2-4 Agricultural Conditions

2-4-1 Existing Agricultural Development Plan

(1) Agricultural Development Policy

The main policy of the agricultural policy in Bulgaria since 1989 has been the transition from centrally planned- to market-oriented agriculture and food industry. The main thing to be achieved in the agricultural policy is to create favorable economic conditions for effective, competitive and export oriented agriculture and food industry, which requires improving the level and quality of their production in accordance with the requirement of the domestic and international markets.

In order to achieve these objectives, the government of Bulgaria has established the Law on Protection of Agricultural Producers (LPAP) and enforced together with the regulation for the implementation of the LPAP on June, 1995. The LPAP includes the support of production and trade in agricultural commodities and the state agricultural fund.

In accordance with the LPAP, the annual agricultural development program shall be prepared by the MAFI. The program shall include: the types of agricultural production and the activities to be supported, the protected purchase prices; the amount of output to be contracted for purchase at the protected purchase prices; the technical and financial (including budgetary) means.

(2) State Agricultural Fund

The Agricultural Fund was established under the LPAP. Annual subsidies from the central budget, income from privatization deals, export taxes on farm commodity exports, public farmland leases and other funds go into the Fund. The funds are spent in accordance with the goals of the LPAP and the agricultural policy of the country, and it began operating in 1996 for the financial stimulation and support of agricultural producers.

In 1996, the fund expended Lev 3,998.8 million for wheat producers as a subsidy for wheat production, based a price of Lev 350 per dca.

In 1993, the Tobacco Fund was established, to promote tobacco production and support the tobacco producers. The fund is used to purchase tobacco leaves (dry) at a minimum price and to provide free seed for producers. In 1996, this fund will subsidize tobacco producers by Lev 388.2 million.

(3) Amelioration Fund

The Amelioration Fund was established in accordance with Order No. 15 of the Council of Ministers in October 1983. In 1989, the fund was transformed into the Republican Fund "Land Regulation and Amelioration" by the Decree 922 of the State Council, 1989.

The function of the fund is to finance the construction of hydromeliorative facilities, such as dams, river adjustments, pump stations, irrigation and drainage facilities as well as pay for the maintenance of these facilities. The final objective is to increase agricultural production.

The revenues of the fund are derived from 2% taxes levied on the balance profit of enterprises and commercial banks with more than 50% state participation. For 1996 the estimated expenses in the account of the fund are Lev 909,700 thousand of which capital investments are about Lev 800,000 thousand, and basic funds for about Lev 810,000 thousand are established.

2-4-2 Marketing Conditions

(1) Distribution and Marketing Channels of Major Agricultural Produce

As Figure E-1-1, Appendix E shows various distribution channels exist for the major agricultural products. In general, cereals, vegetables and fruit are traded freely compared with other strategic products such as tobacco, wine and sunflower oil. Presently, there are stock markets for cereals and sunflower in Sofia, Montana, Pleven, Plovdiv, Radneva, Varna and Dobrich. With respect to vegetables and fruits some wholesale markets exist such as in Sofia, Plovdiv and Varna. However, the shares of these markets are small and average trading volume at stock markets is said to be around five to ten per cent of total marketed volume.

Regarding grain the state has intervened in the market acting as a backstop to prevent dramatic price changes. Minimum procurement prices have been set in order to protect the urban population. However, state shares have been eroded in cereal sector where private milling and storage companies are emerging rapidly. Presently, feed grain is either self consumed or procured by traders and feed companies. According to MAFI's estimates, one third of production is consumed by producers and two thirds is sold. Depressed demand for feed as a result of decreasing production of pig and poultry farms makes the capacity utilization of factories as low as one third of the peak level. Regarding sunflower, the state still has dominant shares in terms of procurement and processing as

fourteen state owned oil extracting enterprises procure seventy to eighty per cent of sunflower seeds and produce about eighty five to ninety per cent of sunflower oil. Most private companies use low technology and only filter the crude oil. Based on "Regulation to Implement the Tobacco and Tobacco Producers Act", production, distribution and marketing of tobacco is strictly controlled by the government in terms of growing licenses, the numbers of tobacco growers and areas planted with tobacco, provision of seeds, the minimum purchase prices of tobacco, and the amount of product purchased by public tobacco companies.

Presently, seventy per cent of the total marketable vegetables and fruit is said to be sold to producers markets in the rural areas and to consumer markets in the main consumption areas. The remaining part is sold to wholesalers and processing companies through farming contracts. Wholesalers procure produce from the whole country and sell the purchased products to retail shops, municipal consumer markets and food processing industries.

(2) Quality Control Systems

The Bulgarian National Standard (BNS) is developed in accordance with European requirements. However, after the collapse of the centrally planned economic systems, there is no organization for proper hygiene and food safety regulations. Many producers are still following the standardization of the previous centrally planned economy which required preliminary determined quantity, and not quality.

(3) Export Quota to the EU and Actual Utilization Rates

Presently, a number of tariff quotas are provided by the EU to Bulgaria based on the Europe Association Agreement. The quotas are modified every year according to actual traded volume during the previous three consecutive years. However, the actual utilization rate is low due to i) Inadequate supply response by producers/exporters to fulfill export quotas; ii) Non tariff varies and seasonal countervailing studies; iii) Lack of familiarity with the quota system and the way it works; iv) Lack of conformity with customer requirements in the way of quality, packaging, variety, label and other specifications; v) Other market opportunities; vi) Poor administration of quotas; and vii) Quota exhaustion. These are shown in Table E-1-1, Appendix E.

(4) Exports of Bulgarian Agricultural Produce

Table E-1-2, Appendix E shows the recent trends of agricultural exports and imports from 1992 to 1995. Exports of cereal accounted for about forty per cent of total exports in

terms of volume except for the period of export ban. Exports of sunflower products have increased in terms of volumes and value. Export volume of tobacco and manufactured tobacco substitutes have shown an increasing trend during the transitional period. In Bulgaria, vegetables and fruit were export oriented products mainly to CMEA (CMECON) countries. Therefore, after the disruption of these trade partners total production of these products have decreased rapidly. Exports of livestock has decreased rapidly, which made imports increase.

Table E-1-3 and E-1-4 show the breakdown of trading partners for exports and imports. Regarding exports of agricultural processed products the former Soviet Union countries are still attractive geographic destinations even though these countries, in particular Russia and the Ukraine, are losing their purchasing power.

2-4-3 Agricultural Production

(1) The Importance of the Sector

Bulgarian Trade and Agriculture (US$ million)

	1990	1991	1992	1993	1994
Total Exports	13,123	2,706	4,468	5,058	4,316
Food & Agricultural Exports	2,025	753	1,011	760	885
Total Imports	13,434	3,440	3,922	3,721	4,156
Food & Agricultural Imports	570	195	329	452	456

Source: National Statistical Institute (NSI)

The sector averages 20-24% of the GDP. In 1995, agriculture was 12%, and the food industry 8% of the GDP. The two sectors employ 22-25% of the manpower and provide 20-23% of the total exports. Out of total exports of c. $4,900 million in 1995, approx. 20% was from products of animal/plant origin, food, drinks and tobacco, making agriculture and its processed products equal to base metals as an export earner. In 1995, the value of the agricultural output was Lev 250,000 million out of a total output of Lev 1,350,000 million. (NSI) The largest private sector employer is farming, which employed 540,000 people in 1994, out of 1,097,000 (49.2%). (Institute of Economic Bulgaria Academy of Sciences)

(2) The Main Products

The most important cereal crop in Bulgaria is wheat, with an annual production between 3.4 - 5.3 million tons. Domestic consumption is 3.25 million tons or more, the food

industry uses 1.7 million tons on average, the feed industry 1.0 - 1.3 million tons, and seed required to plant 1.1-1.3 million ha is approx. 0.3 - 0.35 million tons. Maize is planted on about half a million ha. Its major use is as feed. Annual consumption has been up to 2.5 million tons, but recently consumption has fallen closer to 1 million tons. Barley is grown on about 3.75 million ha and production is between 1.0 -1.5 million tons. It is used mainly for feed (0.5 - 0.8 million tons) and brewing (c. 225,000 tons per year). Oats, rye and rice are grown, on about 50,000 ha, 14,000 ha and 1,000 ha respectively.

The two major constraints facing the Bulgarian grain farmer are the disparity between the costs of imported inputs, which have risen to world price levels, while the domestic procurement prices have remained low; and the disruption of the livestock sector, with the disconnection that has occurred between livestock production and feed production making the prediction of effective demand for feed grain difficult.

a) Wheat

Typically Bulgaria grows 1.1 million ha of wheat, and reserves are 400-500,000 tons. In 1995, the reduced area, lack of fertilization, and the early winter which caused late planting and poor establishment, followed by a late slow cold spring all combined to reduce yields. The Government was forced to import at world prices in 1996, and has banned wheat exports. The Agricultural Minister allocated US$ 85 million for wheat imports, and it is envisaged that at least 450-500,000 ton will be needed. The decline in Bulgaria's average wheat yield is particularly unfortunate given the current high world prices for wheat.

In 1995/6 wheat received the majority of the Agricultural Funds resources, with an estimated 95% of the wheat area subsidized at 350 Lev/dca. The subsidy was released in three tranches, 40% in November at sowing time, 40% in the spring for fertilizer and pest and disease control, and 20% at harvest. The farmer was to deliver 100 kg of wheat for every subsidized dca. (approximately one third of the output; average yields are 300 kg/dca, (lowlands) 150 kg/dca (highlands)) The grain was to be sold at the minimum price, which at that time was 6,200 -6,800 Lev/ton depending on quality.

b) Barley

Farmers, if at all possible, grow malting barley, and if they fail to make the quality requirements, then sell on the feed market. The brewing industry is one of the sectors in Bulgaria that has received investment and technology from foreign investors. In 1995, 550 million liters of beer were brewed. The demand for livestock feed dropped as livestock were liquidated, but livestock numbers are now increasing and thus the demand for feed.

c) Sunflower

Bulgaria's main oilseed crop is sunflower, since 1990 the area has doubled, from 280,000 ha to 586,000 ha. Yields have declined slightly, from 1.3 tons/ha in 1990 to 1.2 tons/ha in 1994. 1991 (1.6 tons/ha.) was a good rainfall year, and 1993 (900 kg/ha), a dry year. As the sunflower acreage increases, Sclerotinia root rot may become a major constraint.

There are fourteen large State processing companies, with an annual capacity of 600,000 ton, plus a number of much smaller, private operations. Seven of the State companies are equipped with older, inefficient presses. The price of refined sunflower seed oil is set at production costs plus 12%, which does not encourage efficient extraction plants.

Trade in sunflower has been restricted, through taxes and temporary bans on exports. The processors argue that they have large stocks of oil, with low domestic demand, and they require to realize the capital represented by these stocks to purchase the new crop. The high per capita use of sunflower suggests that the trade barriers are being circumvented.

d) Sugar Beet

In 1995, 157,000 tons of beet was grown under contract for the refineries from 9,200 ha. In 1990, 35,000 ha were grown. Sugar beet is one of the two crops that has a minimum price guaranteed under LPAP, with a minimum price of Lev 2,170 per ton of beet. The Ministry projects production of 20-30,000 ha in 1996, increasing to 75,000 ha in 1997. It is not immediately obvious why sugar beet should receive a subsidy. The processing equipment is obsolete, yields of beet are low and declining, and the world price of sugar is low. Ninety percent of Bulgaria's sugar is imported. Although local beet sugar cannot compete with the prices of cane sugar, there is a demand by the refiners to continue import tariffs.

e) Tobacco

Tobacco was one of Bulgaria's most important export crops, but following the collapse of the Council of Mutual Economic Assistance markets in 1990, the areas planted declined drastically, from 53,000 ha in 1990, to 14,000 ha in 1995. Previously, annual production was up to 140,000 tons, but in 1995 only 18,000 tons of tobacco was produced. In an attempt to increase the 1996 crop to the target of 60,000 tons, changes in the pricing policy and the financing of the crop were implemented. The average price in 1995 was Lev 87 ($1.35/kg). The average price proposed for 1996 is Lev 115 ($0.73/kg).

Bulgaria's traditional markets for tobacco declined in 1992, but have since come back. Exports of tobacco products to CIS increased from 17,103 ton in 1993 to 55,946 ton in 1995, (approximately 45% of the total exports). Ukraine, Uzbekistan and Romania are other important markets. Bulgaria suffers from its UN designated status as a developed nation, and thus its Russian imports are included under a higher tariff structure than many of its competitors, but Russia remains a major trading partner for Bulgaria, importing tobacco and alcohol products in return for raw materials for Bulgaria's industry.

f) Vegetables

Vegetable production for processing and export has fallen drastically. Currently important for the fresh export market are early tomatoes under plastic, frame cucumbers, early potatoes and red peppers, with a value of Lev 400-450 million, as compared to wine exports of Lev 1,500 million. (MAFI). With its climate, soils, and location, Bulgaria is well placed to address the revival of its markets in the former Soviet Union as the purchasing power of those populations increases, and their demand for vegetables, particularly off-season expands. The EU is another possibility.

g) Fruits

The major problems for Bulgarian fruit production are the prolonged nature of the land reform process, the increase of input costs, particularly pesticides, and the loss of the export markets, for all kinds of fruit (fresh, frozen and preserved) leading to an oversupply situation, a fall in the domestic price, and a disinclination to invest in fruit husbandry. Up to 50% of the orchards have been destroyed or are so badly neglected that they require massive investment. The area under fruit has declined by more than 20%, from 95.8 thousand hectares in 1985 to 49.7 thousand hectares in 1995. The production decline has also been large, from an overall average for all kinds of farms and all kinds of fruit of 479,000 tons in 1985 to 214,000 tons in 1995. Since 1990, the private sector has been responsible for a greater share of the total fruit production, from 5% of the total in 1990, to 56% of the total in 1995.

h) Grapes

In 1990, Bulgaria had 127,000 ha of vineyards, by 1995 the area was 98,000 ha. Many of the plantings are abandoned or neglected and production has declined drastically. It has been estimated that only 10% of the vineyards are in good condition, at least 20% of the area is abandoned, 25% is damaged and 17% has severe disease or pest infestation. The decline of the industry, can be ascribed to three major factors: the collapse of the market in the former Soviet Union, the delays in the land restitution process, and the high costs of

inputs. Some of the wineries are now extending credit to producers to encourage them to rehabilitate and improve their vineyards.

In the past Bulgaria produced 1.7 million hl of wine annually, now production is closer to 1 million hl. Eighty percent of the wine production is exported, making it the second biggest agricultural export earner after tobacco. In 1995, the wineries were responsible for 12% of the total food processing output, with a value of Lev 15,000 million, (NSI) Bulgaria has 45 wineries, 39 in the Ministry of Agriculture and Food Industry, 1 municipal company, and 5 cooperatives. They can process 700,000 ton of grapes annually. According to the Association of Wine and Spirit Makers and Merchants, the total production of wine in 1995 from 50,000 ha was 1 million hl produced from 200,000 ton of grapes, down from 450,000 ton in 1994. In 1980 grape production was 911,000 tons.

i) Livestock

The decline in livestock production following the collapse of the state livestock enterprises was even more dramatic than the reduction in crop yields. The response of the new owners, following the redistribution of the stock by the liquidation committees, was frequently either to sell or consume the animals. Exports of live animals rose significantly in 1992, as new owners unable to feed and tend for their charges sold the animals. This resulted in a shortage of breeding animals and subsequently young stock, and when combined with the declines in forage production caused by a transfer of the farmland from large mechanized cooperatives to smaller parcels, often farmed manually, significant declines in numbers of animals occurred. By the end of 1994 this decline finally appeared to be in the process of being reversed. Information about current livestock numbers is hard to verify as the great majority of the animals are now kept on small family farms and by households.

Livestock Numbers (Bulgaria)

(000's)	1989	1990	1991	1992	1993	1994	1995
Cattle	1,615	1,577	1,457	1,310	974	750	638
-- cows	648	617	609	575	489	419	351
Pigs	4,132	4,352	4,187	3,140	2,680	2,071	1,986
Sheep/ Goats	9,045	8,563	8,436	7,256	5,425	4,439	4,193
Poultry	41,805	36,339	27,998	21,707	19,872	18,211	19,126

FAO and NSI

The decrease in livestock production has had an impact on Bulgaria's export earnings, traditionally an exporter of live animals and meat, exports of all categories of stock following the "liquidation year" (1992) are now at 25-33% of their 1989 levels.

2-4-4 Farm Management

(1) Farming Pattern and its Scale

According to the IMF, current patterns of agricultural management are: (i) state farms; (ii) organizations under liquidation; (iii) new cooperatives; (iv) new associations (partnership and farming companies); and (v) individual farms and household plots. The main characteristics of these groups are as follows:

a) State Farms

Juridical basis:	Decree 56; Commercial Law
Land ownership:	Publicly owned
Average land area:	270 ha
Manager:	State employee
Labor:	Hired

b) Organizations under Liquidation*

Juridical basis:	Law on Ownership and Use of Agricultural Land
Land ownership:	Unrestituted land
Average land area:	1,700 ha
Manager:	Chairman of Liquidation Council
Labor:	Hired

c) Production Cooperatives

Juridical basis:	Cooperative Law
Land ownership:	Privately owned/leased
Average land area:	700 ha
Manager:	Member elected as Chairman
Labor:	Members and hired

d) Farmer Associations (Partnership and farming companies)

Juridical basis:	Commercial Law
Land ownership:	Privately owned/leased
Average land area:	500 ha

Manager:	Employed manager or nominated partner
Labor:	Self employed and hired

e) Individual Farms and Household Plots

Juridical basis:	No need to be registered
Land ownership:	Privately owned/leased
Average land area:	0.6 ha
Manager:	Family head
Labor:	Self employed family

Note: * In May 1995 Liquidation Councils were abolished.

State farms exhibiting public ownership and operation account for only 7% of the total land (320,000 ha). Nearly 2.3 million ha, which is 53% of the total arable land, is land operated by the private farms. This is all subject to restitution. In case of new cooperatives, a part of the land is still recorded as unrestored ownership. This amounts to 1,797,000 ha (42% of the arable land).

Private farming organizations are gradually growing in number. According to the data from NSI, there are more than 1,775,000 farms which cultivated 42.6% of arable land in 1995. During the period (1992-1995) the number of private farms decreased by 9%, and the amount of private farm land increased over two times, i.e., average size of 1.1 ha.

(2) Farm Labor Supply

About 759,200 (16%) of EAP of the country is engaged in agriculture, and 60,700 (8%) of the total labor in agriculture are employed in private sector. The number of seasonal hired workers in agriculture is estimated at 2.0-2.2 million.

(3) Prices of Farm Products and Inputs

The income support scheme for farmers has been released by the program of the LPAP in July 1995. The law sets up guaranteed farm gate prices for wheat, maize, sugar beet, potatoes, meat (veal, pork, lamb), milk (cow and sheep) and projected prices for other main crops according to the program of MAFI.

Farmers are facing difficulties for their farming due to the high input prices, most of them imported and so effected by the constantly increasing exchange rate, and farm gate prices driven by the strong monopolistic enterprises in the food processing industry.

(4) Income Tax of Farming

The LPAP, exempts individual farmers from income tax on income from farming and commercial farms from profit tax for five years.

(5) Variable Costs and Incomes of Products

Major crops produced in Bulgaria are wheat, barley, maize, and sunflower. As fruit tree crops, wine grapes are mainly grown.

On the basis of the production costs prepared by the data of SAPI and the results of the farm interview survey at production cooperatives, income obtained from these crop production is estimated as below:

Crop	Yield	Farm-gate Price	Revenue	Variable Costs	Fixed Costs	Return	Profitability
	(kg/ha)	(US$/kg)	(US$)	(US$)	(US$)	(US$)	(%)
1. Annual Crop							
Wheat	2,000	0.14	280.00	220.00	10.00	50.00	22
Barley	1,800	0.13	234.00	199.00	10.00	25.00	12
Maize	2,200	0.15	330.00	219.00	38.00	73.00	28
Sunflower	1,000	0.11	110.00	77.00	10.00	23.00	26
2. Perennial Crop							
Wine grapes	4,000	0.18	720.00	134.00	22.00	564.00	361

Note: Prices as of 31 July, 1996 are adopted Exchange rate (average July, 1996) =180.14
Variable costs: Input materials and labor costs, etc.
Fixed costs: Administration, insurance and amortization, etc.
Data source: SAPI and farm interview survey at production cooperatives.

Farm management in Bulgaria has severe constraints such as low yields caused by inadequate farming technology (lack of extension services), small application of fertilizers and pesticides (lack of financial resources for purchasing, high interest of the credit, and inflation), lack of quality seeds, and lack of marketing systems. The farm machinery and irrigation facilities are also deteriorated. In addition, no irrigated cultivation predominates among these crops, excepting wine grapes. Hence, farm management with declining and stagnating crop production reflects these circumstances.

2-4-5 Agricultural Credit

(1) Preferential Investment Credits

Agricultural credit services by the public financing institution are virtually nonexistent. The only preferential investment credits were granted to the agricultural producers by the State Agricultural Fund under the Law (LPAP). This credit was directed to autumn crop planting in 1995 under which farmers (credit users) had to pay 50 % of the basic interest rate in the country. The other 50 % between the subsidized and the market interest rate had to be covered by the Fund.

According to the Program for the development of agriculture and food industry 1996, basically, the Fund will be directed to; subsidies for the wheat and maize producers; providing protection purchase price of sugar beet; stimulating export of agricultural products ; taking over up to 20 % of the farm investments for purchasing and renting out of 300 Bulgarian tractors; preferential investment credits according to the Law (LPAP) and so on.

(2) Agricultural Capital Fund Scheme

The agricultural capital fund scheme which was agreed between the government of Bulgaria and the EU for the establishment of the private mutual credit associations (called "credit cooperatives") of the private farmers starts operation on December, 1996. According to the scheme, an additional financial resource in the form of share capital and credit funds for member of the credit cooperatives, which established by the scheme, are provided Lev 280 million and 7 million ECU as a free aid by the Bulgarian government and the EU (EU-PHARE program). Under this scheme, 30 credit cooperatives are established throughout the country.

The credits of this scheme will be used for financing activities and services, connected with agricultural production in the following branches: cereal production, fruits and vegetable production, vineyard production, meat and milk, as well as small-scale agro-processing. As an exception, the annual interest rate is set up 54 % which is about quarter of the interest rate of the commercial banks.

Currently, agricultural credit services by the commercial banks are not functioning because of no credit for credit/loan. Present primary interest rate of the BNB is set at 180 % so that the minimum interest rate of the bank is 188 % and over. The loan needs mortgage such as farm machines, facilities and crops.

2-4-6 Farmers' Organizations

(1) Cooperatives

The Bulgarian communists, after taking power in the post-WWII period, centralized planning and state control of agriculture. By 1950, they had organized an estimated 90-95% of all arable land into collective farms averaging 3-4,000 ha each. (World Bank, 1994) In 1987, GOB restructured the large collective farms into 2,100 village-based cooperatives, with small leased plots for private cultivation.

Liquidation councils were established in 1991. Under the agricultural land ownership and land use law, and its many amendments, GOB began a process to give land back. This process meant many urban dwellers or non-farmers came into agricultural land ownership. In large numbers, landholders have chosen to either hold the land idle or lease the land to cooperatives.

The Liquidation Councils helped transform the old State Farms / Kombinats (TKZCs) into reformed "cooperatives". Following liquidation of assets Liquidation Councils were dissolved in May 1995. Regional and local agricultural officials promoted cooperative organizations in the hopes of increasing land under cultivation. Cooperative structures were also a convenient and familiar organization type to serve as recipients of assets in the liquidation process.

Cooperatives in Bulgaria can be grouped into three categories:

1) Former TKZCs, which their former managers transformed into cooperatives, many who retain the old top-down management styles. These cooperatives are usually large (greater than 500 ha) and may have 200-500 members;
2) "New cooperatives". Ex-members of TKZCs formed these cooperatives, as they did not want to be part of cooperatives run by their former managers. Their management style resembles the old socialist system. The typical size ranges from 100 - 200 ha, up to 700 ha, with 50-200 members;
3) Partnerships and association. Individuals grouped into partnerships and small associations or cooperatives are emerging. These vary from small groups of poor farmers to large for - profit private farmers who have leased land. Their size varies by region, 300-600 ha farm partnerships were seen.

Of the three types, the former TKZCs still dominate land and production. Various sources suggest 42-50% of all arable land in cooperatives, with many districts operating under near - total cooperative management.

At the national level, the Union of Agricultural Cooperatives is the organization that groups the former TKZCs. It is a powerful, political organization, dominated by supporters of the Bulgarian Socialist Party (BSP). The Union is political, but it also brokers input and output markets for its members.

The Confederation of Agriculture represents the "new cooperatives." It is not as strong as the Union, and it focuses on policy issues more than practical input, output, or production issues. The Confederation is also BSP dominated, but with a more technical base. Each district has a federation that joins on the national level to form the Confederation.

The Central Cooperative Union (CCU) is a union of consumer service cooperatives that retailed consumer goods all over the country during the pre - reform days. Trade cooperatives (TCs) within the CCU have a network of more than 1,000 firms buying, selling and producing food stuffs. A typical TC serves 5-8 villages or a larger town, and sells consumer products, hand tools, perhaps seeds, fertilizers, and small machinery and might operate a bakery, dairy, or meat processing facility, though shelves are sparsely stocked.

For purposes of this study, farm organizations have been categorized in several types of groups: cooperatives, corporate farms, lessees, partnerships or associations, private farmers. The categories are listed in descending order of land under cultivation, highlighting the fact that cooperatives typically are managing the largest number of ha. On average, each form of organization includes a group of members (not always active farmers) working a series of tracts of land. Private farmers are generally regarded as individuals.

Cooperatives are the dominant form of production unit, accounting for 60-90% of the land under cultivation depending on the region. One or two cooperatives are found in most every village. Cooperatives have been a convenient holding pattern, and the most familiar form of organizing production in the transition period given the uncertainty of change, and the absence of land reform. Cooperatives were encouraged to organize in 1992 and 1993, in order to facilitate liquidation of the old state farm structure, and thus the revised cooperatives had the important advantage of access and ownership of facilities and large farm equipment.

Cooperatives are registered under the Cooperatives Act, each with a Board and General Assembly of members as the basic management structure. Some cooperatives insist on full control of land cultivation and cropping strategies, while others offer members options on the degree of cooperative participation, labor requirements, and cropping options. Members, on average, received 20-35% of the proceeds of the harvest in kind or in cash rent-like payments.

Corporate farm or enterprises are rare, but are projected to grow in number with the completion of land restitution and the opening of a land market. Affordable credit and land transactions likely will spur the development of farm enterprises operating commercial operations in a market economy. Currently, risks are high if an enterprise begins full commercial business, so many entrepreneurs are operating under association or cooperative labels to avoid harassment and tax obligations.

Lessee production arrangements account for about 10-20% of the land under cultivation, depending on location. Lease agreements are arranged between temporary users and the leasing agent serving as farm manager. Leasing combines several parcels of land under common production management in exchange for cash or in-kind rental payments to the land owners. Such arrangements are on a personal level, and the structure is not normally registered as a business or farm enterprise. Lessees appear to operate profitably, paying modestly better rents than cooperatives - payments ranging from 25-35% of the proceeds of the production as compensation to participating members.

Associations of temporary land users have so far accounted for 0-20% of the land under cultivation depending on the region. Associations often form along kinship lines, and operate similar to a cooperative among extended family members. In time, associations are expected to move from informal family structures to more formalized business associations or corporate farms with 3-5 farm managers, registered under the Trade Act or Cooperatives Act.

Private farmers account for a small minority of production areas across the country. Very few people operate as more than small family units or subsistence farms. Small farming has been an important source of vegetables for extended family units to combat high inflation, and a modest means of income generation - a fact increasingly important as industrial jobs decline. The business environment is not now favorable for private farming operations of a larger scale. Private farmers are constrained by lack of access to

affordable credit, low cost inputs, markets, and farm machinery. Land restitution and access to credit will be key factors in encouraging an increase in private farming.

(2) Water User Associations

In theory, WUAs are a useful mechanism for encouraging farmer responsibility and control over irrigated water input and facility management. The implementation of WUAs in Bulgaria, is problematic given the status of land reform, the condition of the irrigation facilities, and rapidly changing structure of agricultural production. Under the direction of MAFI and ISC, with advice from the World Bank, plans are continuing for nationwide establishment of local WUAs. Under this program, WUAs are to be a mechanism for allocation of water, collecting water fees, and providing O&M for on-farm facilities. Nationwide, use of irrigation facilities is running at only 5-20%.

The World Bank is now in the project preparation stage of a potential irrigation sector loan. A condition for proceeding with the loan is the establishment of locally-based WUAs, in theory along a technological principle, organized by a network of local advisors. The goal is to have 100 WUAs registered in 1996, and begin the transfer of responsibility for O&M to the local WUAs. The World Bank funding, if it takes form, is expected to support the funding of selected grant pilot areas and provide credit for a two-step loan window. WUAs might use low interest credits for rehabilitation of on-farm facilities.

Interviews with ISC, branch WUA advisors and newly formed WUAs in the three Study Areas suggest modest progress in forming WUAs. However, given the structure of farming - combined with the very low use of irrigation facilities, limited interest exists in forming these groups. Local WUA advisors are pressing ahead with various forms of encouragement to meet the numerical targets for formation and registration of WUAs. In most cases, WUAs are organized around the largest cooperative in a village territory where irrigation facilities are in partial use. The formation of these groups appears forced, top-down and pursuing a tract of administrative convenience.

The legal foundation for the establishment of WUAs in the form of the "Act on Water Associations in Farming" has been drafted and approved by MAFI in late November 1996. The legislation includes the four "roles" defined above. The Act requires further ratification in the Legislature, before being enacted into law. The Act, as drafted, draws heavily on the historical patterns in Bulgaria when "water syndicates" were vital rural organizations in the 1920s. Drafters of the Act have reportedly also taken account of European law statues in France and Germany.

2-4-7 Institutions and Supporting Services

(1) Extension Service

An Extension Service within MAFI, in the western model, has only recently emerged largely with the financial backing of EC PHARE. The former socialist management system included a large national network of scientific experiment stations organized by commodity group but did not include a consultant role to agricultural producers. In the past, State farm and cooperative structures, assumed this advisory function. In the Fall 1995, EC PHARE financially and technically backed the establishment of a new Research and Extension Department within MAFI. The Department has two sections, one for consulting in agriculture and the second for leadership of academic and vocational agricultural schools. Four national centers are defined: (1) Information, (2) Agribusiness and Accounting, (3) Training, and (4) Soil Analysis. In January 1996, the Extension department effectively launched a network of nineteen local extension offices building upon the existing facilities and staff of former experiment stations. Each Local Advisory Office (LAO) has a staff of 5 specialists placed to provide practical advice to producers. These offices are in various states of operation.

(2) Agricultural Education and Research

GOB has organized agricultural secondary schools and vocational training facilities under MAFI. MAFI has maintained a network of eighty-seven offices and institutes across Bulgaria. Notably, the University-level schools include the Agricultural University in Plovdiv, Faculty of Agricultural Economics in Sofia, Veterinary Science Center at Stara Zagora, and Agricultural Mechanization Faculty in Russe. Limited funding, and declining international linkages, have drained the facilities of their past vitality.

Bulgaria has a rich history, and noted reputation, for its agricultural research and training resources. Under the Academy of Agricultural Science, GOB spread 61 research institutes across the country. A shortage of funds, and staff attrition, has taken its toll on the national system.

2-5 Infrastructure

2-5-1 Agricultural Infrastructure

(1) Irrigation and Drainage

a) Water Resources

Dams, as a water resource in Bulgaria, total 158 with total reservoir capacities of 4,624.37 mcm. The number and total capacity by operating authority are tabulated below. Most dams are operated and maintained by the ISC, Operation and maintenance of other dams are carried out by other authorities such as water supply authorities or an electric company.

Authority by Operation	Number	Total Capacity
ISC	173	3,133.17 mcm
Other Authority	5	1,491.20 mcm
Total	178	4,624.37 mcm

Among the dams in Bulgaria, five big dams in terms of total storage capacities are tabulated below.

Name of Dam	Total Capacity	Location	Purpose
1. Iskar Dam	673.0 mcm	Sofia	Water Supply
2. Ogosta Dam	505.0 mcm	Montana	Irrigation
3. Jrebchevo Dam	400.0 mcm	Sliven	Irrigation
4. Tsonevo Dam	329.0 mcm	Varna	Irrigation
5. Ticha Dam	311.8 mcm	Shumen	Irrigation

Ogosta dam was constructed for the irrigation water, however the stored water in the reservoir is not used effectively given a lack of irrigation facilities.

b) Irrigation Area

There are six million ha of agricultural land in Bulgaria, and approximately one million ha are facilitated irrigation land, according to the inventory survey conducted by MAFI on 1994. About 70 % of the facilitated land, corresponding to 692 thousand ha, has irrigation facilities ready to irrigate. More than 95 % of irrigation facilities are operated and maintained by ISC. (refer to Table J-1-1, Appendix J)

c) Irrigation Facilities

More than 20 % of total irrigation area operated by ISC requires rehabilitation, according to the classification by the inventory survey at 1994.

(unit of below table is 1,000 ha)

Description	Total	Class I + II	Class III	Class IV
Total area in Bulgaria	1,017.50	692.55	243.38	81.57 (64.79)
Operated land by ISC	960.93	673.00	219.08	68.84 (52.32)

Class I : Irrigation facilities are well maintained, therefore repair work is not necessary at moment.
Class II : Irrigation facilities are operational, but some part are necessary to be repaired under the maintenance works.
Class III : Irrigation facilities require rehabilitation.
Class IV : Since these areas are not suitable for irrigation due to the reasons mentioned on the Table J-1-1, these facilities shall be excluded from assets in the balance sheet. The area damaged in water sources and/or canals can be considered as a virgin area. These areas are shown in parentheses.

d) Irrigation Methods

More than half of the irrigation in Bulgaria was applied by sprinkler systems, because of large scale cultivation and positive water savings. The facilitated area for sprinkler irrigation generally does not require rehabilitation, as compared with gravity irrigation areas. (refer to Table J-1-1)

(2) Power Supply

About 2/3 of the irrigation area are supplied with water by pumping systems. The cost of electricity supplied during the day is very high compared with the night time, therefore pumps for irrigation water supply are usually operated at night and water is stored in a compensator.

Electrical Charge for Industry including Agricultural Use (unit : Lev/kWh)

	Winter			Summer		
Voltage Level	High	Middle	Low	High	Middle	Low
Peak	12.27	12.74	13.31	10.74	11.04	11.59
Day-Time	6.66	6.87	7.16	5.77	6.00	6.26
Night-Time	3.29	3.40	3.53	2.81	2.99	3.04
One-Zone	9.88	10.07	10.74	8.58	8.88	9.32

2-5-2 Social Infrastructure

Bulgaria had developed transport and social infrastructure based on the centrally planned system. Transportation (e.g. road, railroad, airway, inland-waterway, maritime) and Social infrastructure (e.g. housing, waste disposal, power plant) are in good condition and are of high quality. However, after the collapse of socialist system, the transport sector is facing a number of difficult problems such as improper operation and low quality management for the transition economy because of budget shortage for operation and maintenance.

(1) Changing Mode of Transport

After the collapse of socialist economy, means of transportation have been dramatically changed. Railroad transport which used to occupy nearly 40 percent of total cargo in 1991 has lost the position and recently transports only 8 % of the total. Due to the change of client countries from former CMEA markets to OECD countries, inland transport also decreased the amount of transport. On the other hand, Maritime transport expanded the share to double and Road transport is recording a dramatic increase of the total. Transport by Road increased by 10 times in 1994 compared with that of 1991.

(2) Outline of Transport

a) Road

Road classification has following 4 categories; Freeway, Class 1 (National road), Class 2 (National road), Class 3 (Local road) and Class 4 (District Road). Total number of roads is 185 and the total length is 3,934 km. Paved roads, except Freeways, occupy more than 90 % of the total, but mostly simply-paved, and about 70 % of C1 - C4 roads suffer from lack of maintenance services.

b) Railroad

Railroad in Bulgaria has 4,300 km network, many are double-tracked and 61 % are electrified. The standard line size is 1,435 mm in width which makes it possible to access to European countries.

Domestic main lines are Sofia - Varna, Sofia - Bourgas, and 2 lines connect Rousse - Varna and Stara Zagora, all of which are electrified. Other railroads which access neighboring countries are Sofia - Dimitrov grad, Vidin - Sofia - Kulata, Plovdiv - Svilengrad, and Devnia - Kardam.

c) Airways

At the beginning of 1991, Balkan Airlines (national carrier) were separated into 3 airplane companies according to the process of privatization. But three airplane companies are still state-owned enterprises (SOEs). There are about 290 airports in Bulgaria. Among them, 260 airports are being used for agricultural purpose. The main airports for passengers are Vidin, Sofia, Bourgas, Veliko Tarnovo, Rousse, Targoviste, Varna, Stara Zagora and Plovdiv. The three international airports are Sofia, Varna and Bourgas.

d) Inland Waterways

Inland Waterways using mainly Danube river have 13 ports and 7 custom offices along the riverside. Statistics shows that total passengers who used the inland waterways were 54,000 and total amount of cargo transported by Inland-ways were 1.13 million metric tons. It decreased by 80 % from that of 1991. Main inland ports, delivering 92 % of the cargo in Bulgaria, are located at Rousse, Lom and Svistov.

e) Maritime Transport

Maritime ports are located along the coast of Black Sea. On 350 km seashore from the national boundary of Romania to Turkey, there are 11 ports. The ports at Varna and Bourgas are functioning as hubs of international trade. Total amount of cargo by maritime transport accounts for more than doubled in 1994 compared with that of 1990.

2-6 Environmental Management of Natural Resources

Environmental issues in Bulgaria has shown improvement including the establishment of basic legislation, development of national environmental strategy and enhancement of institutional capacity. Pollution loads to two major components such as water and air have been reduced. Efforts must now focus to establish a cost effective way for management while integrating with its economic reform process. An outline of management of natural resources is stated below.

(1) Water

Average annual runoff of Bulgaria is 20.7 BCM (excluding the flow in the Danube). Annual groundwater availability is estimated to be 6 BCM. The unbalanced distribution of water resources causes a shortage of water in many areas.

Most of the population of Bulgaria uses central water supplies. The quality is generally good. The river water quality is not satisfactory but showing improvement due to declines in industrial and agricultural production.

Industrial plants are major sources of pollution through their regular discharge of effluent. The other source of pollution is municipal waste water.

A network of surface water monitoring covers all major river basins. The results are published by quarterly report and annual summary report. Monitoring of groundwater is sporadic. In general, it is suitable for irrigation purposes, however, contamination by sulphates and nitrates is reported.

(2) Land

Approximately 20 percent of Bulgaria's agricultural and forest lands are degraded or polluted. Natural causes such as erosion and acidification account for nearly 80 percent of the areas affected. Human intervention is also responsible for erosion and acidification processes. About 3.2 million ha of land has very steep slope and subject to erosion. The land area subject to wind erosion is estimated as 1.7 million ha.

According to Poushkarov Institute, very strongly acidic soils cover about 0.35 million ha (Ph less than 4.5). Many of these soils are naturally acidic. In recent years declines in agricultural practices has brought down the severeness of the problem.

The other problems regarding land management are water-logging (about 0.30 million ha), salinity (0.03 million ha), mining and construction operations.

(3) Nature

Bulgaria is endowed with a rich natural environment and diversity of fauna and flora. The recent downturn of economic growth has contributed to the nature conservation through decreases in pollution and other pressures. The country has made good achievements in enlarging protected areas which now covers 4.5 percent of the national territory. Progress can also be identified in management of wetlands. The extinction rate is low compared with rest of Europe.

(4) Air

In general, Bulgaria has high emissions of air pollutants. However, since the 1980 and in particular since 1990, mainly as consequence of the fall in economic output, main

pollutants such as Sulphur, Nitrogen and Carbon has decreased significantly. The main sectors that contribute to the air pollution is power generation, industry, heating, coal mining and transport.

2-7 Related On-going Projects

2-7-1 EC-PHARE

(1) General

The PHARE Program is a European Union initiative which supports the development of a larger democratic family of nations within a prosperous and stable Europe. Its aim is to help the countries of central and eastern Europe (six countries including Bulgaria, Czech, Hungary, Poland, Romania and Slovak) rejoin the mainstream of European development and build closer political and economic ties with the European Union.

PHARE does this by providing grant finance to support the process of economic transformation and to strengthen newly created democratic societies. PHARE also provides grant finance to help countries, making PHARE the largest assistance program of its kind.

The main priorities for PHARE funding are common to all countries, although every one is at a different stage of transformation. The key areas include restructuring of state enterprises including agriculture, private sector development, reform of institutions and public administration, reform of social services, employment, education and health, development of energy, transport and telecommunications infrastructure, environment and nuclear safety. Under the programs, PHARE hopes to make laws compatible with European Union norms and standards, and to align practice. In 1990-1995 Bulgaria has received ECU 476.5 million PHARE assistance under the National and Cross-border Cooperation programs. The assistance has supported a variety of projects for economic, social and political reform.

Until 1995, PHARE assisted and agreed to implement the following main projects.

- Public finance reform for taxation, accounting, auditing and insurance in 1991 (6 million ECU);
- Public finance reform for continued work on accounting and taxation, budget reform, debt management and control in 1993 (2 m. ECU);

- Support to European integration activity in 1993 (2 m. ECU);
- Support a general information campaign, study and training activity in the framework of the Center for European Studies and the Euro Info Correspondence Center in 1994 (1.2 m. ECU);
- Public administration in 1993 (3 m. ECU);
- Customs reform in 1993 (8 m. ECU);
- Statistics in 1993 (3 m. ECU); and
- The approximation laws in 1995 (2.0 m. ECU).

The proposed main areas of work in the framework of the PHARE program in 1996-99 are:

- the process of European integration, including legislative approximation, public administration and participation in EU programs;
- private sector development, including privatization, restructuring of state owned enterprises and the banking sector, foreign investment and export promotion;
- human resources and social development; and
- infrastructure, with an emphasis on the Trans European Networks and the reform of the energy sector.

(2) Agriculture

a) Review of Past Assistance

A total of ECU 56 million was allocated to the agriculture sector over 1990-1995. Work included: 1) policy support and other technical assistance to the Ministry of Agriculture and Food Industry, 2) assistance to ownership reform (land restitution and registration, privatization and restructuring of SOEs); 3) development of production and market structures, and 4) rural finance, including a credit facility. The 1990 program (ECU 16 million) and 1991 programs (ECU 25 million) have been completed in 1996.

The 1995 program (ECU 5 million) aims at establishing a coherent policy framework for agriculture and the food industry in the context of European integration, measures for adopting a legal and regulatory framework compatible with that of the European Union, including quality control and veterinary standards and finally, the strengthening of relevant institutions for land registration, agricultural extension and market development (domestic and foreign).

b) Future Program

The following are the key objectives until the year 2000:

- to assist the approximation of Bulgarian agriculture policies and implementation of legislation relevant for EU integration;
- to support institution development in the agriculture sector; and
- to harmonize the standards of the veterinary and phyto sanitary control and establish the conditions for their implementation.

Input of the programs will be held by technical assistance scheme (policy development, institution building, management training, transfer of know-how). Development of market infrastructure will be formed as a investment project.

EC-PHARE Program

Item	Expected results
Land reform	extension of the National System for Land Registration; establishment of a market for land
Private agriculture development	support to credit facilities for private farmers; support to business plan development; product development; transfer of know-how
State owned enterprises	restructuring of companies complete with a view to privatization
Regions	development of a regional market infrastructure (investment program), development mountain and hill farming; irrigation

2-7-2 EBRD Wholesale Market Development Project

(1) Background and Progress

Upon the request of the Bulgarian government the EBRD conducted a feasibility study on establishment of wholesale and assembly markets for fruits, vegetables and flower in Bulgaria in 1993. Although changes in cabinets delayed ratification of EBRD's credit to the project, it was finally ratified by the Parliament on July 5, 1996.

(2) Concepts of the Wholesale Market Project

The principle objective of the project is to develop a market-oriented system for perishable produce. Its initial target products are vegetables, fruit and flowers but will be expanded to meat and fish in some markets in the future. The system constructed in the project is expected to replace the centralized structures built around the old state-owned entity Bulgarplod. There are two wholesale markets in Sofia and Varna, two assembly markets

in Montana and Sandanski, and two transition wholesale markets in Plovdiv and Stara Zagora. The EBRD WSM Project attempts to rehabilitate these six existing markets and establish new four markets in four regions: Sliven, Pazarzik, Pleven and Haskovo. Among ten project sites, first priority is given southern part of the country: namely, Sliven, Stara Zagora, Plovdiv and Sandanski.

(3) Related Projects in the Study Areas

In the case of Pleven finding a place for a market became a constraint for proceeding with the project. As for Sliven, a new transition wholesale market, which has both wholesale and producers market functions, will be established. It will be equipped both with open selling places for producers and traders, and wholesale market for traders and retailers. Estimated benefited area is within a radius of 40 to 45 km. Construction will start in March 1997 and expected opening of the market is 1999 after partially opening in Spring of 1998. Sliven municipality prepared 23.1 ha of land for the project.

Rehabilitation of the existing stock market at Sandanski has high priority among the EBRD WSM project. Basically, new refrigerators will be stored and a new trading hall will be constructed. Estimated benefited area is within a radius of 15 to 20 km which covers Petrich region.

2-7-3 World Bank Projects

Since joining the World Bank in 1990, Bulgaria has received 12 loans and another 11 loans are in an advanced stage of loan processing. Both structural adjustment and investment loans have been made to Bulgaria. The loan portfolio as of October 1996 equals $528.8m, including 3 categories: $478.5m under implementation, $50.3m approved but not effective, and loans under preparation.

<u>Loans under implementation</u>:	
Technical Assistance Loan (TAL)	$17.0m
Energy I	$93.0m
Telecommunications	$30.0m
Private Investment & Export Finance	$55.0m
Agricultural Development	$50.0m
Water Companies Restructuring	$98.0m
Railways Rehabilitation	$95.0m

Ozone Depleting Substance Phaseout	$10.5m
Rehabilitation Loan	$30.0m
Loans Approved, but not Effective:	
Health	$26.0m
Social Insurance Administration	$24.3m
Projects Under Preparation:	
Enterprise Sector Adjustment Loan	To be determined
Irrigation Rehabilitation & Restructuring	To be determined

The World Bank has prepared an Agricultural Sector Review dated August 1995 as a background overview of issues. The two loan projects processed in the agricultural sector are particularly relevant for this JICA study. The Agricultural Development investment loan and the Irrigation Rehabilitation & Restructuring investment loan.

The Agricultural Development Project Loan became effective in July 1995, but no disbursements have been made from the loan account. The project is the World Bank's first agricultural sector activity, and it has experienced difficulties in defining investment projects and in working through a fragile banking sector. The Project is designed to improve access of the private sector to medium and long-term credit for investments in primary agriculture and agribusiness. Foreign exchange resources are to be made available through participating financial institutions to finance imports of farm machinery and other equipment needed in the modernization of the sector. The World Bank is working through the Bulgarian National Bank (BNB) as the intermediary institution receiving the World Bank loan and on-lending to participating organizations at market-based spreads, with borrowers assuming currency risk. A combination of weak banking institutions, limited incentives for agricultural investment, along with high interest rates and foreign exchange risks have discouraged use of the credit line.

Irrigation Rehabilitation & Restructuring Project: A project preparation and consultancy team is in the process of assisting MAFI and ISC to encourage farmers' participation and establish water user organizations across the country. Project preparation funds are provided by Dutch and Japanese Trust Funds through the World Bank. The potential loan project of an estimated $50m, will aim to support the restructuring of Bulgaria's irrigation system through the transfer of irrigation management and O&M to users, and improve water delivery and utilization efficiency. Project preparation has supported a network of

20 field advisors working through ISC branch offices to organize WUAs. Registration of an estimated 80-100 WUAs is a pre-condition for proceeding for down-stream funding through ISC. Five pilots areas for tertiary rehabilitation improvements are envisioned, with additional financial support provided to 10-15 Water User Associations after screening investment plans. Investment funding for each WUA may be supplemented by accessing the Amelioration Fund on a loan-basis. Optimistically, the project will begin in earnest in the summer of 1997.

CHAPTER 3. DEVELOPMENT POLICIES OF THE COUNTRY

3-1 Macroeconomic Frameworks

3-1-1 Macroeconomic Problems and Agricultural Development

(1) Influence of Macroeconomic Conditions on Agriculture Development

Macroeconomics conditions have a great influence on agricultural development.

- GDP growth is linked to increases in the real income, leading to an increase in the demand for agricultural and food production;
- macroeconomics determine the investment climate in the country and influences the investment intentions of manufacturers;
- the level of the national budget deficit determines the amount of state subsidies for agriculture and food industry;
- fluctuation of the foreign exchange rate impacts production, and profit and loss in agricultural foreign trade;
- inflation reduces consumer demand for agriculture products, and worsens management conditions for producer and agri-processing manufactures; and
- High interest rates make it difficult to finance producers, and agri-processing firms.

(2) IMF Policy and Agriculture Development

The agriculture development plan will probably be implemented under the tight monetary policy of MOF agreed with IMF. This will reduce the government budget for agricultural development. Budget for construction of new agricultural infrastructures is going to be available. At the same time, there will be a limited budget for assistance of agriculture and agro-processing industry.

Therefore, it is an important factor to secure the financial resource instead of governmental subsidy and credit from the commercial banks on the agriculture development in Bulgaria.

In the view of self-financing, MAFI should consider utilizing foreign financial resources including international financial aid rationalistically on the agricultural development plan.

On the other hand, Bulgarian economy is still under the adjustment period, the annual real GDP growth in 1997～2000 is estimated to be 1～2%. As IMF estimates a similar figure, the growth rate is considered to be reasonable.

To attain sustainable GDP growth, development of agricultural production increase is important. As the domestic market size is insufficient to generate the expected GDP from agricultural sector, without export revenues, the promotion of agricultural products export is necessary in the medium or long term strategy for development of agriculture.

3-1-2 Development Strategy under Tight Monetary Policy

(1) Positive Utilization of the Agricultural Fund and the Amelioration Fund

The Agricultural Fund and Amelioration Fund are only the active financial resources for the agriculture development strategy of MAFI, which funds can be used without restriction. Expanded use of these funds for investment to efficient agricultural development projects is encouraged. To maintain the balance of the fund, MAFI should also endeavor to gain the operating profit of these funds and increase the income of the funds. To do this, MAFI should achieve efficient fund management system and increase the revenue from the private company's profit tax instead of state company's profit tax. The profit tax from private agro-industry companies is considered as a promising source of revenue in the future.

(2) Improvement of Promotion of Foreign Investment for Agriculture and Agro-processing Industry

In the present economic recession, the domestic funds for investment in agriculture and agro-processing are limited. Foreign direct investment is still one of the useful methods to develop the agriculture and agro-processing in the long term view. The government established the special agency, the Foreign Investment Agency, and has started to promote activities of foreign investment for every industrial area, including agriculture, with identification of the importance of foreign investment. (See Table A-2-2 to 4, Appendix A)

To promote more foreign investment, following improvements seem to be needed:

- strengthening relationship between MAFI and the Foreign Investment Agency;
- establishment of the specialist team for promoting foreign investment in agricultural sector (For appointment of specialists, international cooperation scheme should be considered);
- concentration of promotion activities, such as selection of pilot project area in municipality level and the marketing activity in pilot project area; and
- assistance for the preparation of listed companies' business plan, including marketing and financial projection to encourage and attract the investors.

(3) Strengthen of Export of Agricultural Products

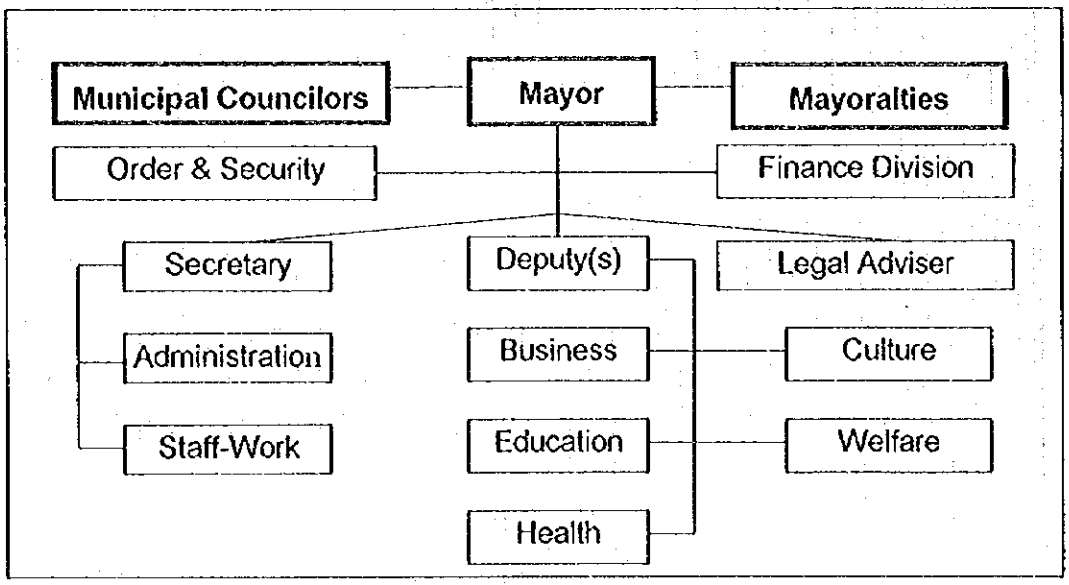
Before 1989, Bulgaria was export oriented targeting COMECON countries and exported agricultural and agricultural processing products, machine and electronic instrument and parts. Due to the loss of former COMECON markets and the late privatization, the production of agriculture and its processing were severely damaged. Drastic decreases in production has caused Bulgaria to become an importer of agricultural products.

After improvement of agriculture production increase, promotion of exports, especially for agricultural sector is one of the preferences for national policy to recover the national economy. Establishment of an agricultural export strategies might include the, following points:

- research and development of new potential markets, such as Asia;
- selection of valuable and commercially viable plants, for example, medicinal, herb and aromatic plants;
- consideration of appropriate processing and accessible transportation (Agro-processed products should be exported to keep and accumulate the value added in Bulgarian economy); and
- set up the pilot project area concentrating on export promotion.

3-1-3 Local Government Policy

Municipal leadership includes municipal counselors and mayors. These officials are elected through local democratic elections. The chart below illustrates an exemplary municipal structure.



Exemplary Municipal Structure in Bulgaria

Generally, a municipal budget is formed by revenues of the central government (2/3) and local tax revenues. The local tax revenue sources are usually the income tax (50% of the income tax remains in the municipality), local taxes (i.e. inhabited house duty, garbage tax, legacy duty), and the value added tax. The agricultural policy of municipalities is acutely affected by the lack of funds and as a result agricultural activities are reduced to basically providing limited extension services to the local farmers and cooperatives.

3-1-4 Rural Development Policy

The rural development policy of the government since 1990 is primarily conducted through municipalities by leadership of the mayor and municipal councilors. Most of the municipalities issue five-year programs which contents to a great extent reflects the election platforms of the elected mayors. A typical program would include the following items described as important problems to focus on and formulate a policy to deal with:

1. Municipal administration and mayoralties;
2. Financial issues;
3. Economic activities;
4. Urban planning, construction, public utilities and sanitation;
5. Ecology;
6. Education;
7. Culture and cultural heritage;
8. Health care and social policy; and
9. Public order and crime-rate reducing measures.

The program, with time-tables and money allocated, would describe in details the activities that the municipal leadership plans to promote. The most often planned activities are construction or rehabilitation of water supply and sewage systems, road maintenance and public facilities construction such as kindergarten, libraries, etc. Although the programs are relevant to the needs of the rural populace, it is a common case that the promised and planned actions are delayed or called off due to a lack of resources. An overview of the present municipal allowances shows that their budget provides funds barely enough only for social welfare necessities such as free education and medical care. It is presumed, considering the ongoing recession in the country, that the financial situation of the municipalities will even worsen leaving them with no funds for urgent measures such as public buildings or street maintenance.

3-1-5 Population Projection

In the past several years, as a result of unfavorable tendencies in the development of the demographic processes in Bulgaria, the population growth ceased and the total number of people has began progressively to decrease. Prior to Dec. 31, 1995 the number of permanently residing people in the country was 8,385,000 which is a decline of 382,000 in comparison with 1989 or 63,700 per year. The prognosis of the NSI, shown in the table below, illustrates that during the next 15 years the number of people below the age of EAP will decrease by 524,000 and in the same time the number of EAP will be almost 462,000 less, compared with 1995.

Prognosis on Bulgarian Population until the year of 2010 (thousands)

Year	Total	Age		
		Below EAP	EAP	Above EAP
1995	8,385	1,598	4,745	2,041
2000	8,000	1,364	4,596	2,040
2005	7,759	1,169	4,493	2,097
2010	7,527	1,074	4,283	2,168

Source : NSI

3-2 Privatization Policy

3-2-1 Land Restitution Target

In accordance with the "Law on Ownership and Use of Agricultural Land", the acceleration and completion of the process of restoration of the ownership rights over agricultural land will be the main target in the agrarian reform policy in 1996-1997. The reform aims to provide a favorable environment for the development of agriculture and food industry, as a sound basis for more investment in this sector.

The main objective of agrarian reform in 1997 will be the completion of the restitution of ownership over agricultural land and hand-over of notary deeds in the mountain and semi-mountain regions as well as in the surroundings of the former district centers.

Until the end of 1996, the restitution of the ownership rights over agricultural land will be completed in respect of 49 million dca (90 percent), while bringing into possession 57.9 million dca. During 1996-1997 agricultural year, there is a trend towards enlargement of the State Land Fund up to a level of some 3 million decares (300 thousand ha).

3-2-2 State-owned and Municipality Enterprises

Bulgaria's government is proceeding with privatization of state-owned and municipality enterprises based on "The Law on Transformation and Privatization of State-Owned and Municipal Enterprises" established in 1993. There are two types of privatization in Bulgaria - mass and cash privatization.

The Privatization Agency is the state authority responsible for overseeing the privatization of state companies with assets in excess of Lev 70 million. MAFI has the responsibility for privatization of agriculture and food processing companies with assets less than Lev 70 million.

At present, 93 out of 855 state-owned agriculture and food processing companies had been privatized, and 167 companies will be mass-privatized. By cash privatization, 31 state owned companies were privatized in 1996.

On the establishment of privatization policy, the following items are recommended:

- The number of companies privatized are determined by MAFI on annual basis. MAFI has no long-term privatization plan on state owned agriculture and food processing companies. Long-term strategy is necessary for privatization to proceed successfully;
- Stabilization of agriculture and food processing companies is necessary to develop Bulgarian agriculture. Unsuccessful privatization of these companies will give negative influence to agriculture development. MAFI may be requested to conduct assistance services such as management consultation for privatized companies' right after the privatization; and
- To attract investors, MAFI may be requested to assist the company for preparation of a business plan or a reform strategy before its privatization. For the smooth privatization process, minimum improvement and restructuring of the facility/organization will be required.

3-3 Agricultural Development Strategy

3-3-1 Agricultural Development Policy

A sectorial strategy for the development of agriculture and food industry in Bulgaria prepared by MAFI has been recently endorsed by the Council of Ministers and is currently

presented for ratification to the Agricultural Parliamentary Commission. This document outlines the 7 core areas of the agricultural and food strategy until year 2000 as follows:

- Complete the land reform, and proceed with the structural reform in the agricultural and food subsectors;
- Satisfying domestic demand rather by national production than by imports;
- Providing solution to the downstream structural problems by speeding up the privatization process in agriculture and food industry through increase of the number of companies in the list for mass privatization;
- Ensuring better support to agricultural production mainly by a system of market intervention and price regulation, managed by government agencies;
- Sustaining investments in agriculture and food industry by credit subsidies, for improving the structures of newly settled farms and processing companies;
- Solving farm structural problems in the long run. The reinforcement of small scale farming for subsistence purposes will not be viable in the long run and this problem must be overcome because it could complicate the task of modernizing agriculture; and
- Accelerating the integration processes by speeding up the accession of Bulgaria to the WTO, the EU and the CEFTA.

3-3-2 Marketing Policy

(1) Foodstuff Balance

Price support mechanism for producers exists in the case of cereals based on "the Law on Protection of Agricultural Producers" in order to achieve domestic foodstuff balance. MAFI has developed a system of procuring and selling of wheat in 1994 in an attempt to ensure higher producer prices by producer support, quality inspection of grain, grain market information development and financial guarantee. As the policy paper for 1996-97 suggesting forecast price of second class wheat to be increased to eighty per cent of the international prices in 1997, MAFI has an intention to narrow the gap between domestic and world prices of wheat. However, it has certain limitations in terms of inflexible preliminary determined forecast prices under the current rapidly changing economic conditions. During 1996/97 farm year focus of price policy has been shifting from price support to income support mechanism, which is a general trend observed in European countries. "The Agricultural Fund" provided producers with interest subsidies for the purpose of purchasing of seeds, fertilizers, mechanical service and tractors and harvesters as mentioned in the previous section.

(2) Trade Policy

In Bulgaria, exports and imports of agricultural products has to be performed according to the Law on Protection of Agricultural Producers. The focus put on maintenance of domestic demand and supply conditions. Current trade regime with respect to cereals and sunflower, which are major products of the study areas, are shown in Appendix E-2.

(3) Standardization and Metrology

Bulgarian National Standard (BNS) is developed by the Technical Committee (TC) on Standardization in accordance with European requirements. The Committee for Standardization and Metrology is responsible for the overall monitoring of standardization and certification registration and procedures. Within the MAFI there are four sectors dealing with quality control and ranking of agricultural products. They are National Service for Pest Control, Quarantine and Agrochemistry; National Inspection for Grain and Feed Grain Control; National Veterinary and Medical Service; and Main Inspection for Approbation and Chemistry.

(4) Market Information System

MAFI has a plan to establish "National Systems for Advice in Agriculture" for each different administrative levels: namely, national, regional and local levels. Within the context, a unified integrated and multi-functional information system will be set up for data and information interchange among different levels of management. MAFI also has intention to enhance coordination with the Agricultural Academy and other higher education institutions.

(5) Legal Aspects

Market related laws are now being prepared. "A Law on Commodity Exchange and Wholesale Market" was ratified in 1996 and "A Law on Cereal Traders" is now in the process of establishment. The law on wholesale market puts an emphasis on quality control by requiring produce to be sold at markets with certificates of origin, compliance with safety, sanitary, veterinary and plant health, hygiene and other standards.

3-3-3 Farmers' Organizations

The inadequacy, or unavailability, of basic services for private farmers is the most important constraint facing farmers, and a major deterrent for other people not now farming lands from entering the profession. Services such as the provision of inputs (seeds, fertilizers, chemicals, feed), machinery services, crop and investment financing, and marketing and

processing support networks, and information and advisory services are scarce across the country.

The scarcity of services and support networks result from the previous structure of the agricultural sector. In the past, state farms and collectives were large and self-sufficient, or producing for quantity. Therefore, they were not required to meet the quality standards now necessary in a market economy.

Commercial traders can fill part of the gap. However, private sector operators will be selective in the fields they pursue as entrepreneurs, given the current high risks of doing business. Furthermore, the perception among farmers is that trustworthy private traders are limited, giving farmers little comfort in finding private services if they might be available.

Aspirations for individual farms, and to have farming by a main income-generating activity is not widespread. The small size of personal holdings limits income potential, as does the high age of owners. Therefore, the present inclination toward cooperatives is a normal product of the general economy and agricultural policies. In time, the services and support network may develop around new associations and cooperatives, and private enterprise farms. Farmers likely will organize themselves to meet their own requirements after policies are in place to support farming as a business.

Production cooperatives are the predominant form of organization in the early years of market reform. These cooperatives are most dominant in the areas where arable crops like wheat or sunflower are widely grown. The absence of credit, the high cost of machinery, and the security offered by massive state purchases reinforce this trend over the medium term. If the policy environment improves, and the general economic conditions strengthen the power of the individual, the interests of landowners and the interests of the older style cooperatives may diverge. This situation may lend itself to more risk taking by individual producers if they lease land or a land market develops, and the prospect of farm enterprises through private companies may become more viable.

Producers require the support and encouragement of marketing cooperatives and consumer organizations. State purchase of industrial crops, livestock and meat products has long dominated marketing, and state farms assumed the role of selling produce through state controlled distribution points. Marketing associations, organized around consolidating production to gain a critical mass will help increase bargaining power. Promotion of marketing associations will be most critical for fruits and vegetables, and livestock, where the state processing facilities are not as dominant. Centralizing contacts with municipal

and private markets will help alleviate the problem of producers' inability to market their product and may help to obtain better prices.

WUAs are encouraged for helping on-farm water distribution, the collection of water charges, and the maintenance of an on-farm irrigation and drainage infrastructure. In the longer term, after GOB makes tertiary facilities operational, land owners and the WUA are well positioned to pursue loans for rehabilitation and upkeep of on-farm facilities. For these purposes, water user associations in other countries are most successful when they are voluntary in nature and free market incentives for cooperation encourage their sustained operation. Compulsory participation is successful in some countries, but is generally more complicated if planners focus the purpose on O&M. In Bulgaria, they may require compulsory participation at a modest level in order to over come the short-term constraint of absentee landlords of plots within a command area. However, voluntary participation in WUAs will make them sustainable market-based incentives for cooperation.

Public administrators play an important role in supporting WUA registration and defining the roles and responsibilities through legal statues. Farmers also require on-farm use and O&M through credit access and technical oversight. Importantly, the public sector will strive not to be imposing on private producers and cooperatives.

Now however, facilities are in poor condition, use is limited, fees are not affordable or collected, and personal responsibility and trust is not easily fostered among members of a group. Therefore, the current push to register WUAs is largely an exercise justified to secure the prospect of World Bank financing. The establishment of such groups, currently, is artificial and not likely sustained without other changes in the agricultural sector. Specifically, farmers will be more apt to coordinate water delivery, and use irrigation facilities if the facilities reach their land, canals and pumps are operational, and water is available. Fees for water, and use of facilities, may be affordable and collectable through WUAs. Fees collection is tied to income, and will depend upon a market for produce developing and farmers ability to operate with access to investment and revolving credits. WUAs will make sense to nurture responsibility for on-farm systems and O&M requirements after GOB clarifies land use and land ownership. WUAs as an institution, are not likely to be sustainable without further improvements in the irrigated agricultural environment. The promotion of WUAs is best coordinated with the evolutionary changes in the sector.

3-3-4 Institutions and Supporting Services

Extension services, namely analytical support and practical consultation with producers, are an important activity. Now, EC PHARE is largely underwriting the training and modernization of the new extension network and such funding may continue over the next 12-18 months. One wonders how GOB will sustain this attractive network in the future, in the face of severe budget constraints and without external assistance. Extension services are critical, however to develop a skill base for the new structure of farming in Bulgaria. Advisory and extension deserve strong emphasis.

Skills in personal decision-making and on-farm management require support for the new cooperative and small farmer to flourish. As a new group of individual producers emerge, they require assistance in how best to take individual responsibility and make sound management decisions. Furthermore, if GOB will rejuvenate the agricultural sector, the Government will have to bring young professionals into the industry and give them the tools to prosper through formal and informal training services.

Interviews in the study areas and at the national level confirm the importance of these extension services. The most common questions asked by small producers include: (1) technical concerns on proper crop rotation, fertilizer application, machinery use, and soil testing, (2) assistance in marketing and projecting forward pricing, and (3) credit and financial management concerns. Each of these questions are areas extension services can address, and are not areas likely filled by the private sector.

Revitalization of the strong tradition of agricultural research in Bulgaria is important to the prosperity of the sector. The Academy of Agricultural Science will require financial support to retain and retrain scholars and researchers for the current challenges facing farmers and agricultural enterprises. Of particular note, the Experimental Station for Irrigation and Amelioration in Stara Zagora has been the center for irrigated agriculture applied research. Financial support for on-farm adaptive research and research on the economic aspects of agricultural production is important. Agricultural research should be seen as a long-term investment in the sector.

GOB categorizes agricultural secondary and vocational education as a task of the newly formed Extension service in MAFI. Financial and intellectual support to the network of schools across the country is important to develop a new, skilled human resource base for working in commercial agriculture. The advanced age of the vast majority of agricultural producers is a significant constraint for the revitalization of the industry. Support to

agricultural education, and incentives to young people to encourage their interest in an agrarian lifestyle, are key concerns for sectoral investment planning.

3-4 Infrastructure Development Policies

3-4-1 Medium to Long Term Policies

The polices of irrigation infrastructure development for the long term are not finalized. However, a consensus appears to be forming for the development polices within the Government that irrigation should be regarded as a private activity and be eventually operated without public financial support, but being an economic activity of public interest and using public resources (water), this should be carried out within certain rules and regulations. Consequently, the Government has divested itself of the ISC, first granting it financial autonomy (May, 1993) establishing it as a share-holding company. For the time being, the Government is the only share-holder.

The policies regarding the on-farm facilities are to establish WUAs by each town, small unit of local government, and this WUA would take over full responsibility for Operation and Maintenance of the on-farm facilities. The draft law covering WUA foresees their establishment on a voluntary basis. In order to facilitate larger project size units, the policy is to eventually lump several WUAs together to form Water User Unions. It is envisaged that the latter would take over full responsibility for smaller irrigation projects, including the reservoirs previously managed by the cooperatives.

3-4-2 Short Term Policies

The Government recognizes that the irrigation subsector will need to be increased considerably in the future to a level that renders it competitive with regard to other market forces. Until that time, the Government is prepared to keep the main infrastructure of the command area. To encourage farmers to utilize the infrastructure in high cost areas, ISC is following a policy of cross-subsidization of water charges.

3-5 Environmental Strategy for Development

(1) Management Development

Considerable efforts have been made since the adoption of the National Environmental Action Plan (NEAP) in early 1992 according to the recommendation by the Environmental Strategy Study (ESS) carried out with the assistance of the World Bank and the U.S. Government. The main areas of progress have been: the strengthening environmental institutions including the Ministry of Environment (MOE) and other agencies; development of important environmental legislation and regulations: improvement of the environmental monitoring system and establishment of mechanisms for funding of environmental protection.

(2) Institutional Development

Bulgaria started developing its environment related institutions in the early 1970s with the establishment of the National Committee for Protection of the Natural Environment and Regional Environmental Inspectorates. Since 1991 a number of measures have been taken to strengthen the regulatory and enforcement capacity of the MOE. It has created new departments such as the Urban Ecology Department, Ecological Risk Department, Department for International Projects dealing with projects under the EC-PHARE program, and Information and Public Relations Division in order to enhance its functions and structure, and improvement of enforcement capacity of Regional Environmental Inspectorate. The organization chart of the MOE is presented in Figure N-1-9, Appendix N.

(3) Development of Environmental Legislation

Since 1991 a legislative reform has been in progress in order to provide an implementable, market oriented legal framework for environmental improvements issues, the Environmental Protection Act (EPA) of 1991 was then amended by the parliament in 1992. A major contribution of this Act is the introduction of mandatory environmental impact assessment. Also a number of laws have been drafted to address the core pollution prevention and environmental management issues, for example, substitution of Laws on "Prevention of Air, Water and Soil Pollution" of 1963 by "a Clean Air Law, a Water Law, a Waste Management Law, and a Noise Management Law.

There already exists a system of sanctions and fines, and is the main source of revenue for Environment Protection Funds (EPF). Moreover, since 1990, Environmental and Health authorities have taken steps/passed regulations to revise the old permissible standards or set new standards in line with the EU standards.

Permissible standards for different categories, agricultural projects liable to EIA and requirements for the preliminary EIA report are presented in Table M-2, Appendix M.

PART II

PLAN FOR THREE STUDY AREAS

TABLE OF CONTENTS FOR PART II

CHAPTER 1. THE STUDY AREAS

1-1 Geographical Conditions of the Study Areas

The Study Area is scattered at three sites; Petrich Study Area, Rositza Study Area and Sredna Tundja Study Area.

The Petrich Study Area is mainly the municipality of Petrich, located at the south of Sofia and south-west corner of the country. It is 180 km from Sofia to Petrich by the international road along the Struma valley to Greece.

The Rositza Study Area is located at the central part of the Dunabe height between the Dunabe river and the Balkan mountain range (Stara Planina) at the central north of the country. The distance from Sofia to Veliko Tarnovo is 247 km. The distance from Veliko Tarnovo to Varna and Burgas which are important coastal cities along the Black Sea, is 220 km and 233 km, respectively.

The Sredna Tundja Study Area is located in the eastern part of the Trakiya plain of the country. The distance to Sliven and Yambol from Sofia is 279 km and 300 km, respectively, and the distance from Sliven to Burgas is 120 km.

1-2 Petrich Study Area

1-2-1 Natural and Physical Conditions

(1) Location and Topography

The Study Area is located mainly along the Struma river and the Strumeshnitza river, at the foot of the north slopes of Belasitza mountain and the south slopes of Ograijden mountain. The Study Area is divided into three different districts:

- Pirinska Bistritza district, located on the left bank of the Struma river and covered by low hills;
- Petrich district, located on both banks of the Strumeshnitza river neighboring Petrich and forming an alluvial plain; and
- Samuilova Krepost district, the steep north slopes of Belasitza mountain gradually forming an alluvial plain formed by the terraces of the rivers.

The Study Area is undulating land ranging from 50 to 300 m. The slopes of the agricultural land are distributed as follows:

less than 3 %	41.3 %
3 % to 5 %	10.5 %
5 % to 10 %	16.4 %
more than 10 %	31.8 %

Ground water table depth in the alluvial plain varies between 0.6 to 2.5 m; in the terrace it varies from 4 to 10 m and in the remaining part of the plain it is below 15 m.

Alluvial soil is predominant along the rivers, and the other two types of soil found in the area are Cinamonic and Brown forest soils lacking humus.

(2) Climatic Conditions

Petrich belongs to the transitional Mediterranean climate zone. The annual mean temperature is 14.1 °C. The lowest monthly mean minimum temperature is 2.5 °C in January and highest monthly mean maximum temperature 25.5 °C in July and August. Accumulated temperature at Petrich during the growing season from April to September is one of the highest in the country. Monthly climatic conditions of past 10 years are presented in Table I-1-1, Appendix I.

(3) Precipitation

The mean annual precipitation at Petrich is higher than the average rainfall of the country, however a summer drought is not uncommon. Monthly precipitation from 1954 is given in Table I-2-1, Appendix I.

mean annual precipitation	617.7 mm
precipitation from April to September	253.6 mm

(4) River Runoff

There are two rivers in the Study Area; the Struma river and the Strumeshnitza river, which are the main irrigation water resources for the Petrich district. Runoff of both rivers has decreased from 1988 as shown on Figure I-3-1 & I-3-2, Appendix I.

For Prinska Bistritza district, irrigation water is introduced from a compensator downstream of the dam and power generation plant on the Bistritza river.

Mean river runoff of the Struma, Strumeshnitza and Lebnitza river is summarized below. (Refer to Table I-3-1 to Table I-3-3, Appendix I)

1-2-2 Socio-Economic Conditions

(1) Sofia Region District

Area	Population	Population density	Number of municipality	Location and main town
18,978 km^2 (17% of Bulgaria)	980,598 (12% of Bulgaria)	52 persons per km^2	50	Have borders on three countries ; Greece, Macedonia, Serbia. Biggest town is Pernic.

Source: Bulgarian Almanac 1996

The District Governor's office does not have a specific economic program.
Sofia District has a very high degree of industrialization and grounds for dynamic development of agriculture and tourism. Over the last several years the development of economic sectors in Sofia District (industry, agriculture and services) has undergone significant changes towards creation of a modern structure, meeting the requirements of the market economy. The shares of the industrial and agricultural sector decreased while the share of the services went up. The economy of the district encompasses all branches of material production. The existing structure approximates a modern European structure. Industry has a leading role and significance in the economic activities of the district. Its branches form 57.7% of the domestic product produced on its territory. 44.1% of the manpower is engaged in industry. 55% of its investments are directed towards development of industry.

Sofia district is at one of the leading areas of the country for development of electronic and electromechanical industry, coal mining, black metallurgy, color metallurgy, paper production, production of construction materials, production of furs and leathers, and shoe making. Most of these branches include machine assembling, wood processing, furniture production, food processing, chemical and pharmaceutical industry. Textile and dress-making are considered as priorities for the future development.

In the southern part of the region, the towns of Petrich, Sandanski, Gotse Delchev, Hadzhidimov, the economic structure is agrarian-industrial. Typical crops grown are vegetables, fruits and vine-growing and livestock breeding.

(2) Petrich Municipality

a) History

History of the area suggests that 60-70% of the people who live at present in Petrich municipality are former refugees or their descendants who moved from Greece and Yugoslavia between 1918 and 1926 as a result of unsuccessful attempts of the Kingdom of Bulgaria to unite its former territories. In 1930, by a government decree, these people were given farm land. The land size for full-time farmers was fixed at 3.6 ha, for people of other occupations it was 0.9 ha. This fact helps explain why small land ownership is predominant in Petrich municipality.

b) Population and Social Infrastructure

57,829 people (see Table B-1-2, Appendix B, census 1992) are gathered in 57 villages including the town of Petrich with 27,659 inhabitants. 29,815 people in the municipality are in the age of Econonically Active Population (EAP, people of age between 18 and 55 or 60 for females and males, respectively) and 14 % of them are unemployed. There are 36 schools with 1,020 teachers and 8,800 students between 7 and 18 years of age. 113 physicians are dispatched in 45 health centers, including a municipal hospital.

c) Economy

The economy of the district is composed 45% in industry, 30% in services (mainly trade) and 25% in agriculture. The main industries are light industry manufacturing (knit and clothing), water flow meter, safe box, electronics (joint-venture with German company) and furniture. There are many small size international trade companies doing business with Greece and Macedonia. Agricultural production and processing are vegetable cannery, meat processing, vegetable and fruit farming facilitized with greenhouse, and dairy. These state and municipal companies are in decline.

The municipality is now drafting its plan up to the year 2000, and it is scheduled to be completed in September, 1996. Foreign investment projects and agriculture development policy will be included in the plan. Agricultural output is targeted to increase by 65% of the output level of 5 years ago. Implementation of scientific technology and agricultural machinery is considered necessary to promote the agricultural sector.

d) Priority and Potential of Municipality

First priority is given to agriculture. There is a municipal program for organizing of local farmers into cooperatives. The idea is to convince private farmers that collective planning and managing of their business is in their interest. The 1996 municipality budget is Lev 462,585,000 with Lev 2,220,000 devoted to agriculture.

(3) The Petrich Study Area

The Petrich Study Area is comprised of 11,000 ha irrigable land. It includes 29 villages and the town of Petrich in Petrich Municipality and 11 villages in Sandanski Municipality. A total of 58,603 people lives in the Study Area including 30,724 EAP (14 % of them are unemployed; See Table B-1-2 and Figure B-2-3, Appendix B, census 1992). Although the region joined Bulgaria after the Balkan War in 1913, it is a harmonious part of Bulgaria.

With a few exceptions, the social infrastructure that exists now in Bulgaria was built up mostly after the WW II when funds were provided by the central government proportionally to municipalities. Given the location of the Study Area Petrich along the borders with Greece and Macedonia, trading is a good source of income. The region is Bulgaria's physical gate to the EU and one might expect a future boost of activities between EU, in particular Greece, and Bulgaria. For the purpose of this project the Study Area 'Petrich' was divided into two blocks : Petrich Case I (6,600 ha) and Petrich Case II (11,000 ha).

1-2-3 Agricultural Conditions

(1) Marketing and Distribution

a) Location and Production

Before 1989 Petrich was an important export base to Czechoslovakia, Poland, Germany, Austria, the Scandinavian countries and Russia. It is located along the international road to Greece (via Kulata) and Macedonia (via Petrich and Delchevo) and the railway system from Sofia to Greece. Being an export base there are two existing assembly markets for fruit and vegetables with cooling and freezing storage facilities in Petrich city and in Sandanski city. However, the current utilization rates are low due to decline in export amounts. From Petrich to major European cities it takes three to six days by truck.

b) Distribution Channels of the Major Agricultural Produce

Apart from self consumption current major selling channel for fruit and vegetables in the study area is on farm selling and spontaneously emerged producer markets such as Karnalovo. Procurement by food processing companies has been seriously affected by the financial difficulty of the industry. Petrich region is only a place in Bulgaria where tobacco can be sown after harvesting cereals. There are two state owned cooperatives which have contract production system with producers. As for grapes, there is a state owned winery which procures raw materials from the area.

c) Constraints of Current Distribution System

i) Lost export markets

Petrich region has suffered from decreasing export markets of fresh and processed fruit and vegetables after 1989. These products are now imported from neighboring countries such as Greece and Macedonia. Besides, the UN embargo on Yugoslavia affected transportation of perishable goods to the major European countries.

ii) Lost domestic markets

Small scale producers cannot meet with requests from traders such as large quantities of produce, variety of products and timely delivery. Therefore, prices of vegetables have decreased and producers started to shift from vegetables to cereals in the region. This is further emphasized by an aging society which became a constraint for promoting labor intensive production.

(2) Demand and Supply Condition of Major Produce

Production data from SAPI is utilized. Consumption rates are from the National Statistical Institute. For wine grapes, MAFI data is utilized. The procurement capacity data of the canning industries is not available, and the potential procurement capacity of the 2 existing collecting and assembly markets in Petrich and Sandanski is utilized for the estimation.

Estimated Demand and Supply Condition of Major Produce

(Unit : Ton)

	Production	Self Consumption	Marketable Production	Potential Procurement Capacity of Markets	Balance (1995)
Wine Grapes	1,980	1,157	823	834	11
Peaches	2,110	1,157	957	1,620	667
Tomatoes	8,100	1,157	6,943	4,000	-2,943

Source: JICA Study Team, 1995

a) Wine Grapes

The state owned winery at Damunitza is assumed to procure grapes according to the ratio of total production of Blagoevgrad vs Petrich and the estimated procurement capacity of the study area is estimated to be almost equal to the actual 1995 production levels.

b) Peaches and Tomatoes

Existing assembly markets with cooling facilities in Petrich city and Damyanitza are assumed to procure raw materials from the study area. Production level of peaches in 1995 is apparently lower than the peak production level in the area as the estimated procurement capacity of the markets could be utilized only to about 60%. Production of tomatoes in 1995 surpassed the estimated procurement capacity of the local markets. This might imply an increasing role of private traders who come from all over the country to procure fresh tomatoes at voluntarily emerged producer markets.

(3) Farming and Agricultural Production

a) Introduction and Overview of the Study Area

The study area lies within two river valleys, the Struma and the Strumeshnitza, and the crop agriculture is found predominately on the alluvial soils of the narrow valley floor, while the vineyards, pastures and orchards are found on the bench terraces. The main town within the study area is Petrich, and the major market for the area's production is Sofia. The climate is transitional Mediterranean, and the growing season allows the possibility of multicropping and early vegetable production. In recent years upstream water use on both rivers, but particularly the Strumeshnitza has reduced the availability of irrigation water.

b) The Importance of Agriculture

The agriculture of the greater Sofia region is based mainly on tobacco, fruit, vineyards and vegetable growing. In 1995, 46 % of the land was under cereals, 7% technical crops, 11% fruit and vegetables and 36% fodder crops. In this study area the majority of farms are small, (average size 1.2 ha) and grow mainly tobacco, melons and vegetables for the market, with some peanuts and beans on the larger farms, while cereals and fodder crops are grown by the larger farmers. The orchards in this study area are limited in extent, mainly peaches on the lower slopes of the surrounding hills. The area under vineyards is larger, but many of these plantings are neglected. Commercial animal production is limited by the small farm size.

In 1995, according to the ISC branch office in Sandanski total cropped irrigable areas were 2,604 ha; mainly vegetables (1,680 ha), grain maize (480 ha) and orchards (128 ha), and irrigated areas were 964 ha; vegetables (280 ha) grain maize (240 ha), orchards (128 ha) and other crops using 2.5 million cubic meters of water. In 1994, 2.8 million cubic meters were used to irrigate 2,600 ha of crops, mainly tobacco (600 ha), vegetables (500 ha) and grain maize (420 ha) on an irrigable area of 5,130 ha.

This can be contrasted with the situation in 1990, when the State cooperatives used 4 million cubic meters of water to irrigate a total of 16,480 ha, mainly private use (6,165 ha), tobacco (3,328 ha), meadows (1,374 ha), vegetables (1,004 ha) and other crops .

c) Conclusions

The limited availability of land and water will always restrict the possibilities for agricultural production in this study area. Their comparative advantage is in terms of early season production and their access to the Sofia market. The small farm size is also a limit to productivity, and although the local population is aggressively farming their available land, the low domestic prices for their products, and the competition will tend to restrict returns.

(4) Farm Management and Economy

a) Economic Profile

As mentioned in the preceding section, agriculture is the economic foundation in the study area and is characterized by vegetables, tobacco and grapes. The total production in the area is estimated at US$ 6.5 million. Among farm products, the production amounts of vegetables and tobacco are US$ 2.15 million (33.2% of the total

amount) and US$ 2.34 million (36.3% of the total amount), respectively. (see Table F-I-1-11, Appendix F)

b) Land Restitution

The NSI land restitution data as of July 26, 1996, shows that in Sofia region, which includes the study area, 360,732 private farms with 571,893.9 ha have already received notary deeds under the land law. However, most farmers cultivate their farms with temporary ownership rights of farmland. The farm survey conducted on 100 farmers in Petrich, found 61 farmers with a temporary ownership right and only 2 with notary deeds.

c) Farming Pattern and Size

The survey data showed private farmland areas ranging from 0.2 ha to 9.1 ha with 4 to 6 plots. One third of private farmers are renting land (0.56 ha in the average) for second crop cultivation. Average farmland per private farmer is 20 decares (2.0 ha). The average farmer farms 1.0 ha cereals, 0.1 ha grass, 1.2 ha vegetables and 0.3 ha melons.

d) Farm Management

In the area, the farming system is mixed with manual labor and mechanization, 38% of the farmers help each other in their farming activities. Some farmers use hired labor for their farming practices such as weeding and harvesting.

Revenues and expenditure of farm management were analyzed based on the farm interview survey and the data of the SAPI and NSI. Vegetables, grapes and tobacco show the highest profitability ranging from 90% to 223%. (see Table F-I-1-9, Appendix F)

e) Farm Labor Force and Mechanization

According to the result of farm labor analysis, the total requirement of present farm labor force is 1,145.0 thousand man-days (tmd). More than 150 thousand man-days are required from June to September. (see Table F-I-2-1(2), Appendix F)

Concerning the farm equipment, 46% of farms with over 2.0 ha have a tractor. The water pumps are owned by the farmers with 0.5-1.0 ha (36%), 1.0-1.5 ha (14%), 1.5-2.0 ha (21%) and over 2.0 ha (21%). 98% of the sample farmers irrigate their lands. The most used method of irrigation is gravity (83%).

f) Farm Credit

In 1995, only 1% of the farmers obtained a bank credit. The amount was Lev 20,000 and the annual interest rate was 60%. In 1995, 2% of the farmers borrowed money from relatives for farming and its amount was Lev 20,000 (annual interest rate: 50%). Almost no farmers took bank credit because of the high interest rate.

g) Farm Household Economy

The average farm conditions have been analyzed assuming 2.0 ha farmland. Irrigated farming is assumed for all crops except wheat. The cropping pattern is wheat (1.0 ha), vegetables (1.2 ha), melons (0.3 ha) and alfalfa (0.1 ha). Family size is 4 persons (farm labor force: 3) and mechanized farming is used for wheat.

The result of this analysis is tabulated as follows: (see Table F-I-3-1(1), Appendix F)

Category	Amount (Lev)
Farm Income	246,340
Production Costs	106,400
Return	139,940
Home Consumption	83,910
Living Expenses	194,640
Deficit	138,610

The result shows it is very difficult to maintain living expenses solely from farm income, the income deficit is covered by off-farm income in other labor markets.

(5) Farmers' Cooperatives, WUAs, and Institutions

One major state farm once dominated the fruit and vegetable production, and livestock raising in the Petrich area. New forms of organization have not been established. Liquidation councils and the Yugoslavian war have changed the vitality of agriculture in the region. The uncertainties of reform in the early 1990s, and the short-term trading opportunities existing in association with the war across the border have taken many people out of the agricultural sector. Self-appropriation of assets, and many acts of vandalism has accompanied land reform and liquidation, destroying greenhouses and canals, and uprooting orchards and vineyards. In place of a profitable large state farm operation, middle aged and elderly farm workers have been left with tiny plots of land to operate as "garden" units as a supplement to pension income, or offer land under temporary use to a cooperative.

In Petrich, only two cooperatives exist (ex-TKZCs). These two cooperatives are engaged in tobacco production. The "Golden Leaf" and the "Ograzdin" production cooperatives account for more than 90% of tobacco production, and modest production of forage for sheep, goats and cows. Golden Leaf has an estimated 1,050 ha under pre-contract for tobacco cultivation, and Ograzdin has 2,300 ha arable land in its cooperative. Both cooperatives supply seed, fertilizer and technical advice to members.

WUAs. Registration of new WUAs in Petrich is lagging behind the other two study areas as the use of irrigation is low and the structure of agriculture is still unclear. Irrigation use is small, and small farmers have limited incentives to form WUAs. In practice, registration of WUAs is forced, given the absence of real owners and such small access to and use of irrigation facilities. Groups using irrigation facilities and water will receive a 15% discount on water charges if part of the WUAs. However, current collection rates are very low making such discounts unimportant to many farmers. Twelve targeted water user groups are defined within the JICA study area, out of a total of 18 groups in the Petrich and Sandanski municipalities, though registration is just beginning.

Extension. The extension office in the region, located just outside the municipality of Sandanski, is on the site of the former experiment station. This extension office is not active and not yet comfortable with its outreach roles and duties. The extension office is targeting producers with a maximum of 10 dca of land. Soil testing is available for those requesting laboratory analysis. Sources project demand for services to include advice on pest control, fertilizer application and marketing, although the office recognizes their staff are not qualified to offer much assistance on marketing. The demonstration farm on the premises is virtually idle, and its plans for expanding seed and seedling production are not yet operational.

1-2-4 Infrastructure Conditions

(1) Irrigation and Drainage

a) Irrigation Area

Agricultural land in municipality Petrich is irrigated by the existing irrigation facilities operated by the ISC, and facilities on cooperative lands and private farms. However, some agricultural land can not be irrigated due to damaged canal and pumping stations. In terms of water resources, the agricultural area can be divided into three irrigation

districts, namely Pirinska Bistritza district located on east side area of the Struma river, Petrich district which is in the vicinity of Petrich town and Samuilova Krepost district located on west side area of Petrich town in teams of water resources. The acreage of each district is tabulated below. (Details are shown in Table J-1-2, Appendix J)

Description	Case I	Case II
Study Area	6,584.6 ha	11,000.0 ha
Pirinska Bistritza district	1,940.7 ha	2,496.4 ha
Petrich district	4,170.1 ha	5,889.6 ha
Samuilova Krepost district	473.8 ha	2,614.0 ha

Case I means that the land is to be irrigated by the facilities operated by the ISC, and Case II means total agricultural land irrigated by the facilities operated by the ISC and ex-cooperatives and private farms.

b) Water Resources

Water resources of each irrigation district is described below.

Pirinska Bistritza district : This irrigation district is a part of Pirinska Bistritza irrigation system, and its water source is compensator (storage capacity: 75,000 cu.m) under Gorno Spanchevo WPP, with one pumping station on the Struma river for recovering the water shortage from the compensator.

Petrich district : Water resources of this irrigation district are the Strumeshnitza river and the Struma river. Intake water from the Strumeshnitza river is by gravity. The intake from the Struma river requires pumping up. There are two intakes on the Strumeshnitza river; an intake on right bank and a temporary intake on left bank of the river. However, since storage dams were constructed on the upstream of the river in the territory of Macedonia, the water available in inadequate points. On the Strume river, there are two pumping stations; Kojouh pumping station and Svoboda-1 pumping station.

Samuilova Krepost district : This district is located between the Strumeshnitza river and Belasitza mountains which is the boundary of Bulgaria. This irrigation district collected irrigation water from the runoff of the mountains. For this purpose, one storage dam was constructed and the other new dam is under construction.

c) Irrigation Facilities

Irrigation facilities such as pumping stations and canals under the operation of ISC are described below. (refer to Table K-1-1&2, Exhibit K-2-1, Appendix K)

i) Main facilities

There are two kinds of pumping stations, namely three (3) intake pumping stations which take irrigation water from river and five (5) boosting pumping stations boosting next stage of canal or compensator. Capacities of these pumping stations range from 2.0 cu.m/sec to 0.10 cu.m/sec. The pumping station with compensator is usually not operated at day time due to high electricity fees.

There area has seven (7) main canals along the contour line, with a total length of about 56.7 km and capacities of from 2.0 cu.m/sec to 0.15 cu.m/sec. About 91.6 % or 51.9 km of main canal are lined canals and the remaining are unlined canals. Some parts of lined canal require rehabilitation.

ii) Branch canal

Branch canal, which is an earth canal (0.5 m x 0.4 m), after turnout is located vertical to contour line, and it's capacity is about 0.3 cu.m/sec.

iii) On farm facilities and irrigation methods

Agricultural land supplied by the ISC are irrigated by gravity method, and some agricultural lands in ex-cooperatives are irrigated by pressured irrigation.

d) Drainage facility

There is only a surface drainage system for removing excess irrigation water in the soil and rainfall.

(2) Roads Conditions

Roads between towns are two-laned road, paved by asphalt. All farming lots are planned to be connected with the main roads by farm road with 6.0 m width on the land reform plan, however farm roads are not clear since land reform was not completed, and land ownership is not settled.

1-2-5 Environmental Conditions

(1) Flora and Fauna

Among the three study areas, Petrich has a very rich biological environment. Pirin, Slavyanka, Belasitsa and Ograzhden are the mountain ranges surrounding the Study area. Except for Ograzhden, these mountains are covered with thick coniferous forests, consisting of pine, white fir, Rumelian pine, maple trees, edible chestnut and beech.

A variety of birds, such as the falcon, hazel hen, goshawk, small eagle and owl inhabit this area along with mammals, such as deers, wild boars, foxes, wolves and mountain mouse are common. The reptile world is represented by the cat snake, turtle and Greek frog.

This region has many protected areas. Among them Pirin national park, Melnik pyramids, Rozen monastery, waterfall on the Sandanska Bistritsa river, the old plane trees in the Sandanski municipality, Rupite and Kozhuh are important.

(2) Water Quality

The points for regular water quality monitoring in this area are very few. Monthly water quality is measured only in three points, periodical monitoring is performed in 20 points scattered all over the region. Although the quality of irrigation water is within the range of the permitted limit, the sources i.e. Struma and Strumeshnitza rivers are subject to pollution.

At present there is no sewage water treatment facilities in Petrich and Sandanski. Sewage water from Petrich (approximately 250 l/s) and from Sandanski (220 l/s) is discharged into the rivers. Waste water from industries is also an important source of water pollution in this region.

(3) Air Quality

There are two air quality measurement stations in the region. One is at Blagoevgrad and the other is at Razlog. Measurement activities started in 1994. The air of Blagoevgrad is very dusty. The air of Razlog area used to be very polluted in the past due to its closed location and active industrial production. However, it has improved recently as industry has declined.

(4) Cultural Heritage

In terms of presence of cultural heritage, Petrich area is very well known in the southwestern part of the country. So far, ruins of old villages, prehistoric mounds, church, fortress have been discovered in the region. The names of the Study related places where these ruins have been found are Parvomay, Ragdak, Muletarovo, Mitinovo, Topolnitza and Kapatovo.

(5) Others

Petrich area has a problem of raised river beds due to deposition of small stones from the steep mountain slopes and/or from the unlined side slopes of the roads. This raised beds have caused a decreased flow regime. As a result, intake pumps are encountering difficulties.

1-3 Rositza Study Area

1-3-1 Natural and Physical Conditions

(1) Location and Topography

The agricultural land of the Study Area is irrigated by the Aleksandar Stamboliiski dam. The area near the dam is of the greatest altitude and has a relatively steep slope, while the area along the Rositza and Jantra river possesses a relatively gentle slope. The slope of the agricultural land area is distributed as follows:

less than 3 %	36.6 %
3 % to 5 %	44.5 %
more than 5 %	18.9 %

This area can be divided into the following three Blocks:

Main Lower Right Canal Block : This area is the agricultural land irrigated by the main lower right and upper right canals which are commanded by the Bent Byala Cherkva head works. It is located on the right bank (south) of the Rositza river.

Main Left Nikyupski Canal Block : This agricultural land is irrigated by the main left Nikyupski canal from the inlet of the Pavlikeni siphon of the main left distribution canal, and is located on the left side (north) of the Rositza river and the left side (west) of the Jantra river.

North Main Canal Block : This area is located at north and west of Pavlikeni and is irrigated by the water pumped up by Rositza No.1 pumping station and the main left distribution canal.

The soils in the area of the system include clay loam, loam and typical loess. The level of the underground water varies in a wide range of 1.2 m in river-side ledges to 15 m along slopes. The predominant soils are leached chernozem (black earth), carbonate chernozem and meadow soils. The soils are characterized by a very well formed average layer of humus which is of greater magnitude in the meadow soils.

(2) Climatic Conditions

Climatic conditions of the study area are described by the observed data at Pavlikeni and Suhindol. Table I-1-2 and I-1-3, Appendix I show monthly climatic conditions at these meteorological observation stations.

a) Temperature

As shown below, annual average mean temperature is 11.8 and 11.5℃ at Pavlikeni and Suhindol respectively, while the warmest month is July with monthly mean temperatures of 23.2 and 23.1℃.

b) Wind Speed

Wind speed of this area is moderate.

(3) Precipitation

Rainfall in this area occurs throughout the year. Rainfall in growing season from April to September, as shown on the following table, is 352.0 and 430.8 mm at Pavlikeni and Suhindol, respectively. (refer to Table I-2-2 & I-2-3, Appendix I)

(4) River Run-off

There are two main rivers in the Study Area; the Jantra river and the Rositza river which is the tributary of Jantra. The irrigation water source is the Aleksandar Stamboliiski dam on the Rositza river. Monthly mean river runoff of Sevlievo at 20 km upstream from the dam is given in Table I-3-4, Appendix I.

1-3-2 Socio-Economic Conditions

(1) Lovech District

Area	Population	Population density	Number of municipality	Location and main town
15,150 km^2 (13.8% of Bulgaria)	999,000 (11.9% of Bulgaria)	66 persons per km^2	32	Central part of Northern Bulgaria. Largest town is Pleven. Veliko Tarnovo is a beautiful tourist attraction.

Source: Bulgaria Almanac 1996

The district Governor's office has not made an economic program as yet. Industry has over 60 % of the economic output of the district economy. Lovech district produces

87 % of the electronic motors and 35% of the cement of the country. The main industries and their center towns are as following.

Machine-building, electronical and electronic industry
- Veliko Tarnovo, Gabrovo, Lovech, Troyan (Chemical and oil processing industry)
- Pleven, Veliko Tarnovo, Gabrovo (Production of building materials)
- Pleven, Sevlievo, Gorna Oryahovitsa (Textile industry)
- Gabrovo (Knitwear industry)
- Pleven, Gabrovo, Tryavna (Food industry)
- Svishtov, Gorna Oryahovitsa, Pleven, Veliko Tarnovo (Timber processing and production of furniture)
- Lovech, Tryavna, Troyan, Teteven, Nikopol (Fur processing and production of modern fur and leather clothes and articles).

Agriculture is under the strong influence of the soil and climatic conditions of the district. The northern and central areas specialize in cereals (wheat, maize), sunflower, sugar beet, and vegetables.

In the southern hilly and semi-mountainous areas, plums, pears, apples, vines, raspberries, strawberries are grown. The product mix is 55 % cereals, 16 % sunflower and sugar beet, 5% vegetables, 12 % fruit and vineyard, 12 % fodder crops. The district produces 61 % of the sugar beet, 20 % of the machine tools, 16 % of the meat products, 17 % of the grape wines.

35 % of the land in the district has been restituted completely. The Governor's office estimated that 90 % of the land will be restituted by the middle of next year.

(2) Veliko Tarnovo Municipality

a) History

The town of V. Tarnovo had been the Bulgarian capital until the Turkish invasion of Europe in 1396. It was a major administrative, trade and culture center of the Balkans, ruins of which still exist. Founded by the Bulgarian monarchy in 9th century, the town is spectacularly built along the curves of Jantra river. Harboring monumental historical treasures, the town is one of the Bulgarian most popular tourist sites.

b) Population and Social Infrastructure

V. Tarnovo Municipality (93,796 citizens) has 35 villages and three towns, V. Tarnovo (75,705), Debeletz and Kilifaravo. EAP are 44,546 and 13 % are unemployed. The municipality has 41 schools with 7,996 students and 1,057 teachers. The medical service is organized in 7 major health centers, including a municipal hospital with 1,907 beds and 317 physicians.

c) Economy

Agricultural output is estimated to be occupy 10 % of the municipality's economy. Main industry of the municipality are manufacture of electronics and teleprocessing system. Management condition of both sector are worse due to loss of former market in the former USSR and COMECON. The production has decreased to 50 % of 1989 level. Delegations from South Korea and Russia visited the factory to study the investment potential. However, foreign investment is not yet contracted. Main Agroprocessing Industry is state-owned company-Grain production, milling company (ZLATEN KLAS) Meat processing (RODOPA), milk and dairy company (LARTIMA and SERDIKA).

d) Priority and Potential of Municipality

The local leadership gives priority to helping local industries and creating jobs, improving the transportation network, keeping the position as a leading tourist destination, and completing the land restitution process. The 1996 municipal budget, before actualization, was Lev 700,574,000. Accumulated municipal deficit is Lev 162 million until end of 1995. The main reasons of deficit are reduction of sales due to inflation caused by fluctuation of the exchange rate and insufficient national budgets.

The municipality has an economic development program (not open to public), planned in the end of 1995. It covers wide areas of municipality service and each sector. Each division of the municipality is in charge of implementation for sector programs.

Totally, 70 % has been restituted including temporary restitution. 37 % of the lands are restituted. 34 % of municipality property including public service such as cleaning, construction, watersupply and school will be remaining as municipality owned property. At present, about 30 % of municipality owned company has been sold. In 1996 or later, the state owned blood transfusion company (MOMINA KREPOST) and sport ball manufacture (ETAL 91) will be mass-privatized. Among municipality owned companies, manufacture of repair utility, electronics and wood, trade company and two construction companies are scheduled for privatization.

(3) Pavlikeni Municipality

The name of Pavlikeni is mentioned for a first time in 13-14 century when in the present location of the town came people who belonged to a Christian east-orthodoxy sect known as *Pavlikyani*. Being mostly farmers, these religious men came from southern Bulgarian territories looking for better farm land. During the Turkish Occupation, Pavlikeni was 99 % inhabited by Turks who fled the town in 1878 after the liberation of Bulgaria by the Russian Imperial Army. The town of Pavlikeni thrived after the construction of the railroad Sofia-Varna in late 19th century.

Pavlikeni Municipality (33,795 citizens) has 17 villages and two towns, Pavlikeni (14,585) and Bjala Cherkva. There are 14,467 EAP people in Pavlikeni (15% are registered as unemployed). The municipality has 20 schools with 5,358 students and 494 teachers. Medical service is organized in one municipal hospital with 306 beds and 11 health centers with 74 physicians.

Due to 70% losses of water in the existing water system, the local leadership gives first priority to building of a new water supply system. The municipality's support for local industries is vital for creating jobs at a time when the unemployment rate has become dangerously high. In agriculture, a bright prospect is possible by producing grapes and exporting wines by the local winery. The budget for 1996, before actualization, was Lev 147,753,000.

(4) Polski Trambesh Municipality

Polski Trambesh has long history but as a Bulgarian town it was shaped in the early 20th century when many inhabitants from the northern Balkan Mountain range migrated to the valleys. Almost like the town of Pavlikeni, an industrial boom came with the building of the railroad from Sofia-Varna. Most of town's factories have 60-70 years of history.

Polski Trambesh Municipality (20,910 citizens) has 15 villages and one town, P. Trambesh (5,471). The number of EAP is 10,059 but 17 % of them are unemployed. The municipality has 13 schools with 1,708 students and 270 teachers. Medical service is organized in one municipal hospital and 15 health centers with 30 physicians.

Today's problems are associated with education, health care, social activities and repair and maintenance of the social infrastructure. The municipal budget for 1996, before actualization, was Lev 120,000,000.

(5) The Study Area in Irrigation System Rositza

The Study Area incorporates 50,700 ha irrigable land known as Irrigation System Rositza, and spreads across eight municipalities. It includes 47 villages and 3 towns. Total of 76,029 people live in the area including 32,063 EAP out of which 18 % are unemployed (See Table B-1-3 and Figure B-2-4, Appendix B, census 1992). The area is a typical Bulgarian agricultural region with a wide variety of agricultural products.

The Rositza study area was divided into three blocks : North Main Canal, Main Left Nikyupski Canal and Main Lower Right Canal.

Northern Main Canal Block: While the main part of North Main Canal block lays in Pavlikeni municipality, its north-east branches are located deep into Polski Trambesh municipality. A total of 29,396 people (EAP are 12,636 with 16 % unemployed) live in the area of the block (See Table B-2-2, Appendix B, census 1992). There are 15 settlements among which is the town of Pavlikeni. The number of people has remained stable during the last three years marking only a 0.3 % decrease

Main Left Nikyupski Canal Block: The Main Left Nikyupski Canal stretches along the left (north) bank of Rositza river. A total of 19,849 people (EAP are 8,213 with 20 % unemployed) live in the area of the block (See Table B-2-3, Appendix B, census 1992). There are 13 settlements, among which is the town of Polski Trambesh. The number of people has remained stable during the last three years marking only a 0.9% decrease.

Main Lower Right Canal Block: The Main Lower Right Canal, stretches along the right (south) bank of Rositza river. Total of 26,642 people (EAP are 11,312 with 19 % unemployed) live in the area of the irrigation block (See Table B-2-4, Appendix B, census 1992). There are 17 settlements in the irrigation block. The number of people has decreased by 3.9 % during the last three years producing the sharpest decline among the three study blocks in the 'Rositza' area.

1-3-3 Agricultural Conditions

(1) Marketing and Distribution

a) Location and Production

Physical infrastructure is well developed. There are road and railway transportation networks connecting the region with Romania and Ukraine via Ruse, and Russia and Grusia via Varna port. There are two major agribusiness areas. Agribusiness center in Polski Trambesh which is on the way to Romania with meat, feed, oil extraction, canning and dairy industries and a winery. Pavlikeni is another agribusiness center with food processing industries such as meat, winery and canning.

b) Distribution Channels of Major Agricultural Produce

State milling companies in Tarnovo mainly procure cereals from the study area. It can be traded in the commodity exchange market in Pleven. There are some integrated closed production systems within which producers own processing companies, feed companies, retail shops and restaurants. Regarding sunflower, a state-owned sunflower oil extraction company in Polski Trambesh dominates the procurement of raw materials from large scale producers based on contract production system. As for vegetables and fruit, many channels exist such as on-farm, consumer markets and private traders. Regarding sugar beet, raw materials are brought to collection points near to railway stations and transported to sugar factories in Gorna Oryahobitza. Wine grapes are procured by state wineries and a private winery in Suhindol.

c) Constraints of Current Distribution System

i) Gaps between domestic procurement prices and world prices of cereals

While cereal trading has been controlled by state policy in terms of minimum procurement prices and trade regime, procurement prices are normally lower in grain production areas such as Lovech district. The gap between domestic procurement prices and world prices of cereals discouraged producers from selling their produce to state procurement companies, instead, they export when the export ban is lifted.

ii) Inadequate post harvest practices

Producers in Rositza region now have different selling channels outside of the state sectors. However, due to inadequate storage facilities, transportation means and financial resources, many producers cannot afford to negotiate but sell their produce to traders at the lowest prices in the year, immediately after the harvest season.

(2) Demand and Supply Condition of Major Produce

An analysis of demand and supply condition of major agricultural produce in seven municipalities covering the study area was conducted. The results show general demand and supply condition of the seven municipalities in Rositza region but not the exact situation in each of the three blocks.

a) Data

Production data prepared by the Agricultural Market Information System (SAPI) was used for the analysis. National average per capita consumption figures estimated by the National Statistical Institute were utilized for estimation of total consumption of vegetable and fruit. Consumption of cereals and sunflower is estimated according to consumption data derived from MAFI's demand and supply analysis. Due to constraints in collecting data from the private sector, only state procurement organizations are included in the analysis. Therefore, the analysis has certain omissions such as direct exports by producers through private traders.

b) Assumptions

The following assumptions were made in order to estimate demand and supply conditions of the study area. Wheat is assumed to be sold to a state procurement organization (Zarneni hrani in Tarnovo) and 3 state owned milling companies, (Yantra, V. Levski and Varltr). Assuming that these companies procure the output of Lovech district, the procurement for the 7 municipalities in the study area is estimated according to the production in the municipalities (V. Tarnovo, G. Oryahovitza, Pavlikeni, Polski Trambesh, Svishtov, Levski and Suhindol) compared to total for Lovech district. The same assumption applies to other produce.

According to the farm survey, forage crops are mainly self-consumed for feeding livestock in the case of individual producers and only agricultural cooperatives sell forage. Therefore, the production of agricultural cooperatives is used for the analysis of demand and supply condition of forage crops (barley and maize). Their total production is assumed to be sold to four state fodder companies, ("Vit", "Nadezda", "Rositza" and "Yantra",) and a beer company in the case of barley.

Sunflower is assumed to be sold to a state sunflower oil extraction company in Polski Trambesh ("Prima M"), which is the main procurement organization for the study area. Wine grapes are assumed to be sold to four state owned wineries, [Vinprom (Svishtov), Vinprom (V. Tarnovo), Rositza (Pavlikeni) and Vinprom (Lyaskovetz)].

c) Estimation of Demand and Supply Condition of Major Produce

Estimated Demand and Supply Condition of Major Produce

(Unit: Ton)

	Production	Self Consumption	Marketable Production	Procurement Capacity of State Sector	Balance (1995)
Wheat	198,414	102,678	95,736	60,708	-35,028
Barley	59,567	40,450	19,117	95,282	76,165
Fodder Maize	113,011	43,562	69,449	48,419	-21,030
Sunflower	59,321	15,867	43,454	70,000	26,546
Wine Grapes	25,277	5,218	20,059	35,174	15,115

Source: Estimated by JICA study team, 1995

i) Wheat

In Rositza region, the state procurement company (Zarneni hrani in Tarnovo) and state owned milling companies were estimated to procure about 60 % of the total marketable produce in 1995. The rest of produce was procured by private wholesale traders and milling companies, new types of agricultural cooperatives which inherited or purchased storage facilities belonged to the old cooperatives, and the commodity exchange market for cereals and sunflower at Pleven.

ii) Barley and maize

Apart from self consumption, state owned fodder companies and a beer company have room for procuring additional barley. As for maize procurement the capacity of the state owned fodder companies is estimated to be inadequate for procurement. However, actual supply of maize is decreasing due to low demand from the livestock sector, bad climatic conditions, and delayed sales caused by low procurement prices.

iii) Sunflower

Production of sunflower is guaranteed by the current state procurement capacity and there is room for further increases. Oil extraction companies located within a short distance of the production areas purchased the quantity they needed and the remaining part was left waiting for higher procurement prices. With the imported sunflower from Hungary and Poland, produce in Lovech district faced better prices in 1995.

iv) Wine grapes

Similar to fruit production, production of wine grapes has declined rapidly due to the uncertain ownership of the land caused by delayed land restitution. In Lovech district only 24 % of vineyards are fully preserved and as much as 21.3 % of vineyards are said

to be non restorable, according to data from the Pleven Institute. Therefore, the production of Rositza region was not sufficient for full utilization of the existing processing facilities in the study area and further increases in production of wine grapes are possible.

v) Sugar beet

Since the procurement data of sugar processing companies was not available, demand and supply estimation of sugar beet could not be conducted. However, a report prepared by SAPI said that sugar beet produced in Lovech district was not sufficient for full capacities of the two sugar factories in Gorna Oryahobitza and Dolna Mitropolia. The Gorna Oryahobitza factory was forced to supply even producers who cultivate outside of the region with free seeds. They also covered expenses for pesticide by 100 %, fungicides by 50 %, and gave producers 5 kg of sugar per ton of sugar beet.

(3) Farming and Agricultural Production

a) Introduction and Overview of the Study Area

The Rositza study area is located in the Lovech region in the north central part of Bulgaria, located on the northern fringe of the Balkan range. The topography of the area is gently rolling hills, dissected by valleys. The irrigation system is built along the main river valley, the Rositza, and via gravity canals and pumping stations into the surrounding areas. The soils are alluvial along the river terraces, black earths, particularly in the east and north-east, and gray forest soils on the upland areas. The major towns located near the study area are Veliko Turnovo, Gorna Oryahovista and Pavlikeni. Lovech is the administrative center for this study region. The climate is moderate continental, with the frosts coming by October. The irrigation system is old (1950's) and large portions of it have not been operational for some time.

b) The Importance of Agriculture

The region grows cereals (wheat, maize and sunflower) on the plains, and along the hills, orchards of plums, pears and apples, and vineyards are found. A large sunflower oil processing plant is found at Polski Trambesh. Much of Bulgaria's sugar beet is grown in the region, with a refinery at Gorna Oryahovista.

In 1995, the crop mix for the region was cereals 55%, technical crops (sugar beet, cotton, sunflower) 16 %, vegetables 5 %, fruit and vineyards 12 %, and fodder crops 12 %. The average ownership size is 1.9 ha, of which 0.75 ha is irrigated. Unlike Petrich, this area can grow wheat and sunflower as dryland crops. Most of the land is

still connected in some degree with the old cooperative farming structures, for inputs, services or farming their land, though an emerging group of medium size farmers who are renting land was observed. Currently the cropped area is growing mainly maize, wheat and barley, sunflower and alfalfa. However, many of the upland fields are lying fallow, and large areas of land are severely infested with weeds.

Sugarbeet is now frequently grown by individual farmers, and harvested by hand rather than mechanically. The area of vegetables has declined drastically. The processing factories are unable to attract sufficient quantities at the current prices and are running at 20% of their capacity. The orchards are neglected, with the low domestic prices and the high costs of spray inputs and their labor requirements discouraging their maintenance and upkeep. On the other hand the vineyards are beginning to see a revival, with individuals maintaining their own areas in the larger plantings and the wineries beginning to make loans for the maintenance and rehabilitation of the neglected plantings. Pigs and sheep are important in the area, though mainly kept in subsistence or smaller private enterprises.

Like the other study areas, irrigation is currently running well below capacity, in 1996 out of 50,348 cropped ha, only 14,917 ha were irrigable and the ISC used 1.6 million cubic meters to officially irrigate 4,337 ha up to July 1996. The main crops grown were wheat 12,600 ha, barley 5,500 ha and maize 9,300 ha and the main crops irrigated were maize (9,300 ha), vegetable (2,266 ha) and melons (755 ha). These figures can be contrasted with the situation in 1990. In that year 114 million cubic meters of water were used to irrigate 28,611 ha out of 86,169 cropped irrigable ha, mainly maize (6,721 ha), sugar beet (2,890 ha), alfalfa (5,740 ha), vegetables (3,337 ha) and private use (2,271 ha).

c) Conclusions

This area has been hit hard by the decline of Bulgaria's markets for processed fruit and vegetables, the decline in the importance of livestock, and the higher labor requirements of the new farming systems. The major revenue earner now appears to be sunflower where the favorable overseas market is encouraging its production. How long the area can continue to produce reasonable yields of sunflower remains to be seen. Poor seeds, inadequate husbandry, weeds and failure to rotate are all beginning to have an impact. Wheat and barley, sunflower, and vines are likely to be important in the future. The emergence of small numbers of private farmers, owning and operating machinery on his and his neighbors land is also likely to continue.

(4) Farm Management and Economy

a) Economic Profile

Agriculture is an important sector in the study area. Cereals and technical cultures, vegetables, fruits and vines are grown. The total production amount of agriculture in the area is estimated about Lev 3,020 million (US$ 16.8 million). As cereals, outputs are US$ 5.3 million (wheat), US$ 2.2 million (barley) and US$ 3.6 million (maize). Vegetables are about US$ 2.9 million. Traditionally, this area produces wine grapes. The production amount of grapes was US$ 892 thousand. (see Table F-I-1-11, Appendix F)

b) Land Restitution

From the data of the NSI, the work of land restitutions in Lovech region which includes the study area is progressing favorably compared with other regions. In this region, the data as of July 26, 1996, shows that 422,891 individual farms with 9,129,511 decares have been restituted (average : 21.59 decares - 2.159 ha). On the other hand, the registered production cooperatives in the study area are 131 with 1,511,901 decares which are already restituted (average: 11,541 decares - 1,154 ha).

According to the data obtained by the farm survey conducted on 150 sample farmers in this area, 55 % of the private farmers have received temporary rights of land use, and 25 % of the farmers obtained their notary deeds.

c) Farming Pattern and Size

Farmland of private farmers in the area ranges from 0.1 ha to 26.6 ha with number of plots between 3 and 4. Average size of farmland per farmer is 19 decares (1.9 ha). This farmer uses his land for farming such as 1.0 ha for cereals, 0.5 ha for vegetables, 0.3 ha for melons and 0.1 ha for grasses (alfalfa).

From the data surveyed, 96 % of the farmers cultivate part of their own land out of the cooperatives, and 68 % of the farmers have part of their land in cooperatives. The average size of the land provided to the cooperatives is 0.25 ha. In 1995, 12 % of the farmers rented land for farming. The average size of the rented land is 0.59 ha. 59 % of those farmers renting land have up to 0.4 ha.

According to the farm interview survey at typical production cooperatives in the area, the cooperatives have farmland of 1,600 ha and cultivated wheat (477 ha), barley (138

ha), maize (270 ha), sunflower (410 ha), alfalfa (130 ha), vegetables (18 ha), melons (12 ha) and unplanted (145 ha).

d) Farm Management

This area has a long history of agriculture, primarily grains and vineyards. The private farmer in the area is farming manually except for the land preparation and harvesting of cereals which are mechanized. 51 % of the farmers use exchange labor with each other in their farming activities.

Viewing from the result of balance of farm management, vegetables and grapes are the most profitable crops in the area. The returns from them are remarkably higher than those of other crops, with profitability over 180 percent. (see Table F-I-1-9, Appendix F)

There are 131 registered production cooperatives in the area. They operate mechanized farming with small staff and employees (operators and mechanicians). For weeding and harvesting works, they hire temporary farm workers, mainly cooperative members.

e) Farm Labor Force and Mechanization

As a result of farm labor analysis, the total requirement of present farm labor force is 1.2 million man-day annually. Higher demand of farm labor is required from March to September owing to harvest, land preparation and seeding, particularly, for vegetables and cereals. (see Table F-I-2-1(3), Appendix F)

According to the farm survey, farmers have different types of equipment: 10 % of the farmers have tractors, 44 % - a water pump, 39 % have a horse-cart, 2 % have a truck and 16 % have other farm equipment. 62 % of the farmers irrigate their land. The most used method of irrigation is the pumping method - 39%, and 33% are using gravity method. A typical production cooperative (mentioned in (c)) has 9 tractors, 1 combine and 2 trucks. For the system as a whole, gravity is the principal irrigation method.

f) Farm Credit

From the survey, in 1996, only three farmers borrowed money (from Lev 2,000 to Lev 20,000) from relatives for farming, without interest. No one had credit from banks. In 1995, a typical production cooperative obtained credit for farming from the bank.

The amount of the credit was Lev 0.5 million with annual interest rate of 65 %. No credit was used from the bank because of the high interest rate.

g) Farm Household Economy

Based on the farm survey and direct interview with farmers, a typical farmer household economy is estimated. The farming activity (with 1.9 ha of the land) of this farmer is assumed as wheat (0.5 ha), maize (0.5 ha), vegetables (0.5 ha), melons (0.3 ha), and alfalfa (0.1 ha). Family size and labor is assumed 3 persons and 2 persons respectively. The result of the analysis is presented as follows: (see Table F-I-3-2(1), Appendix F)

Category	Amount (Lev)
Farm Income	122,360
Production Costs	64,220
Return	58,140
Home Consumption	21,500
Living Expenses	130,730
Deficit	94,090

From the result, the farmer cannot maintain his living by farm income. According to the survey, most the farmers in the area work at production cooperatives in the village as a temporary farm worker to cover the deficit.

h) Income and Expenditure of Production Cooperatives

In order to grasp farm management practices of typical production cooperatives in the area, estimation of income and expenditure of the cooperatives was made. The farming conditions mentioned in section (c) is adopted. The result is summarized as follows: (see Table F-I-4-1(1), Appendix F)

Category	Amount (Lev)
Revenues	
Gross Income	79,104,500
Expenditure	
Production Costs	54,997,900
Reserves	24,106,600

The revenues are high due to excluded amortization of buildings and farm machineries from the expenditure. However, large-scale farming contributes to their farm management.

(5) Farm Cooperatives, WUAs, and Support Services

In Rositza, farmers form each type of cooperative model. Partnership and family farms will increase in number as land titling is completed. At least one cooperative is in nearly every settlement in the area, and many larger villages and towns have multiple cooperatives in operation. The high rate of participation in farm organizations is confirmed in the rural survey results. In Rositza, 79 % of the 150 farm households surveyed indicated membership in APCs.

WUAs. In Rositza, progress is promising in defining 17 WUAs along the main gravitational irrigation canals in the system. These gravitational canal areas are running at 20-30 % irrigation use, and many settlements along this network have made significant progress in land reform. In principle, a land title is a requirement for membership in WUAs though GOB does not apply this guideline consistently. Rositza rural surveys results, in comparison to the other areas, show a high level of land under notary deeds (25 %), and 55 % under temporary use rights.

Extension. The extension offices in the Rositza area closest to the study area is in Drianovo, outside the boundaries of the irrigation area and two hours drive from the bulk of the irrigation system. Farmers in the area did not indicate knowledge of the new outreach role of this office. Television and radio advertisements are presumably advertising the establishment of this new extension office. Farmers defined marketing assistance, advise on credit and finance, and guidance on procurement of new machinery as the top areas for advisory assistance.

1-3-4 Infrastructure Conditions

(1) Irrigation and Drainage System

The Rositza Irrigation System was constructed from 1945 to 1955, and thereafter maintenance works have been carried out.

a) Irrigation Area

The irrigation water of Rositza irrigation system is supplied by the Aleksandar Stamboliiski dam and its commanded area are summarized below. (Details are given in Table J-1-2, Appendix J)

Description	Area	
Study Area	50,700.0 ha	
Main Lower Right Canal Block	12,020.0 ha	
Suitable Irrigable Land		12,010.6 ha
Unsuitable Land for Cultivation		9.4 ha
Main Left Nikyupski Canal Block	9,384.5 ha	
Suitable Irrigable Land		9,377.5 ha
Unsuitable Land for Cultivation		7.0 ha
Northern Main Canal Block	29,295.5 ha	
Suitable Irrigable Land		28,959.6 ha
Unsuitable Land for Cultivation		335.9 ha

b) Water Resources

There are three storage dams : Aleksandar Stamboliiski dam (220.0 mcm of storage capacity), Negovanka dam (2.80 mcm) and Karaisen dam (10.25 mcm). The Aleksandar Stamboliiski dam is the main water resource for Rositza irrigation system with 7.5 MW of power generation plant, Negovanba dam is a supplemental water resource for Main Upper Right canal which is a part of Main Lower Right Canal Block, Karaisen dam is a regulating reservoir for Karaisen area under Northern Main Canal Block.

Design work of the Aleksandar Stamboliiski dam started on 1939 and the construction works made from 1942 to 1958. Major dimensions of the dam are given in Table J-1-3, Appendix J. This dam is operated and maintained by the maintenance company under NEC.

There are two outlets from the dam and three intake facilities in the system. Reservoir water is delivered to the main canal as follows;

- The water from the dam outlet No. 1 through No. 1 power generator is conveyed to No.2 power generator by a pressured canal, and then delivered to left bank by siphon. Delivery pit of siphon is the starting point of Main Left Distribution Canal. The beginning point of Main Left Nikyupuski Canal is inlet of Pavlikeni siphon of main left distribution canal.
- Water released from dam through outlet No. 2 directly to the river can be intaken by Rositza No. 1 pumping station for R-5 & R-6 irrigation area, and Byala Cherkva intake for the irrigation purpose of Main Lower Right Canal area.

c) Irrigation Facilities

Irrigation facilities such as pumping stations and canals under the operation of the ISC are described below. (refer to Exhibit K-2-2, Appendix K)

i) Main Lower Right Canal

There are seven (7) pumping stations in the Main Lower Right Canal Block, among them, three (3) are operable and four (4) are inoperable. An inoperable pumping station is one where mechanical parts such as pump, pipe and electrical parts were stolen. These pumping stations require rehabilitation to return to operation.

Open canals including main and secondary canal, are about 60 km in length. Of them, unlined canal make up about 15 km. For maintaining the canal discharge and saving the conveyance losses, unlined canals are requested to be lined by concrete panel and/or concrete. Canal dimensions are as follows:

Width of canal bottom	0.50 to 5.00 m
Height of canal	0.70 to 2.20 m
Side slope of canal	1 : 1.25

There is one power station (generating capacity of 280 kW) using water head of 5.0 m in the main canal.

ii) Main Left Nikyupski Canal

There are four (4) pumping stations along the main left Nikyupski canal Block, however all are inoperable. The inoperable pumping stations were vandalized and require rehabilitation.

The open canal including main and secondary canal has about 50 km in length. Of this, unlined canal is about 40 km. For maintaining the discharge of canal and saving the conveyance losses, the unlined portion of canal requires lining by concrete panel and/or concrete. Canal dimensions are as follows:

Width of canal bottom	0.60 to 4.00 m
Height of canal	0.80 to 3.20 m
Side slope of canal	1 : 1.25

There is one tunnel other than open canal in the main canal.

iii) Northern Canals

There are 18 pumping stations in the Main Northern Canal Block, among them, 11 are operable, and eight (8) are inoperable. Inoperable pumping stations require rehabilitation.

The open canal including main and secondary canal has about 181 km in length. Of this, unlined canal is about 54 km. The unlined part of canals require lining by concrete panel and/or concrete. Canal dimensions are as follows:

Width of canal bottom	0.50 to 5.00 m
Height of canal	0.60 to 3.90 m
Side slope of canal	1 : 1.25

d) Drainage Facility

There is only surface drainage system for removing excess water from the soil.

(2) Roads Conditions

The roads in the Study Area are divided into two categories; public road networks and farm roads. The public road networks are paved with asphalt and maintained well by the national and local government. All farming lots are planned to be connected with the main road by farm road with 6.0 m width on the land reform plan. However locations for farm roads are not clear since land reform was not completed and land ownership is not settled.

1-3-5 Environmental Conditions

(1) Flora and Fauna

The Rositsa river catchment basin covers a diversified terrain. The upper course of the river is inhabited by extensive formations of beech, hornbeam, mountain sycamore, mountain elm tree, spruce and fir. The middle and lower courses of Rositsa is characterized by forest formations of Quercus frainetto, Quercus cerris, the durmost, hornbeam, Tilia tomentosa, Robina pseudoacacia and elm.

Among the fish species found are the carp, the chub, the perch, the pike, the sheath-fish. The common reptiles and amphibians are the water frog, water snake, viper, green lizard, and the protected species such as the salamander, triton, tree-frog, toad, tortoise, blind-worm and grass-snake.

The birds species inhabiting this region are diverse, and most of them are protected. The most common species found there are the sparrow, the pheasant, the duck, the quail, the turtle-dove, the ring-dove, the magpie, the grey crow, the jay, the woodpecker and the thrush. The mammal represented in this area are the deer, the wild boar, the red deer, jackal, wolf, fox, wild cat, badger, squirrel, polecat, etc.

(2) Water Quality

Generally surface water in this area is within the allowable range of standard, but deviations are observed in the points where there is a city nearby. They are due to the waste water from the industries/factories that discharged into the rivers without complying with the standard. Irrigation water for this area is supplied from the Stamboliisky dam and quality is within the permissible range.

Here too, as in the other areas, the two main sources of water pollution are sewage water from the town/cities and waste water from the industries/factories. The results of some investigations carried out in the points close to the dumping sites revealed the deterioration of quality.

(3) Air Quality

According to the data of Sevlievo monitoring station the air in this area in general is within the limit of allowable range however, big industries such as a sugar mill in Oryachovitsa do not comply with the standard and pay fines consistently.

(4) Waste Water from Animal Farms

Discharge of partly treated or untreated effluent pollutes the river and undergorund water. Foreign financed projects are dealing with this problem but a successful economically viable treatment technology is still to be found.

(5) Cultural Heritage

Rositza is very famous for its historical sites and landmarks which includes V. Tarnovo and ancient Royal Complex of Arbanasi. According to the information published in the Encyclopaedia, the Study area is also very rich from the view point of archeology. Many valuable ruins of Thracian, Roman and Middle age villages, burial mounds, fortress have been found in the Study related villages.

1-4 Sredna Tundja Study Area

1-4-1 Natural and Physical Conditions

(1) Location and Topography

The Sredna Tundja Area is located at the eastern part of the Trakiya plain of the country. Distance to Sliven and Yambol from Sofia is 279 km and 300 km, respectively, and distance from Sliven to Burgas is 120 km.

The area can be divided into the following four (4) Blocks:

Nova Zagora Block : This Block is located at south of Jrebchevo dam and north of Blatniza river, and the agricultural land having slope faces south. Center of the Block is Nova Zagora. The irrigation water source of west part of Nova Zagora is supplied by existing M-3 main canal. And east part is planned to be irrigated by M-2 main canal.

Mlekaevo Padarevo Block : This Block stretches south of the Nova Zagora Block, and the south and south-east of this Block includes hilly land. The slope of this Block faces north and north-west. Most land is part of Nova Zagora municipality. Irrigation water of this Block is planned to be supplied by M-4 and M-5 main canals after Nova Zagora syphon.

Binkos Marash Block : This Block is located at south of Sliven, and the Block is distributed between hills which are southern part of the Balkan mountain ranges, and Tundja river. There are some drainage problems in the vicinity of Straldja in the eastern part of the area. Irrigation water of this area is supplied by M-1 main canal starting at Binkos head works.

Kerman Roza Block : This Block is located at east of the Nova Zagora and Mlekaevo Padarevo Blocks. There is hilly land in the south of the Block, the slope of the hilly land faces north and north-east. Irrigation water is supplied by M-1-3 main canal. Main canal was constructed, but the on-farm facilities are not completed, so irrigated agriculture is not well developed.

(2) Climatic Conditions

Climatic conditions of the Study Area are described by the observed data at Sadievo and Yambol. Table I-1-4 and I-1-5, Appendix I show monthly climatic conditions at these meteorological observation stations.

a) Temperature

Annual average of mean temperature is 12.1 and 12.2℃ at Sadievo and Yambol respectively, while the warmest month is August having mean monthly temperature of 23.4℃ and 23.5℃ at Sadievo and Yambol respectively.

b) Wind Speed

Wind speed of this area is moderate.

(3) Precipitation

Rainfall in this area occurs throughout the year. The rainfall in the growing season from April to September is 288.8 and 276.0 mm at Sadievo and Yambol, respectively. (Table I-2-4 & I-2-5, Appendix I)

(4) River Run-off

There is only one main river in the Study Area; the Tundja river. The irrigation water source is the Jrebchvo dam on the Tundja river. Monthly mean river run-off of Banya is given in Table I-3-5, Appendix I.

1-4-2 Socio-Economic Conditions

(1) Burgas Region

Area	Population	Population density	Number of municipality	Location and main town
14,724 km^2 (13.3% of Bulgaria)	849,000 (10.1% of Bulgaria)	58 persons per km^2	21	The southeastern part of Bulgaria. Biggest town is Burgas.

Source: Bulgaria Almanac 1996

In the end of 1995, the Governor's office of Burgas completed the economical development program of the district. With consideration of the characteristic of the municipalities, regional development policies were determined by municipality. Industry dominates in the structure of the economy in the northern part of the district, while agriculture and food industry prevail in the southern part. The biggest Bulgarian oil refinery (NEFTOCHIM) is near Burgas. Beside gasoline, technical oils, ethylene and other products, the plant produces 75% of the plastic and synthetic resins and 70% of artificial fibers in the country. In Burgas, there is a metallurgy enterprise (ferrous

metals), machine building plants, a big timber processing company, and many food processing factories.

Sliven is the biggest textile center (35% of the woolen textile), electronics and machine building industry. Food industry is typical for Nova Zagora, Karnobat, Yambol, Aytos and Elhovo.

In the district, there is the second largest Black Sea freight handler (after Constantia in Romania) port in Bulgaria, the port of Burgas. In 1989, in immediate proximity to the harbor, a duty-free economic zone was established. It performs the functions of a transport terminal for East-West trade.

The attractiveness of the Black Sea coast Bulgaria are unique. Tourism is an important income resource to the population of the district.

In the district, there is a good climate and soil suitable for agriculture. Cereals make up 65% of total agriculture production in the district. In the past, livestock-breeding was one of active sectors. The district produces 61% of the sugar beet, 20% of machine tools, 16% of the meat products, and 17% of grape wines.

35% of land in the district had been restituted completely. The Governor's office estimates 90% of land will be restituted by the middle of 1997.

(2) Sliven Municipality

a) History

Thanks to an Arab - traveler the town of Sliven was known since 1153 as an important market place. The Sliven masse was one of the most visited in medieval Europe. In the beginning of 19th century Sliven already had 469 manufacturers and shops which prompted the Bulgarian new capitalists to build in 1834 the first textile factory on the Balkans. Located along the major route Sofia - Burgas at the foot of the Balkan mountain, the town is one of the most important industrial centers in the country.

b) Population and Social Infrastructure

Sliven Municipality (144,097 citizens) includes 43 villages and one town - Sliven (See Table B-1-4, Appendix B, census 1992). There are 68,597 EAP in Sliven Municipality (19 % are unemployed) . The municipality has 65 schools with 22,272 students and

3,077 teachers. Medical service is organized in 5 hospitals with 1,053 beds and 39 health centers with 346 physicians.

c) Economy

Main industries are machine building (lathes, lamp, generator, starter) and textile industry (wool, knit and socks). 30% of total population work in the agriculture sector including processing.

50% of the land in the municipality is temporally or permanently restituted. Two municipality owned companies, a construction company and a trade company of industrial commodities will be privatized. Grain and bread manufacturers will also be privatized.

A draft economic program was completed. At present, the draft program is under negotiation in each department. The final program will be submitted in the middle of August 1996. In this program, the policy for municipal development, analysis of current conditions and future projections for each sector such as industry and agriculture will be incorporated.

Additionally, the municipality has 11 municipal owned companies(cleaning, garage, trade, market etc.). The municipality requested these companies to make a business plan from 1996 to 1999. These business plan will be implemented after administration of the mayor.

Current economical conditions are recovering slowly. Due to implementation of market economics, former large markets (USSR, COMECON countries) have disappeared. Every factory has over-capacity for the present economic condition and it is important to increase the operation rate by development of new markets and securing of raw material.

For development of agriculture, the municipality insists on the following projects,

- Construction of seedling farm (municipality's project)
- Wholesale market for vegetable, fruit and flower (EBRD project)
- Municipality will hold 52% stock of the company(joint stock company) including agroprocessing

d) Priority and Potential of Municipality

The municipal budget is spent on providing funds for schools, health care and public hygiene. Funds are also planned to be spent on construction of a drinking water purification station. The budget for 1996, before actualization, was Lev 1,245,000,000.

(3) Nova Zagora Municipality

a) History

Municipality is located in the eastern part of one of the most fertile lands in Bulgaria - Thrace flat land. The region has a very long history which began from pre Greek civilizations. A mass movement of Bulgarians that began after 1878 brought people from Balkan Mountain down to Nova Zagora's flat land. Other immigrants settled down in 1885 when some Bulgarian territories, south of Rodopi mountains, were left over in Turkey and Greece after the Unification of the Kingdom of Bulgaria with Eastern Rumelia (Southern Bulgaria). The municipality has a strategic location on the main route Sofia - Plovdiv - Burgas.

b) Population and Social Infrastructure

Nova Zagora Municipality (49,566 people, 1992 census) has 33 villages and one town, Nova Zagora (26,932). While EAP are 22,971, 16 % of them are registered as unemployed (See Table B-1-4, Appendix B, census 1992). The municipality has 32 schools with 825 teachers. Medical service is organized in 1 municipal hospital, 357 beds, and 13 health centers with 103 physicians.

c) Economy

The main industry is agriculture including processing. Agricultural output occupied 50% of municipality's economy in 1996. 50% of population works in the agriculture sector. Economic condition of industry is stable, however output level is under the former levels. There are machine building (lathes), textile industry, and agromachinery (pesticide spray instrument, maintenance and repair service for agricultural machine) and dairy product company.

d) Priority and Potential of Municipality

The local leadership gives priority to agriculture, which sector provides 50% of municipal GDP in 1996. In the same time emphasis is put on promoting livestock production. The 1996 budget, before actualization, was Lev 399,193,000.

(4) The Study Area in Irrigation System 'Sredna Tundja'

The Study Area is 97,000 ha irrigable land known as the Irrigation System "Sredna Tundja". It spreads over four municipalities covering 66 villages and 2 towns. 91,908 people live in the Study Area including 41,303 EAP (20% of them are unemployed; See Table B-1-4 and Figure B-2-5, Appendix B, census 1992). The area has all the characteristics of a typical Bulgarian agricultural region, producing the best cereals but also an excellent producer of many other farm products, such as vegetables, beans, maize, grapes, fruits, etc. Being located along the Balkan Mountain range, having flat lands and rich water resources, the region is very suitable for irrigation and intensive farming.

The 'Sredna Tundja' study area was conditionally divided into four blocks : Binkos-Marash, Nova Zagora, Mlekarevo-Padarevo, and Roza-Kermen (See Table B-2-5 to B-2-8, Appendix B, census 1992).

i) **The Binkos-Marash** block lays on the territory of three municipalities : Sliven, Straldja and Tundja. A total of 32,209 people (EAP are 13,892 with 27% unemployed) live in the area of the block (See Table B-2-5, Appendix B, census 1992). There are 25 settlements among which is the town of Straldja. The number of people has remained relatively stable during the last three years marking a 3.8% decrease

ii) **The Nova Zagora** block encompasses the area around the town of Nova Zagora. A total of 39,337 people (EAP are 17,469 with 18 % unemployed) live in the area of the block (See Table B-2-6, Appendix B, census 1992). There are 14 settlements, among which is the town of Nova Zagora. The number of people has decreased considerably during the last three years hitting a 7.2 % decrease.

iii) **The Mlekarevo-Padarevo** block is located in the southern territories of Nova Zagora municipality. A total of 14,346 people (EAP are 6,395 with 14 % unemployed) live in the area of the block (See Table B-2-7, Appendix B, census 1992). There are 15 settlements in the block. The number of people has decreased by 4.4% during the last three years.

iv) **The Kermen-Roza** block is located mainly in Tundja municipality. A total of 12,206 people (EAP are 5,095 with 14 % unemployed) live in the area of the block (See Table B-2-8, Appendix B, census 1992). There are 10 settlements in the block. The number of people has remained stable marking a decrease of 4.4% during the last three years.

1-4-3 Agricultural Condition

(1) Marketing and Distribution

a) Location and Production Profile

Physical infrastructure is well developed. There are some agribusiness centers in Nova Zagora, Sliven and Yambol and raw materials are purchased by processing companies. They are dairy, flour milling, feed, winery, and meat processing industries.

b) Distribution Channels of Major Produce in the Study Area

Regarding wheat, private traders, agro-processing factories, state procurement enterprises are the main selling channels. Newly formed agricultural cooperatives have continued an integrated production system which enables them produce, store and process by themselves utilizing purchased assets from old cooperatives. Presently, forage crops are produced mainly for self consumption purposes. There is no commodity exchange market for cereal and sunflower in Burgas district. Regarding sunflower, state owned sunflower oil extraction companies in Burgas procure raw materials either through private traders and agricultural cooperatives or from the producers themselves. Vegetables and fruits used to be purchased by canning industries, but the share is decreasing due to the financial difficulty of the industry. Therefore, current major selling channels for vegetables and fruit are on-farm and spontaneously emerged local markets, and consumer markets such as at Sliven. There are some cases that private traders directly procure products at the farm gate. A chain of wineries are located in Burgas, Pomorie and Slavyantsi. Wineries procure raw materials through own collecting points in production areas. There are some cases where private individual producers bring their produce directly to wineries.

c) Constraints of Current Distribution Systems

i) Gaps between domestic procurement prices and world prices of cereals

Like in Rositza, a wide gap between the domestic prices of cereals and the world prices discourages producers from growing cereals.

ii) Inadequate post harvest practices

Not only for cereals, but for perishable produce, also producers access to post harvest facilities is limited, which prevents them from improving quality.

(2) Demand and Supply Condition of Major Produce

a) Data

Some data sources are not reliable as well in Rositza. Therefore, the analysis has certain omissions such as direct exports by producers through private traders.

b) Assumptions

Following assumptions are made to estimate demand and supply conditions

i) Wheat

Wheat is sold to a state procurement organization ('Zarneni hrani' in Yambol) and state owned milling companies ('the Sliven Mill', 'Zagaria', 'Republika and Zagore'). Assuming that these companies procure all output produced in the Burgas region, the procurement for the study area is estimated according to the production shares of four municipalities (Sliven, Nova Zagora, Tundja and Straldja) compared to total amount for Burgas district. The same assumption applies to other produce, too.

ii) Barley and Maize

Apart from self consumption, state owned fodder companies and a beer company are assumed to procure produced barley. As for maize, state owned fodder companies procure the amount of produce other than self consumption. 'Smester' (Stara Zagora), 'Provimi' (Chirpan), FZ-76 (Sliven), 'Bakadjik' (Yambol), 'Kolhida' (Elhovo) and 'Astika' are assumed to procure barley and maize from the study area.

iii) Sunflower

Sunflower is sold to the state sunflower oil extraction companies in Burgas.

iv) Wine Grapes

Wine grapes are assumed to be procured by state owned wineries, Wine (Sliven), Vinprom (Haskovo) and Vinprom (Chirpan).

c) Estimation of Demand and Supply Condition of Major Produce

Estimated Demand and Supply Condition of Major Produce

(Unit: Ton)

	Production	Self Consumption	Marketable Production	Procurement Capacity of State	Balance (1995)
Wheat	251,978	96,860	155,117	88,765	-66,352
Barley	157,118	47,135	109,983	19,919	-90,063
Fodder Maize	40,214	13,391	26,823	19,410	-7,413
Sunflower	41,990	13,913	28,078	51,016	22,938
Wine Grape	37,280	4,922	32,358	18,937	-13,421

Source: Estimated by JICA Study Team, 1995

i) Wheat

In the case of Sredna Tundja region, the estimated possible procurement capacity of the state sector covers about 60% of the total produce in 1995. The rest of produce is considered to be procured by private wholesale traders, new types of agricultural cooperatives which inherited or purchased storage facilities belonged to the old cooperatives, and private milling companies. Since there is no commodity exchange market for cereals in the study area, traded volume at such markets is considered to be marginal. As the estimated possible state's procurement rate suggests that producers in Sredna Tundja region now have different channels for selling produce, this implies that market economic system works to a certain extent.

ii) Barley and Maize

According to the estimation, the procurement capacities of state sectors is far below the actual production amount of Sredna Tundja in 1995. Due to serious decline in livestock sector production of maize has been discouraged and storage facilities became inadequate. Therefore, in some cases private traders of fodder crops use the storage facilities of livestock companies.

iii) Sunflower

In 1994/95, production of sunflower increased, reflecting high demand both from domestic and foreign markets. Considering a situation that state owned sunflower oil extraction companies still monopolize the procurement of raw materials the estimate can suggest that there is a room for increasing the production of sunflower seeds without expanding existing facilities. However, this suggestion should be closely related with government policy on trade regime, as well as protection of soil fertility.

iv) Grapes

According to the analysis grapes produced in the study area surpass the existing facilities of state owned wineries.

(3) Farming and Agricultural Production

a) Introduction and Overview of the Study Area

Located in Burgas region, south of the Balkan range, the extensive plains around the Tundja river combine with a climate that is transitional between continental and Mediterranean to provide near ideal conditions for irrigated crop production. The soils vary from alluvial adjacent to the river, to black earths along the extensive valley bottoms, especially in the south west (Mlekarevo and Nova Zagora) to brown-forest soils on the edges of the plains and along the foothills. Nova Zagora which lies on the western edge of Burgas region, Sliven at the base of the Balkans and Yambol to the east are the main administrative and trading centers within this study area. Nova Zagora is an important agribusiness center, as is Yambol, which has an agricultural machinery plant and food processing industries. Sliven is less agriculturally focused, although important for textiles, it is more important for machine-building and electrotechnical industries. Although the irrigation system was originally planned for 97,000 ha, only approximately 50,000 ha have had irrigation facilities. The main water source is the Jrebchevo dam built on the Tundja river, which releases water to the Binkos Barrage, where M-1 starts, a 70 km canal with a discharge of 42 cu.m/sec. A 4 km tunnel direct from the dam, Korten tunnel, supplies water to the other system M-3. Water does not appear to be limiting crop production on the current irrigable area, although it may become limiting if further expansions in irrigable area are made.

b) The Importance of Agriculture

The crop mix for the whole region predominates in cereals 65 % with 15 % technical cultures, 9 % fodder crops, 8 % orchards and vineyards and 3 % vegetables. The region produces 33 % of Bulgaria's barley, 15 % of the sunflower, 14 % of the grapes and 16 % of the fruit, mainly apples, peaches and cherries. The Sredna Tundja region has perhaps the most diverse cropping pattern in the three study areas except tobacco, and most of the field for horticultural and orchard crops found in the other two areas are grown here.

The farm size here is significantly larger than in the other two study areas, and the average is 13.7 ha, of which 5.1 ha are irrigated. The topography and the settlement pattern have encouraged the development of larger farming units, and mechanization is

an important factor. The main crops are cereals, wheat, barley and maize, orchards, vineyards and a mixture of technical crops such as cotton, sunflower, vegetables, etc.

Currently, only a very limited portion of the available irrigation water is being used. In 1995, only 4,371 ha were officially irrigated by ISC. The majority of this 12 million cubic meters of water was used on grain maize (2,644 ha), other crops (443 ha) and vegetables (613 ha).

c) Conclusions

In terms of agricultural potential, this study area has not only the richest resource base in terms of flat arable land, water available and infrastructure, (irrigation, processing, roads, markets) but also seems to be developing a diversity of solutions to how to farm in Bulgaria under the new conditions.

(4) Farm Management and Economy

a) Economic Profile

The study area has favorable soil and climatic conditions for the development of agriculture. In the area, the crops dominate cereals with 61 percent, 9 percent technical culture (sunflower), 4 percent vegetables, 8.5 percent fruits (peaches) and 5.5 percent grapes. The total production amount of agriculture in the area is estimated about US$ 38 million. The outputs of cereals are US$ 14.6 million (wheat), US$ 6.7 million (barley) and US$ 4 million (maize). Vegetables are about US$ 5.6 million. Fruit and grapes are US$ 1.2 million and US$ 3.0 million, respectively. (see Table F-I-1-11, Appendix F)

b) Land Restitution

According to the data as of July 26, 1996, of NSI, the progress of the restitution of ownership rights for agricultural land has been made as: 216,942 farms with 684,150 ha, in Burgas region which includes the study area. From the data surveyed, 83.8% of the farmers (150 sample farmers) are obtained temporary rights for land use and only three farmers have notary deeds. In Sliven region, 13 private cooperatives with 249,189 decares (24,918.9 ha), which have settled legally the restoration of ownership rights. However, the rest (71 cooperatives) are following the procedures for the restoration.

c) Farming Pattern and Size

The average size of land belonging to a farm household is about 13.7 ha and farmland ranges from 0.7 ha to 148 ha. About 17% of the farmers are usually renting land.

The average size of the rented land of 23 farmers is 19.6 ha and 50 % of the farmers rent up to 4.6 ha. The average number of plots is between 4 and 5. This farmer uses his land for farming such as 7.5 ha for cereals, 1.7 ha for vegetables, 1.5 ha for orchard and 1.5 ha for vineyard and 1.5 ha for grasses.

According to the farm interview survey at typical production cooperatives in the area, they have a land for farming of 1,050 ha and use the land for wheat (300 ha), barley (200 ha), maize (200 ha), sunflower (150 ha), vegetables (15 ha), orchard - peaches (15 ha), vineyard (15 ha), alfalfa (50 ha) and unplanted area (105 ha).

d) Farm Management

There are 170 registered production cooperatives with farmland of 148 thousand ha. Most of the farmland in the area is cultivated by large-scale production cooperatives which have an average land of 1,000 ha and over per cooperative. As mentioned above (c), the cooperatives operate large-scale farming with mechanization, for cereals, technical cultures and fruit and vineyards. As a result of the survey, the balance of farm management shows that profitability of cereals, vegetables, fruit and grapes are considerably high compared with the other two study areas.

Most farmers carry out labor exchange with each other in their farming activities. The farming system of the private farmers is mainly mechanized cultivation like the cooperatives.

e) Farm Labor Force and Mechanization

The total requirement of present farm labor force in the area is about 2.7 million man-day annually. Among the plant growing, vegetables account for 35 percent. Farm labor force needed is about 1 million man-day from July to September.

The mechanization system for farming dominates in the area. 60 % of the farmers have tractors, 18 % - a water pump, 56 % - horse-cart, 12 % - a truck, 6 % - a combine, and 35 % have other agricultural equipment. The farmers (55 %) are using irrigation water in their land with gravity method. 13 % of the farmers are using pumps.

f) Farm Credit

In 1995, a few farmers (3 %) obtained a loan from banks, for the purpose of growing wheat, barley, maize, sunflower, alfalfa, fruits and grapes. The amounts ranged between Lev 7,800 and Lev 400,000 with the interest rates - 23 %, 48 %, 75 %, 118 %.

A credit cooperative "kaln" was established recently in Nova Zagora under Agricultural Fund Scheme.

g) Farm Household Economy

On the basis of the farm survey and directly interview with farmers, calculation of the typical private farmer (13.7 ha) have been made on the assumption that family labor force is 3. Cropping pattern is assumed as mentioned in section c). The estimation of this farmer's household economy is presented as follows: (see Table F-I-3-3(1), Appendix F)

Category	Amount
Farm Income	1,351,640
Production Costs	397,900
Return	953,740
Home Consumption	209,940
Living Expenses	267,940
Surplus	475,860

Viewing the result, this farmer can afford to manage with farming providing sufficient income. In this study area, it seems that farmer has high consciousness for farming and their land conditions are also favorable to farming.

h) Income and Expenditure of Production Cooperatives

On the basis of the direct farm interview with leaders of some production cooperatives in the area, estimation of farm management of typical production cooperatives in the area was made. The farming conditions mentioned in section (c) is adopted. The result is summarized as follows: (see Table F-I-4-1(1), Appendix F)

Category	Amount (Lev)
Revenues	
Gross Income	79,104,520
Expenditure	
Production Costs	54,997,897
Land Rent	16,000,000
Reserve	8,106,623

Viewing the result, the revenues are high compared with that of the Rositza's case. Lower production costs and the farming conditions in the area bring about these results. The favorable condition of location for marketing and transport in the area is also advantageous.

(5) Farm Cooperatives, WUAs, and Support Services

In Sredna Tundja, large cooperative structures prevail of both the old and new type. Large, newly registered cooperatives may grow in number as many members reside outside the region and new arrangements for land use emerge. Land leases and titling progress will further clarify land use possibilities.

Land ownership and the nature of settlement and cropping patterns largely determine cooperative organization. Farm size in Sredna Tundja is comparatively large (averaging 13.7 ha), settlements are fewer and population density is less than in other study areas. In addition, cereals have dominated the cropping pattern, with vineyards and orchards, lending itself to mechanized, large-scale farming.

Official statistics suggest 80 cooperatives in the study area, although this number is suspect given the rapidly evolving nature of land lease and ownership. As confirmed in the rural survey and in field investigation, the area has the most arable land under temporary use rights (84 %) and thus cooperatives operating in a transitional phase.

WUA. In Sredna Tundja, progress in WUA designation is slower than other study areas, but ISC has experienced success in defining 10 new Water User groups. ISC advisors have formed WUAs primarily in proximity to the Sliven area, because it has been administratively easier.

Extension. Of the three targeted project areas, the Yambol extension service in the Sredna Tundja area is by far the most active office. The Yambol office has taken on its new role with a missionary zeal that is encouraging and beneficial to small producers looking for guidance.

In Yambol, five specialists staff the office, including a sheep breeding specialist, cereals' agronomist, orchard specialist, agricultural machinery, and an agricultural economist. Bulgaria's Agricultural Academy pays the salaries of the five scientists, and EC PHARE has paid the overhead support. The office is producing seeds (primarily wheat and barley) from the neighboring experiment station, and selling them to producers. Seed sales serve as a small source of income for the extension service. To date, most of the clients have been private owners ranging from 2 dca to 1,000 dca. The most common concerns have been wheat marketing and pricing concerns, weed control advice, fertilizer application questions, and finance and credit issues.