is said not to exceed 10 percent but is constantly on the increase because of population growth, insufficient development of non agricultural employment opportunities, and continuing fragmentation of holdings through inheritance. However, in view of the active labour demand during the peak agricultural seasons open unemployment of agricultural labour exists mainly for about two months in the slack season only.

Table 4.4.1. Labour utilised by farm holdings by size categories

Farm size classes (ha)	Number of holdings	Total family workers	Total area planted (ha)	Number of permanent workers	Number of full time equivalent temporary workers	Total number of full time hired workers	Family workers per holding	Family workers per ha	Total hired workers per holding	Total hired workers per ha
Without land	40403	59525	0	773	99	872	1,47		0,02	
<0.5	48405	107308	13699	1719	449	2168	2,22	7,83	0,04	0,16
0.5-2	153191	449735	161596	7550	3880	11430	2,94	2,78	0,07	0,07
2-10	233669	862360	989771	17725	16192	33917	3,69	0,87	0,15	0,03
10-50	114538	418570	2069818	17989	14273	32262	3,65	0,20	0,28	0,02
>50	10840	40644	965562	5253	2601	7854	3,75	0,04	0,72	0,01
All country	601046	1938142	4200446	51009	37495	88504	3,22	0,46	0,15	0,02

Source. 1994 Computed from Agricultural census

Landless labourer households, i.e. those households not operating land under any form and not having a non agricultural employment, were recorded in Forni's (2001) field survey as accounting for between 6 and 36 percent of total households in the eight surveyed villages. This means that this category has a different significance over the territory. Furthermore, because of their attitude to pluriactivity, i.e. their participation to several sectors and not agriculture only, the landless as a category do not necessarily coincide with the poor households.

The landlessness situation in some parts of central Syria, e.g. Idleb, is serious as it is characterised by limited numbers of totally landless labourers but an overwhelming presence of near-landless households. Eighty percent of the households cultivate less than one hectare of land and another 15 cultivate between 1 and 3 ha. This means that the minimum subsistence security provided by the land base is such that with another round of subdivisions through inheritance the social balance may be toppled. Furthermore, in a situation of this type the prospective employers of agricultural labour force, namely those having a land base big enough to require labour in addition to household resources, are limited. This explains the presence of many organised labour groups in this *mohafaza* which bring to other areas the surplus labour of Idleb. There is fortunately some complementarity between the different labour peaks, i.e. Idleb's labour migrates after the local peak demand and moves to work with other crops in other areas.

More generally, in Syria, agricultural labour organisation and mobilisation functions in accordance with local and non-local demand. Traditional labour contractors, the *chawesh*, perform these functions. They pool mainly female labour and make it available in different governorates according to market demand.

Another phenomenon relevant to labour use and its co-ordination is inter-household co-operation between farmers producing different crops and hence having different labour requirement peaks. For instance cotton-producing farmers get into co-operation with onion-producing farmers and exchange their family labour, as needed. However, a broader information system on labour supply and demand is missing.

The scarcity of land, coupled with insecurity of income creates a tendency among workers to occupy land permanently whenever possible. Labourers are said to want to become sharecroppers, who are more difficult to evict, while all employers would like to continue

using casual unprotected labour. Currently, however, labourers with no own production base are unlikely to be able to become squatters, and hence slowly acquire rights to stay on the land. This is because labourers are employed for short periods only and for specific tasks only for the very purpose of preventing any possibility for them to settle on the land and claim any right to it.

The minimum wage for agriculture, 75 SP per day is lower than the base market rate of 100 SP for unskilled labour. Survey based actual agricultural wages in 2001 range from 80 to 150 SP per day depending on the type of activity, and do not vary by gender. Most of the hired labour is said to be composed of women and poorer pastoralists.

In general, the increasing supply of labour is not matched by similar increase in demand and results in stagnation of daily rates. For instance, rates had actually slightly decreased in Al-Hassake in 2000 over 1999 for cotton picking, a relatively well paid activity for female seasonal migrant labour.

It should however be noted that Syrian agricultural labour moves in a larger than national context. Findings from a field survey conducted in the Idleb and Hama mohafazat in early 2001 indicate that workers compare the local daily rates with the ones prevailing in Lebanon or in the Gulf. In the case of Lebanon the rates would be about five times higher for comparable work, and the proximity allows labourers to move out easily. It is mainly women, more constrained by social custom, who are continuing to operate in the national market only, but by no means in the purely local one. Women constitute the bulk of the migrant labour force which the *Chawesh* mobilise to provide the needed number of labourers at the right place and time for all the major agricultural operations, and particularly harvest.

4.5 Agricultural capital

There are various types of capital that are relevant for agriculture in Syria. These include irrigation, trees, animals, and machinery. The issue that is of relevance for policy is the extent to which various types of holders have similar patterns of capital ownership. The census of 1994 is useful in illustrating this pattern.

Table 4.5.1 indicates the average area operated by holders of different size, and the proportion of irrigated area among them. The noticeable thing is that albeit the amount of irrigated land increase with holding size, the proportion of irrigated land decreases. This suggests that the land holdings of larger size have a larger proportion of rain-fed land.

Table 4.5.1 Pattern of irrigated land across holders of different sizes.

	Number of holders	Average total area per holding (ha)	Average irrigated area per holding (ha)	Percent irrigated land
Land size classes (ha)				
<0.5	49185	0,30	0,13	44,5
0.5-2	155586	1,11	0,41	37,1
2-10	238346	4,58	1,37	29,8
10-50	118426	19,67	3,93	20,0
>50	11650	92,52	13,89	15,0
All country	573193	8,18	1,79	21,8

Source. Computed from 1994 census of agriculture

Table 4.5.2 indicates the numbers of holders of different size classes that plant crops, trees, greenhouses, and combinations. There are several noticeable things in this table. First, the number of holders that plant only crops is relatively small, only 46.5 percent of the total. However, the proportion is much larger among the large holdings. In the largest size class, namely those with area larger than 50 ha, 78 percent plant only crops, while in the lowest size class, namely those with area less than 0.5 ha, only 27.4 percent plant only crops. In the next smallest size class, namely those with land between 0.5 and 2 ha, only 33 percent plant only crops.

A remarkable thing that emerges from the table is that there appears to be a large number of holders (23.4 percent of all holders with land) that plant only fruit trees. This proportion is, however, much larger among small size holdings (53 percent of the smallest size class, and 37.6 percent in the next smallest size class). This indicates that for most small holdings fruit trees are a profitable activity. The same pattern emerges in the case of holders that have only greenhouses, or greenhouses along with non-greenhouse cultivation. This suggests that policies relating to fruits and vegetables (most greenhouses produce vegetables) impact on small holdings, while policies for crops impact more on larger holdings.

Table 4.5.2 Distribution of holders across different types of crop operations

Land size classes (ha)	Total number of holders having land	Holders planting only crops		Holders planting only fruit trees		Holders planting crops and fruit trees		Holders having green house and non-greenhouse cultivation		Holders having only greenhouse cultivation	
		Number	Average area (ha)	Number	Average area (ha)	Number	Average area (ha)	Number	Average area (ha)	Number	Average area (ha)
<0.5	49185	13475	0,3	26076	0,3	5113	0,3	2747	0,3	202	0,2
0.5-2	155586	51650	1,1	58542	1,0	36959	1,1	6380	1,1	42	0,6
2-10	238346	113977	4,4	43386	3,5	73198	4,3	5655	3,9	2	3,3
10-50	118426	78556	18,5	5817	11,8	32770	17,0	582	15,3	0	
>50	11650	9088	87,0	122	53,1	2351	70,0	47	86,5	0	
All country	573193	266746	10,5	133943	2,2	150391	7,2	15411	2,8	246	3,1

Source. Computed from 1994 census of agriculture

Table 4.5.3 indicates that the number of holders that operate only land, namely have no animals, is relatively small, only 26.5 percent of all holders. However, the proportion seems to be much larger among small holdings. This suggests that animal ownership is concentrated among larger holdings. Table 4.5.4 verifies this. It can be seen that the proportions of holders owning sheep and goats, the two most popular types of animals, are much higher among larger farm holdings, and approach the proportions of holders without land that have these types of animals, which are traditionally regarded as animal raisers. It can also be seen that the ownership of horses and local chickens, while skewed in favour of the larger holdings, is relatively evenly distributed. However, cow ownership is skewed towards smaller land holdings, indicating that many cow owners do not own much land, but instead rely on purchased feeds.

Table 4.5.3 Proportion of holders having only land by holding size

Land size classes (ha)	Total number of holders	Holders with land only		
		Number	Average area per holding (ha)	Percentage of all holders
<0.5	49049	24124	0,3	49,18
0.5-2	155571	56991	1,1	36,63
2-10	238443	58097	4,3	24,37
10-50	118473	21110	18,6	17,82
>50	11657	2067	86,1	17,73
All country	613657	162389	5,5	26,46

Source. Computed from 1994 census of agriculture

Table 4.5.4 Proportion of holders with different types of animals by holding size

	No. of	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
	Holders	of	of	of	of	of	of	of	of	of
Land size classes (ha)		sheep	cow	goat	holders of broiler	holders of layer	holders of	holders of	holders of	holders of
		holders	holders	holders	Chicken farms	chicken farms	Local chicken	Horses	camels	beehives
Without land	40464	49,83	34,33	32,32	0,58	0,93	65,08	16,55	0,23	3,91
<0.5	49049	7,18	24,81	7,88	0,28	0,10	35,01	9,91	0,07	2,41
0.5-2	155571	12,06	32,70	12,04	0,32	0,07	43,61	19,26	0,12	2,99
2-10	238443	26,01	32,10	20,61	0,34	0,07	55,86	21,79	0,14	3,61
10-50	118473	50,37	19,72	31,18	0,28	0,09	65,65	20,38	0,16	2,75
>50	11657	61,77	11,21	33,92	0,14	0,09	58,83	21,88	0,30	1,70
All country	613657	27,92	29,03	20,48	0,33	0,14	53,64	19,58	0,14	3,17

Source. Computed from 1994 census of agriculture

Table 4.5.5 indicates the pattern of ownership of different types of machinery. It can be seen that water raising pump ownership, seeder, modern plough, thresher, and tractor ownership are all heavily skewed, in terms of the proportions owning, toward the larger holdings, while sprayers seem to be more evenly distributed. Table 4.5.6, however, indicates that the number of machines owned per owning household is very even, and close to one for most types of machinery. In other words, it appears that for most holdings owning machinery, one piece of machinery is enough. This suggests, in turn that there might be considerable inefficiencies in machine use in smaller holdings, as both smaller and larger size holdings seem to utilise on average the same number of machine, whenever they own them, while the land they operate is vastly different. On the other hand, this is also consistent with the reported pattern, whereby machine owners that have surplus capacity make them available for hire to other holders.

Table 4.5.5 Proportion of holders with different types of machinery by holding size

Land size classes (ha)	Number of holders	Percent of holders owning						
		Water raising pumps	Sprayers by motors	Seeders	Modern ploughs	Fixed threshers	Harvester threshers	Tractors
Without land	40464	0,42	0,15	0,75	2,02	0,37	0,84	6,89
<0.5	49049	6,13	1,04	0,03	0,58	0,11	0,09	2,09
0.5-2	155571	9,31	2,06	0,14	1,48	0,24	0,18	4,47
2-10	238443	14,18	2,24	0,92	5,52	0,59	0,58	12,96
10-50	118473	17,09	1,74	4,57	12,20	1,01	1,61	22,18
>50	11657	21,27	2,98	12,98	21,34	1,84	4,25	34,18
All country	613657	12,09	1,88	1,57	5,46	0,55	0,72	11,72

Source. Computed from 1994 census of agriculture

Table 4.5.7 indicates the number of different types of machines per ha of total operated land (namely by all holdings and not only those owning the machines) among different sizes of holdings. The remarkable thing is that there appears to be an inverse relationship between the size class and the number of machines per ha. Assuming, that those with excess machine capacity make them available to other farmers of the same size class, the numbers suggest that either there is considerable capital intensity in smaller farms, or that there are inefficiencies in machine use for smaller sized farms.

Table 4.5.6 Number of different types of machines per machine owning holding

Land size classes (ha)	Number of machines per owning holder						
	Water raising pumps	Sprayers by motors	Seeders	Modern ploughs	Fixed threshers	Harvester threshers	Tractors
Without land	1,16	1,13	1,07	1,59	1,10	0,94	1,00
<0.5	1,06	1,05	1,00	1,36	1,30	0,70	0,99
0.5-2	1,07	1,04	1,06	1,39	1,18	0,72	0,97
2-10	1,16	1,24	1,07	1,55	1,19	0,82	0,98
10-50	1,25	2,37	1,06	1,67	1,16	0,82	1,00
>50	1,56	2,40	1,08	1,88	1,03	0,94	1,07
All country	1,17	1,41	1,07	1,61	1,17	0,83	0,99

Source. Computed from 1994 census of agriculture

Table 4.5.7 Number of different types of machines per ha of land of all holdings in size class

Land size classes (ha)	Total area operated (ha)	Number of machines per ha for all holders						
		Water raising pumps	Sprayers by motors	Seeders	Modern ploughs	Fixed threshers	Harvester threshers	Tractors
Without land	0							
<0.5	14626	0,217	0,036	0,001	0,027	0,005	0,002	0,070
0.5-2	173296	0,089	0,019	0,001	0,019	0,003	0,001	0,039
2-10	1092383	0,036	0,006	0,002	0,019	0,002	0,001	0,028
10-50	2329423	0,011	0,002	0,002	0,010	0,001	0,001	0,011
>50	1077818	0,004	0,001	0,002	0,004	0,000	0,000	0,004
All country	4687546	0,019	0,003	0,002	0,012	0,001	0,001	0,015

Source. Computed from 1994 census of agriculture

Table 4.5.8 explores the issue further by indicating the ratios of the three most prevalent types of capital (water raising pumps, modern ploughs and tractors) per family worker, and per full time equivalent hired worker (this as mentioned earlier includes both permanent and the full time equivalent of temporary workers). If the prices for labour and capital faced by different types of farmers are the same, then the capital labour ratios, namely the so-called capital intensities should be similar across different types of farms. The table indicates that they are not, with larger holdings being generally more capital intensive than smaller sized holdings. The higher capital intensity seems to hold for all capital types for family labour, which is the prevalent type of labour in agriculture in Syria. However, it does not seem to hold for hired labour, where an inverse pattern seems to hold for water pumps, and a more even pattern seems to emerge for the other types of capital. This is evidence that while the prices faced by farmers of different size classes for capital and labour in the open markets are similar, they are not similar for prices imputed for family labour. The generally lower capital intensity (or equivalently higher labour intensity) of smaller farms, implies that the opportunity cost of family labour (the so-called shadow price of labour) is lower for smaller holdings, compared to large ones. This is consistent with excess supply of labour by smaller holdings, as already indicated earlier.

Table 4.5.8 Capital-labour ratios for different sizes of farms in Syria

Land size classes (ha)	Water pumps per		Modern ploughs per		Tractors per	
	Family worker	Total full time equivalent hired worker	Family worker	Total full time equivalent hired worker	Family worker	Total full time equivalent hired worker
Without land	0,003	0,227	0,022	1,489	0,047	3,180
<0.5	0,030	1,464	0,004	0,179	0,009	0,469
0.5-2	0,034	1,357	0,007	0,280	0,015	0,589
2-10	0,045	1,152	0,024	0,601	0,035	0,895
10-50	0,061	0,786	0,058	0,747	0,063	0,815
>50	0,095	0,494	0,115	0,594	0,104	0,541
All country	0,045	0,985	0,028	0,611	0,037	0,807

Source. Computed from the 1994 census of agriculture

4.6 Current situation in water sources and their utilisation in agriculture⁴

From the 18,5 million ha of total lands of the Syrian Arab Republic, cultivated land extends over an area of 5484000 ha of which 1213000 is irrigated land (22%), 3655000 ha is rain-fed land (67%) and 616000 ha is fallow land (11%) (1998 data⁵). Irrigated agriculture has increased steadily in Syria over the last decades, with a doubling of the irrigated cultivated area since 1985. This increasing pace was followed in order to comply with the nation's food security policy objectives and thus to satisfy the food production needs of an increasing population. Irrigated lands are not distributed evenly across the country and concentrate mostly in the governorates of Al Hassake (34% of total irrigated area), Aleppo (13%), Rakka (12%), Hama (11%) and Deir-Ezzor (10%).

The water resources of Syria are very limited compared to the needs of the country. Estimations by Varela and Sagardoy (2001), reproduced in table 4.6.1, show that available resources amount to 14589 million m³/year but total uses (re. Table 4.6.2) reach 19162 million m³/year. Consequently, the overall water balance for Syria is negative with a deficit of 3104 million m³/year varying distinctively across basins. In fact, the balance per basin shows that only three basins, namely Euphrates, Coastal and Al Badia have a positive annual water balance. The remaining basins have considerable negative annual balances, ranging from relatively small negative balances for the Barada and Awag (-311 million m³), and Yarmouk (-206 million m³) basins, to very critical ones at Orontes (-856 million m³) and Al Khabour (-3151 million m³). The magnitude of the deficit of the Al Khabour indicates that it will be difficult to correct it without special and severe measures. Given that of total uses, irrigation requirements comprise 83 percent, agricultural development and irrigation policies will have important effects on the different basins.

Syria has important groundwater resources estimated at 5395 million m³ (MM3) which represent 37% of the total water resources of the country. The best aquifers concentrate in the western and northern regions but most of the aquifers have been overexploited except for the Coastal and Al Badia basins. For instance the water table in the Orantes basin has decreased by 57 meters during the period 1990-1999 in the Al Ashareneh area and 34

⁴ This section draws partly from the work of Varela and Sagardoy (2001)

⁵ Syria databases GCP/SYR/006/ITA

meters in the Al Salamieh area which has led to the prohibition of drilling new wells by recently enacted legal decisions. Total irrigated area by wells is 715509 ha of which 314050ha (44%) are in Al Hassakeh (Khabour basin) and the estimated total number of wells is 135089 out of which 63078 were not licensed in 1999. The primary source of energy used for irrigation from wells is fuel and only one fourth of wells use electricity.

Table 4.6.1: Available water resources by water basin

	Unit	Water Basin							Total
		Barada & Awag	Yarmouk	Al Badia	Orantes	Coastal	Al Khabour	Euphrates and Tigris	
Water resources (surface)	Million m3	12	88	49	666	1246	315	6818	9194
Water resources (underground)	Million m3	490	131	54	964	622	640	2494	5395
Water resources (total)	Million m3	502	219	103	1630	1868	955	9312	14589
Utilization rate	%	0,90	0,85	0,60	0,85	0,65	0,95	0,98	-
Actually available	Million m3	452	186	62	1386	1214	907	9126	13332
Domestic use and Industrial waste water	Million m3	257	50	8	214	0	36	130	695
Agricultural drainage	Million m3	568	36	-	231	43	428	725	2031
Total available for use	Million m3	1277	272	70	1831	1257	1371	9981	16058

Source. Varela and Sagardoy (2001)

Table 4.6.2: Present water uses and balances by water basin

	Unit	Water Basin							Total
		Barada & Awag	Yarmouk	Al Badia	Orantes	Coastal	Al Khabour	Euphrates and Tigris	
Irrigated area	Ha	75429	34299	3871	253427	72132	404075	432835	1276068
Irrigation requirements	m3/ha	16000	10500	11000	9100	6000	10600	16700	12429
Irrigation water use	million m3	1207	360	43	2306	433	4283	7228	15860
Population	million persons	4,0890	0,9430	0,1130	2,5280	1,8290	0,6690	4,1050	14,2760
Requirements per person	m3/per capita	0,2000	0,2000	0,2000	0,2000	0,2000	0,2000	0,2000	0,2000
Domestic water use	million m3	298	69	8	185	134	49	300	1042
Industry water use	million m3	77	18	2	48	35	13	78	315
Evaporation	million m3	5	31	15	148	16	132	1643	1 990
Total uses	million m3	1588	478	68	2687	617	4477	9249	19162
Water balance (- = deficit)	million m3	-311	-206	2	-856	640	-3105	732	-3104

Source. Varela and Sagardoy (2001)

Total irrigated area by surface is 560559 ha of which 396518 ha (71%) correspond to public irrigation systems and the remaining 164041 ha are private. Water consumption in surface irrigated areas are reported to be in the order 15000 to 16000 m3/ha in the Euphrates basin, which is very high. The reported costs of developing new areas are in the range of 200000- 250000 SP/ha and they are recovered through charges to farmers over a period of 30 years.

As water resources are very limited in Syria the construction of dams has received considerable priority. In the last decades construction reached a total of 154 dams but only three of them represent 87% of the total storage capacity.

Table 4.6.3 shows the number of holdings by Mohafaza that utilise irrigation by different methods of irrigation, and the average irrigated area per holding. It can be seen that half of the total farm holdings in Syria utilised some kind of irrigation in 1994. The proportions vary considerably across Mohafaza, with the highest proportion in Deir-ez-Zor, where 95.6 percent of all holdings have available some method of irrigation. The next highest share is in rural Damascus, where 74 percent of holdings have some type of irrigation, and above average shares are also exhibited in Hama (63 percent), Al-Rakka (63.2 percent), and Dara'a (66 percent). By contrast in Sweida only 7 percent of holdings have some kind of irrigation, and in Idleb the share is only 19 percent.

Table 4.6.3 Proportions of farm holdings irrigated by different methods and average irrigated areas by Mohafaza

Mohafaza	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
Damascus City	7074	2,81	10,53	1,14	1,53	1,40	30,32	1,59	12,34	1,71	3871	54,72	1,53
Damascus Rural	37019	3,30	14,14	1,06	0,30	1,40	43,68	1,80	15,94	1,82	27419	74,07	1,66
Homs	45987	8,22	8,29	1,60	6,67	1,51	23,77	2,35	11,79	2,74	23235	50,53	2,21
Hama	60879	6,71	12,64	1,73	15,51	2,44	25,58	3,13	9,45	2,89	38464	63,18	2,64
Tartous	58079	1,81	6,65	0,55	0,50	1,32	19,22	1,25	12,51	0,63	22584	38,88	0,93
Lattakia	47434	1,96	7,27	1,33	14,48	1,45	16,31	1,08	13,52	1,10	24467	51,58	1,22
Idleb	53178	5,42	4,49	1,74	0,54	1,83	11,42	4,70	2,57	3,40	10111	19,01	3,74
Aleppo	89367	12,05	4,84	5,00	1,48	7,50	18,86	5,19	9,79	5,82	31249	34,97	5,44
Al-Rakka	25524	25,73	33,71	4,04	5,68	6,19	17,23	19,25	6,54	8,67	16121	63,16	8,86
Deir-ez-Zor	39255	5,23	85,53	2,26	0,07	3,37	5,42	12,88	5,49	6,25	37885	96,51	3,08
Al-Hassakeh	55021	17,30	10,05	4,81	2,72	6,98	28,33	12,92	5,64	10,18	25716	46,74	10,50
Sweida	22158	7,51	0,12	2,12	0,02	3,92	0,39	3,11	6,66	0,58	1593	7,19	0,75
Dara'a	28358	6,96	4,13	2,39	5,66	2,34	6,38	2,72	50,35	1,18	18865	66,52	1,50
Quneitra	3853	4,86	14,72	1,17	2,02	1,94	9,63	1,23	4,44	0,98	1187	30,81	1,21
Syria	573186	8,18	14,13	2,46	4,56	2,76	19,37	5,08	11,27	2,92	282767	49,33	3,62

Source. Computed from 1994 census of agriculture

Another observation from the table is that the average irrigated area per holding with irrigation varies substantially across governorates. The largest average irrigated area per holding is in the Al-Hassakeh mohafaza, where each holding with irrigation irrigates on average 10.5 ha. Similarly in Al-Rakka the average is 8.9 ha. By contrast in Sweida the average area irrigated by holdings that have some type of irrigation is only 0.75 ha, and in Hama 0.93 ha. It is not known or reported in the census what proportion of the total area of the relevant holdings are irrigated. In other words it is not known what is the total area of the irrigating holdings. Given that the number of irrigating holdings is half of the total, it may well be that the total area that these holdings operate is considerably larger than the amount of their irrigated area.

Table 4.6.4 presents the same type of information as table 4.6.3 but organised according to farm size classes. Annex 2 gives the same type of table for each mohafaza. The most interesting result of the table is that among holdings in the smallest size class (those operating an average total area of 0.3 ha), those that irrigate tend to irrigate a very large share of their area (83 percent). On the other end of the spectrum, among irrigating holdings in the largest size class (those with total average area more than 50 ha), those that irrigate, and they are roughly the same proportion as those in the smallest class, tend to irrigate only 33 percent of their total area. Given, however, the large area of these holdings, this irrigated area amounts to a very large average amount of 30 ha. This conclusion largely seems to hold for all mohafazat (re. Annex 2).

Table 4.6.4 Proportions of farm holdings irrigated by different methods and average irrigated areas by farm size classes for all Syria

Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	493 25	0,30	17,52	0,26	3,36	0,31	18,71	0,26	12,80	0,22	25845	52,40	0,25
0.5-2	155 754	1,12	18,35	0,88	5,01	0,94	16,87	0,84	10,28	0,62	78671	50,51	0,82
2-10	238 768	4,60	14,85	2,83	5,99	2,81	17,84	2,96	12,04	2,08	121100	50,72	2,70
10-50	117 723	19,74	6,52	7,45	1,96	9,22	25,06	10,33	10,43	6,61	51775	43,98	8,97
>50	116 16	92,63	5,40	22,37	0,78	31,35	29,45	31,84	10,65	28,97	5376	46,28	30,07
Total	573 186	8,18	14,13	2,46	4,56	2,76	19,37	5,08	11,27	2,92	282767	49,33	3,62

Source. Computed from 1994 census of agriculture

The table also shows that in the aggregate there does not appear to be large differences among the average areas irrigated by different methods. In other words within one size class, the average irrigated area seems to be similar irrespective of the type of irrigation utilised. This picture is similar when the aggregated data for individual mohafaza are examined as in table 4.6.3.

Table 4.6.5 presents the allocation of irrigating holdings and irrigated areas according to different types of irrigation methods used for each mohafaza, while table 4.6.6 presents the same information, but organised according to farm size classes. The main message of table 4.6.5 is that there are substantial differences across governorates in the sources of irrigation. For instance in Deir-ez-Zor, Al-Rakka and Quneitra the bulk of irrigating holdings have as main source of irrigation the rivers, while wells provide the majority of irrigating farmers in Damascus, Homs, Hama, Tartous, Idlib, Aleppo, and Al-Hassakeh. In terms of irrigated area, however, wells seem to provide the major source of irrigation in all governorates, except in Lattakia, Deir-ez-Zor, Dara'a, Sweida, and Quneitra. Overall wells seem to provide irrigation for 55.1 percent of all irrigated area in Syria. When we examine table 3.5.6, it appears that the larger holdings use disproportionately more wells as their main irrigation source, and irrigate the bulk of their area from them.

Table 4.6.5 Proportions (in percentages) of irrigated holdings and areas irrigated by different types of methods by Mohafaza

Mohafaza	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
Damascus City	3871	5905	19,2	2,8	55,4	22,6	14,4	2,6	57,7	25,3
Damascus Rural	27419	45551	19,1	0,4	59,0	21,5	12,2	0,3	63,9	23,6
Homs	23235	51339	16,4	13,2	47,0	23,3	11,9	9,0	50,1	29,0
Hama	38464	101722	20,0	24,5	40,5	15,0	13,1	22,7	47,9	16,3
Tartous	22584	20992	17,1	1,3	49,4	32,2	10,2	1,8	66,3	21,7
Lattakia	24467	29938	14,1	28,1	31,6	26,2	15,3	33,2	27,9	23,6
Idleb	10111	37862	23,6	2,8	60,0	13,5	11,0	1,4	75,4	12,3
Aleppo	31249	169896	13,9	4,2	53,9	28,0	12,7	5,8	51,4	30,0
Al-Rakka	16121	142901	53,4	9,0	27,3	10,3	24,3	6,3	59,3	10,1
Deir-ez-Zor	37885	116754	88,6	0,1	5,6	5,7	64,9	0,1	23,5	11,5
Al-Hassakeh	25716	270088	21,5	5,8	60,6	12,1	9,8	3,9	74,6	11,7
Sweida	1593	1199	1,6	0,3	5,5	92,7	4,6	1,3	22,6	71,5
Dara'a	18865	28280	6,2	8,5	9,6	75,7	9,9	13,3	17,4	59,4
Quneitra	1187	1436	47,8	6,6	31,3	14,4	46,0	10,5	31,8	11,6
Syria	282767	1023862	28,6	9,3	39,3	22,8	19,4	7,1	55,1	18,4

Source. Computed from the 1994 census of agriculture

Table 4.6.6 Proportions (in percentages) of irrigated holdings and areas irrigated by different types of methods by farm size classes

Syria										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	25845	65445	33,4	6,4	35,7	24,4	33,9	7,9	37,0	21,2
0.5-2	78671	645516	36,3	9,9	33,4	20,3	38,9	11,4	34,3	15,4
2-10	121100	3265800	29,3	11,8	35,2	23,7	30,8	12,3	38,6	18,3
10-50	51775	4645368	14,8	4,5	57,0	23,7	12,3	4,6	65,6	17,5
>50	5376	1616492	11,7	1,7	63,6	23,0	8,7	1,8	67,4	22,2
Total	282767	10238621	28,6	9,3	39,3	22,8	19,4	7,1	55,1	18,4

Source. Computed from the 1994 census of agriculture

4.7 The structure of provision of agricultural credit⁶

The Agricultural Co-operative Bank (ACB) is the only formal institution extending formal credit to farmers in Syria, and is perhaps the most important institutional instrument of the government to promote agricultural production and productivity and to raise the standard of living of the rural population. Cash and “in-kind” loans are provided through it to support farm and animal husbandry activities. The “in-kind” portion is limited to inputs distributed by ACB. The bank is in a position to extend the loan in any of the following forms – as inputs in kind, as direct cash loans, as current account facility to be drawn according to need, by discounting of bills of purchase presented by the borrower and extending guarantees for payment on the due date against supplier credit.

Short-term credit is made available for farm expenses such as ploughing, harvesting, irrigation and fuel, cost of inputs, for small tools and for animal feeds and veterinary medicines. Short-term loans are for a period of 300 days and are given in cash and in kind as inputs at 4% for co-operative members and 5.5% for individual farmers (referred to as private farmers) for loans less than SP 50,000. For those eligible for a higher sum, the respective rates are 6 and 7.5%. For private farmers two sureties are needed and in the case of co-operative members any single default would render the entire group ineligible for the next loan. Medium term credit for periods not exceeding five years is extended for greenhouses, forest tree planting, purchase of livestock, digging of canals for irrigation, equipment for poultry farms and machinery for grading, waxing and packing. Long-term credit for periods of ten years or less is aimed at financing construction of stores, land improvement, forestry projects, fruit tree planting programs and cold storage facilities.

ACB extends assistance to private farmers, co-operative member farmers, co-operatives, farmers’ unions and federations and public sector organisations engaged in agriculture. The ownership of the private agent intending to borrow should be farmer/farmers with a license from the MAAR. Each farm household must have a crop license as a prerequisite for obtaining credit and even for cash purchase of inputs if credit is not needed. Farmers have to produce the crop license, well license, land ownership certificate renewed every year with the Directorate of Land, two sureties (if they are not members of the association) and discharge certificate for the previous loan to be eligible for fresh credit. Association members also need all these documents except the sureties as the loan is collectively arranged. A consolidated license to the association is issued listing all the details of individual households. The money is disbursed to the association and it is distributed to members and individual receipts obtained. The debtors to the bank are the individual members and not the association.

Farmers find it difficult to obtain loans for machinery like harvesters and tractors and have to depend on supplier credit at high interest rates of 20-30 %. Lesser priority seems to be given by the bank to medium and long term lending affecting important activities like land reclamation and fruit tree replanting. Loans for land reclamation is subject to a standard ceiling whereas the actual fund needed may be higher depending on the nature of the terrain and the soil structure. As regards finance for fruit tree planting programs, the term of 5 years is clearly insufficient, as most fruit trees take longer (6-7 years for apples, for example) to attain commercially viable level of bearing. Despite all this, farmers still take the loans under pressure for money. As such the loan design has an in-built element leading to inevitable default.

⁶ This section draws on the report of Parthasarathy (2001)

Medium and long term loans for tree planting are often obtained by farmers from friends or relatives living outside the country, mostly Arab countries and Lebanon. Machinery suppliers are a common source of finance for purchase of equipment. The procedures are short and simple although interest rates are high. Interest on such deals is generally made a part of the price. Farmers are aware of the higher cost by this route of financing but do not mind the extra cost to save time and inconvenience.

For production expenses the alternative sources are the input supplier and the output dealers, exporters' agents and cold storage units. Input dealers are generally small traders and do not have the capacity to extend credit covering the whole crop duration. In the case of agro-chemicals, however, profit margins being good because of the cost-plus pricing system and withdrawal of subsidy, large agro-chemical marketing firms are able to extend prolonged credit to their wholesalers enabling the latter, in turn, to sell on credit to farmers. Farmers are generally anxious to apply chemicals to protect the crop and the expenses they have already incurred on the land, and for this reason consider agro-chemicals as of higher priority over other inputs. Consequently, they like keeping a good account with agro-chemical dealers by repaying loans relatively more promptly.

Output dealers, exporters' agents and cold storage units are active in fruit and vegetable growing areas. Financing by them takes several forms. Direct advances ahead of the season are given with, and sometimes without, an agreement on the unit price at which the harvest would be sold. The farmer is thus under obligation to sell the crop to the dealer at a price to be negotiated and having to repay the loan the farmer finds himself at the weaker end of the bargain. Another form of financing by the output buyer is to agree on a lump sum to be paid to the grower for the entire output. The lump sum is paid in suitable instalments to enable the grower to meet production expenses. The expected yield is estimated by the contractor in such a way that he recovers interest at a fairly high rate and makes also a profit, which is often quite handsome, taking full advantage of the growers' financial need. To meet difficult conditions caused by environmental factors, farmers liquidate their assets. When the need is large they are forced to sell the house and equipment. Smaller farmers sell their animals.

Concerning loan recovery mechanisms, the ACB collects loans and conducts transactions in accordance with the Public Funds Collection Law, the Syrian Law and the Code of Procedures. The funds and rights of ACB are considered as those of the State Treasury. It has priority in claiming fixed and current assets of the debtor and those of the guarantor in respect of recoveries regardless of whether or not such assets are mortgaged in favour of ACB subject only to any charge prior to the date of the issuance of the loan. Branch managers are authorised to act as registrars of documents on behalf of the Real estate Office and mortgage endorsements made by them are legally recognised. ACB also has special powers of confiscation, under law, without having to go through elaborate legal procedures.

The enforcement mechanism is effective and as such repayments are generally satisfactory except in times of poor rainfall and drought. A committee, appointed by the Governor, consisting of representatives of ACB, administrative authority of the affected area, MAAR and farmers' union, assesses the extent of damage based upon which ACB Board is authorised to grant full or partial deferment. If damage is not more than 30 % of the debtors' average annual yield, 50 % of the sum due is deferred and 100 % if the damage is more than 60 %. Deferment applies only to principal and interest must continue

to be paid. The repayment in instalments is allowed over not longer than three years. It was noted, however, that rescheduling is not allowed for medium and long-term loans when repayment capacity is affected by drought. The special powers conferred upon the lending agency is a unique feature of the Syrian system encouraging timely repayments, acting as deterrent on wilful defaulters and providing, at the same time, for appropriate relief in times of distress. However, the recovery rates have been steadily going down in recent years, to a large extent due to poor seasonal conditions, and in 1999 they were only 57 percent, compared with 90 percent in 1996.

Loan amounts are determined strictly on the basis of input eligibilities determined in the crop license. Loan sums and inputs in kind are given to the co-operative for disbursement to individual members according to their eligibility. Private farmers, who are not members of farmer associations, apply individually and make individual arrangements for drawing the cash part and taking delivery of inputs. Private farmers accounted for over 50% of the total ACB loans, and co-operative members about 45% the remaining going to the state farms. Many non-co-operative member farmers prefer to stay out of the association, as they do not wish to be penalised for other members' defaults.

The proportion of medium and long-term loans has been declining from year to year – from 17 percent of total in 1997, to 14 percent in 1999. It is quite possible ACB's ability to enlarge the share of medium and long-term loans is restricted by fund availability.

The interest rates are quite low, between 4 and 7.5 percent, depending on duration. Various charges (commissions, administrative charges, etc.) add about another 3 percentage points to the nominal rates for annual loans, and also augment the interest rates on medium and long term loans. These rates until recently were negative in real terms, with the result that there has been an excess demand for credit. There is little flexibility in loan structures by the ACB to suit different crop and cash flow situations, despite the fact that the need for adaptability to different borrower circumstances is well within the knowledge and expertise of the bank staff. The problem is more fundamental in that there is little managerial freedom and room for innovation in the current set-up.

4.8 Structural aspects of agricultural input markets⁷

Agricultural production inputs include primarily fertilisers, seeds, plant protection products, and veterinary products. Concerning **fertilisers**, about 60% of total fertiliser requirements are produced locally at the only manufacturing unit located at Homs and the balance is met by imports. The ACB distributes imported and locally produced fertilisers to farmers directly and through co-operatives. The ACB is both dispenser of farm loans and distributor of inputs. The quantity of fertiliser and other inputs are pre-determined according to a recommended crop plan (earlier it was a mandatory plan subject to severe penalties for non-adherence but now it has been made "indicative"), and formalised by the issue of a crop license to every farm at the beginning of each crop year. Farmers wishing to purchase fertiliser on cash terms also need crop licenses indicating the quantity of fertiliser they are entitled to.

The General Fertiliser Company, located in Homs, is a public sector Organization and is the only fertiliser manufacturing unit in Syria. Fertiliser import is entrusted to the public sector Organization called the Foreign Trade Organization for Import of Chemicals and

⁷ This section draws on Parthasarathy (2000)

Foodstuffs – referred to as GEZA. The private sector has not, until; very recently permitted to import fertilisers.

The private sector is not involved in distribution except at retail level. Retail outlets run by agricultural engineers are registered with the agriculture engineers' syndicate in the governorate. Most of these outlets are predominantly engaged in sales of plant protection products and vegetable seeds. To deal in fertiliser, they have to enter into a contract with the syndicate whereby, against the syndicate's guarantee, ACB extends credit not exceeding SP 300,000 for working capital and in return for this support these outlets (called joint ventures) pay 40% of the profit to the syndicate.

Concerning **seeds**, those for all strategic crops – wheat, barley, lentils, chickpeas, cotton, and sugar beet – are produced only by the General Organisation for Seed Multiplication (GOSM), a public sector organisation, for distribution through their branches and through ACB warehouses. Hybrid seeds for vegetables are imported and marketed by private sector seed companies through a network of stockists spread across the country. State farms in seventy locations with a combined area of 5000 ha, and under the control of the Directorate of Agricultural Affairs of the MAAR raise seedlings for fruit trees. The seedlings are distributed to farmers directly and through extension units at nominal prices that reflect a subsidy of about 50%. The seedlings are sold both for new plantings in reclamation areas, in hilly areas, and for replacement in old areas.

The usage of **plant protection products** is under two sectors – the public system for control of pests on a community scale where government takes responsibility to protect crops against migratory pests and, second, private sector marketing of products where responsibility for protection rests with individual farmers. About 60% of the chemicals imported and distributed by the government are herbicides, especially for wheat. The private-sector market for plant protection products has been registering a steady growth resulting in a reversal of shares between the two sectors from 1997. Although figures for the last two years are unavailable experts in the industry estimate that demand in the private sector market has been growing at 15-25% per year.

Private-sector market being well defined there is a smooth flow of material from the importer through the dealer network to farmers. Broadly, public imports cover the strategic crops – wheat barley, lentils, chickpea, cotton and sugar beet – and the private sector covers the non-strategic crops. Apart from fixing prices, government allows a free hand to distributors retaining responsibility for demand estimation, registration, licensing and quality enforcement.

While no major complaints appear to exist from farmers regarding quality of fertilisers, poor quality and non-effectiveness of agricultural chemicals is sometimes a problem. Importers and distributors of plant protection products of good standing (and formulators of veterinary products) complain of inadequate quality enforcement in the field.

4.9 Agricultural marketing structures⁸

Despite considerable liberalisation in recent years, the state in Syria still heavily intervenes in the marketing of agricultural products. The main objectives of such interventions have been: to realise food security, especially for lower income classes; to achieve price stability and assure farmers of the right income that would give them the

⁸ This section relies on Rama (2001)

right incentive; to direct agricultural production in the manner envisaged by the Annual Agricultural Production Plan; to meet the requirements of the agricultural industries for agricultural products; to realise surplus in agricultural products for export; and; to protect consumers and producers from being manipulated by middlemen.

The public sector's share of the market differs in different products. Between 1975 and 1993 it was 100 percent of the total production for cotton, sugar beets, and tobacco, and between 34 percent (barley) and 56 percent (yellow corn), of the total production of wheat, barley, lentils, chickpeas, and yellow corn. (Alloush,, 1994). Currently the state still maintains the monopoly of purchasing for cotton, tobacco, and sugarbeet, and purchasing agencies for most of the other products, but without monopoly. For such products, the remainder of production, apart from satisfying farmers' household consumption, can be sold to either public firms or private traders and brokers. Farmers and private traders have to obtain certificates of origin to be able to transport their production to the nearest collection area for the relevant public Organization. Certificates of origin are issued by the General Federation of Farmers (GFF) for all grains except for corn. Certificates of origin for yellow corn and cotton are given by branches of MAAR. For sugar beets central and local committees meet weekly during harvest seasons to put programs and issue cards of deliveries for farmers to deliver their harvest to the nearest sugar factory belonging to the General Establishment for Sugar (GES).

The General Company for Meat (GCM) had been entrusted with the domestic and foreign markets for meat until 1989 when the Meat Dealers Association (MDA) was authorised to enter the market at par with GCM. MDA was given the same right as GCM in exporting sheep up to 50 percent of the imports. In this same year imports of ready meat was banned. Under these conditions GCM lost its upper hand and became unable to compete with the private sector. Subsequently its volume of business declined significantly, and turned to slaughtering animals for the private sector in its slaughter houses.

Officially, the state has been controlling the marketing of agricultural products. However, this control was not as firm as was the case with agricultural inputs. Four public organisations were entrusted with the marketing of agricultural products. These include the General Organisation for Cereals Production and Trade (GOCPT), the General Organisation for Cotton Ginning and Marketing (GOCGM), the General Company for Vegetables and Fruit (GCVF), and the General Company for Meat (GCM).

Forced deliveries of grains to GOCPT used to be the norm. However, controlling compulsory delivery of crops was eased as of 1987. Since then, decrees fixing agricultural prices did not include forced deliveries, even for major agricultural products such as wheat. Instead, higher prices were offered to farmers to encourage them to deliver their products. At the same time, the number of crops for which prices were determined was reduced to seven crops; two grains (wheat and barley), two legumes (lentils and chickpeas), and three industrial crops (cotton, sugar beets, and tobacco). Prices of other products were also determined and declared to farmers, but only to serve, more or less, as minimum guaranteed prices. Farmers can sell their produce to private traders if they get higher prices.

The private sector has been always free to trade in fruit and vegetables at all levels of the market from the farm gate to the consumer, including processing. The same was true for livestock and livestock products, except for meat, where between 1978 and 1988 private trade was mainly restricted to retail, and GCM was given privileges over the private

sector. Actually private sector trade has been active all the time, even in grain, both before as well as after easing up the forced delivery system.

In Syria, it is relatively simple (for Syrian citizens, as internal trade is not open to foreigners) to start a trade activity. The only formality to comply with is to inscribe in a Chamber of Commerce, getting a “marketing certificate”, which does not mention either the type of traded items or the scale (wholesale, retail) of trading activity. Therefore, it is practically impossible to know the number of traders engaged in procurement and retail of agricultural and food products. Theoretically, they are under the control of the Department for Marketing and International Trade of the MSIT, but there isn’t any systematic monitoring.

For an import-export activity, any individual or company (either national or foreign) must be inscribed in a special list at the Ministry of Economy and Foreign Trade (MEFT).

A typical wholesale market is Suk el Hal, the general market for fruits and vegetables present in each governorate capital. In Damascus Suk el Hal, around 400 traders operate, of which about 50% are commissioners and 50% wholesalers or semi-wholesalers. Ninety five percent of the traffic is wholesale trade, although there is some retail. There are no publicly available information on prices (although they are monitored by the MSIT). Other markets are the so-called district markets, where the majority of operators are retailers.

Up to the mid-‘80s, many agricultural products were priced at the farm level by the Supreme Agricultural Council (SAC), which has the last responsibility for agricultural markets regulation. In fact, most of them were traded by state monopolies, so the SAC simply indicated buying prices of public establishments. At present, only cotton, tobacco and sugar markets are organised in this way; procurement, trade and processing are still under public monopoly regime and the price, even at the farm level, is set *ex ante*. For other strategic products, like wheat and barley, the Council sets indicative prices, which are the prices paid by the state (in this case, the GOCTP). As this Establishment is still the most important buyer, and it is obliged to buy unlimited quantities at the fixed price, market price is strongly influenced by the indicative price. Some traders pay a lower price, which farmers can accept only because payment conditions are better, and traders often anticipate loans to them.

Few other official prices are set at the farm level. This happens for apples and grapes, and the indicative price is the price paid by the GOFV, but as this Organization has a low market share, its price has a limited influence on the market. For animal products, only cow milk has an indicative price, which is the price paid by state dairies; (it is a flat price), while prices paid by private processors reflect production seasonality.

At the wholesale and retail levels, price control is the responsibility of the Price Directorate of the Ministry of Supply and Internal Trade (MSIT), except for selling prices of state companies, which are fixed by the company or the relevant authority, by adding costs to the farm price. In the case of wheat flour, selling price is lower than cost. This is one of the few examples of an explicit consumer subsidy. The cost for the state establishment (including purchasing price of wheat, storage and milling costs, interests etc.) is equal to 20 SP per kg, while the selling price to bakeries is 7 SP per kg. At the retail price, “the popular” bread (from supported flour) costs one third less than the “special” (free market) bread. Total consumption for supported bread is around 1.4 million tons, while for the free market one it is 300 thousand tons.

The MSIT monitors wholesale prices three times a week and retail prices once a week. On the basis of observed price, it determines a price, which is supposed to represent the equilibrium between demand and supply, and this is published as maximum allowed price. The Ministry checks that this price is respected, both at wholesale and semi-wholesale levels (like in the Suk el Hal) and in shops. Any consumer can denounce abnormal prices in a shop.

In practice, price control is more or less strict according to the product. For meat, each week a price bulletin is issued by the Ministry and slaughterhouses and shops must expose it to the public. For cheese the price control is less strict, and is mainly a “trigger price”. If a consumer complains that he paid a higher price, functionaries from the Ministry will visit the retailer and check invoices (concerning cheese purchase, transportation and other expenses) in order to determine if the price applied was correct.

All pre-packed products must have the price written on the label. Even promotions must be agreed with the MSIT, and a poster in the shop must announce the promotion and its length. Generally, it is possible for processors to reach a satisfactory agreement with the Ministry about price level of a branded product (but the limitation remains on pricing flexibility). It can, however, happen that introduction of new, higher quality products, is discouraged by this kind of constraint, as there may be disagreements between the selling company and the MSIT over correct pricing.

4.10 Food processing and marketing⁹

The food processing sector in Syria has been dominated during many years by State-owned companies, which held a monopoly or extremely dominant position in almost all sub-sectors up to 1991, when private agro-related firms were authorised under Investment Law 10.¹⁰

4.10.1 State food companies

The General Organization for Food Industries (GOFI), a corporation which is part of the Ministry of Industry, affiliates 22 food companies, corresponding to 27 factories, in several industries. It deals with processed fruits and vegetables, oil, dairy, biscuits and pasta, dried onions, sugar and sweets, water, beer and spirits. All the companies have been established (or nationalized, if they existed previously) in the '60s or '70s. Up to 1991, these companies were in a monopoly situation (*de jure* or *de facto*) in many food processing industries.

On average, state food companies employ about 230 people, from a minimum of 77 to a maximum of 1,238, and their total turnover amounts to 4847 million SP. It is not possible to calculate their market share, either on aggregate or by industry, because total industry values are not known. However, in terms of processing capacity, it can be estimated that, for example, state companies in 1997 had 53% of the tomato paste market and 65% of the yogurt (laban and labne) market. Two years earlier, the corresponding shares were 65% and 87%.

It is a common opinion within the management of these companies (as well as in the GOFI) that the quality of their products is excellent, being higher than the quality of the

⁹ This section draws on Rama (2001) and Maletta (2001)

¹⁰ Some private companies established under previous legislation survived the process of nationalisation, and continue to operate up to the present, and also some joint-ventures were launched after legislation to that purpose was passed in 1981 and 1986.

products of the private sector due to more controls on products specifications (which also means higher costs). But, the Syrian consumers do not perceive these differences and are not product loyal. The market is considered completely demand-driven and competition is based only on price. This is only partly true, however, as often private companies are increasing their market share thanks to non-price competition.

Consequently, these public companies do not invest in market development. Only two of them introduced new products during the last five years and only one realized promotional activities different from the participation in expositions and participation in common advertising by GOFI. For all of them, the main customer is the public sector, both as collective consumers (army etc.) or as state marketing departments.

Although almost half of these companies market some of their products abroad, only for three of them exports reach 10 percent of turnover. In all cases, this is done either through public establishments (like GEZA) or by spot contracts, and cash payment or letter of credit are required. The only promotional activity on foreign markets is a film produced by GOFI covering all the state companies.

In fact, management decisions for these companies are even more centralized than for state agricultural companies. Not only investment policy is decided by GOFI, but even short-term marketing decisions, like promotion expenditure or discounts to traders, are centralized.

4.10.2 The private food processing sector

If for state companies available documentation is limited, it is almost zero for private companies, as they are absent from official statistics and do not have special obligations like publicly available balance sheets or production declarations. In fact, up to 1991, they were absent from the majority of Syrian industries, or their presence was mainly limited to small, handicraft-type companies. Private companies are still legally excluded from some industries, like cotton, tobacco, sugar and beer. So, the only available figures are those from company licenses, stating authorized products and theoretical production capacity as well as raw material consumption.

According to information supplied by the Investment Office, at the Council of Ministers, 257 projects have been approved under Law 10/91 in the food sector up to June 1999. Of these, 58 approvals are for new companies registered at the Ministry of Industry, generally having more than 10 employees (83% of the companies in this group) and in some cases (26% of companies) with partly or totally foreign capital. Beyond these structured companies, there is a swarm of medium and small private firms, especially in traditional industries like bakery, sweets, oil and beverage, which are intermediate between market leaders and classic “informal” businesses.

Regarding the four markets leaders in each industry, it appears that even major companies are much smaller than state food companies. With few exceptions, the number of employees does not reach 50 people. It must be said that probably many firms are still under their optimal size, as 75% of them have been established after 1990. Licensing or franchising contracts with foreign companies are very unusual; only one company in the oil industry and some in the non-alcoholic beverages industry have recourse to these options.

Despite their generally limited size and their recent establishment, private food companies are very active in the export market. They have a dominant position in some key

industries like processed fruits and vegetables, dairy products and sweets. The evolution of the licensed production capacity for processed fruits and vegetables and for dairy products confirms the dynamic phase characterizing private food companies. In all cases, this capacity is in rapid evolution, and often it was zero only some years ago.

4.10.3 State distribution companies

Although retail market for food products is mainly in the hands of private firms, the state is present in this activity through several establishments affiliated to the MSIT. Processed foods are sold through the General Establishment for Retail (GER), a bureaucratic organization established in the '70s, which was intended to become a dominant force in supplying consumers with mass consumption (not only food) items. State food shops (branches of the GER) are present in each Syrian town. It is estimated that their market share is between 5% and 10%. They buy only from state food companies, and they represent for them an important marketing outlet. Compared with private supermarkets, they sell at competitive prices but they offer lower services, especially in terms of product range and opening hours (they are open only from 9 a.m. to 2 p.m.). Fresh products are not sold in these shops. Fresh fruits and vegetables can arrive in the market through the GOFV. This organization has large scale refrigerated warehouses, sorting and packing facilities (even some mechanized facilities, although they are generally not used) and a network of retail outlets in all-important cities in Syria. In the mid-'80s, it brought to the market 25% of Syrian apples, almost 10% of citrus and lower percentages of other fruits, but since then its role declined. Still, it has the monopoly over imports of fruits and vegetables, e.g. apples, citrus, potatoes and others. As the GOFV buys at fixed prices, determined by the Government, it can act (at least theoretically) as an intervention agency, stabilizing markets in times of price fall. Like other state retail establishments, the GOFV is the main supplier for institutional consumers (army, hospitals, etc.). The quality of products sold in its shops is generally lower than the market average. Prices are determined starting from the purchasing price, adding costs and a "normal profit".

4.11 Agricultural research and extension

Agricultural research in Syria is co-ordinated by the Department of Agricultural Scientific Research (DASR), which was established within the MAAR only in 1964. It comprises six sections one each for field crops, fruit trees, vegetables, plant protection, agricultural industries, and soils. Desert or badia and livestock research still belongs to the Badia and Livestock Departments respectively. Cotton research is carried out within the Cotton Bureau established in 1952. Tobacco research is carried out within the General Establishment for Tobacco (GET). In 1975, the Soil Research Section was enlarged into a separate department, and in 1987 the Olives Bureau and the Department of Citrus Bureau were established. Livestock research was transferred to MAAR as a special section for livestock research. Research on water was separated from soils after establishing the Department of Irrigation and Water use in 1987.

The agricultural research network in Syria comprises fourteen centers and 16 research stations that belong to DSAR, six central section and 9 research stations specialising in cotton, that belong to the Cotton Bureau, eleven research stations which belong to the Department of Irrigation and Water Use (DIWU), a research and service center for citrus located in Tartous, that belongs to the Citrus Bureau (DCB), that is supported by three research stations, a research and service center for olives, located in Idleb that belongs to the Olives Bureau, a research and service center located in Homs Governorate that

belongs to the Department of Al-Badia that deals with range plantings, and breeding of Badia animals, and the department of tobacco research of the General Establishment of Tobacco, in Lattakia, with 4 subsidiary research stations

Agricultural research in colleges of agriculture in Damascus, Aleppo, Hama, and Lattakia is not well developed. Concentration is on teaching rather than carrying research.

The number of employees in the above mentioned research centers, except for those in the universities, amount to about 1200 persons. Of this number, only 120, or ten percent, hold MS. or Ph.D. degrees. The number holding B.Sc. is about 75 percent of the total, most of which are new graduates. The rest hold high School Diplomas. Researchers working in the universities are more than 500. However, most of them are not involved in research.

Research infrastructure includes agricultural land, buildings, accommodations, laboratories, equipment, libraries, computers, and all other things that enables and facilitates research undertakings. Unfortunately, almost all research centers lack the proper infrastructure, even with respect to quality and amount of agricultural land available for research, buildings, and accommodation, not to mention other more research specific items, such as research journals, for which the shortage is even more acute.

The main source of financial resources is the budget, current and investment. The current budget covers salaries, transportation, maintenance, administrative and some other running cost. The investment budget, on the other hand covers the cost of buildings and construction, equipment, materials for research, and so on. However, funds allocated to actual research activities are very minimal. It is enough to state that financial resources made available for total (not only agricultural) research amount to only about 0.3 percent of GDP.

Agricultural extension was one of the functions of the Ministry of Agriculture when it was established in 1947. However, a separate Department for agricultural extension was established after ten years, in 1958. In 1966, the structure of the Ministry of Agriculture was adjusted to give more attention to co-operation. As a result, agricultural extension was put under the Department of Agricultural Cupertino, with a view to undertake extension activities through co-operatives. Later, agricultural extension was entrusted to the Department of Agricultural Education in the Ministry of Education. It returned back to the Ministry of Agriculture in 1971, when it was put under the Department of Agricultural Affairs. A separate department for agricultural extension was re-established in 1979, which started to organise agricultural extension units in the villages themselves. Presently, there are 869 extension units, that cover all agricultural producing areas of Syria, employing about 5900 extension agents.

Besides the central Directorate of extension in Damascus, there is a similar Directorate in each mohafaza, and region. At the village level, there is the agricultural extension unit through which agricultural workers perform their functions. Given that there are about 6 thousand villages in Syria, there corresponds about one extension unit per 8 villages, which is a very dense system. Of the employees in the agricultural extension system about half are agricultural engineers.

Extension service, as is the case with research, is financed from the regular and investment budgets. The practices of extension units include, field and home visits, field

days, meetings with experts, production games, radio programs, television programs, cinema programs, moving theaters, bulletins, and an agricultural magazine.

5. Performance of the agricultural sector

5.1 Agricultural production

The value of agricultural production (at constant prices of 1995) over the period 1981-1998 increased from SP 150.1 billion in 1981 to SP 303.7 billion in 1998. It declined to SP 265.8 billion in 1999 because of the drought. Production increased constantly throughout the period 1981-99 except for drought years such as 1987, 1989, 1997 and 1999. Table 5.1.1 indicates that the increases were both in plant as well as in animal output. However, the pattern of growth has not been even. Fruits and industrial crops production have grown the most, while the production of vegetables has declined since 1985. The bulk of plant production is accounted for by cereals, industrial crops (mainly cotton, sugarbeet, and tobacco), and fruits, while the bulk of animal production is accounted for by milk and animal breeding.

Table 5.1.2 indicates that over the last ten years there have been substantial changes in the allocation of cultivated area among crops. Summer crops have increased their area, while summer vegetables have reduced it. Within summer crops the area increase has been almost totally in irrigated area. Similarly within winter crops, there has been a large increase in the area of irrigated crops, while there was a major decline in the area of rainfed crops. Also the area of fruit trees has expanded considerably. The major pattern has been a substantial increase in irrigated areas. Table 5.1.1 Indices of the volume of agricultural production (1995=100)

	1985	1994	1995	1996	1997	1998	1999	Share in total value of production (1997-98 average)	Share in total value of production in 1999
Plant production	61	96	100	110	94	120	92	70,0	66,1
Cereals	42	88	100	98	71	89	57	17,6	13,0
Dry legumes	61	70	100	91	72	119	41	1,8	0,8
Vegetables	130	91	100	95	78	102	91	6,6	6,9
Industrial crops*	70	90	100	112	140	141	132	19,7	20,6
Fruits	49	113	100	144	110	167	118	16,9	15,3
Others	89	123	100	106	111	135	168	7,4	7,5
Animal Production	76	87	100	109	114	120	125	30,0	33,9
Milk and products	82	89	100	109	121	129	119	13,1	13,3
Livestock	73	84	100	109	111	116	131	13,9	16,6
Eggs	72	96	100	104	106	104	116	1,9	2,2
Wool, hair and silk cocoons	93	93	100	108	111	129	101	0,5	0,6
Others	54	89	100	114	115	137	134	0,5	1,2
Total agricultural production	65	93	100	110	99	120	102	100,0	100,0

Source. Various Annual Statistical Abstracts.

*Includes ginning of cotton, which in 1997-98 accounted for 8.2 percent of the total value of agricultural output, and in 1999 for 9.3 percent.

Table 5.1.2 Evolution and allocation of cultivated area (thousand ha)

	1989/90 average	1998/99 average	Absolute change	Percent change
Summer Crops Irrigated	283,8	363,5	79,7	28,1
Rainfed	33,1	29,7	-3,4	-10,3
<i>Summer Crops Total</i>	316,9	393,2	76,3	24,1
Summer Vegetables Irrigated	69,4	60,2	-9,2	-13,2
Rainfed	52,0	34,9	-17,1	-33,0
<i>Summer Vegetables Total</i>	121,4	95,1	-26,3	-21,7
Winter Crops Irrigated	302,7	748,3	445,6	147,2
Rainfed	4123,7	2771,3	-1352,5	-32,8
<i>Winter Crops Total</i>	4426,5	3519,6	-906,9	-20,5
Winter Vegetables Irrigated	37,6	28,9	-8,7	-23,2
Rainfed	14,1	5,3	-8,8	-62,5
<i>Winter Vegetables Total</i>	51,7	34,2	-17,5	-33,9
Fruit Trees Irrigated	116,1	121,1	4,9	4,2
Rainfed	621,6	661,4	39,8	6,4
<i>Fruit Trees Total</i>	737,7	782,5	44,7	6,1
<i>Grand Total</i>	5654,2	4824,5	-829,7	-14,7

Source. FAO project data base

Table 5.1.3 exhibits the evolution of irrigated areas by mohafaza and agroecological zone. There are marked differences in the changes of irrigated areas. The major governorate that has experienced increases in irrigated areas during the last decade is Al-Hassakeh, which accounts for almost half of the total increase in irrigated areas. Aleppo and Al-Rakka are two other governorates with significant irrigated area expansion, with Idleb and Deir-ez-Zor close behind.

Table 5.1.3 Evolution of irrigated areas by Mohafaza and agroecological zone.

	1989/90 average	1998	Absolute change	Percent change
Total Country	682	1213	532	78,0
Damascus*	75	75	0	0,0
Homs	42	51	9	21,4
Hama	101	134	33	32,7
Tartous	24	25	2	6,4
Lattakia	28	34	7	23,6
Idleb	13	37	25	196,0
Aleppo	95	156	62	65,1
Al-Rakka	68	142	74	108,8
Deir-ez-Zor	80	121	41	51,3
Al-Hassakeh	141	410	270	191,8
Al-Sweida	138	144	7	4,7
Dara'a	166	182	16	9,6
Quneitra	14	18	5	33,3
Zone 1	250	407	157	62,8
Zone 2	158	343	186	117,8
Zone 3	41	94	53	129,3
Zone 4	71	128	57	80,3
Zone 5	162	241	79	48,8

Source. FAO project data base

*Includes Damascus city and rural

The table also shows that the major absolute expansion in irrigated areas has been in zones 1 and 2, but percentage wise all zones have experienced substantial increases.

Table 5.1.4 indicates the allocation of cultivable land in 1999, and the share of strategic crops. The major conclusion from the table is that the bulk of total irrigated area is occupied by wheat and cotton, that account for 57.7 percent and 21 percent respectively of all irrigated area. These are the two most important strategic crops, which have been the object of the major types of intervention, and which continue to be the object of severe government planning.

As a major objective of agricultural policy has been food security, it is important to ascertain per capita production of major products. Table 5.1.5 exhibits these numbers that were computed from official data by dividing by the population living in Syria from the Statistical Abstract. The major trend that appears from the data is the per capita production of wheat, barley, fruits, vegetables and sugarbeet have increased during the last decade but with annual fluctuations, which have no doubt been due to weather induced yield variations. Cotton per capita production has also increased but with major annual fluctuations, On the other hand, the per capita production of legumes, red meat, milk, as well as the number of animals have been stagnant or even declining, as in the case of the population of sheep and goats.

Table 5.1.4 Allocation of cultivable land in Syria for 1999

				Percentage of strategic crops			Percentage of annual crops			Percentage of all crops		
	Rainfed	Irrigated	Total	Rainfed	Irrigated	Total	Rainfed	Irrigated	Total	Rainfed	Irrigated	Total
	(Hectares)			(percent)			(percent)			(percent)		
Wheat	933.083	669.937	1.603.020	36,6	70,1	45,7	34,8	57,7	41,7	27,9	52,2	34,6
Barley	1.408.961	5.266	1.414.227	55,2	0,6	40,3	52,5	0,5	36,8	42,1	0,4	30,5
Lentils	147.427	214	147.641	5,8	0,0	4,2	5,5	0,0	3,8	4,4	0,0	3,2
Chickpeas	50.426	218	50.644	2,0	0,0	1,4	1,9	0,0	1,3	1,5	0,0	1,1
Cotton	0	243.835	243.835	0,0	25,5	7,0	0,0	21,0	6,3	0,0	19,0	5,3
Sugar Beet	0	29.953	29.953	0,0	3,1	0,9	0,0	2,6	0,8	0,0	2,3	0,6
Tobacco	10.310	5.853	16.163	0,4	0,6	0,5	0,4	0,5	0,4	0,3	0,5	0,3
Total Strategic Crops	2.550.207	955.276	3.505.483	100,0	100,0	100,0	95,1	82,3	91,2	76,1	74,4	75,7
Other field crops excluding vegetables	103.673	119.192	222.865				3,9	10,3	5,8	3,1	9,3	4,8
Total All Crops excluding vegetables	2.653.880	1.074.468	3.728.348				99,0	92,5	97,0	79,2	83,7	80,5
Vegetables	28.010	86.794	114.804				1,0	7,5	3,0	0,8	6,8	2,5
Total All Annual Crops	2.681.890	1.161.262	3.843.152				100,0	100,0	100,0	80,1	90,5	83,0
Fruit Trees	667.676	121.948	789.624							19,9	9,5	17,0
Total All Crops	3.349.566	1.283.210	4.632.776							100,0	100,0	100,0
Fallow			961.702									

Source. Westlake (2000)

Table 5.1.5 per capita production of major products, and population of animals 1990-97

Per capita production		1990	1991	1992	1993	1994	1995	1996	1997
Cereals	kg/capita	255,5	285,48	338,2	407,1	391,0	426,2	407,9	286,5
Wheat	kg/capita	170,8	187,6	236,7	274,4	268,7	292,9	278,1	201,2
Barley	kg/capita	69,8	79,8	84,8	117,5	107,5	119,4	112,7	65,2
Maize	kg/capita	14,9	18,0	16,7	15,1	14,8	13,9	17,0	20,1
Legumes	kg/capita	13,2	7,1	13,1	13,0	11,6	15,6	14,7	10,8
Fruits	kg/capita	110,9	120,0	116,0	103,8	110,9	102,7	135,3	112,2
Olive	Kg/capita	38	18	40	25	38	30	44	27
Vegetables	kg/capita	136,0	134,6	1313	122,2	123,6	132,7	122,5	96,7
Red meat	kg/capita	12,6	12,9	11,4	9,6	11,3	11,9	13,0	13,0
Milk	kg/capita	109,8	109,3	104,9	87,3	89,0	99,0	102,8	106,8
Goats	Head/capita	0,08	0,08	0,07	0,07	0,08	0,07	0,07	0,07
Sheep	Head/capita	1,20	1,21	1,14	0,77	0,82	0,85	0,89	0,92
Cattle	Head/capita	0,06	0,06	0,06	0,05	0,05	0,05	0,06	0,06
Cotton (raw)	kg/capita	36,4	44,3	53,5	48,4	38,8	42,0	51,8	69,5
Sugarbeet	kg/capita	34,8	52,1	106,1	93,6	105,4	98,4	66,4	74,8

Source. Computed from FAO project data base

5.2 Areas cultivated and yields¹¹

The annual plan, that aims at steering farmers towards a particular land use pattern, is the main vehicle for national agricultural planning. The plan also serves the important

¹¹ This section is partially based on Westlake (2001)

secondary purpose of providing a framework for the provision of credit, inputs and other services to farmers. The major planning tool is area allocations to different products, that, once agreed at the farm level, are listed in the individual licenses.

In practice, there are substantial differences between the areas planned and the areas that are ultimately planted. Differences at the national level from 1989 to 1999 are summarized for the strategic crops in table 5.2.1. It can be seen that, for all the strategic crops other than tobacco, the areas that are estimated to have been planted under irrigation are on average above those actually planned. The actual area planted to barley, the most widely grown rainfed crop, has on average also exceeded the area planned. Rainfed wheat area has been roughly equal to that planned, while both actual lentil and chickpea areas have averaged substantially less.

In the case of lentils and chickpeas, the deviations in the area planted from the area planned have been particularly marked. Annual actual lentil area has ranged from 48% below that planned to 23% above, chickpeas from 56% below to 6% above. Such erratic behavior is the result of the extent of planting being a function of rainfall. Many farmers simply do not plant if rainfall is inadequate, whereas they exceed their licensed area when rainfall is particularly good.

The deviations between planned and estimated crop areas on irrigated land are harder to explain. The general apparent over-planting could possibly be simply a result of an upward bias in the measurement of planted areas. Alternatively it could be due to farmers 'stretching' their irrigated area to make maximum use of publicly supplied water. Government irrigation system maintenance and operation fees are paid for on the basis of *licensed* area but the *use* of such water is in effect free

Table 5.2.1 Area, yield and production of strategic crops, divergences of actual from planned values

	Ratio of Planned (1998+1999 to 1989+1990)*	Ratio of Actual to Planned (1989 to 1999)		
		Highest	Lowest	Mean
Wheat: irrigated				
- Area	2.76	1.31	0.94	1.10
- Yield	1.13	1.03	0.68	0.88
- Production	3.12	1.36	0.67	0.97
Wheat: rainfed				
- Area	0.65	1.31	0.77	0.98
- Yield	1.27	1.09	0.29	0.78
- Production	0.83	1.14	0.24	0.75
Wheat: total				
- Area	1.01	1.12	0.84	1.00
- Yield	1.58	1.14	0.45	0.85
- Production	1.59	1.11	0.38	0.85
Barley				
- Area	0.55	1.18	0.94	1.04
- Yield	1.16	1.06	0.10	0.58
- Production	0.64	1.06	0.11	0.61
Lentils				
- Area	1.22	1.23	0.52	0.77
- Yield	1.16	1.21	0.27	0.81
- Production	1.42	0.93	0.20	0.61
Chickpeas				
- Area	1.37	1.06	0.43	0.79
- Yield	1.15	1.05	0.44	0.70
- Production	1.58	1.08	0.19	0.57
Cotton				
- Area	1.44	1.19	0.90	1.02
- Yield	1.13	1.30	0.84	1.02
- Production	1.63	1.42	0.83	1.05
Sugar				
- Area	1.00	1.81	0.96	1.37
- Yield	1.18	1.16	0.49	0.91
- Production	1.18	1.99	0.52	1.28
Tobacco				
- Area	1.11	1.17	0.82	0.95
- Yield	1.05	1.42	0.81	1.16
- Production	1.16	1.45	0.72	1.11

Source: Westlake (2000).

* The ratio of the mean of the planned 1998 and 1999 values to the mean of the planned 1989 and 1990 values.

Yields per hectare have tended to be substantially over-estimated in annual plans in the period from 1989 to 1999 for all the strategic crops other than cotton and tobacco. Average cotton yields have been similar to those planned, while tobacco yields have averaged 16% above planned levels. The phenomenon of yield over-estimation is frequently encountered in national planning. Planners work in terms of 'normal' years, which are years of adequate weather conditions. In arid countries such as Syria, conditions are frequently substantially worse than normal and yields are frequently below those planned. Occasionally conditions are better than normal but the impact on yields is

relatively small compared with the bad years. Other than for cotton and tobacco, the relative planned and actual yield data are consistent with this phenomenon. Yields have indeed been higher than those planned in some years, but in such years they have exceeded the planned levels by only relatively small percentages. Yields in poor growing years, on the other hand, have been well below those planned.

An interesting question, however, is why yields in irrigated areas vary so much from year to year. Table 5.2.2 indicates the average actual yields for strategic crops for the three year periods 1989-91 and 1997-99, and the respective growth rates, as well as minimum, maximum and ratios of maximum to minimum achieved yields, and the coefficients of variation, which are indices of instability. It can be seen that in the last ten years there have been significant average yield increases for barley, cotton, sugarbeet, and chickpeas, while there have been no major yield changes for wheat, and lentils. The development of wheat yield is particularly important, in light of the government's food security policy, and the substantial drive to increase wheat production.

Given that irrigated production is more controlled than rainfed production, one would expect that the variability of yields in irrigated areas would be smaller than that of rainfed areas. In fact this does not appear to be the case. The coefficients of variation as well as the ratios of maximum to minimum yields for irrigated strategic crops seem to be only slightly lower than those for the rainfed crops, and in some cases are larger. A possible explanation of this is that while the farmer is obliged to cultivate certain areas according to the license, and obtains inputs on the basis of the planned areas, in practice he can vary the amount of inputs applied considerably (with labor being the least observable and monitorable input). Hence, since he has limited freedom to vary the areas planted, he may compensate, in order to achieve his desired production, by varying the amounts of applied inputs.

Table 5.2.2 Yield developments and variability from 1989 to 1999 for strategic crops

	Average 1989-91	Average 1997-99	Percent total change	Average annual growth rate (%)	Maximum 1989-99	Minimum 1989-99	Average 1989-99	Ratio max/min	Coefficien t of variation*
Irrigated yields (kg/Ha)									
Wheat	3050	3209	5,2	0,63	3981	2473	3448	1,15	0,29
Barley	1732	2517	45,4	4,79	3062	1094	2252	1,36	0,38
Lentils	1038	1028	-1,0	-0,12	1735	800	1266	1,37	0,38
Chickpeas	1049	1601	52,7	5,43	2000	594	1488	1,34	0,39
Cotton	2635	3895	47,8	5,01	4179	2357	3211	1,30	0,31
Sugarbeet Autumn	23543	47130	100,2	9,06	50743	18350	38918	1,30	0,39
Summer/spring	25104	30329	20,8	2,39	52922	20443	33849	1,56	0,40
Winter	23543	40744	73,1	7,10	48784	18350	37177	1,31	0,38
Tobacco	2126	2558	20,3	2,34	3380	1870	2545	1,33	0,31
Rainfed yields (kg/Ha)									
Wheat	919	1065	15,9	1,86	1777	432	1285	1,38	0,44
Barley	279	491	76,1	7,33	1060	88	562	1,88	0,59
Lentils	589	700	19,0	2,19	1167	293	805	1,45	0,45
Chickpeas	512	657	28,3	3,17	895	393	634	1,41	0,35
Tobacco	679	1030	51,8	5,35	1071	577	840	1,28	0,34

Source. Computed from data in FAO project data base

* The coefficient of variation is the ratio of the standard deviation of a series of numbers to their average value. It is an index of instability

The end result of the combination of area and yield deviations from plans is that:

- (i) the annual production of each strategic crop frequently differs significantly from that planned; and
- (ii) more cotton, sugar beet and tobacco has been produced than planned since 1989 but less wheat, barley, lentils and chickpeas.

To the extent that part of the purpose of planning is to achieve target national outputs, these biases will have served to prevent certain plan objectives from being achieved fully. There is a need to address this problem, and also the more fundamental problem for a centrally planned system that stems from the fact that one of the key variables – production - is influenced strongly by natural factors which cannot be controlled. Finally, it should be noted that, since the data in table 5.2.1 are national averages, they almost certainly mask much larger deviations at the level of the mohafaza, nahia, village and individual farmers.

5.3 Consumption and food security

Food security, interpreted as food self sufficiency and increasing per capita food consumption, has been one of the most consistent objectives of government policy. Hence it is appropriate to estimate the per capita availability of the major food commodities for domestic consumption. Table 5.3.1 exhibits the per capita apparent consumption of major commodities for the two three year averages 1990-92 and 1995-97, estimated from the yearly national balances, namely as the sum of domestic production plus imports minus exports, and divided by the estimated population living in Syria.

The major and surprising implication of the data of the table is that for many of the key food commodities the per capita domestic apparent consumption, according to this official data, has declined. This holds for cereals, and in particular for wheat, for legumes, for fruits, and for milk, while it has increased only marginally for red meat. The only commodities for which significant increases are indicated are maize, cotton and sugarbeet. None of these, however, constitute major food consumption items. While there maybe errors in the data particularly since there may be parallel imports and exports, the trend is quite disturbing, and suggests that one of the key objectives of the government for the population, namely increasing food consumption, does not seem to have been met. This despite considerable increases in the volume of production of most of these products. Apparently the population growth in Syria is growing faster than the increases in agricultural production net of exports, and imports have not been able to compensate for per-capita consumption declines.

Table 5.3.1 Per capita annual domestic apparent consumption of major food and industrial commodities, and animal stocks

Per capita dom. disappearance		Average 1990-92	Average 1995-97	Percent change
Cereals	kg/capita	373,4	340,4	-8,8
Wheat	kg/capita	255,0	229,0	-10,2
Barley	kg/capita	85,6	66,0	-22,9
Maize	kg/capita	33,0	44,0	33,4
Legumes	kg/capita	8,8	5,1	-41,3
Fruits	kg/capita	76,0	63,0	-17,2
Olives	Kg/capita	32,0	27,0	-14,8
Vegetables	kg/capita	125,0	108,0	-13,6
Red meat	kg/capita	12,4	12,6	1,9
Milk (fresh and processed)	kg/capita	107,8	102,9	-4,6
Goats (stocks)	head/capita	0,07	0,07	1,7
Sheep (stocks)	head/capita	1,17	0,91	-22,16
Cattle (stocks)	head/capita	0,06	0,05	-14,8
Cotton fibre	kg/capita	9,1	12,6	38,4
Sugarbeet	kg/capita	65,0	79,8	22,4

Source. Computed from FAO project data base

5.4 Degree of agricultural market price support¹²

As mentioned earlier, the government of Syria has instituted a wide range of policies that affect agriculture, as well as macro policies, such as the exchange rate policy, which have indirect effects. These policies have the effect of either generating explicit and implicit transfers for agriculture, or inducing taxation. The effects of the various policies must be judged against the alternative, which is the no-policy situation.

The effect of policies on agriculture work through the following mechanisms. First, there maybe product specific **market price supports (MPS)**, which arise from all measures (such as border protection) which induce differentials between domestic and international prices for products. Market based support also includes subsidies on credit and production inputs, as well as capital subsidies, both measures that have been utilised in Syria. The second type of support is general service support, which includes investment expenditures, and all types of current expenditures for research, training, extension, marketing structures, administration, etc.

Any indirect policies which affect domestic agricultural producer prices are effectively support granted from the market participants, because of which this form of support is called market price support (MPS). There seem to be three policy areas in Syria which affect the level of indirect policy transfers to agricultural producers in Syria:

¹² This section draws from Wehrheim (2001)

- **Import and export policies.** Import tariffs, export taxes, and quantitative constraints increase the difference between the domestic and international agricultural prices.
- **Exchange rate policies.** They also directly affect the international prices which have to be expressed in domestic currency.
- The **centrally planned system** because it has a direct effect on domestic prices, particularly in the case of strategic crops.

The most frequently method applied for the calculation of the extent of transfers which is associated with these indirect policies is based on the concept of **Nominal Protection Coefficients (NPC)**. The market price support component on a per unit basis is obtained by calculating the difference between the international parity price and the official domestic producer price, computed at the same marketing level and point of sale. By multiplying the per unit price differential between domestic and international commodity prices one gets an impression of the total transfers which are associated with the commodity-specific indirect policies in a given year.

The most important variable in the estimates of NPCs is the exchange rate. As discussed earlier, Syria has used a system of multiple and fixed exchange rates during the 1990s. The official exchange rate has been used mainly for statistical purposes. Agricultural imports and exports were evaluated at different rates. The discrepancy between these exchange rate was not marginal but manifold throughout most parts of the 1990s. Therefore, the choice of exchange rates for converting the international price into local currency will have decisive effects on the results. Three different exchange rates have been chosen for the assessment of the market price support: the official exchange rate, a trade weighted exchange rate, and the neighbouring country exchange rate as it prevailed in Beirut. Accordingly, the calculations of market price support for all products will be reported based on each of these exchange rates.

Table 5.4.1 indicates the average NPC for the years 1990-91, for years 1998-99 and year 2000. The latter could not be computed for all products. Based on the official exchange rate, all commodities but tomatoes were subsidised throughout the 90s. By year 2000 the degree of protection, however, had declined considerably, and this is due primarily to the devaluation of the official exchange rate.

The respective estimates with the trade-weighted exchange rate indicate a much more differentiated picture. It can be seen that the major strategic crops, namely wheat, barley, raw cotton, sugar and tobacco have clearly received considerable support throughout the 1990s and continue to receive large indirect support by the end of the 90s. In contrast, some of the more export-oriented strategic crops such as chickpeas and lentils were taxed based on the trade-weighted exchange rate.

Turning to the results computed with the neighbouring country exchange rate, which can be thought to represent more accurately the underlying shadow price of foreign exchange, it can be seen that, with the exception of wheat, barley, sugar, tobacco and beef, most products were implicitly taxed in the early 1990s. This appears to have remained so in the late 1990s, as well as 2000 for the limited cases where data is available. In other words the bulk of strategic products enjoy some kind of implicit protection, while the bulk of exportable products are implicitly taxed.

Table 5.4.1 Nominal Protection Coefficients (NPC) for different agricultural products under various exchange rate assumptions

	NPC (official exchange rate)			NPC (trade weighted exchange rate)			NPC (neighbouring market rate)		
	Average 1990-91	Average 1998-1999	2000	Average 1990-91	Average 1998-1999	2000	Average 1990-91	Average 1998-1999	2000
Durum wheat	5,56	8,35	2,05	2,86	1,91	1,99	1,36	1,84	1,87
Soft wheat	7,65	7,56	1,68	3,86	1,73	1,62	1,87	1,67	1,53
Barley	5,96	6,14		3,00	1,40		1,45	1,35	
Raw cotton	3,87	7,01	2,09	1,99	1,61	2,02	0,94	1,55	1,90
Sugar, refined	5,66	8,42	1,76	2,84	1,93	1,70	1,38	1,86	1,60
Chickpeas	1,86	3,83	0,98	0,97	0,88	0,95	0,45	0,84	0,90
Lentils	2,67	3,78	1,42	1,30	0,87	1,37	0,65	0,83	1,30
Tobacco	11,43	13,28		5,60	3,04		2,79	2,93	
Apples	1,38	3,14	0,56	0,72	0,72	0,55	0,34	0,69	0,51
Apricots	1,98	1,44		0,98	0,33		0,48	0,32	
Oranges	2,21	2,63		1,13	0,60		0,54	0,58	
Lemons	3,39	3,02		1,71	0,69		0,83	0,67	
Tomatoes	0,82	0,94		0,42	0,21		0,20	0,21	
Potatoes	3,07	2,80		1,45	0,64		0,75	0,62	
Olive oil	2,71	3,75		1,38	0,86		0,66	0,83	
Sheep meat	3,08	3,22		1,57	0,74		0,75	0,71	
Cheese	3,99	7,04		2,01	1,61		0,97	1,55	
Beef	5,12	8,69	1,89	2,62	1,99	1,83	1,25	1,92	1,72
Poultry	2,60	3,63	0,74	1,34	0,83	0,71	0,63	0,80	0,67

Source. Computed from data in Wehrheim (2001)

Table 5.4.2 indicates the evolution of aggregate MPS as a percentage of total current value of gross agricultural output (GAO) at producer prices, and computed with different exchange rates. The lower the exchange rate applied for this step the lower is the respective international parity price, and consequently, the lower the exchange rate the higher is the respective gap between domestic and international commodity prices.

The major result of the table is that while the official exchange rates as well as the trade weighted exchange rates indicate that agriculture has been protected all throughout the decade of the 1990s, (at relatively constant rates when the official rate is used but at declining rates when the trade weighted exchange rate is used), the neighbouring market rate indicates a very different story. It suggests that until the mid-1990s, and apart from some years like 1993 and 1994, namely when the official exchange rate was heavily overvalued, the Syrian agriculture was effectively taxed. It is only in the last few years, namely since 1997, with the devaluation of the exchange rates that Syrian agriculture has been effectively subsidised. In 1999 the rate of support reached an average of 7 percent of the gross value of agricultural output, which is quite large, and implies a heavy load on the budget. The other interesting observation is that the trend in the aggregate MPS using the trade-weighted exchange rate and the neighbouring country rate are opposite. The former indicates a decline in overall MPS to agriculture, while the latter indicates an increase.

As discussed earlier, the official exchange rate has been kept at a low and substantially overvalued level of 11.25 SP to the US\$ until 2000. Therefore, the total sum of MPS calculated on the basis of the official exchange rate has been highest in the 1990s. In fact,

the stability of the official exchange rate indicates that the relative level of MPS in relation to GAO has remained somewhat stable throughout the 1990s. Even though the absolute amount of transfers associated with MPS approximately doubled from an average of 65 billion SYP (1990-92) to about 130 billion SYP (1997-99), nominal gross agricultural output doubled as well, thereby offsetting the increase of MPS in relative terms. This relative stability is somewhat surprising because world market prices have shown strong variations over the same period.

The neighbouring country exchange rate (from Beirut) has moved, similarly to the black-market exchange rate, around 50 SYP/US\$ throughout the 90s. If that exchange rate is used for the estimation of the transfers associated with indirect agricultural policies it becomes obvious that domestic agricultural prices in the beginning of the 90s have actually discriminated against agricultural producers or in other words agriculture has been taxed in that period. This highlights the ultimate role of the exchange rate in determining not only the level of indirect support but also in determining the competitive position of export-oriented farmers. Furthermore, the gradual devaluation of the trade-weighted exchange rate throughout the 90s highlights another important trend. The more this exchange rate has been devalued in the course of the 90s the further the estimates of market price support converges to zero, indicating a reduction in distortions arising from indirect policies. From an economic point of view this is actually good news and indicates that the policy of gradual devaluation of the SP against the US\$ is in fact the single most important factor in reducing negative distortions for agricultural producers.

Table 5.4.2 Aggregate market price support computed with different exchange rates

	MPS in percent of the value of gross agricultural output at current producer prices		
	official ER	Trade-weighted ER	Neighbouring country ER
1990	32,7	26,0	-27,4
1991	36,5	25,8	-5,5
1992	39,7	27,3	-5,0
1993	41,5	29,2	4,6
1994	38,2	23,4	3,3
1995	40,5	17,3	-5,7
1996	41,1	15,4	-1,0
1997	37,7	10,6	2,7
1998	36,2	5,5	3,6
1999	32,6	9,6	7,4

Source. Computed from data in Wehrheim (2001)

Table 5.4.3 indicates the total amounts of MPS by product for the early and late parts of the decade of the 1990s, and for the official, the trade weighted and the neighbouring market exchange rates. It can be seen that according to the MPS computed at the official rate, and the trade weighted exchange rate, the bulk of support, early in the decade, has been afforded to wheat, barley, cotton, olive oil and sheep meat. In the later part of the decade, however, while the MPS based on the official rate indicates a pattern of support similar to that of the early part of the decade, the MPS computed with the trade weighted exchange rate suggests that sugar and beef supplanted olive oil and sheep meat as drawing considerable support. When the neighbouring market rates are computed, the early part of the 1990s exhibited a negative MPS, or a tax on agriculture. The respective shares column indicates that it was only wheat, barley, sugar, tobacco, and beef that were subsidised, while all the other products were in effect taxed. By the late 1990s the picture had turned into one of implicit subsidy, and the bulk of the subsidies were afforded to the strategic crops and beef, while all the other products were in effect still taxed.

Thus the overall conclusion emerges that the market related policies of the Syrian government have subsidised the strategic products, while they have subsidised much less, or even implicitly taxed all other products and especially those that are of export interest.

Table 5.4.3 Absolute amounts of total MPS of agriculture by product

Name of product	Official exchange rate				Trade weighted exchange rate				Neighbouring country exchange rate			
	Average 1990-91	Share of total support in 1990-91 (percent)	Average 1998-99	Share of total support in 1998-99 (percent)	Average 1990-91	Share of total tax in 1990-91 (percent)	Average 1998-99	Share of total support in 1998-99 (percent)	Average 1990-91	Share of total tax in 1990-91 (percent)	Average 1998-99	Share of total support in 1998-99 (percent)
Durum wheat	13994	30,0	22248	20,0	11001	31,6	11845	49,6	4512	-21,6	11359	65,7
Soft wheat	1787	3,8	11769	10,6	1528	4,4	5755	24,1	939	-4,5	5463	31,6
Barley	4527	9,7	4323	3,9	3644	10,5	2523	10,6	1661	-8,0	2447	14,2
Raw cotton	6635	14,2	26059	23,5	12777	36,7	33096	138,6	-1453	7,0	31010	179,4
Sugar, refined	807	1,7	2756	2,5	639	1,8	1484	6,2	298	-1,4	1420	8,2
Chickpeas	209	0,4	550	0,5	-23	-0,1	-1007	-4,2	-544	2,6	-1075	-6,2
Lentils	454	1,0	779	0,7	53	0,2	-1935	-8,1	-1133	5,4	-2052	-11,9
Tobacco	680	1,5	1653	1,5	615	1,8	1189	5,0	458	-2,2	1166	6,7
Apples	721	1,5	3527	3,2	-1252	-3,6	-1998	-8,4	-5416	26,0	-2264	-13,1
Apricots	366	0,8	328	0,3	-16	0,0	-2189	-9,2	-911	4,4	-2312	-13,4
Oranges	770	1,6	2031	1,8	155	0,4	-2144	-9,0	-1196	5,7	-2346	-13,6
Lemons	568	1,2	600	0,5	338	1,0	196	0,8	-170	0,8	179	1,0
Tomatoes	-444	-1,0	-222	-0,2	-2631	-7,6	-11922	-49,9	-7721	37,0	-12490	-72,3
Potatoes	1298	2,8	2449	2,2	166	0,5	-3294	-13,8	-3017	14,5	-3555	-20,6
Olive oil	2488	5,3	8943	8,1	1160	3,3	-1649	-6,9	-2346	11,3	-2147	-12,4
Sheep meat	7493	16,0	14370	12,9	3984	11,5	-7507	-31,4	-3653	17,5	-8585	-49,7
Cheese	717	1,5	940	0,8	485	1,4	357	1,5	-46	0,2	325	1,9
Beef	1955	4,2	3907	3,5	1495	4,3	2189	9,2	482	-2,3	2104	12,2
Poultry	1685	3,6	3976	3,6	660	1,9	-1117	-4,7	-1586	7,6	-1366	-7,9
Total sum of MPS (million SP)	46711	100,0	110987	100,0	34778	100,0	23871	100,0	-20843	100,0	17282	100,0
MPS in % of gross ag. Output	35		34		26		8		-16		6	
Gross agricultural output in current producer prices (million SP)	134289		321534		773385		1152894		134289		321534	

Source. Computed from data in Wehrheim (2001)

5.5 Agricultural credit and credit subsidies¹³

The recent changes in agricultural policies, with the general tendency for opening the markets, and releasing farmers from many obligations, should have caused a major shift in the share of demand for capital from public sector to private sector besides substantially increasing the overall demand for funds for investment in agriculture related activities. Medium term lending for irrigation equipment should have registered major increases. Working capital lending to exporters of vegetables and fruits should have increased and long term lending for establishment of new agro-industrial projects should have recorded quantum increases. The impact of demand for working capital from private sector importers of fertilisers should have been large and instantaneous as this activity is capital intensive and could, with appropriate capital support, be initiated with minimum time lag.

The total demand for all funds (not just for agriculture) by all specialised banks has grown by 3.2 times during the last decade and loans to sectors other than the public sector have grown faster than those for the public sector, apparently stimulated by the policy reforms. The public sector, however, continues to dominate the capital market with its share having nudged downwards from 74.72 to only 70.46 percent in the last decade. In absolute terms public sector absorption of available resources is still very substantial.

Table 5.5.1 provides an overview of the total amounts of loans which have been disbursed annually by the Agricultural Credit Bank between 1990 and 1999. It is apparent that the total amount of lending to agriculture has declined considerably since the mid-1990s. Table 5.5.2 shows the division of loans according to duration. It is apparent that the bulk of the loans have been of short-term nature.

Table 5.5.3 shows loan disbursements by type of commodity for which the respective production loans have been used. The figures indicate that the biggest share of loans disbursed to agricultural producers is disbursed to production loans for wheat and cotton. Loan disbursements for capital investments have indeed been very low (e.g. tractors and combines) and those for irrigation projects declined substantially.

Priority areas enumerated in agricultural policy documents have not fared well. Loans for irrigation declined in 1999 to a little over a third of its 1990 value. Greenhouses, which form the thrust for improved quality and competitive costs for export, has limped from SP 301 million to SP 475 million in 1999. The share of these special purpose loans declined from 20 percent of total loans to 12 percent in 1999 besides registering a fall in absolute terms from SP 1695 million to SP 1271 million.

¹³ This section draws on the reports of Parthasarathy (2001) and Wehrheim (2001)
Final and Cleared Report on Agricultural Sector Strategy

Table 5.5.1: Overview of agricultural loan disbursement by ACB (in million SP) to various types of firms, 1990-1999

	Public firms	Cooperatives	Private firms	Total
1990	123	3963	4521	8607
1991	130	5393	6158	11681
1992	127	5717	7474	13318
1993	93	5794	7650	13537
1994	109	6552	7719	14380
1995	265	7055	8120	15440
1996	204	6930	7926	15060
1997	283	6065	7050	13398
1998	218	5600	6781	12599
1999	191	4556	5475	10222

Source: Central Bank of Syria.

Table 5.5.2: Overview of agricultural loan disbursement by ACB (in Mill SYP) according to the duration of loans¹⁾, 1990-1999

	Short term	Medium term	Long term	Total
1990	6556	1768	283	8607
1991	8042	3430	209	11681
1992	9632	3541	145	13318
1993	10582	2829	126	13537
1994	11480	2776	124	14380
1995	12523	2671	246	15440
1996	12506	2295	259	15060
1997	11134	2012	252	13398
1998	10552	1869	178	12599
1999	8640	1396	186	10222

Note: 1) Short-term loans are provided for sales of inputs and have to be paid back after the harvest. Medium-term loans range between 1-5 years. Long-term loans are granted for five years and more.

Source: Central Bank of Syria.

Table 5.5.3 Loans of the ACB according to production purpose

	Average 1990-91 (million SP)	Average 1998-99 (million SP)	Percent Change	Share of all loans in 1998-99 (percent)
Wheat	2705,5	3147,0	16,3	26,4
Barley	445,5	123,5	-72,3	1,0
Lentil & chickpeas	76,0	37,0	-51,3	0,3
Various cereals	523,0	671,0	28,3	5,6
Fodder crops	146,0	160,5	9,9	1,3
Cotton	1783,0	3646,5	104,5	30,6
Industrial crops	196,5	360,0	83,2	3,0
Vegetable	394,0	493,0	25,1	4,1
Olives	338,5	345,0	1,9	2,9
Citrus Fruits	48,0	25,5	-46,9	0,2
Apples	41,0	6,0	-85,4	0,1
Grape	26,0	21,0	-19,2	0,2
Various trees	240,5	570,0	137,0	4,8
Poultry	207,0	319,5	54,3	2,7
Cows	47,0	199,0	323,4	1,7
Sheep	240,0	41,0	-82,9	0,3
Various Animals	35,0	75,5	115,7	0,6
Irrigated projects	2016,5	522,0	-74,1	4,4
Land improvement	63,0	254,0	303,2	2,1
Other infrastructure	25,0	75,5	202,0	0,6
Green Houses	464,0	492,5	6,1	4,1
Tractors	8,0	267,5	3243,8	2,2
Harvesters	5,0	0,0	-100,0	0,0
Agric. Machinery	70,0	58,0	-17,1	0,5
Total	10144,0	11910,5	17,4	100,0

Source. Computed from data in Wehrheim (2001)

Nevertheless, funding of food related industries by the Industrial Bank (IB) increased from SP million 298 in 1990 to SP 976 million in 1999 registering a growth of 3.3 times. The share of this sector in the total lending of IB grew from 20 percent in 1990 to 39 percent in 1999. However, the number of borrowers in this sector declined in the same period from 1129 to 953. This suggests that the average loan recipient in the food industry has been receiving larger loans

Table 5.5.4 indicates that the number of beneficiaries of ACB loans in 1999 is only 54 % of the number in 1994. Even allowing for the poor rainfall in 1999 and 1998, it is seen that the market contraction process had already set in from 1995. It is significant to note that the number of borrowers peaked to 749,703 in 1989, nearly three times the client base in 1999. This trend is indeed cause for concern. Either loans are not reaching farmers, or farmers are unwilling to utilise the facility from the Bank, or farmers are becoming self-sufficient for financing production activities. The last mentioned possibility seems unlikely by the impression one gains from meeting farmers in different parts of the country. Loans advanced have also been going down reaching to 61 % of the 1994 volume in 2000 despite increase of area during the same period. Not surprisingly, therefore, the average size of loans has been increasing and is presently 1.32 times the

size six years ago. The higher average size is suggestive of a movement toward larger farmers and/or toward better-endowed zones. Subsidies in the form of low lending rates and tolerance for defaults, encouraged by a system that does not make it incumbent on the lending bank to be self-reliant for resources, may have been gradually cornered by well-to-do farmers crowding out the poorer ones thereby reducing access to credit.

Table 5.5.4 ACB Loans, beneficiaries and average loan size 1994-99

Year	Beneficiaries (number)	Index of the number of beneficiaries	Loan disbursements (million SP)	Index of loan disbursements	Average loan size (SP)	Index of average loan size
1994	496021	100	14380	100	28991	100
1995	433475	87	15440	107	35619	123
1996	430726	87	15060	105	34964	121
1997	355684	72	13398	93	37668	130
1998	293911	59	12599	88	42867	148
1999	266320	54	10222	71	38382	132
2000	na	na	8702	61	na	na

Source. Parthasarathy (2001)

Table 5.5.5 provides an overview of the amount of implicit subsidies on credits according to short term loan disbursements. Based on the respective annual loan disbursements and the estimated interest rate differential the total amount of transfers to farmers has been limited throughout the 1990s. In terms of gross agricultural output (GAO) the share of agricultural credit subsidies was with below 0.5% throughout the 90s much lower than in many industrialised countries. However, the costs of administering this agricultural credit system were not included in these calculations.

Table 5.5.5: Indirect subsidies associated with disbursement of short term loans in million SP (in current prices) and in percent of gross agricultural output (GAO), 1990-1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Wheat	102	114	166	200	201	198	205	175	145	107
Barley	23	12	19	17	12	7	10	8	5	5
Lentil& chickpeas	3	3	5	6	4	3	2	2	2	1
cotton	65	77	100	101	102	124	124	131	138	154
Olives	12	15	12	15	13	18	18	16	15	13
Citrus Fruits	2	2	2	1	2	3	2	2	1	1
Apples	2	1	1	1	2	2	1	1	0	0
Poultry	7	10	8	8	11	17	15	15	14	11
Cows	2	2	2	2	3	6	8	9	9	6
Sheep	5	14	6	2	3	2	3	2	1	2
Loans for other purposes	122	215	211	187	222	237	213	193	173	0
Total	344	467	533	541	575	618	602	553	504	449
In % of GAO	0,28	0,32	0,31	0,29	0,27	0,26	0,21	0,19	0,15	0,10

Source: Wehrheim (2001).

The contracting base of ACB credit and the increasing average loan size are causes for concern in terms of its impact on agricultural growth and productivity and the social implications of neglecting the weaker segments depending on land for livelihood. It raises the question whether the formal credit system, in spite of subsidised interest and

unrestricted fund availability at low cost is not reaching out to smaller farmers and lower rainfall zones.

5.6 Estimates of input subsidies¹⁴

Input subsidies can be obtained by comparing the domestic prices farmers have to pay for the inputs with the respective international prices. Because of substantial product and quality differences comparable international price series were available for a few fertilisers only. The calculated price differential can then be multiplied by the quantity allocated to agricultural producers. It should be clear, that these subsidies are associated with costs for the total economy which have to be born by either the government or the producers of the respective inputs.

Pesticides carry basically no subsidy because the highest share of inputs has been imported in recent years. Hence, Syria has been a price taker during all years in the 1990s. As long as importing, distribution and sales of pesticides was restricted to the Agricultural Co-operative Bank and, hence, the state sector, a 15 percent premium was charged on average on the import price of pesticides to cover the marketing costs within Syria. Today substantial shares of pesticides are imported by private traders at free market prices. Therefore, the pesticide sector does not carry any obvious subsidies.

With respect to **seeds** one can make a distinction between seeds for strategic crops and other seeds. Seeds for strategic crops are provided by the General Organization for Seed Multiplication (GOSM). Estimates by Parthasarathy (2000) indicate that the implicit subsidy to farmers associated with seed policies amount to an annual amount of 2398 Mill SYP.

Currently about 60 % of total **fertiliser** used are produced in Syria while the rest is imported. Fertiliser is distributed to farmers by the ACB exclusively. In the course of the 1990s the market for fertiliser has been liberalised in consecutive steps. In the three-year period 1991-93 the market price support for fertiliser was estimated by Wehrheim (2001) for two major types of fertilisers (Urea and Phosphate) at 1092 million SP. This support level dropped in the three-year period 1997-99 to an average of 358 Mill SP. When relating these estimates of the market price support associated with input pricing to GAO the decline becomes even more distinct. Parthasarathy (2000), however, estimated the total implicit fertiliser subsidy in 2000 at 1390 Mill SP referring to a wider variety of fertilisers. Additionally, he estimated the net subsidy implicit in the widely government dominated distribution system for fertiliser at 435 Mill SP.

The total of the above subsidies amounted to about 1.4 percent of GAO in 1999. Given, however, that the main source of credit for inputs, as well as inputs themselves, has been the ACB, and given that the total number of beneficiaries of ACB loans has declined during the recent period, these subsidies have increasingly applied to a smaller number of relatively larger farmers. On the other hand, estimates by Parthasarathy (2000) suggest that domestic fertiliser demand is much larger than total domestic supply. This implies that the input delivery system has increasingly been biased against the smaller farmers.

¹⁴ This section draws on Wehrheim (2001)

5.7 Budgetary expenditures for agriculture¹⁵

Tables 5.7.1 and 5.7.2 provide an overview of the administrative and current expenditures and the revenues which are associated with ‘running’ the government system through which general support services are provided to Syria’s agriculture. Table 5.7.1 shows also the breakdown of the general budgetary expenditures for agriculture. Next to the operating costs for the MAAR the expenditures for land reclamation, afforestation and forest improvement, along with expenditures for rural road maintenance were the most important. Given the scarcity of water and the associated problems with desertification, the availability of increased financial resources for reforestation seems to be justified. Note that if the total expenditures of the Ministry of irrigation are added to those of the MAAR for land reclamation and irrigation, then the total expenditures of the two ministries devoted to irrigation activities amounted in year 2000 to 69 percent of all expenditures on agriculture. This underlines the importance that the government has placed on irrigation development.

At the same time it is notable that the agricultural research and especially the extension system receive only very limited financial resources. Given that the economic returns to agricultural research and extension have been shown to be very large in all developed as well as developing countries, this is noticeable negative development.

Table 5.7.2 provides some interesting facts about the extent of government revenues from agriculture. The revenues for various taxes (e.g. excise tax on livestock, sugar etc.) are listed as well as the revenues from some trade operations (e.g. export taxes on cotton and tobacco). The published data by the MAAR indicates that the most significant revenue items are from taxes on agricultural production and exports, but also includes income from foreign funded agricultural projects (such as the IFAD and FAO sponsored projects). The comparison of total agricultural revenues with total expenditures by the MAAR and the Ministry of Irrigation indicates that agricultural revenues do not cover more than 20 percent of total expenditures. However, it should be noted that information on some relevant expenditure items is not included in the tables. In particular the total costs which are associated with the maintenance of some agricultural government agencies which are under the supervision of the Ministry of Supply are not reported here, and also the administrative costs of running the ACB are not included.

¹⁵ This section draws on Wehrheim (2001)

Table 5.7.1 Expenditures by MAAR and the Ministry of Irrigation

	1990	1995	1996	1997	1998	1999	2000	Percent of all non-operating costs 1999-2000
Budgetary expenditures by MAAR in Mill. SP								
Agricultural research	76	237	309	329	335	301	470	8,1
Extension services	56	90	89	90	105	91	158	2,6
Soils (testing and classification)	12	42	39	39	44	34	43	0,8
Pesticide subsidy	36	95	108	146	143	137	154	3,0
Fruit seedlings production	166	214	290	248	259	251	330	6,1
Reclamation projects	294	570	843	957	1011	879	2158	31,7
Forestation projects	211	398	688	576	769	619	849	15,3
Veterinary care improvement and generalisation	32	79	76	61	64	53	100	1,6
BADIA (dessert improvement)	239	240	230	256	296	256	433	7,2
Maintenance of rural roads	0	327	548	792	844	502	750	13,1
Breeding horses	0	66	43	45	24	23	21	0,5
Bees and honey improvement	28	29	32	35	37	32	28	0,6
rain evoking	0	24	23	29	26	26	18	0,5
Fertilisers use improvement	0	0	27	36	40	22	35	0,6
State agricultural establishments	367	354	460	410	302	335	322	6,9
Real estate department	57	50	61	63	75	65	75	1,5
Total of non-operating costs	1574	2815	3866	4112	4374	3626	5944	100,0
Operating costs of MAAR	884	1701	1717	1798	1835	1883	n.a.	
Total	2458	4521	5590	5922	6232	5538	5957	
Budgetary expenditures by the Ministry of Irrigation, in million SP								
Central department	2546	5408	5813	6722	6956	6389	5586	
Reclamation establishment	2062	6352	5320	7321	6433	4822	6673	
Total	4608	11761	11343	14065	13389	11346	12413	
Sum of budgetary expenditures of MAAR and Ministry of Irrigation together								
Total	7066	16281	16934	19987	19621	16884	18369	
In percent of all govt. expenditures	11,4	10,0	9,0	9,5	8,3	6,6	n.a.	
In percent of GAO	5,8	6,7	5,8	6,9	5,7	5,7		

Source. Wehrheim (2001)

Table 5.7.2 Revenues of the MAAR and the Ministry of Irrigation

	1990	1995	1996	1997	1998	1999
Irrigation fees	40	55	60	90	12	12
Excise tax on livestock	25	15	15	15	20	2
Excise tax on sugar	60	75	75	75	90	100
Excise taxes on tobacco	350	650	800	800	650	800
Tax on agricultural production	400	1200	1500	1000	90	900
Duties on cotton exports	130	750	1000	1000	1000	1000
Excise taxes on hunting, fishing & vessels	2	2	2	2	2	2
Revenues of state land	60	346	350	350	400	425
Agricultural budget surplus	205	176	273	212	234	180
Liquidity surplus	75	145	145	162	165	148

Total Agricultural revenues	1347	3413	4221	3706	2663	3569
Agric. Revenues as percent of total public revenues	2,2	2,1	2,2	1,8	1,1	1,4
Agric. Revenues as percent of GAO	1,1	1,4	1,5	1,3	0,8	1,2

Source. Wehrheim (2001)

The importance of the income from leasing of state land is interesting, because it suggests that agricultural current and development expenditures in Syria are largely supported from leasing of state land. This implies that any attempt to distribute any more state land to farmers may have immediate negative budgetary implications for agricultural expenditures.

5.8 Consumer subsidies¹⁶

Official figures on the annual government expenditures used for subsidising consumer prices for some staple foods are not publicly available or at least not released. Therefore, estimates of consumer subsidies must be made in a way similar to the one used for calculating indirect producer subsidies, namely by comparing international parity prices for the respective commodities with the national sale prices adjusted to the same point of sale.

In the past decade and today the Syrian government controls the retail price of some major food commodities in order to subsidise food consumers. The major commodities for which such consumer food subsidies are granted are: bread and flour, rice, sugar, vegetable oil and tea. These commodities are considered to be so important for food security of the Syrian populace that they are subsidised with flat rates. Even though the explicit extent of these consumer subsidies is not known, the high quantity of these food items consumed indicate that they make up a significant amount of the total government expenditures. Basically the taxpayer has to finance these food subsidies and they constitute a pure form of redistribution.

In the course of the 90s the pressure on the government budget increased, and consequently the scope of consumer subsidies for food became more and more limited. Subsidies on vegetable oil and tea were discontinued, those for bread (flour) were reduced, and the ones for sugar and rice were restricted by the distribution of food coupons. Coupons allowed for the purchase of a maximum of 1.5 kg of sugar and 0.5 kg of rice per capita and year at the subsidised prices.

Table 5.8.1 indicates estimates of the total cost of these subsidies in 1999. It can be seen that wheat and cotton farmers received approximately equal total price support through Government acquisition at prices that were substantially above, respectively, import and export parity. However, the total losses of the GCM were about four times those of the GOCGM. This was for two main reasons. First, the GOCPT includes in its selling price to the GCM not only its costs of acquisition, transport and intra-seasonal storage, but also the cost of financing the national strategic reserve and other interest costs that result from late reimbursement of losses by the Treasury. Second, the GOCGM recovers a part of the cost of subsidising seed cotton producers by selling cotton fibre to the domestic textile

¹⁶ This section is based on Westlake (2001)
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industry at prices that are above export parity. The GCM, conversely, sells standard flour at below import parity with the aim of reducing the retail price of bread.

Since official producer prices have not been changed since 1996, the relative size of the subsidy received by producers and by consumers of wheat and sugar will have tended to change from year to year with changes in relative world prices. In 1999, farmers and consumers shared the subsidisation of sugar roughly equally. In the case of wheat, some 85% of the total price subsidisation went to farmers.

It can be seen from the table that the cost to the three public establishments involved in the markets for wheat and flour, cotton, and sugar, amounted in 1999 to about 4.5 percent of GDP. This is larger than the deficit of the Public Stabilisation Fund (PSF), which as was indicated in table 2.4.1 amounted in 1999 to 2.3 percent of GDP. However, these estimates omit the cost of running the wheat reserve, which could be large.

Table 5.8.1 Government interventions in wheat, cotton, and sugar

	Billion SP	Percentage of GDP
WHEAT(1999)		
- GCM loss	26.29	3.24
- Subsidy to farmers	10.80	1.33
- Subsidy on standard flour	1.98	0.24
COTTON (1998/99)		
- GOCGM loss	6.42	0.79
- Subsidy to farmers	9.88	1.22
- Tax on domestic spinners	2.30	0.28
SUGAR (1999)		
- GEC loss	3.72	0.46
- Subsidy to farmers	1.55	0.19
- Subsidy to consumers	1.63	0.20
TOTAL		
- Losses of state establishments	36.43	4.49
- Subsidy to farmers	22.23	2.74
- Subsidy to consumers	3.61	0.44
- Tax on industry	2.30	0.28

Source. Westlake (2000)

Currently the major question related to food consumer subsidies seems to be how to replace the general food subsidies to consumers with a well-functioning and efficient system of targeted food aid to the poor. 'Targeting' is simply a means of getting more food and food of better nutritional value to groups in need and not to others. Hence, the success of targeting schemes depends on limiting the leakage of program benefits to non-program families. Generally, the leakages will be a function of the size of the economic benefit associated with the consumer subsidies. The higher the subsidy the higher the incentives to misuse. Therefore, it will be essential to carefully design an operational targeting mechanism. The basis for any such targeting mechanism should be a careful assessment of food consumption and expenditure habits which usually can be obtained from household surveys. Once the households which are in need have been identified, various forms of targeting can be relevant, such as by geographic, age, or functional criteria.

5.9 Irrigation and water use¹⁷

The present water balance for the SAR is negative with a deficit of –3104 million m³. Growing population at fast rate will put additional demand on the existing resources which are not enough to satisfy existing demand. The development of new water resources seems very limited considering that Syria has developed already 164 dams. Therefore much of the present and future water policy will have to rely on demand management. Restoring a positive water balance in the future appears as an important policy objective that will require some drastic measures in some of the existing basins where the deficit has reached alarming proportions.

Table 5.9.1 indicates that the bulk of the increase in irrigated areas during the last ten years has come from the construction of new wells. The number of new wells has increased by 50 percent between 1990 and 1999. Total irrigated area by wells in 2000 is 715509 ha of which 314050ha (44 percent) are in Al Hassakeh (Khabour basin). The total number of wells is 201259 out of which 53078 were not licensed in 1999. About ¾ of the wells use fuel as primary energy and only the remaining ¼ use electricity

Table 5.9.1 The development of irrigated areas

Area irrigated from	1990	1999	Absolute change	Percent change	
Rivers, Springs and Lakes	217	211	-6	-2,9	
Wells	Without Pumping	134	270	136	101,4
	With Pumping	342	705	363	106,1
<i>Total area irrigated</i>	693	1186	493	71,1	

Source. FAO project database

Surface irrigation is the prevailing irrigation system in Syria covering 95 percent of the irrigated area. Basin irrigation is the predominant technique used in surface irrigation and most of the irrigated wheat and barley are irrigated by this method. Irrigation field efficiency is reportedly low often below 60 percent. Furthermore the construction of ridges for the basins implies a loss of productive land which could be assessed between 5 and 10 percent, reducing further the productivity of the land. Cotton and vegetables are irrigated by furrows, but because the land is rarely levelled the efficiency of such a technique is also low.

The average consumption per irrigated hectare for the whole of Syria is 12434 m³ per year, and the average consumption of the irrigated hectare in the Euphrates basin is 16750 m³ per year. This is a huge quantity that necessitates a serious reconsideration of the irrigation methods and shifting to modern irrigation systems. Varela and Sagardoy (2001) simulated the current water policy addressed to modernise the existing irrigation areas. This scenario represents the official government policy in term of modernisation of the irrigation techniques and the development of an area compatible with the requirements created by the increasing population. The area to be modernised is 319017 ha/year (for a period of 4 years) and those to be developed are 27800 ha/year (15 years).

¹⁷ This section draws on Varela and Sagardoy (2001)

The results show that during the four initial years a large reduction of the national deficit is obtained but from the 5th year onwards the deficit starts to increase due to the development of the new areas. Reaching at the end of the period a deficit of 2469 Mm³ which is only 635 million m³ smaller than the initial value. This shows clearly that in spite of the substantial impact that could be obtained with the modernisation programme the expansion of the irrigated area has a marked counterbalancing effect. The Al Khabour basin, in particular, recovers up to a deficit of nearly 2000 million m³ to decline later on to values close to the initial ones. This is an indication that in this basin the development of new irrigation should not be promoted if one desires to re-establish the equilibrium between demand and supply. A similar conclusion applies to the Orontes basin.

Beneficiaries from the public irrigation systems are subject to a fee which intends to recover some of the investments made. The fee to be paid is calculated taking into consideration the development costs for an amortisation period of 30 years but no interest is charged nor corrected by inflation. Therefore the amount charged is small and in the order of 2000 to 7000 SP/ ha. Operation and maintenance costs of the irrigation and drainage networks are charged through a flat fee of SP 3500/ha for permanent irrigation and SP 600/ha for winter irrigation. The actual cost of operation and maintenance are considerably higher. They range from 5 594 SP/ha for pump irrigation to 1708 SP/ha for gravity irrigation. Given the average water consumption per ha, the actual total cost to the farmers per m³ of water is less than 1 SP. This appears to be quite small compared to what farmers are already paying, which from field inquiries appears to be in the vicinity of 6 SP per m³. If this is anywhere close to the shadow price of water, then it appears that the water pricing policy entails a considerable amount of implicit subsidy as well.

Concerning groundwater, the Ministry of Irrigation is responsible for the planning, design and management of dams and public irrigation systems covering some 400000 ha. The Directorate of Operation and Maintenance is responsible for their management. The Directorate receives the necessary funds from the Central Treasury for proper operation and maintenance of the systems. Fields interviews did not reveal shortages of funds. At the Governorate level the corresponding units of the Ministry of Irrigation are well equipped with staff and machinery for the necessary operation and maintenance work. Field interviews indicated that farmers were generally satisfied with the services received.

There are also many small and some medium irrigation systems that take water from the rivers or springs and are managed by co-operatives. In such irrigation systems land holdings tend to be very small and the co-operative is responsible for providing a large number of services to their associates. One of such services is the maintenance of the irrigation system and the distribution of the water. Other services include provision of inputs and sale of produce. Water distribution is normally organised by groups of farmers that receive water from the same canal. The water in the main canal and pumping station is managed by a hired person or sometimes by some of the leaders of the co-operative. Water to the lateral canals is generally distributed on an established rotation.

In groundwater areas most of the wells are private and water is used in the farm of the owner of the well and sometimes it includes those plots of relatives that may be located near by. Farmers that have excess water capacity in their wells sell some of the extra capacity to neighbours. Prices quoted were in the range of 6 SP/m³.

5.10 Environmental performance¹⁸

5.10.1 Water

The amount of water available in Syria is not well quantified, and one water balance developed in 1995 suggested that while demand almost equalled supply in the Barada and A'wag basin, there was still considerable capacity to increase use in some other basins. However by 2001 all basins, apart from Euphrates and the Coastal Basin, show negative balances. The long-term average of water supply is above the water poverty level of 1000 m³/capita/yr. However, the variation in supply between years is problematical. Estimates of future demand suggest annual demand growth of around 2% over the next 20 years. This is lower than projected population growth, but would still require 51% more water to be abstracted by 2015 than was abstracted in 1997

Agriculture is currently the major user of water. Currently 90 percent of irrigation is surface irrigation. This is about 50 percent efficient. Sprinklers are 70-75 percent efficient and drip is more than 90 percent efficient. Water is conveyed to farms by Ministry of Irrigation systems. However some of the old irrigation systems use open channels, which are only 50-55 percent efficient. New projects are developing pressurised systems and hydrants. The use of these new technologies should increase efficiency to 75-80 percent.

The amount of water received by farmers, and the timing of its arrival, is set according to the plan according to crop, location and time of year. A certain volume/hr is assumed and the Government provides a given number of hours of water supply. However, the flow rate down the pipe and the time over which it is provided can vary. This reduces efficiency to about 80 percent. Farmers are responsible for maintaining the irrigation equipment on their land. Generally irrigated crops are poorly monitored. The introduction of on-farm gauges would aid management. This is indeed a Government aim and farmers are being encouraged to install water gauges. All new projects have water gauges fitted and all old ones will be fitted too.

Wells provide the irrigation water for the majority of the land and a large proportion of these wells are illegal. The amount of land irrigated from ground water almost doubled in the period 1990-2000, with the estimated volume from ground water increasing by 68 percent. The total volume of water abstracted from ground and surface water increased by 42 percent over the same period. Uncontrolled pumping occurs from wells and some surface supplies, and while good long term data on ground water levels are scarce, it is clear that ground water levels are decreasing by around 1m/yr in many areas. The use of water in agriculture is affected by the centralised cropping plan, which determines how much of the seven so-called 'strategic crops' each farmer can grow (wheat, barely, cotton, sugar beet, lentils, chickpeas and tobacco).

Generally wells in the west are the least **saline**, and there is a gradual deterioration eastwards. Tadmor in Palmyra is among the worst areas where salinity is up to 6000mg/l. Salinity in surface waters of the peri-urban Ghouta region of Damascus has increased dramatically in recent years, and may be having adverse impacts on crop growth.

¹⁸ This section is adapted from the report of Edwards-Jones (2001)
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The treatment of **sewage and urban wastewater** is still underdeveloped in Syria. A wastewater treatment plant only began running in Damascus in 1998, and is still being upgraded. Sewage treatment plants are planned for all major cities in Syria over the next 10 years. Untreated sewage water is used in some areas for irrigation, and treated sewage water is used for irrigation of crops in the Ghouta region of Damascus. This brings problems of human health and contamination of soil, food and groundwater with heavy metals, pesticide and disease organisms. Currently there is no policy on the use of treated solid sludge, but this may have value as a soil conditioner, and could safely be used around forest trees and in green belts.

There are no incentives to use water sparingly and/or efficiently, or to allocate water to crops that cause least environmental damage. In theory the imposition of a centralised cropping plan does not necessarily lead to inefficient water allocations, but in practice the absence of environmental data means that such inefficiencies will occur. The functioning of the irrigation systems themselves may be inefficient in terms of the time and amount of delivery of water, and the nature of many of the irrigation delivery mechanisms leads to undue losses of water in transport. Technical advice available to farmers on irrigation management may be limited and the lack of meters on water delivery systems severely restricts management options. The drainage systems over much of the irrigated lands are ineffective. This is particularly important in the Euphrates basin and other areas where salinisation is likely.

5.10.2 Al Baddia

The Baddia comprises 55 percent of Syria's land mass. It totals 10.2 million ha and receives less than 200 mm rain per annum. Pasture comprises 70 percent of Al Baddia and this provides a grazing resource for 6-7 months of the year. There are between 900,000 and 1.5 million people in Al Baddia, of which about 500,000 are settled. Deterioration of the range land has been related to overgrazing in early summer. In 1950 there were 2.6 million sheep, while now there are 10-12 million, with the maximum number of sheep in Al Baddia having reached 15 million.

Al Baddia's main water resources are below ground aquifers, and wells are dug to access these resources to provide water for humans and animals. The quality of the water varies with location. There are ancient wells in the Steppe which are really forms of collecting run-off. They were dug in areas of natural run-off. Historically they were managed by tribes. Recently wells have been dug at the request of the coops / herders and according to a Government plan to provide a network of wells across the Baddia. The Department of Baddia identifies the sites for wells and the excavation and maintenance and excavation is done by the Ministry of Irrigation. The Government appoints labourers / guards to look after wells. The water, which is supposedly only for sheep to drink, is pumped into small reservoirs. It is a real open access resource as any one can use it, - even herders outside the coop. Despite the availability of wells, almost all herders transport water in large tankers to the Baddia.

There are currently 33 grazing Protectorates designated within Al Baddia which comprise 400,000 Ha. These protectorates are marked in some way, such as with an earth fence, and the sheep should be excluded from these areas. After 3 years of no grazing, grazing would be permitted twice a year (April & October) in the protectorates. Rehabilitation of

the range land has been tried in the Protectorates. Standard sowing drills have been used to plant seeds in some areas, but the major activity has been the planting of seedlings. This requires 'cultivation' with large bulldozers and rippers, which break up the soil, and the use of irrigation to establish the plants. This programme is supported by seven centres which produce seeds and seedling for the rehabilitation and 13 nurseries for growing grazing shrubs. The plan is rehabilitate 16, 000 Ha a year with seeds / seedlings and 50 tonnes of seed are sown in Al Baddia a year. The aims of the protectorates are multiple: rehabilitate grazing, biodiversity, reduce erosion. They may also act as a grazing reserve for times of drought. None of the Protectorates are currently closed (2000/2001), rather all are open in order to help the herders in this time of drought. Even when they are closed the fines on grazers for entering protected areas very small at SP5.

Deterioration of the Syrian Steppe has been documented in many reports. In addition changes in the composition and abundance of plants have been noted, particularly the increasing dominance of less palatable species and disappearance of the more desirable plants. These reports suggests that degradation is caused largely by overgrazing, but other causes of degradation include removal of shrubs and use of motor vehicles.

The herdsman have gradually been obliged over time to use more concentrate feeds, as substitutes for declining range land resources. The range livestock was almost dependent on range plants until 1958 when concentrate feeds were introduced for the first time. The rate of feed use has increased considerably in the last three decades. Estimates of the use of feed by co-operative members suggests that 46 percent of herders use concentrate feed for between 3 and 5 months of the year, 41 percent use it for between 6 and 8 months, while 7 percent use concentrates for between 9 and 12 months.

The lack of property rights over the land in Al Baddia provides no incentive for long term management and leads to a classic 'tragedy of the commons'. This situation is exacerbated firstly by the provision of increased numbers of wells which enable sheep to remain on the Baddia longer into the summer, and to return earlier, than was historically the case, and secondly by the provision of subsidised feed that enables the maintenance of stocking densities above that which could be supported by the natural environment alone. The problems of overstocking and poor management are not helped by the prohibition on slaughtering female lambs and sheep under 7 years old and a largely closed export market. Efforts to rehabilitate the Baddia have included a banning on cultivation, the establishment of grazing protectorates and the revegetation of large areas with native plants. Unfortunately these efforts have been undermined in recent years as the grazing protectorates have been opened to sheep.

5.10.3 Soils

The soils of Syria suffer from water and wind erosion, salinisation and chemical pollution. Wind erosion effects the greatest area (1.6 million ha) of these three, and chemical degradation the least. In total 17.3 percent of Syria's land is affected by some form of degradation. Of the 125,000 ha affected by salinity, 72 percent is in the highest class of, 20 percent is moderate, and 8% is only slighted salinised. The areas most affected by salinisation are the Euphrates and Khabour valleys, an area south east of Aleppo and an area in the extreme east of the country, north of Albo-Kamal. Problems of salinisation are accentuated by the insufficient and inefficient drainage that exists on most cultivated land.

Reclamation of land of high salinity has been undertaken, with some success, but no best method of reclamation has been devised.

There is no specific policy for the soils of Syria. Soil degradation is occurring because of the impact of policies related to water use on cultivated areas and resource management of the Baddia. It is clear that soil conservation is an important long term issue for Syria, and needs to be dealt with effectively. This basically means transferring existing knowledge from projects in Syria, and elsewhere, and making these happen over the majority of Syria's cultivated land.

5.10.4 Forestry

Historically Syria was far more forested than it is presently. Currently, forests cover 2,6 percent of the land area, down from about 11 percent at the beginning of the 20th century. The causes of natural forest loss have varied, and include extensive land clearing for human settlements and agriculture, overgrazing by goats, sheep and other animals, illicit felling, burning for charcoal production, unorganised tourism, fires and inappropriate agricultural practices. The old forest law, that was outdated, remained in effect until 1994. Substantial afforestation and reforestation programs have been launched in recent decades to increase forest areas. Forest reserves have been declared in Syria. Work on sand dune fixation, green belts, roadside plantations and urban forests has been intensified. The rate of afforestation in Syria has increased from 159 ha/year during 1953-70 to more than 24,000 ha /year during the 1980s. These measures have been helpful in slowing deforestation, and controlling desertification.

Annual afforestation plans are binding for all governorates with the objective of achieving an important environmental goal. The economic aspects of the plans are not considered as a priority, and a limited number of species are planted. Rigid adherence to the planting plan may be inefficient as so many trees fail to establish. The requirement of each Governorate to meet set targets tends to force them to plant on land which may not bring the highest return nationally. Many species of tree are planted, including species not native to the country or region. The introduction of exotic trees can become a future environmental problem. However, gradually Syria has started the production of adaptable seedlings, especially the drought resistant ones. Many of the protected areas are forested, but they are not well managed. More forestry effort could go into managing these areas. Most tree planting is on State land. There may be environmental benefits in planting more trees on private lands, especially of agroforestry and/or multipurpose trees. Forest fire is not a major problem, but better forest management may reduce losses. Poorly motivated forest guards do not protect the forests very well. The policy of land clearing and planting trees has been successful, but from an environmental point of view such land clearing is not a priority. The resources could be better spent on preventing erosion. Policy in the citrus sector seems to have been successful, and the sector seems responsive to environmental concerns, but it is hindered in its biocontrol by the bureaucracy and processes surrounding the import of biocontrol agents.

5.10.5 Biodiversity

The biodiversity of Syria is poorly recorded, however existing data suggest Syria has many species of international importance. Declines have been reported for numerous species over the last 50 years. Species particularly affected by these declines include many mammals (e.g. gazelles, onagers, wolves, and wild buffalo). The cause for many of these declines is believed to be overhunting and habitat degradation. There is an unusual diversity of ecosystems occurring over relatively small spatial scales in Syria. The geographic situation of the country makes it an important area for migratory birds. For this reason some of Syria's habitats, particularly its wetlands, are of real international importance. Syria has a rich culture of agro-biodiversity, which is worthy of conserving for potential future use. The MAAR is fully aware of the importance of forests as a source of biodiversity, so it established a network of natural reserves representing all the ecological systems in Syria with the aim of protecting the environment, restoring vegetation cover, and rehabilitating the extinct species.

Currently there are 13 recognised protected areas in Syria covering 0.6 percent of the land area. This is one of the lowest percentages of total land area in protected areas of any Mediterranean country. These protected areas have been recognised by law over the last 30 years. Despite the national legislation, these protected areas are not well developed and none of them are recognised by international standards. There are no marine protected areas in Syria.

The protected areas are not particularly well managed, and this sends the signal that biodiversity is not an issue of major concern to the Government. This signal is reinforced by the lack of protection given to certain forests and grazing protectorates. Current agricultural policy does not incorporate any incentives to conserve biodiversity. This is despite the excellent example set by the biocontrol strategy in the Citrus sector. The relative paucity of environmental education in schools, colleges and Universities leads to the population of Syria having a relatively poor level of environmental awareness. This is a real hindrance to furthering environmental objectives in the country. Environmental education is not helped by the absence of any public zoos and botanic gardens in Syria. Recent development of the Biodiversity Unit within the Ministry of State for Environment is a positive step, and its recent reports on biodiversity in Syria are useful starting points for further work. Furthermore, the government has recently started a biodiversity project in the Department of Agricultural Scientific Research.

6. Issues relevant to the establishment of a new agricultural sector strategy

Given the structural description of Syrian agriculture and policies, as well as the analysis of performance, this chapter examines the major issues that are relevant in Syria for the establishment of a new agricultural development strategy.

6.1 Implications of a changing international environment and orientation of the Syrian economy¹⁹

The design of the previous agricultural development strategy that dates to the 1970s was influenced considerably by a closed economy mentality. In particular external and internal security were of paramount importance. These concerns dictated an inward oriented import-substitution development and industrialisation strategy, and agricultural policy was subject to this overall mentality. Most aspects of economic activity, including production, distribution, pricing, finance and foreign trade were regulated and dominated by the public sector.

Since the late 1980s, the Syrian authorities have initiated a series of liberalising reforms, that were reviewed in section 2.7. The pace of liberalisation seems to be increasing in the last two years in light of the desire of the government to sign an agreement with the EU, and joining the WTO.

The Syrian proposal to the EU concerning an Association Agreement (AA) between Syria and the EU includes a component on agriculture that has several implications for Syrian agriculture. In particular, the proposal suggests that the bans on imports of some agricultural products into Syria are continued for five years after the entry into force of the Association Agreement. This implies that after five years the bans will be eliminated and competitive pressures on Syrian agroindustrial products will increase. Similarly the proposal suggests that for the products that are permitted for imports, tariffs and similar levies are gradually dismantled over a twelve-year period. This, again implies considerable future trade liberalisation that will increase competitive pressures on domestic industries. The general opening up that is implied by the proposal is consistent with the overall export strategy for Syria that has been formulated by the Ministry of Economy and Foreign Trade²⁰.

Syrian trade experience with the EU is disappointing, and reflects a “North-South” pattern. Only 15 percent of Syrian exports to EU against 87 percent of Syrian imports from the EU are processed products. The net bilateral agricultural trade balance is negative for Syria and has worsened over the last years (Garcia Alvarez Coque, 2001). The net balance for food processed products has fallen from –156 million Euro in 1995-97 to –164 million Euro in 1997-99. Five products compose 90 percent of Syrian exports to the EU. Out of them only potatoes show a positive development. Concentration of Syrian exports on raw cotton is marked, and this product accounts for 73 per cent of Syrian agricultural exports to the EU. Syrian dependence on EU products is also significant, the EU being the source of 28 percent of Syrian agricultural imports.

The benefits of the previous Co-operation Protocol with the EU have been small. Although the Syrian agricultural exports benefiting from zero tariff account for 91.4 percent of the Syrian agricultural export value to the EU, only 1 percent of it benefited from a real preference. Syrian export composition has tended to adapt to the EU tariff structure and does not properly reflect the comparative advantages of Syrian foreign exports. The export performance of preferential products has been weak, and this is because of weak domestic production. Hence trade preferences do not seem to have been enough for promoting Syrian export diversification.

¹⁹ This section is partly based on Garcia Alvarez Coque (2001)

²⁰ See Ministry of Economy and Foreign Trade, "Export Strategy in Syria", mimeographed 2000.
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To realise export gains from the EU agreement, it is crucial for Syria that export activities are supported by an adequate domestic environment for business and investment. Market access in the EU is a necessary condition for improving export performance but does not seem to be sufficient. Syrian export composition must diversify to high-value products, if export gains are to be pursued. Preference indices, calculated to assess the relative specialisation of EU imports on Syrian supplies compared to other Mediterranean countries, indicate that export performance of Syrian products is significantly worse in the EU than in other countries (Garcia-Alvarez-Coque, 2001). Free market access to the EU could help to create adequate incentives for the development of many products.

However, taking advantage of the newly negotiated tariff concessions will depend on the potential for growth of Syrian exportable products, provided that there is an adequate domestic environment for export growth. The constraints to Syrian exports are mainly supply-related. While farm-gate prices in Syria are below farm-gate prices in EU countries for a number of fruit and vegetables, high marketing costs (including logistics, post-harvest operations, transport, etc.) imply reduced Syrian competitiveness in the EU markets. Non-price competition has a significant influence on the European demand for imports of Mediterranean products. A wider access to the EU markets can be constrained by European specifications for quality, but the new situation can create also incentives for further implementation in Syria of grades and environmental standards accepted in the EU markets. Potential gains for Syrian exports from a wider access to the EU market can be significant, and will certainly spill over to exports for other markets as well.

However, for the potential gains become a reality, the agricultural agreement should be accompanied by structural reforms. An assessment of the regional integration with the EU by Garcia-Alvarez-Coque (2001) suggests that the AA involves some efficiency gains by decreasing the import costs of equipment (these accounted for around 40 percent of the capital invested in agri-food projects under Law no. 10). The European Foreign Direct investment in the Syrian agri-food economy is insignificant. A scheme of deep regional integration with the EU would assist the modernisation of the Syrian economy, with relatively low social costs. However, long transition does not mean an argument to slow down the path of policy reform.

It is clear that a reform of trade practices, in line to the WTO rules, would be needed to ease the regional integration with other Arab countries and with the EU, and to introduce transparency in agricultural trade. A reform of policy instruments, leading to a full tariffication of border measures, could be undertaken. Tariff reductions would be a second priority, as far as agricultural imports are concerned. Price comparisons between the EU and Syria for some products of import interest for Syria (wheat, barley and sugar) suggest that the opening of Syrian agricultural markets should be progressive but gradual. The opening of the agricultural import markets should be accompanied by a number of actions addressed to bring more flexibility to the domestic pricing system, more in line with a market economy. Lower import prices would help to maintain consumer prices down and to counteract the inflating effects of a possible devaluation of the exchange rates used for custom valuing. The import ban list could be abolished as a way of promoting price competitiveness of Syrian products, also for those with export potential, such as processed fruit and vegetables and cotton.

Increased market access in the EU and the progressive intra-Arab integration should improve the appeal of Syria as a destination of European Foreign Direct Investment (FDI)

in the agri-food sector. However, the reform of the legal framework for the encouragement of FDI could help to simplify the business environment. The current process of reforms would need to be speeded, in relation to the banking system, the currency regulations, the movement of capital and the administrative procedures for foreign commercial transactions. While the current direction of the reforms seem to be right, their timetable should be clearly defined. The Euro-Syrian joint ventures in the agricultural sector will surely react to the removal of existing constraints to FDI. The AA includes a series of provisions establishing clear commitments for economic reform, which represent an “intangible” asset of the Syrian-European co-operation.

The AA will affect the whole Syrian economy. “Reciprocity” is a key word that involves the obligation of eliminating tariffs on EU manufactures, within a defined schedule of 10 to 12 years. Syrian industrial exports already have duty-free access to the EU market. Tariff dismantling on EU exports will begin once the AA is in force. The short-term impact of free trade on local industries, which have benefited from decades of protection, is not easy to anticipate. Some agrofood industries have a significant weight in the Syrian manufacturing sector, such as food processing, cotton and sugar. Some of the largest industries are public enterprises. Since 1999, « management by objectives » has started to be introduced, as an attempt to make public enterprises more efficiently managed and more truly autonomous. There are also plans to undertake a comprehensive industrial rehabilitation plan. However, the foreign exchange and import restrictions as well as the lack of sufficient banking funding are a cause of difficulties for the development of the private industry. High marginal tax rates and poor marketing complete this picture of constrains.

It is clear that the AA with the EU should be understood as a part of the programme of structural reforms needed to stimulate private sector exports and reorient Syria towards global markets. The present import restrictions, still considerable, don't help to the development of a private sector. There are not reliable estimates on the impact of the AA on the Syrian industry. Expert opinion within Syria express the view that the short-term impact would be equivalent to what has been reported for other Mediterranean countries. The governments of Morocco and Tunisia, the first to sign agreements, have anticipated that one-third of the companies in affected industries are competitive enough to survive free trade while another one-third will require significant restructuring and capital investments. The rest is expected to face serious problems to survive.

Compatibility between agricultural trade and price policy will become an issue for the domestic administration of the transitional period, under the AA. A further opening of the Syrian foreign markets should maintain consistency with the price regulations in force. Import prices might not be consistent with the public price guidelines and any decrease of import price could create an increasing burden on public budget. This may be the case for some of the strategic crops for which procurement prices have been above the corresponding international parity prices.

Price comparisons between domestic Syrian prices for strategic crops and EU farm gate prices, indicated in table 6.1.1, suggest that the improvement of market access for EU exports to Syria is likely to undermine domestic price policies, as EU export parity prices seem to be much lower than those for comparable strategic Syrian products.. Of course, this does not mean that those products should be kept as a part of a Syrian import ban list.

They could be fully tariffed and subjected to a schedule of tariff liberalisation, with the help of tariff rate quotas (TRQ)s, which could be progressively wider.

The progressive opening of Syrian markets could offer some opportunities for a further deepening of the price policy reform in Syria. A gradual opening of foreign markets would not force a dramatic dismantling of the regulating role of the Syrian State. Official procurement prices have not been subjected to significant changes since 1996, and there is a declared intention to reduce the number of commodities classified as strategic. However, if international competitiveness is to be maintained and/or improved in a more open trading environment, the producer prices should be put more in line with international parity prices.

Table 6.1.1 Price comparison between French and Syrian prices of selected products

	Soft Wheat	Hard Wheat	Barley	Sugar beet	Refined Sugar
French farm-gate price(ECU/MT) /c	104	124	99	320	
French intra-EU export unit value /f (ECU/MT)	126	149	138		688
Syrian import parity price (ECU/MT)	122	135	137	141	
Adjustment /e (**) ECU/MT	14,4	11,5	31		31
Adjusted French unit value / a = e + f (ECU/MT)	140,4	160,5	169		719
Syrian farm-gate price (SP/MT)	10800	11800	7500	2150	
Syrian farm-gate price (ECU/MT) /b	203	221	141	422	
Syrian Domestic refined sugar price (SP/MT) (*)					38062
Syrian Domestic refined sugar price (ECU/MT) (*) /d					714
Ratio French to Syrian prices					
Ratio a/b	0,69	0,73	1,20		
Ratio c/b	0,51	0,56	0,70	0,76	
Ratio a/d					1,01
(*)	Ex-Mill gate refined sugar + transport costs to wholesale level + 10 percent cost accounting for quality differences between imported and domestic sugar				
(**)	Net adjustment to make farm-gate prices comparable with import prices.				

Prices correspond to 1999

Source: Garcia-Alvarez-Coque (2001)

The opening of agricultural and agroindustrial markets could also promote the price competitiveness of some products with export potential, such as processed fruit and vegetables, olive oil and cotton. Domestic prices of cotton delivered to domestic spinning plants are 30 percent above international prices, which has negatively influenced the competitiveness of the Syrian textile industry. Olive oil and cotton stocks have become a serious problem, amounting to a value around 50 to 80 billion SP. Both products should gain price competitiveness in order to increase their position in foreign markets. This also leads to the need for facilitating an adequate environment for private and foreign investments in agriculture, in particular in the cotton sector, where private investment is still restricted for some operations.

Ideally, the EU-Syrian partnership should increase the European investment in the Syrian agribusiness sector. Potential for such goal exists, considering the advantages that Syria could offer to EU companies. The Syrian “assets” for attracting foreign capital are the appropriate natural conditions for the cultivation of Mediterranean products, relatively low labour costs (compared to other Mediterranean countries), and relative proximity to Europe and the Arab countries.

The desire to join WTO also has considerable other policy implications. Current computation of prices in terms of production cost is not valid for setting bound tax rates under WTO. In that context what is required is to exhibit the differences between domestic and international prices for Syrian agricultural products, and use this to set the bound tariffs. While this can be done for products with monopoly purchasing like cotton, sugarbeet, tobacco and wheat, it cannot be done for others. Hence the MAAR will need to do work on the differences between domestic and international prices for a range of agricultural and processed agricultural products. Another aspect of WTO membership is the inability to have bans on any imported products. These are not permitted under WTO for industrial products and for agricultural products they are permitted only in light of

market access commitments. This is an area of further thinking and policy reform on the part of the MAAR.

6.2 Distributional implications of current agricultural policies

The intention of the government policies over the past two decades has been to benefit the smaller and poorer members of the agricultural producers. It is difficult, however, to assess the impacts of any policies in the absence of any household level survey information. For this reason, and within the limitations of this project, a small survey of 100 households selected in a representative way in five of the most representative mohafaza in Syria²¹ was undertaken. Of these households 49 farmed in zone 1, 36 in zone 2 and 19 in zone 3. The full results of the survey are reported in annex 3. Here we present some highlights of the results.

6.2.1 General household structure

Table 6.2.1.1 indicates the distribution of sampled households according to both the land cultivated as well as the per capita annual consumption expenditures of the household. The per capita household expenditure is a much utilised and acceptable proxy for the total income level and welfare of the households. According to the unpublished results of the Syrian national household survey of 1996-97 the average annual total per capita consumption expenditure for the whole of Syria was 25140 SP, with the average in urban areas being 26688 SP, and the average in rural areas at 23616 SP. This dictated the choice of the consumption classes for the tabulation of the survey. According to the survey results, indicated in the table, 60 percent of the surveyed households had per capita total yearly expenditure levels below 20000 SP, and only 7 percent of surveyed households had annual per capita consumption expenditures above 40000 SP. This suggests a rather skewed income distribution of rural households. The average per capita total annual consumption expenditure for the whole of the sample was 24582 SP, which is 4 percent larger than the average reported in the 1996-97 national survey for rural areas. This average is not statistically different than the national figure for 1996-97, and suggests that there has not been much change in average household incomes and expenditures in the last four years, despite the drought.

Table 6.2.1.1 Allocation of sampled households according to farm size (cultivated land) and consumption classes

	Farm size classes (in donum)					Total
	0 - 10	>10 - <=50	>50 - >=200	>200-<=500	>500	
Consumption classes (SP/cap/annum)						
0 - <=10000	3	2	6	3		14
>10000-<=20000	3	13	23	5		44
>20000 - <=40000	5	5	11	8	3	32
>40000 - <=100000		1	2		2	5
>100000				1	1	2
Total	11	21	42	17	6	97

Source. Household survey

²¹ These were Al-Hassake, Aleppo, Hama, Lattakia and Tartous. In each Mohafaza four representative villages were selected, out of a list of 200 villages selected so as to represent the whole of Syria. In each village five representative farm households were selected.

The cross-classification of expenditure classes with cultivated area suggests that cultivated land size is imperfectly correlated with total expenditure (and hence income) of the households. Almost all the households with farm size less than 1 ha (10 donum) belong to the three lowest expenditure classes, while all households with land area above 50 ha belong to the three highest expenditure classes. For the other households the picture is more mixed.

Table 6.2.1.2 indicates that the educational level of the heads of farm households is inadequate. 66 percent of all household heads have education elementary or below, and 28 percent of household heads have no education at all. Education seems to be higher among wealthier households.

Table 6.2.1.2 Education of household heads

Education of chief	Consumption classes (SP/cap/year)					Total
	0 - <=10000	>10000- <=20000	>20000 - <=40000	>40000 - <=100000	>100000	
Below elementary or none	11	30	18	3	0	62
Above elementary	2	14	12	2	2	32
Total	13	44	30	5	2	94
	Farm size classes (donum)					Total
	0 - 10	>10 - <=50	>50 - >=200	>200-<=500	>500	
Below elementary or none	8	12	29	9	4	62
Above elementary	3	7	13	8	2	33
Total	11	19	42	17	6	95

Source. Household survey

Of all households surveyed 56 percent of chiefs reported being members of a co-operative, but the percentage varied according to income class and farm size. Among smaller income classes and farm sizes more than two thirds of chiefs are co-operative members, while in the higher income and farm size classes less than one third belong to co-operatives. Of the interviewed farmers 72 percent had as main job agriculture, while another 13 percent had as main job employment in the public sector.

Table 6.2.1.3 shows the amount of time spent on farm activities. It appears that 52 out of 89 farm heads that responded (or 58 percent) spend more than 8 months of their time on farm activities, while 20 percent spend less than 2 months of their time on farm activities. This suggests that agriculture seems to be the major activity of most farmers in Syria.

Table 6.2.1.3 Allocation of time to their farm of household heads

	Consumption classes (SP/cap/year)					Total
	0 - <=10000	>10000- <=20000	>20000 - <=40000	>40000 - <=100000	>100000	
Number of heads that spend in work:						
less than 2 months	3	10	3	1	1	18
>2 - <=4 months	0	4	4	1	0	9
>4 - <=8 months	2	6	2	0	0	10
>8 months	9	17	20	3	1	50
Total	14	37	29	5	2	87
	Farm size classes (donum)					Total
	0 - 10	>10 - <=50	>50 - >=200	>200-<=500	>500	
Number of heads that spend in work:						
less than 2 months	1	4	11	2	0	18
>2 - <=4 months	0	3	3	2	1	9
>4 - <=8 months	0	2	5	3	0	10
>8 months	8	11	17	10	5	51
Total	9	20	36	17	6	88

Source. Household survey

6.2.2 Household welfare

The survey included a variety of questions relevant to household welfare. Table 6.2.2.1 indicates that 48 percent of the interviewed households had income not enough to cover the bare necessities of life, while another 38 percent had incomes only enough to cover bare necessities. Only 14 percent of households declared that their incomes were adequate or above.

In the national household survey of Syria in 1996-97 the average per capita monthly expenditures on food was reported to be 1253 SP for the whole country, 1184 SP for rural areas and 1322 SP for urban areas. For total expenditures the average monthly per capita expenditures for the whole of Syria was 2095 SP, while it was 2224 SP for urban areas and 1968 for rural areas. In our sample the average per capita monthly expenditure on food for all households was 1353, which given the four years that have elapsed suggests that the sample is broadly representative of Syrian rural households. However, the averages were very different by household classes. For the poorest class (those with per capita total monthly expenditure less than 833 SP, the average spent on food was only 495 SP, while for the richest class (those with per capita total monthly expenditure more than 8300 SP), it was 9250, namely more than 20 times higher. Clearly there are substantial inequalities within the rural farm households.

Table 6.2.2.1 indicates the perceived real income situation of households in Syria. It is notable that 48 percent of all households report that their income is not enough even for the bare necessities, while another 38 percent indicate that their income is only sufficient for the bare necessities. Only 14 percent of all households report that their income is adequate. Table 6.2.2.2 shows the perceived income situation of the households compared

to that of five years earlier. It can be seen that 43 percent of all households report that their family's financial situation is worse than it was in 1995, while 45 percent report that it is better, the remaining reporting no change. It is thus clear that the developments of the past five years have not affected all rural households in the same way.

Table 6.2.2.1 The perceived real income situation of households

	Consumption classes (SP/cap/year)					Total
	0 - ≤10000	>10000- ≤20000	>20000 - ≤40000	>40000 - ≤100000	>100000	
Present incomes in the household						
Not sufficient for the bare life necessities	6	25	14	2		47
Sufficient for the bare life necessities	5	17	13	2		37
Sufficient for a decent living, but we cannot afford buying more expensive things	3	3	4	1	2	13
We manage to buy everything we need, without any restrictions			1			1
Total	14	45	32	5	2	98
	Farm size classes (donum)					Total
	0 - 10	>10 - ≤50	>50 - ≥200	>200- ≤500	>500	
Present incomes in the household						
Not sufficient for the bare life necessities	7	12	24	3	1	47
Sufficient for the bare life necessities	3	8	14	8	4	37
Sufficient for a decent living, but we cannot afford buying more expensive things	1	2	5	5	1	14
We manage to buy everything we need, without any restrictions				1		1
Total	11	22	43	17	6	99

Source. Household survey

Table 6.2.2.2 The financial situation of households in 2000 compared to that of 1995

	Consumption classes (SP/cap/year)					Total
	0 - ≤10000	>10000- ≤20000	>20000 - ≤40000	>40000 - ≤100000	>100000	
Financial situation of your household in 2000 compared to 1995						
Much better	3	7	7	3		20
Better	3	12	9	1		25
Similar	5	5		1	1	12
Worse	2	14	7	1	1	25
Much worse	3	6	8	1		18
Total	16	44	31	7	2	100
	Farm size classes (donum)					Total
	0 - 10	>10 - ≤50	>50 - ≥200	>200- ≤500	>500	
Financial situation of your household in 2000 compared to 1995						
Much better	1	2	8	5	4	20
Better	4	6	10	4	1	25
Similar	2	3	5	1	1	12
Worse	3	7	11	4		25
Much worse	2	4	9	3		18
Total	12	22	43	17	6	100

Source. Household survey

Interestingly of the same households, 40 percent report that their farm's profitability has been higher in 2000 compared to 1998, despite the drought, while 39 percent report worse farm income. Also 69 percent of all households report that farm income is their most important source of income, and this proportion does not appear to be smaller for smaller or poorer farmers.

6.2.3 Land cultivation and production of strategic crops

Table 6.2.3.1 exhibits the average total arable and orchard land cultivated by different classes of households, as well as the average amounts of irrigated land. It can be noticed that, as expected, wealthier households cultivate on average more land, but also, and this is important for policy, they have considerably more irrigated land, both absolutely, as well as a proportion of their total cultivated land. This is important as it suggests that any irrigation related policies such as irrigation subsidies impact relatively more the wealthier farm classes. The majority of farmers appear to own their land, much like was indicated for the whole of Syria earlier.

Table 6.2.3.1 Cultivation of rainfed and irrigated land by household classes.

	Consumption classes (SP/cap/year)					Total
	0 - <=10000	>10000- <=20000	>20000 - <=40000	>40000 - <=100000	>100000	
Average land area cultivated (don)						
Arable land	121,7	98,7	208,2	512,2	425,0	168,9
Fruit orchards (including olive trees and vineyards)	2,5	50,0	15,0			22,5
Average land area irrigated (don)						
Arable land	54,4	35,1	120,1	425,0	295,0	94,0
Fruit orchards (including olive trees and vineyards)	10,7	3,9	36,8	0,0		16,3
	Farm size classes (donum)					Total
	0 - 10	>10 - <=50	>50 - >=200	>200-<=500	>500	
Average land area cultivated (don)						
Arable land	3,0	24,3	97,3	266,9	1001,5	166,3
Fruit orchards (including olive trees and vineyards)	4,3	17,0	20,6	96,6	6,0	28,3
Average land area irrigated (don)						
Arable land	0,1	8,2	47,7	102,8	741,7	92,6
Fruit orchards (including olive trees and vineyards)	2,1	2,6	9,7	71,3	0,0	16,3

Source. Household survey

Sixty of the respondents indicated that they had one or more wells, with 38 of them reporting having only one well, while the rest had more than one. Of these wells only 37 were licensed during the time of the survey in mid-2001. Of the 80 respondents who answered the question, only 17 indicated that they had obtained irrigation from a government project during the past year, and all of them were from the lowest three income or farm size classes. Of these, half were not satisfied with the government irrigation services. Another 15 farmers indicated that they had bought irrigation services

from neighbours, and irrigated an average of 3.7 ha with this water. The average amount paid for this irrigation was 46800 SP during the past year, which amounts to 12650 SP per irrigated ha. This indicates first that there is considerable private trading in irrigation water, and also that the private market price for irrigation water is far above what the government charges.

Table 6.2.3.2 indicates the amounts of wheat produced on irrigated and non-irrigated land, as well as the amounts sold to government agencies. Of the total farmers surveyed 74 produced wheat. Of these, 44 had some irrigated wheat land and 34 had some rainfed land. The average total production from irrigated land was 74.5 tons, but it varied considerably from 4.8 tons for the smallest farms to 416 tons for the largest ones. Of the total number of producing farmers only 48 sold wheat to the government agency, and the average quantity sold per selling farmer was 66.9 tons, with substantial variations, however, by farm size or income class. The smallest farms sold nothing to the government, while the largest size farms sold to the government an average of 482.2 tons. Given that wheat is one of the most subsidised crops, it is clear that the incidence of the benefits is highly skewed, with the largest and richest farmers obtaining the bulk of the benefits.

Table 6.2.3.2 Cultivation of wheat

	Consumption classes (SP/cap/year)					Total
	0 - <=10000	>10000- <=20000	>20000 - <=40000	>40000 - <=100000	>100000	
Wheat						
Number of households with cultivated area irrigated	9	16	13	4	2	44
Number of household with cultivated area rainfed	6	15	9	3	1	34
Average production from irrigated land (kg)	17350	17844	57185	469250	107500	74478
Average production from rainfed land (kg)	3900	1653	3438	4867	19000	3316
Number who sold to government	9	16	15	6	2	48
Average quantity sold to government (kg)	17744	14439	49008	308350	117000	66874
	Farm size classes (donum)					Total
	0 - 10	>10 - <=50	>50 - <=200	>200-<=500	>500	
Wheat						
Number of households with cultivated area irrigated		6	25	8	5	44
Number of household with cultivated area rainfed	4	8	13	6	3	34
Average production from irrigated land (kg)		4750	17130	45288	491600	74478
Average production from rainfed land (kg)	625	2699	2992	7225	2133	3316
Number who sold to government		9	26	8	5	48
Average quantity sold to government (kg)		4300	15460	44806	482168	66874

Source. Household survey

Table 6.2.3.3 presents the same type of information for cotton. It is also apparent that there is extreme skewing of the amounts sold to government agency. Any benefits from price supports clearly benefit more the largest farmers. The conclusion from this analysis is that the benefits of the government price support policies accrue largely to the bigger and wealthier farmers.

Table 6.2.3.3 Cultivation of cotton

	Consumption classes (SP/cap/year)					Total
	0 - <=10000	>10000- <=20000	>20000 - <=40000	>40000 - <=100000	>100000	
Cotton						
Number of households with cultivated area irrigated	7	11	13	5	2	38
Average production from irrigated land (kg)	9007	12652	28485	64420	38250	25556
Number who sold to government	7	10	12	5	2	36
Average quantity sold to government (kg)	9007	13917	30858	64420	38250	26976
	Farm size classes (donum)					Total
	0 - 10	>10 - <=50	>50 - <=200	>200-<=500	>500	
Cotton						
Number of households with cultivated area irrigated	0	7	19	7	5	38
Average production from irrigated land (kg)	0	3129	9722	25643	117000	25556
Number who sold to government	0	7	18	6	5	36
Average quantity sold to government (kg)	0	3129	10262	29917	117000	26976

Source. Household survey

6.2.4 Services and inputs used

Of the surveyed households almost all (96 percent) were regularly visited by extension agents. The average number of times each farmer was visited was 6.8. 97 percent of the farmers requested help from extension in the past year, and the average number of times help was requested was 4. 63 percent of the interviewed farmers found the extension services very useful and 17 percent said that they changed crop practices because of advice from extension.

Of the total number of farmers, 72 percent utilised fertiliser of all three types (nitrate, urea, phosphate) but only 36 percent said that their main source of supply was the ACB. The larger farmers had permanent workers, while all sizes of farmers hired some temporary labour, with the larger farmers hiring more.

6.2.5 Production prospects

Table 6.2.5.1 indicates that the farmers of the sample made a variety of investments in the course of year 2000. The major type of investment was to pay for children's education. The second most popular investment was to buy tree seedlings, and this implies the perceived profitability of fruit trees. Apart from these investments the only other frequent investment was house improvements or purchase. Of all the investments made, loans were

used for 13 out of the 34 investments in tree seedlings, for 1 out of 5 farmers investing in livestock, and the only farmer that bought agricultural processing equipment. The other investing farmers used their own funds.

A question was asked as to what would the households do if they had extra money. Table 6.2.5.2 indicates that buying land, machinery and investing in wells were the three most desired forms of investments that households perceived as most profitable. This suggests that agriculture is still a profitable activity in Syria. Indeed when the farmers were asked whether they are interested in increasing agricultural production, 84 percent answered in the affirmative. Of those the majority (43 percent) indicated that their major constraint to expansion was lack of own funds or credit, 18 percent said that the major constraint was that they cannot obtain more land, while 7 percent declared that the major constraint was low product prices and the lack of additional irrigation.

Table 6.2.5.1 Investments by farmers in 2000

	Consumption classes (SP/cap/year)					Total
	0 - ≤10000	>10000- ≤20000	>20000 - ≤40000	>40000 - ≤100000	>100000	
Number of households who invested money during 2000 in:						
Buy agricultural equipment (tractor, other machinery, etc.)		1	7			8
Buy trees or seedlings	4	12	15	2	1	34
Buy livestock		3	2			5
Buy agricultural land	1		1			2
Buy non agricultural land						0
Build, expand or improve agricultural buildings or greenhouses	1	3	3			7
buy agricultural processing equipment			1			1
Develop new or existing non-agricultural private business						0
Build or buy a new house, apartment or building	2	1	2			5
Improve a house, apartment or building	2	7	4	2		15
Buy a car or truck	1		5			6
Pay for children's education	7	16	17	3	1	44
	Farm size classes (donum)					
	0 - 10	>10 - ≤50	>50 - ≤200	>200- ≤500	>500	Total
Number of households who invested money during 2000 in:						
Buy agricultural equipment (tractor, other machinery, etc.)		1	5		2	8
Buy trees or seedlings	2	5	19	7	1	34
Buy livestock		1	2	1	1	5
Buy agricultural land			1	1		2
Buy non agricultural land						0
Build, expand or improve agricultural buildings or greenhouses	1	1	3	2		7
buy agricultural processing equipment				1		1
Develop new or existing non-agricultural private business						0

Build or buy a new house, apartment or building		2	3			5
Improve a house, apartment or building	1	5	5	3	1	15
Buy a car or truck			1	3	2	6
Pay for children's education	4	11	15	11	3	44

Source. Household survey

Of those that answered that they were not interested in increasing agricultural production, most gave as their main reason that private farming was not profitable, and these were mostly poorer and smaller farmers. The conclusion seems to be that farming is still a profitable business for most farm households, but lack of own funds for expansion is the major constraint to expansion. This highlights the importance of rural finance for further agricultural growth.

Table 6.2.5.2 Investment prospects of farm households (number of respondents)

What would you do with an extra amount of money	
buy agricultural land	28
buy agricultural machinery	14
buy livestock	6
buy processing equipment	1
invest in agricultural buildings	0
invest in greenhouses	0
invest in well	10
invest in irrigation equipment (pumps, etc)	4
buy food	1
buy clothes	0
repair house	2
buy house. Apartment or other buildings	6
buy car	5
buy appliance	0
buy non-agricultural land	0
pay children's education	5
put in the bank	1
save it in other financial forms	0
invest in non-farm business	5
pay back outstanding loan	8
buy jewels or gold or other precious stones or metals	0
Other	3
buy shares of companies	1
Total	100

Source. Household survey

6.2.6 Use and compliance with licenses

The survey asked several questions related to the use of licenses by the various farmers interviewed. Table 6.2.6.1 illustrates that a large number of farmers do not obtain licenses even though they cultivate land larger than 0.5 Ha, namely the size below which a license is not required. In fact 21 out of 25 farmers that reported not having obtained a license in the year previous to the survey, cultivated land larger than 10 donum.

It is interesting that among farmers with large sizes, the proportion that obtain licenses is much larger than among farmers that cultivate small areas. For instance in the two largest farm size classes, 18 out of 22 farmers, namely 82 percent obtained a license, while in the two smallest area classes only 13 out of 24, or 54 percent obtained licenses. The license entitles a farmer to obtain subsidised loans, and inputs, as well as to sell his strategic products at the government prices, which as was seen earlier are highly supported. Hence, it appears that the licensing system tends to be utilised to a greater extent by those with larger cultivated areas. This is consistent with the earlier observations concerning the areas cultivated of wheat and cotton, and is consistent with the notion that the various support measure of the government tend to confer the bulk of their benefits on the larger farmers.

Table 6.2.6.1 Use of production licenses by farmers

		Ranges of the farm size (donum)					Total
		0-10	>10-<=50	>50-<=200	>200-<=500	>500	
Did you obtain a production license last year?	Yes	2	11	32	13	5	63
	No	4	7	10	3	1	25
	Total	6	18	42	16	6	88

Source. Household survey

Of the 63 people that reported as having obtained a license, only 33 or 52.4 percent reported that they complied with the license. This suggests that despite the punitive mechanisms in place for complying with the licenses, and the continuous surveillance of areas planted by extension agents, there is widespread non-compliance. Table 6.2.6.2 explores the pattern of compliance and non-compliance among farm size classes. Among the two largest farm size classes 11 out of the 18 recipients, or 61 percent did not comply, while among the two lowest farm size classes only 4 out of 13, or 31 percent did not comply. This suggests that the larger farmers not only are the largest license recipients so as to take advantage of the government subsidies, but also that they are the largest violators of the licenses.

Table 6.2.6.2 Pattern of compliance and non-compliance among license recipients

Did you comply with license?	Ranges of the farm size (donum)					Total number of license recipients
	0-10	>10-<=50	>50-<=200	>200-<=500	>500	
No answer	0	0	1	0	0	1
Yes	2	7	17	6	1	33
No	0	4	14	7	4	29
Total	2	11	32	13	5	63

Source. Household survey

Among those who complied with the license the majority (20 out of the 33 or 61 percent) said that the reason they did not comply was that they found it more profitable not to do so, while almost all the rest declared that the license was not compatible with the best Organization of their production. These two answers imply the same thing, namely that if

the license is against what the farmers desire for their farm, there is a high chance of non-compliance.

Among those who complied with the license almost all who answered the question of why they complied, said that they complied because the license was compatible with their own production plans. This analysis then suggests that it is quite difficult to force farmers to comply with a production pattern that they do not regard as profitable or best for their farms. Whenever the license is compatible with the farmers' plans then they tend to comply.

6.3 Self sufficiency versus comparative advantage

A major issue in the design of agricultural policies in Syria has been the notion of self-sufficiency in a number of so-called strategic food crops, like wheat, barley, lentils, sugarbeet and chickpeas, as well as in a number of other staples. Self sufficiency in staple foods is an extreme form of food security, and is reasonable to pursue when there is extreme unreliability of external staple food supplies, either because of few suppliers that are conditioned by politics in their supply to specific countries (re threat of embargoes), or by extreme international price instability. For instance this argument was one of the key ones that established food self sufficiency as a major goal of the European Community when it was formed in the mid-1950s. During the period of the 1960s and 1970s, international politics was a much more determining factor of perceived insecurities from international markets than is currently, especially after the onset of transition in the Russian Federation and the countries of Eastern Europe. The conclusion of GATT, and the current multiplicity of supplying countries in the world staple foods markets, make the underlying reasons for the pursuit of self-sufficiency policies much weaker.

One can justify the pursuit of self-sufficiency in staple foods under the following circumstances. First, if the country is land locked, faces serious threats of embargoes on its imports of staple foods, and is faced by an international market monopolised by few large operators that can collude to either raise the prices to the country, or to limit their exports to the concerned country. While some of these factors might have been relevant in the past (e.g. the threat of embargoes), none of the above conditions are currently or in the foreseeable future relevant for Syria. In particular, embargoes of grain, the most recent case been the grain embargo imposed on the former Soviet Union by the United States in the 1980s, have not been effective, and did not result in any serious loss of supplies by the affected countries. Hence the pursuit of self-sufficiency on these grounds is not justified.

Assuming, as is currently the case, that Syria has no problem to obtain international supplies of staples when it needs to buy them, suggests that another set of reasons that may justify a policy of self sufficiency in staples have to do with the lack of foreign exchange to purchase staples if the country normally is in deficit. Such a reasoning can justify a self-sufficiency policy, if the foreign exchange cost of obtaining a ton of a staple (e.g. wheat) in the international market is larger than if it is produced domestically. This, however, does not appear to be the case, as the comparison of producer and parity prices (namely import or export prices adjusted to farm level) indicated in table 6.3.1 below shows. For most strategic crops the Syrian producers currently receive prices above those dictated by international markets, except for lentils and chickpeas. In other words the

Syrian government subsidises the production of strategic crops. This is, as was already mentioned, a very costly policy.

Table 6.3.1. Comparison of official and parity prices to producers

	Soft Wheat (Import)	Hard Wheat (Import)	Hard Wheat (Export)	Barley (Import)	Lentils (Export)	Chickpeas (Export)	Cotton (Export)	Sugar (Import)
Official Producer Price	10,800	11,800	11,800	7,500	16,000	17,800	29,290*	2,150*
Parity Producer Price	6,497	7,199	7,062	7,316	18,799	28,852	22,291	746
Ratio Official to Parity	1.66	1.64	1.67	1.03	0.85	0.62	1.31	2.88

* Actual mean producer prices after the adjustment of the official base price to take account of quality premiums and discounts paid to farmers.

Source. Westlake (2000)

When the exchange rate is distorted as it has been in the past in Syria, then the policy of import substitution in staples or self-sufficiency may look much more attractive. However, as it has already been discussed, the distortion that is currently observed in the foreign exchange market is minimal, and hence Syria cannot justify the pursuit of self-sufficiency on these grounds. This implies that the objective of self-sufficiency for several food products must be reconsidered in the current more open domestic and international framework

6.4 Prices versus quantities for planning and incentive compatibility

In Syria the government, via the planning mechanism and the direct monitoring of production at the farm level, tries to control production, while at the same time it also sets the prices at which it will purchase the strategic crops. This policy of setting both prices for producers, as well as quantities to be produced, goes against all economic logic. In fact this process of setting both quantities as well as prices, is against one of the most fundamental economic laws, namely that of how supply is determined, which implies a positively sloping supply curve. In most planning contexts a government sets either the prices or the quantities it desires, but not both. In other cases, depending on how strong the enforcement mechanism is, the farmers will try to evade, either by overtly violating the plan, or covertly by reallocating inputs, so as to achieve their own profit maximising objectives given the prices. It was observed repeatedly in the field, and shown in table 5.2.1 earlier, that both problems exist on a massive scale, as despite strong enforcement of the plan through the extension agents, the farmers still have considerable degrees of freedom when it comes to input reallocation. Inputs that can be reallocated are labour, fertiliser, water, etc. Hence, even when the area targets are satisfied (a situation that does not seem to be the case), the actual production targets might be far from desired. An example of the distortions that this policy creates concern the pricing and production of cotton. In 2000, the government set a very attractive price for cotton, but due to water considerations it forbade several farmers, who would like to produce it, from doing so. The result is that the farmers are producing cotton anyway, despite the fines they are paying in the process.

Concerning the planning mechanism, it seems that one of the hidden costs for both the government as well as the agricultural sector is the enforcement mechanism through the

extension agents. It was observed through the field visits, and verified in the household survey, that every village in Syria is supervised by an extension unit, which is staffed with considerable number of personnel, although most of them are not "engineers", namely agriculture specialists. Each farmer in the area of responsibility of the extension unit is visited between around 10 times a year, largely to observe and ensure that the farmer conforms to the plan and his license, and only as a secondary task to provide information on new techniques etc. It was widely observed in the field that the bulk of the time of extension agents is utilised for these supervisory visits. It was also observed that the farmers are not happy with this heavy control, and hence they come to distrust the extension agent. Furthermore, given that most extension agents, especially the assistants, are young and inexperienced, the farmers tend to consider them not too helpful in solving their technical problems.

6.5 Dealing with water and other environmental externalities²²

Water is a very scarce commodity in Syria. Some 90% of the total available water is currently used for irrigating crops. Almost all sources of irrigation water are currently being exploited up to their sustainable levels, and in some cases beyond. Given these three facts, it is essential that all available water resources in both irrigated and rainfed areas be used efficiently in each year, and that an optimal balance be struck between current and future water use.

Despite its scarcity and great value, there is currently no means of charging farmers for the volume of irrigation water that they use, since water is not metered. Once farmers have invested in a tube well and its associated equipment or have paid their fixed irrigation fee for water from government schemes, their use of water is in effect free, other than for the cost of pumping water from wells or rivers.

Because farmers are not charged for use, water has to be distributed between them administratively. For water supplied from dams, this is done through a combination of regulating the areas planted to particular crops and through limiting the supply of water to particular time periods. For water drawn by farmers directly from rivers or artesian wells, the only means of controlling use is through regulating areas planted. The need for this indirect system of regulation of water usage is a major justification for the Government's current system of agricultural production planning. However, this system does not ensure efficient water use since it only controls each farmer's theoretical potential water requirement. In practice, farmers can utilise more than the amounts that the Government assumes to be optimal without penalty. For this reason, water table levels have been falling throughout Syria, and water from dams is not used as efficiently as it could be.

The need is for a system of allocating the available water between farmers that leads to efficient utilisation and does not require the physical farm-by-farm state control of crop areas.

Recognising the need for direct control of water usage, the Government decided in April 2000 that all artesian wells should be metered. Reportedly, no date has yet been set for meeting this target, but it is likely to take at least three years. The possibility of manufacturing meters locally is currently being explored.

²² This section draws on Westlake (2001) and Varela and Sagardoy (2001)
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Once wells are metered, usage of groundwater will be able to be controlled in one of two ways. First, water could be priced at a fixed charge per unit with no restriction placed on usage. This would have the administrative advantage that it would not require monitoring of the areas that farmers plant to each crop. The alternative would be for farmers to pay a standard charge for usage up to the level deemed optimal for the area of each particular crop that they plant and for them to pay a penal rate for use in excess of this level.²³ In both instances, farmers would need to know the unit charges in advance of the season in order to allow them to make rational decisions on crop combinations. Both methods would require careful selection by the administering authority of the base rate, since this would determine total water usage. For each irrigation area, the aim should be to set this base rate at the level that would result for that area in water usage up to the sustainable maximum. For areas where the water table has been depleted by over-use in the past, the aim could be to regulate usage to levels that would lead to progressive replenishment. The rate of replenishment would, in turn, need to be based on a trade off between the benefits of current usage and the reduction in pumping costs resulting from a higher water table.

In the first year of introducing a new system, in the absence of prior experience of farmers' reactions, it would be difficult for the Government to set the rate at the optimal level. Therefore, it would be preferable initially to use the penal charge system, since this would involve less risk of making a major error in the initial years that led to gross over or under-usage. The difference between the standard and penal rates could then be reduced progressively until the two were unified. The rate at which they would be unified would need to be the rate that would lead to maximum sustainable usage or, in the case of areas where the water table has been depleted, to the optimal rate of replenishment. Once this were achieved and the Government were able to use price to manage water usage effectively, the Government production planning system would no longer be needed for this purpose.

The metering of water from dams and rivers is currently not possible due to the predominant open channel method of delivery. However, the long-term aims of the Government are reportedly (a) to convert all existing dam and river-based irrigation to pressurised systems that would allow metering, and (b) only to construct new systems that are fully pressurised.

In the interim, it will be possible to take some steps towards the objective of ensuring that farmers take at least some account of the cost of water in their decision-making. One measure that could be implemented immediately would be for farmers to pay for water through a per-hectare charge that varies with the crop grown, with the per-hectare charge being a function of the water necessary for the crop in question. This would allow farmers to take account of the cost of water when deciding on the combination of crops to grow. The rate would need to be set on the same basis as described above for groundwater. After a number of years of operation, it should be possible to set a rate for each area supplied from a particular source that leads to usage equal approximately to the water available from that source. Rates would then need to be varied from year-to-year as water availability varies with annual rainfall intensity. Physical regulation of availability

²³ From discussions with Government staff, it would seem that the present intention is to use metering simply as a means of penalising farmers for water use judged to be excessive. Farmers would not be charged for water on the basis of usage.

would no longer be necessary but it would still be possible as a last resort should usage rates exceed those projected. Over the long-term, once all surface irrigation water is metered, it should be possible to employ the same pricing system as proposed above for artesian wells.

The policy of the MAAR to substitute traditional with modern water saving irrigation techniques is appropriate. The effects of the adoption of modern irrigation on farm profit (net and gross margin/ha²⁴) are shown in tables 6.5.1, and 6.5.2 in terms of standardised farm types and crop patterns that are supposed to be representative of Syria. Tables 6.5.3 and 6.5.4 report the analysis in terms of individual crops. As results show, the adoption of modern irrigation can be substantially different in large, medium and small farms²⁵, evidencing that structural parameters and cropping patterns and hence regional characteristics are crucial for profitability of modern irrigation. Small intensive farms growing fruits and vegetables seem to be best suited for adopting modern irrigation techniques, especially drip irrigation. These farms have the largest profit by ha, three times higher than medium size farms and eight times higher than extensive large farms when traditional surface irrigation is used. When drip irrigation is adopted these differences increase and farm profit is five times higher in the small farms than in the medium size farms and ten times higher than in the large extensive farms. Large extensive farms irrigated by wells show, in general, a substantial increase in farm profit when adopting modern irrigation methods. However, as this result is due to initial low farm profits, it remains questionable whether these farms will be able to finance fully the adoption of these techniques unless a change in the cropping pattern is foreseen.

²⁴ Gross margin refers to the total revenue of the farm minus all variable expenses (including cost of hired labour but not family labour). Net margin is equal to gross margin minus the cost of family labour evaluated at market prices, minus land rent, and minus other fixed charges such as land rents, reclamation fees, and annual amortisation costs of investments in wells and irrigation equipment.

²⁵ The large farm is defined as one with 14 Ha of land, and cultivating 70 percent wheat and 30 percent cotton, the medium one has 5 Ha, of which 50 percent in wheat, 20 percent in cotton, 15 percent potato, and 15 percent sugarbeet, and the small farm has 1.5 Ha, 50 percent tomato, 25 percent potato, and 25 percent oranges.

Table 6.5.1: Financial effects of irrigation techniques by type of farm and water source

TYPE OF FARM	WATER SOURCE	GROSS MARGIN (SP/HA)			% Increase Sprinklers	% Increase Drip	NET MARGIN (SP/HA)			% Increase Sprinklers	% Increase Drip
		Traditional Irrigation technique	Modern Irrigation technique				Traditional Irrigation technique	Modern Irrigation technique			
		Surface	Sprinklers	Drip			Surface	Sprinklers	Drip		
Large	River	37861	44126	48989	17	29	18683	23395	22387	25	20
	Well 100 m	27815	47047	52010	69	87	10752	29127	28219	171	162
	Well 200 m	27033	46493	51557	72	91	8671	27274	26467	215	205
Medium	River	68676	84426	91359	23	33	41911	55797	56949	33	36
	Well 100 m	58647	87813	94747	50	62	35627	58477	59628	64	67
Small	River	241034	299217	349261	24	45	153087	210985	255962	38	67
	Well 50 m	218094	302219	352460	39	62	119164	206304	251478	73	111

Source. Varela-Ortega and Sagardoy (2001)

Table 6.5.2 – Financial returns of water by type of farm, water source and irrigation technique

TYPE OF FARM	WATER SOURCE	GROSS MARGIN /m3 OF WATER (SP/m3)			% Increase: Sprinklers	% Increase: Drip	NET MARGIN /m3 OF WATER (SP/m3)			% Increase: Sprinklers	% Increase: Drip
		Traditional Irrigation technique	Modern Irrigation technique				Traditional Irrigation technique	Modern Irrigation technique			
		Surface	Sprinklers	Drip			Surface	Sprinklers	Drip		
Large	River	6,23	9,67	13,43	55	116	3,07	5,13	6,14	67	100
	Well 100 m	4,57	10,31	14,25	126	212	1,77	5,34	7,73	202	337
	Well 200 m	4,45	10,19	14,13	129	218	1,43	5,98	7,25	318	407
Medium	River	11,12	18,23	24,66	64	122	6,79	12,05	15,37	77	126
	Well 100 m	9,5	18,96	25,57	100	169	5,77	12,63	16,09	119	179
Small	River	20,18	33,4	48,73	66	141	12,82	23,55	35,71	84	179
	Well 50 m	18,26	33,74	49,18	85	169	9,98	23,03	35,09	131	252

Source. Varela-Ortega and Sagardoy (2001)

Table 6.5.3 Effects of irrigation technologies on crop budgets by type of farm and water source

			FINANCIAL RESULTS BY AREA					
CROP	FARM TYPE	WATER	GROSS MARGIN /ha (SP/ha)			NET MARGIN /ha (SP/ha)		
		SOURCE	Traditional Irrigation technique	Modern Irrigation technique		Traditional Irrigation technique	Modern Irrigation technique	
			Surface	Sprinklers	Drip	Surface	Sprinklers	Drip
WHEAT	Large	River	26277	30270	33956	13663	19673	23595
		Well 100 m	20897	33439	37191	8283	22841	26830
		Well 200 m	20415	33107	36926	7801	22510	26565
	Medium	River	39650	55560	61098	29300	45210	50748
		Well 100 m	33430	59060	64598	23080	48710	54248
COTTON	Large	River	64892	75433	84426	46231	57549	66704
		Well 100 m	44309	78034	87207	25649	60150	69485
		Well 200 m	43002	77135	86488	24341	59251	68766
	Medium	River	107475	122280	132369	70665	95492	106301
		Well 100 m	87215	125780	135869	58627	98992	109801
SUGAR BEET	Medium	River	90125	110405	118349	43375	63155	72299
		Well 100 m	80665	113905	121849	33915	66655	75799
POTATO	Medium	River	73913	106768	116903	39813	74268	85363
		Well 100 m	65533	110268	120403	31433	77768	88863
	Small	River	117325	153363	186055	64709	104293	137931
		Well 50 m	101295	156120	188961	48679	107050	140837
TOMATO	Small	River	195078	238407	275857	125525	174764	213160
		Well 50 m	178373	241139	278743	108820	177496	216045
ORANGES	Small	River	258075	329399	385534	175565	252405	309486
		Well 50 m	238039	332004	388319	155529	255010	312270

Source. Varela-Ortega and Sagardoy (2001)

Table 6.5.4 Financial returns of water on crop budgets by type of farm and water source

CROP	FARM TYPE	WATER SOURCE	FINANCIAL RESULTS BY VOLUME					
			GROSS MARGIN /m3 OF WATER (SP/m3)			NET MARGIN /m3 OF WATER (SP/m3)		
			Traditional Irrigation technique	Modern Irrigation technique		Traditional Irrigation technique	Modern Irrigation technique	
			Surface	Sprinklers	Drip	Surface	Sprinklers	Drip
WHEAT	Large	River	6,54	10,04	14,09	3,4	6,53	9,79
		Well 100 m	5,2	11,1	15,43	2,06	7,58	11,13
		Well 200 m	5,08	10,99	15,32	1,94	7,47	11,02
	Medium	River	8,81	16,46	22,63	6,51	13,4	18,8
		Well 100 m	7,43	17,5	23,93	5,13	14,43	20,09
COTTON	Large	River	5,95	9,23	12,91	4,24	7,04	10,2
		Well 100 m	4,07	9,55	13,34	2,35	7,36	10,63
		Well 200 m	3,95	9,44	13,23	2,23	7,25	10,52
	Medium	River	9,77	14,82	20,06	6,42	11,57	16,11
		Well 100 m	7,93	15,25	20,59	5,33	12	16,64
SUGAR BEET	Medium	River	15,02	24,53	32,87	7,23	14,03	20,08
		Well 100 m	13,44	25,31	33,85	5,65	14,81	21,06
POTATO	Medium	River	13,44	25,88	35,43	7,24	18	25,87
		Well 100 m	11,92	26,73	36,49	5,72	18,85	26,93
	Small	River	13,04	22,72	34,45	7,19	15,45	25,54
		Well 50 m	11,26	23,13	34,99	5,41	15,86	26,08
TOMATO	Small	River	20,95	34,14	49,38	13,48	25,03	38,16
		Well 50 m	19,2	34,5	49,9	11,7	25,4	38,7
ORANGES	Small	River	23,79	40,49	59,24	16,19	31,03	47,56
		Well 50 m	21,9	40,81	59,67	14,3	31,35	47,99

Source. Varela-Ortega and Sagardoy (2001)

Across all farm types, the kind of water source (surface or underground water) determines also the profitability of adopting modern irrigation methods. In general river water from the government irrigation networks has a lower cost than underground water abstracted from wells. River water is charged by a nation-wide O&M flat fee of 3500 SP/ha and a basin-specific land reclamation fee that ranges from 2000 SP/ha to 6000 SP/ha. O&M costs for extracting water from wells are volumetric costs that range from 0,8 SP/m³ to 2,37 SP/m³ depending on the well depth and the type of energy used for pumping. Hence, the adoption of water-saving modern irrigation technologies results in larger increases in farm profits when water is extracted from wells, as volumetric water costs are substantially reduced. It can be concluded from the comparative analysis that for assessing the effects of the adoption of modern irrigation technologies one has to take into account the interaction of the structural characteristics of the farm, the cropping pattern (determined by the agronomic conditions and the agricultural policies) and the irrigation technologies.

Table 6.5.2 shows the results on financial returns of water (gross margin/m³ and net margin/m³). It can be seen that for all farm types, the adoption of modern irrigation techniques increases substantially both gross margin per m³ of water and net margin per m³ of water. The increases in the case of sprinklers range from 55 to 125%, and in the case of drip irrigation these figures double ranging from 116 to 218%.

Table 6.5.3 shows the effects of the adoption of modern irrigation technologies in the different crops (crop budgets) that have been considered in the various farm models. The results show that for the same crop (e.g. wheat) grown under different types of farms and thus different tillage operations, the crop benefits (net margin/ha) are larger as farm intensification takes place. In the case of wheat and cotton that are grown in large and medium size farms, the adoption of modern irrigation increases substantially crop benefits. In wheat, sprinkler irrigation (which is the more adapted technology) doubles crop benefits (from 23080 SP/ha to 48710 SP/ha) and in cotton, drip irrigation (more suited than sprinklers) also closely doubles crop benefits (58627 SP/ha to 109810 SP/ha). Higher benefits are found in the intensive orange groves of the small farms, where adopting drip irrigation more than doubles net margin/ha, compared to the case of traditional techniques (from 155529 SP/ha to 312270 SP/ha).

These trends are further reinforced by the results of the financial returns of water shown in Table 6.5.4 where we can observe that net margin/m³ of water doubles when modern irrigation techniques are adopted in most of the crops. This effect is more pronounced in the case of highly intensive crops, such as oranges, where returns on water amount to 14,3 SP/m³ in the case of surface irrigation and rise to 50 SP/m³ when drip irrigation is installed.

A policy of promoting modern irrigation techniques, in order to be successful, must be compatible with the incentives and disincentives facing the farmers. One major issue in this context is the clarity of land rights. If land is not fully owned, then a farmer may not be inclined to make the large investment needed for modern irrigation, irrespective of the various tax and other financial incentives given, and irrespective of the benefits derived. It must be emphasised that the calculations made for the results of tables 6.5.1-6.5.4 assumed amortisation periods of 20-30 years, which is a long horizon. If there is uncertainty about the ownership of land, it is clear that the investment may not be undertaken irrespective of the potential profits. Hence the resolution of many land issues is necessary to promote the adoption of modern irrigation techniques.

Related to this issue, the idea that the government is to force the farmers to adopt modern irrigation techniques is to be discouraged. It is well known that forcing economic agents to do something incompatible with the price and other economic signals they face is counterproductive, requires a lot of public resources for enforcement, and can lead to evasion and corruption.

7. Epilogue

The exposition of the previous pages has revealed in great detail the structure of Syrian agriculture, as well as the policies that have characterized it in the past. It has highlighted a number of accomplishments but also a number of problems that have been created in the process. Accomplishments include the fast growth of output, and the large redistribution of land to landless farmers, as well as the considerable coverage of the official rural credit system and the policies regarding inputs and outputs. However, problems that were revealed include the increasing scarcity of water, the lack of improvement in per capita expenditures and staple food consumption, and the maldistribution of the benefits of agricultural support. It is such problems that need to be dealt with by a new agricultural development strategy.

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Annex 1. Terms of Reference

Agricultural Development Strategy (Second Phase)

International Consultant

The assignment shall be accomplished under the direct supervision of the Chief RNER Operations Services and the Technical supervision of Chief RNEP and of the CTA. Also, in close collaboration with the Director of NAPC/National Project Director, Agricultural Economist, the Co-ordinator and National Strategy Task Force for the preparation of the strategy and officials of MAAR and other concerned institutions, the international consultant shall prepare a long-term agricultural development strategy for Syria.

The preparation of the strategy shall be based on the work carried out during the first phase of this exercise, which involved production of a road map for the completion of the strategy as per the attached report. During this second phase, the international consultant shall carry out the following tasks:

Participate in the First National Agricultural Policy Workshop.

Review all studies carried out by the project for the preparation of the strategy.

Prepare a long-term agricultural development strategy including proposals for processes by which the policies and actions contained in the strategy can be internalised by MAAR and other concerned institutions.

Give seminars on the strategy, which will be attended by senior Government officials of MAAR, other relevant institutions and parastatal, concerned political and professional organisations, concerned agents in the private sector and representative of the donor community.

Prepare a complete written draft development strategy and forward to FAO for revision and comments.

Participate in the Second Agricultural Policy Workshop to be organised by the project, present the agricultural development strategy and lead discussions on it.

Finalise preparation of the draft long-term agricultural development strategy by incorporating the results of the discussions in the workshop.

Submit the draft agricultural development strategy document for FAO clearance.

Finalise the agricultural development strategy document within two weeks after receiving FAO comments.

To accomplish these tasks, two stages involving field visits and work at home base are envisaged. These stages are as follows:

Stage (1) Visits to Syria:

Undertake 6 visits to Syria, as follows:

First visit (duration 2 weeks) this travel the international consultant shall:

hold meetings with the National Co-ordinator and members of the national task force to programme the work to be done in a manner to ensure effective and efficient involvement of task force members and their respective institutions,

promote with FAO (RNE and project management) the establishment of an informal network among the international consultants responsible for the planned individual policy studies to enhance discussion on policy issues, and

submit a tentative outline of the strategy report, based on the outline proposed by Mr. M. De Benedictis and included in the attached report.

Subsequent 3 visits (duration 2 weeks each) in which the consultant shall:

meet with Co-ordinator and national task force to review and monitor progress,

discuss results and policy recommendations coming from studies recently completed and present preliminary results on specific components of the strategy, and

provide guidance to national strategy task force on follow-up actions needed including identification of additional specific documentation needed for the strategy to be obtained from the Country/ Project.

The first of these three visits shall coincide with the First National Policy Workshop in which the consultant shall also:

participate in first National Agricultural Policy Workshop,

make a presentation on the arrangements for preparation of the strategy and its likely structure, contents and elements, and,

hold meetings with the international consultants present in the workshop to sum up the implications for the strategy of the policy studies they carried out and presented to the workshop

Last visit (duration 2 weeks) shall coincide with the second national policy workshop. During this travel the international consultant shall

discuss the strategy with the national team,

present the complete written draft of the strategy document to the Second National Agricultural Policy Workshop, and

follow-up, in light of the workshop, on discussion and revision of the strategy with the concerned government institutions.

Stage (2) Work at home base

(9 weeks spread through out the entire time of the assignment)

Activities:

careful assessment, from the point of view of the strategy, of the material produced by the individual studies,

identification of possible gaps between expected outputs of the studies and inputs needed for preparation of the strategy and suggest remedial actions to be taken,

summing up the implications (for the strategy) derived from the entire set of information and analytical material produced by the Project, and

prepare the strategy report.

Qualifications: Agricultural Economist with extensive knowledge in agricultural development and long and wide working experience (20 years) in agricultural economics and formulation of sustainable agricultural development strategies.

Annex 2. Structure of irrigated holdings by size class and Mohafaza

Part A. Number, and average areas per irrigated holding by Mohafaza

Damascus City													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	2165	0,24	17,23	0,21	1,29	0,28	34,36	0,23	11,22	0,18	1388	64,11	0,22
0.5-2	2564	0,83	8,54	0,70	1,99	0,78	31,86	0,76	12,32	0,56	1403	54,72	0,71
2-10	1803	3,50	6,93	2,59	1,39	2,82	25,96	2,54	12,48	2,00	843	46,76	2,41
10-50	499	16,08	5,41	7,13	0,80	8,32	21,44	9,24	16,23	6,37	219	43,89	7,90
>50	43	66,56	2,33	100,00	0,00	0,00	20,93	48,91	18,60	38,60	18	41,86	47,17
Total	7074	2,81	10,53	1,14	1,53	1,40	30,32	1,59	12,34	1,71	3871	54,72	1,53

Damascus Rural													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	7542	0,28	18,13	0,23	0,38	0,29	44,50	0,27	16,14	0,24	5969	79,14	0,26
0.5-2	13882	1,08	13,85	0,69	0,31	0,72	47,18	0,90	14,35	0,78	10507	75,69	0,84
2-10	13166	4,25	12,82	1,69	0,28	2,31	40,77	2,70	16,87	2,51	9314	70,74	2,47
10-50	2310	16,75	10,22	3,64	0,13	10,67	36,84	8,07	19,26	6,36	1535	66,45	6,90
>50	119	86,52	17,65	8,93	0,00	0,00	39,50	19,66	21,85	19,00	94	78,99	17,08
Total	37019	3,30	14,14	1,06	0,30	1,40	43,68	1,80	15,94	1,82	27419	74,07	1,66

Homs													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only	Holdings irrigated from dams only	Holdings irrigated from wells only			Holdings irrigated by other and more than one methods			Total holdings that are irrigated by any method		
					Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings
<0.5	3425	0,30	11,68	0,28	6,39	0,33	22,66	0,28	7,42	0,27	1649	48,15	0,29
0.5-2	13011	1,11	10,98	0,77	9,39	0,93	24,11	0,91	11,74	0,93	7316	56,23	0,89
2-10	19762	4,45	8,77	2,01	7,20	2,09	23,61	2,28	14,75	2,85	10736	54,33	2,37
10-50	8679	20,23	2,74	4,44	2,34	2,20	23,00	3,81	7,48	5,79	3086	35,56	4,17
>50	1110	89,42	0,99	32,10	0,09	2,50	32,25	12,35	7,03	16,64	448	40,36	13,56
Total	45987	8,22	8,29	1,60	6,67	1,51	23,77	2,35	11,79	2,74	23235	50,53	2,21

Hama													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only	Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method			
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	3111	0,29	22,98	0,22	5,95	0,30	13,56	0,28	8,52	0,20	1587	51,01	0,24
0.5-2	15426	1,09	16,76	0,70	13,62	1,02	23,81	0,94	9,41	0,73	9811	63,60	0,86
2-10	32077	4,14	12,94	2,34	21,23	2,77	24,56	2,85	10,73	2,85	22281	69,46	2,73
10-50	9318	19,73	2,60	5,57	3,68	5,47	34,54	5,79	5,57	8,28	4322	46,38	6,05
>50	947	77,98	0,42	67,17	0,32	43,43	40,34	10,61	7,81	19,08	463	48,89	12,66
Total	60879	6,71	12,64	1,73	15,51	2,44	25,58	3,13	9,45	2,89	38464	63,18	2,64

Tartous													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	10998	0,30	4,75	0,20	0,65	0,24	17,33	0,23	9,22	0,16	3514	31,95	0,21
0.5-2	30033	1,06	6,44	0,39	0,40	0,85	16,80	0,64	11,45	0,28	10539	35,09	0,48
2-10	16432	3,57	8,22	0,85	0,58	2,33	24,26	1,99	16,49	0,91	8143	49,56	1,45
10-50	592	14,24	9,46	2,49	0,51	13,93	36,66	5,39	16,55	5,03	374	63,18	4,93
>50	24	124,96	0,00	0,00	0,00	0,00	41,67	112,81	16,67	113,75	14	58,33	113,08
Total	58079	1,81	6,65	0,55	0,50	1,32	19,22	1,25	12,51	0,63	22584	38,88	0,93

Lattakia													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	8734	0,33	6,54	0,30	12,14	0,31	16,87	0,28	10,32	0,23	4005	45,86	0,28
0.5-2	23183	1,09	6,96	0,77	14,55	0,87	15,78	0,72	12,56	0,56	11554	49,84	0,73
2-10	14794	3,64	8,02	1,97	15,53	2,40	16,61	1,80	16,45	1,66	8375	56,61	1,95
10-50	708	13,52	10,45	6,37	19,63	8,11	20,76	6,02	23,16	6,71	524	74,01	6,84
>50	15	71,35	33,33	71,78	6,67	30,70	6,67	9,70	13,33	37,95	9	60,00	52,80
Total	47434	1,96	7,27	1,33	14,48	1,45	16,31	1,08	13,52	1,10	24467	51,58	1,22

Idleb													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	3098	0,33	2,32	0,34	0,06	0,30	4,20	0,30	1,32	0,28	245	7,91	0,31
0.5-2	16478	1,16	4,64	0,90	0,24	0,74	5,73	0,85	1,62	0,68	2016	12,23	0,84
2-10	26033	4,51	5,59	2,01	0,93	2,01	12,52	3,01	2,54	1,95	5617	21,58	2,58
10-50	7262	17,64	1,28	5,27	0,04	3,27	22,53	8,97	4,96	6,14	2092	28,81	8,31
>50	307	73,64	0,65	15,95	0,00	0,00	33,22	31,57	12,05	25,76	141	45,93	29,82
Total	53178	5,42	4,49	1,74	0,54	1,83	11,42	4,70	2,57	3,40	10111	19,01	3,74

Aleppo													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	1278	0,32	2,58	0,29	0,63	0,27	17,29	0,30	12,60	0,26	423	33,10	0,28
0.5-2	10431	1,29	4,61	1,16	1,34	1,28	14,70	1,10	6,54	0,76	2836	27,19	1,04
2-10	44237	5,32	5,45	3,09	1,48	4,29	18,13	3,33	8,76	2,72	14959	33,82	3,18
10-50	31127	20,16	4,18	7,83	1,61	12,65	21,26	7,33	11,93	8,19	12133	38,98	7,87
>50	2294	87,09	4,53	33,19	0,92	29,53	20,10	22,50	13,60	30,22	898	39,15	26,58
Total	89367	12,05	4,84	5,00	1,48	7,50	18,86	5,19	9,79	5,82	31249	34,97	5,44

Al-Rakka													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	233	0,32	63,95	0,34	4,29	0,32	7,30	0,32	7,30	0,22	193	82,83	0,32
0.5-2	2935	1,14	74,41	1,14	7,67	1,30	5,93	1,13	6,00	0,85	2759	94,00	1,13
2-10	8966	4,52	53,07	3,72	9,65	4,40	10,34	4,40	6,81	2,96	7161	79,87	3,83
10-50	9998	22,32	13,28	8,44	3,19	13,19	23,34	15,52	6,28	7,97	4609	46,10	12,29
>50	3392	114,90	5,42	18,00	0,94	20,80	27,92	46,66	6,96	31,77	1399	41,24	39,79
Total	25524	25,73	33,71	4,04	5,68	6,19	17,23	19,25	6,54	8,67	16121	63,16	8,86

Deir-ez-Zor

Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	4530	0,29	93,13	0,27	0,04	0,45	0,79	0,32	1,06	0,27	4305	95,03	0,27
0.5-2	14579	1,09	95,50	0,97	0,05	0,90	0,99	1,06	2,54	1,12	14447	99,09	0,97
2-10	14879	4,06	88,99	3,20	0,11	3,31	2,55	4,75	6,47	3,70	14600	98,12	3,27
10-50	4897	19,28	42,31	8,26	0,04	16,65	30,06	14,87	14,34	9,29	4248	86,75	10,72
>50	370	89,63	32,16	14,78	0,00	0,00	25,95	37,01	18,92	42,04	285	77,03	28,96
Total	39255	5,23	85,53	2,26	0,07	3,37	5,42	12,88	5,49	6,25	37885	96,51	3,08

Al-Hassakeh

Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	186	0,27	26,88	0,28	5,38	0,33	24,19	0,26	6,99	0,24	118	63,44	0,27
0.5-2	1742	1,21	48,39	1,08	5,63	0,95	12,11	1,20	5,40	0,93	1246	71,53	1,08
2-10	18725	5,68	14,09	3,26	4,35	3,87	21,35	5,00	5,01	3,78	8388	44,80	4,21
10-50	31756	19,94	5,74	7,06	1,72	10,90	32,62	13,98	5,54	10,04	14485	45,61	12,52
>50	2612	80,40	6,70	24,01	1,03	46,11	37,37	37,26	11,52	34,33	1479	56,62	35,26
Total	55021	17,30	10,05	4,81	2,72	6,98	28,33	12,92	5,64	10,18	25716	46,74	10,50

Sweida

Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	1059	0,30	0,19	0,25	0,00	0,00	0,09	0,20	18,79	0,19	202	19,07	0,19
0.5-2	4868	1,25	0,12	0,65	0,02	0,70	0,18	0,67	5,73	0,40	295	6,06	0,41
2-10	11332	4,97	0,09	1,29	0,02	2,40	0,36	1,87	5,89	0,58	720	6,35	0,67
10-50	4672	18,47	0,17	4,72	0,02	10,20	0,68	4,06	6,76	0,97	357	7,64	1,35
>50	227	76,67	0,00	0,00	0,00	0,00	1,76	14,47	6,61	1,05	19	8,37	3,87
Total	22158	7,51	0,12	2,12	0,02	3,92	0,39	3,11	6,66	0,58	1593	7,19	0,75

Dara'a													
Holding and size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	2665	0,27	4,80	0,31	1,24	0,34	2,96	0,26	72,65	0,23	2176	81,65	0,24
0.5-2	5453	1,30	8,86	1,04	6,91	0,99	5,52	0,98	45,00	0,67	3615	66,29	0,78
2-10	14780	5,39	3,17	2,78	6,53	2,14	6,45	2,28	47,44	1,15	9399	63,59	1,45
10-50	5315	18,40	1,71	10,46	4,25	5,10	8,45	4,98	52,74	2,16	3569	67,15	2,91
>50	145	84,94	0,00	0,00	3,45	29,96	18,62	7,23	51,03	8,38	106	73,10	9,10
Total	28358	6,96	4,13	2,39	5,66	2,34	6,38	2,72	50,35	1,18	18865	66,52	1,50

Quneitra													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	301	0,29	13,29	0,27	0,33	0,20	7,97	0,23	1,99	0,18	71	23,59	0,25
0.5-2	1169	1,10	16,42	0,53	0,51	0,38	6,93	0,45	4,11	0,38	327	27,97	0,48
2-10	1782	4,28	13,75	1,23	2,81	1,40	11,00	1,03	4,10	0,87	564	31,65	1,13
10-50	590	15,38	15,08	2,76	3,39	3,52	11,69	2,92	7,46	1,92	222	37,63	2,71
>50	11	61,67	9,09	0,50	9,09	8,50	9,09	10,60	0,00	0,00	3	27,27	6,53
Total	3853	4,86	14,72	1,17	2,02	1,94	9,63	1,23	4,44	0,98	1187	30,81	1,21

Syria													
Holding land size classes (ha)	Total number of holdings	Average area of holding (ha)	Holdings irrigated from rivers only		Holdings irrigated from dams only		Holdings irrigated from wells only		Holdings irrigated by other and more than one methods		Total holdings that are irrigated by any method		
			Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Percent of all holdings	Average irrigated area (ha)	Number of holdings	Percent of all holdings	Average irrigated area (ha)
<0.5	49325	0,30	17,52	0,26	3,36	0,31	18,71	0,26	12,80	0,22	25845	52,40	0,25
0.5-2	155754	1,12	18,35	0,88	5,01	0,94	16,87	0,84	10,28	0,62	78671	50,51	0,82
2-10	238768	4,60	14,85	2,83	5,99	2,81	17,84	2,96	12,04	2,08	121100	50,72	2,70
10-50	117723	19,74	6,52	7,45	1,96	9,22	25,06	10,33	10,43	6,61	51775	43,98	8,97
>50	11616	92,63	5,40	22,37	0,78	31,35	29,45	31,84	10,65	28,97	5376	46,28	30,07
Total	573186	8,18	14,13	2,46	4,56	2,76	19,37	5,08	11,27	2,92	282767	49,33	3,62

Part B. Proportions (in percent) of number of irrigating holdings and irrigated area by irrigation source.

Damascus City										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	1388	2989	26,9	2,0	53,6	17,5	26,3	2,6	56,2	14,9
0.5-2	1403	9939	15,6	3,6	58,2	22,5	15,5	4,0	62,7	17,9
2-10	843	20331	14,8	3,0	55,5	26,7	15,9	3,5	58,5	22,1
10-50	219	17300	12,3	1,8	48,9	37,0	11,1	1,9	57,1	29,8
>50	18	8490	5,6	0,0	50,0	44,4	11,8	0,0	51,8	36,4
Total	3871	59049	19,2	2,8	55,4	22,6	14,4	2,6	57,7	25,3

Damascus Rural										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	5969	15225	22,9	0,5	56,2	20,4	21,0	0,6	59,0	19,4
0.5-2	10507	88091	18,3	0,4	62,3	19,0	15,1	0,4	66,9	17,6
2-10	9314	230275	18,1	0,4	57,6	23,8	12,4	0,4	63,1	24,2
10-50	1535	105864	15,4	0,2	55,4	29,0	8,1	0,3	64,8	26,7
>50	94	16054	22,3	0,0	50,0	27,7	11,7	0,0	57,5	30,8
Total	27419	455509	19,1	0,4	59,0	21,5	12,2	0,3	63,9	23,6

Homs										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	1649	4731	24,3	13,3	47,1	15,4	23,9	15,2	46,5	14,4
0.5-2	7316	65192	19,5	16,7	42,9	20,9	16,9	17,4	43,7	21,9
2-10	10736	254122	16,2	13,2	43,5	27,2	13,7	11,7	41,9	32,7
10-50	3086	128607	7,7	6,6	64,7	21,0	8,2	3,5	59,1	29,2
>50	448	60737	2,5	0,2	79,9	17,4	5,8	0,0	72,8	21,4
Total	23235	513389	16,4	13,2	47,0	23,3	11,9	9,0	50,1	29,0

Hama										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	1587	3826	45,1	11,7	26,6	16,7	40,2	14,6	31,2	14,0
0.5-2	9811	84661	26,3	21,4	37,4	14,8	21,5	25,3	40,7	12,5
2-10	22281	608691	18,6	30,6	35,4	15,4	16,0	31,0	36,9	16,1
10-50	4322	261412	5,6	7,9	74,5	12,0	5,2	7,2	71,2	16,4
>50	463	58627	0,9	0,6	82,5	16,0	4,6	2,2	69,1	24,1
Total	38464	1017217	20,0	24,5	40,5	15,0	13,1	22,7	47,9	16,3

Tartous										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	3514	7304	14,9	2,0	54,2	28,9	14,3	2,4	61,0	22,3
0.5-2	10539	50641	18,4	1,1	47,9	32,6	14,7	2,0	64,0	19,2
2-10	8143	117703	16,6	1,2	49,0	33,3	9,8	1,9	67,3	21,1
10-50	374	18441	15,0	0,8	58,0	26,2	7,6	2,3	63,5	26,7
>50	14	15831	0,0	0,0	71,4	28,6	0,0	0,0	71,3	28,7
Total	22584	209920	17,1	1,3	49,4	32,2	10,2	1,8	66,3	21,7

Lattakia										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	4005	11188	14,3	26,5	36,8	22,5	15,5	29,7	36,5	18,3
0.5-2	11554	84439	14,0	29,2	31,7	25,2	14,8	34,6	31,2	19,4
2-10	8375	163154	14,2	27,4	29,3	29,1	14,3	33,8	27,0	24,8
10-50	524	35842	14,1	26,5	28,1	31,3	13,1	31,4	24,7	30,7
>50	9	4752	55,6	11,1	11,1	22,2	75,5	6,5	2,0	16,0
Total	24467	299375	14,1	28,1	31,6	26,2	15,3	33,2	27,9	23,6

Al-Rakka										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	193	626	77,2	5,2	8,8	8,8	80,0	5,1	8,8	6,1
0.5-2	2759	31271	79,2	8,2	6,3	6,4	79,5	9,4	6,3	4,8
2-10	7161	274110	66,4	12,1	12,9	8,5	64,7	13,9	14,9	6,6
10-50	4609	566362	28,8	6,9	50,6	13,6	19,8	7,4	63,9	8,8
>50	1399	556645	13,2	2,3	67,7	16,9	6,0	1,2	79,4	13,5
Total	16121	1429014	53,4	9,0	27,3	10,3	24,3	6,3	59,3	10,1

Idleb										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	245	756	29,4	0,8	53,1	16,7	32,5	0,8	51,7	14,9
0.5-2	2016	16970	37,9	2,0	46,8	13,2	40,4	1,7	47,2	10,6
2-10	5617	144922	25,9	4,3	58,0	11,8	20,2	3,3	67,6	8,9
10-50	2092	173921	4,4	0,1	78,2	17,2	2,8	0,1	84,4	12,7
>50	141	42050	1,4	0,0	72,3	26,2	0,8	0,0	76,6	22,7
Total	10111	378619	23,6	2,8	60,0	13,5	11,0	1,4	75,4	12,3

Aleppo										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	423	1185	7,8	1,9	52,2	38,1	8,0	1,9	55,0	35,1
0.5-2	2836	29430	17,0	4,9	54,1	24,0	19,0	6,1	57,2	17,7
2-10	14959	475243	16,1	4,4	53,6	25,9	15,7	5,9	56,3	22,2
10-50	12133	954389	10,7	4,1	54,6	30,6	10,7	6,6	50,9	31,9
>50	898	238714	11,6	2,3	51,3	34,7	14,5	2,6	43,4	39,5
Total	31249	1698961	13,9	4,2	53,9	28,0	12,7	5,8	51,4	30,0

Deir-ez-Zor										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	4305	11543	98,0	0,0	0,8	1,1	97,8	0,1	1,0	1,1
0.5-2	14447	140592	96,4	0,1	1,0	2,6	95,9	0,1	1,1	2,9
2-10	14600	477328	90,7	0,1	2,6	6,6	88,6	0,1	3,8	7,5
10-50	4248	455533	48,8	0,0	34,7	16,5	37,6	0,1	48,1	14,3
>50	285	82543	41,8	0,0	33,7	24,6	21,3	0,0	43,0	35,6
Total	37885	1167539	88,6	0,1	5,6	5,7	64,9	0,1	23,5	11,5

Al-Hassakeh										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	118	321	42,4	8,5	38,1	11,0	43,3	10,3	36,8	9,7
0.5-2	1246	13416	67,7	7,9	16,9	7,5	67,7	6,9	18,9	6,5
2-10	8388	352806	31,4	9,7	47,7	11,2	24,4	8,9	56,6	10,0
10-50	14485	1812869	12,6	3,8	71,5	12,1	7,1	3,3	79,9	9,7
>50	1479	521467	11,8	1,8	66,0	20,4	8,1	2,4	69,7	19,8
Total	25716	2700879	21,5	5,8	60,6	12,1	9,8	3,9	74,6	11,7

Sweida										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	202	387	1,0	0,0	0,5	98,5	1,3	0,0	0,5	98,2
0.5-2	295	1222	2,0	0,3	3,1	94,6	3,2	0,6	4,9	91,3
2-10	720	4813	1,4	0,3	5,7	92,6	2,7	1,0	15,9	80,4
10-50	357	4836	2,2	0,3	9,0	88,5	7,8	2,1	26,9	63,2
>50	19	736	0,0	0,0	21,1	78,9	0,0	0,0	78,7	21,3
Total	1593	11994	1,6	0,3	5,5	92,7	4,6	1,3	22,6	71,5

Dara'a										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	2176	5187	5,9	1,5	3,6	89,0	7,8	2,2	4,0	86,1
0.5-2	3615	28067	13,4	10,4	8,3	67,9	17,8	13,3	10,5	58,4
2-10	9399	135922	5,0	10,3	10,2	74,6	9,6	15,2	16,0	59,2
10-50	3569	103969	2,5	6,3	12,6	78,5	9,2	11,1	21,5	58,3
>50	106	9650	0,0	4,7	25,5	69,8	0,0	15,5	20,2	64,2
Total	18865	282795	6,2	8,5	9,6	75,7	9,9	13,3	17,4	59,4

Quneitra										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	71	177	56,3	1,4	33,8	8,5	61,0	1,1	31,6	6,2
0.5-2	327	1585	58,7	1,8	24,8	14,7	64,2	1,5	22,9	11,5
2-10	564	6380	43,4	8,9	34,8	12,9	47,4	11,0	31,7	10,0
10-50	222	6023	40,1	9,0	31,1	19,8	40,8	11,7	33,4	14,0
>50	3	196	33,3	33,3	33,3	0,0	2,6	43,4	54,1	0,0
Total	1187	14361	47,8	6,6	31,3	14,4	46,0	10,5	31,8	11,6

Syria										
Holding land size classes (ha)	Number of holdings that irrigate some area	Total irrigated area (ha)	Proportion of irrigating holdings that irrigate from				Proportion of irrigated area that is irrigated from			
			Rivers only	Dams only	Wells only	By other and more than one methods	Rivers only	Dams only	Wells only	By other and more than one methods
<0.5	25845	65445	33,4	6,4	35,7	24,4	33,9	7,9	37,0	21,2
0.5-2	78671	645516	36,3	9,9	33,4	20,3	38,9	11,4	34,3	15,4
2-10	121100	3265800	29,3	11,8	35,2	23,7	30,8	12,3	38,6	18,3
10-50	51775	4645368	14,8	4,5	57,0	23,7	12,3	4,6	65,6	17,5
>50	5376	1616492	11,7	1,7	63,6	23,0	8,7	1,8	67,4	22,2
Total	282767	10238621	28,6	9,3	39,3	22,8	19,4	7,1	55,1	18,4