CHAPTER 3. DEVELOPMENT OF THE PILOT PROJECT AREA

3-1 Development Plan for the Pilot Project Area

3-1-1 Agricultural Production and Land Use Plan

(1) Introduction

Bulgaria currently faces major constraints to improving its agriculture. The concentration of the former state owned capital resources within the cooperatives, combined with the fact that the current marketing system is closely linked to the large parastatal marketing structures, both restricts the access of new entrants to agriculture production and hinders the development of efficient market driven and appropriate scale marketing systems. Completion of the land restitution followed by land consolidation; privatization of the state-owned agro-industries; and a reduction in the base rate, or preferential rates for agricultural lending are necessary pre-conditions for the success of this project. Limited access to credit at appropriate rates; a machinery fleet that is aging and composed mainly of large scale equipment; the lack of recent investment in the orchards and vineyards; and an inefficient agroprocessing industry are restricting the current options for agricultural development and increased production. Other impediments include the labile state of the current organizational structures, the shrinking domestic demand for high value products, the small size of the current ownership units, and water pricing.

Fortunately, the Nova Zagora region has the advantages of a rich agricultural resource base in terms of its soils, water, climate and technical expertise and given the necessary changes in the current impediments to agricultural development has the potential to become a major production area, and a strong competitor in the domestic and international markets for agricultural and horticultural products. Nova Zagora is conviently located on the international north-south road from Romania to Turkey allowing it to serve not only Bulgaria, but also Western Europe, and the Near and Middle East. The investments required to rehabilitate the M3 canal and its associated irrigation infrastructure are small compared to the investments required to rehabilitate other irrigated locations in Bulgaria. A further advantage of the site chosen is that the whole pilot area can be served by gravity, which avoids the use of expensive electricity or fuel.

(2) Land Ownership versus Land Management

According to the Nova Zagora Municipal Land Committee as shown in Table A-5-6 in the Appendix A, the 17,144 ha of farmland in the nine villages of Asenovetz, Bryastovo,

Zagorti, Karanova, Korten, Lubenetz, Nova Zagora, Stoil Voivoda and Sabrano has 7,629 registered owners, making the average ownership 2.25 ha. Clearly this is not an economic farm unit and so these small parcels of land are being grouped for use in a variety of ways. Some owners are giving their land to the cooperatives to farm, others are leasing their land, yet others are combining forces with other landowning family members and friends to create their own economic management units. A variety of alternative methods exist and the predominance and importance of a particular method will obviously vary over time with the legislation in force and the economic incentives offered to land owners by land users.

The pilot project area is 13,200 ha, so assuming the same pattern of land ownership occurs in both the larger area of the nine villages and the project area, a reasonable assumption, then 5,874 owners are estimated currently in the project area. Another estimate is that approximately 73% of the current landowners live away from the village where they own land. Using this proportion, this means that only about 1,579 of the project area landowners are potentially able to directly participate in farming their land. Furthermore, due to age, alternative employment, lack of interest etc. the direct participation of the resident landowners is not likely to be 100%.

Using the results from the farm survey an estimate of the number of people currently with a direct involvement with farming in the pilot area has been made, as well as of the area under and number of each farm type. Based on the current levels of employment by farm type, an estimate of the number of resident landowners directly involved in farming in the pilot project area can be made.

In the table below it is assumed that each cooperative employs an average of 31 people, each corporation 20, each leasee 5, each private farm 1.5 and each partnership 10 people on average.

	Small	Medium	Partners	Large	Coop.	Totals
Total Area	1,400 ha	1,500 ha	340 ha	600 ha	9,360 ha	13,200 ha
% Area	11 %	11 %	3 %	5 %	70 %	100 %
Number	100	20	2	2	12	
Av. Area	14 ha	75 ha	170 ha	300 ha	780 ha	
Resident	167	179	41	72	1,119	1,579
Involved	150	100	20	40	372	682

Using these figures, currently out of the calculated 1,579 resident owners, it is estimated that only 682 or 43% are directly involved in the day to day management or operation of

the project area farms. The other 57% presumably receive payments of some sort for the use of their land, but derive their main income and employment elsewhere.

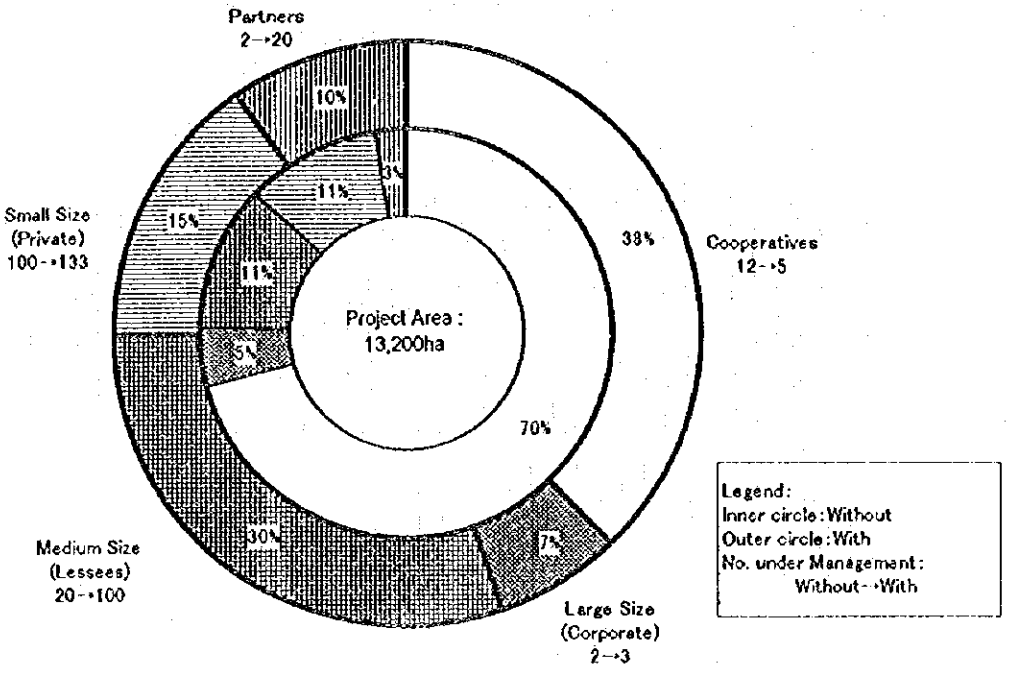
With time there will obviously be a variety of changes in the way land in the project area is owned and managed. Although an exact calculation of this future condition is not possible, another rough estimate can be made. Based on the demographics the resident population of the Nova Zagora district is expected to decline, (see rural development section). If we make the assumption that the resident population of landowners will decline by 22% over the next ten years from all causes, (death, migration, old age, falling birth rates, sales of land, changes in employment etc.) then we will have approximately 1,231 resident landowners in the project area in ten years time. If we make a further assumption that private farms will expand in importance and number, and that the area farmed by the cooperatives will decline, (another reasonable assumption) then, using the same numbers for employment by farm type and projecting the area under each farm type, we can estimate the numbers of resident landowners directly involved in the future.

	Small	Medium	Partners	Large	Coop.	Totals
Total Area	2,000 ha	4,000 ha	1,300 ha	900 ha	5,000 ha	13,200 ha
% Area	15 %	30 %	10 %	7 %	38 %	100 %
Number	133	100	20	3	5	
Av. Area	15 ha	40 ha	65 ha	300 ha	1000 ha	
Resident	200	500	200	66	265	1,231
Involved	200	500	200	60	155	1,115

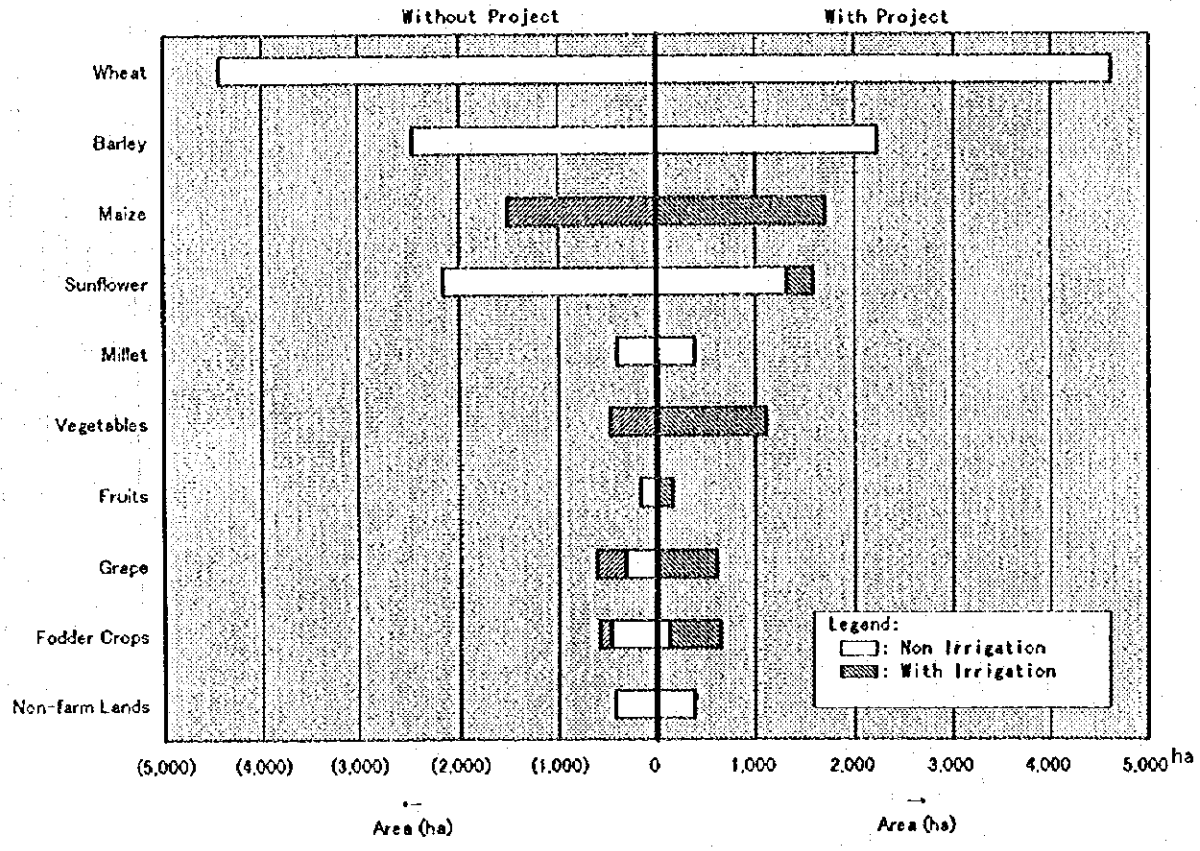
Using these parameters, the number of people directly involved in agriculture has been estimated to be 1,115 after ten years or 90% of the resident landowners, an increase of nearly 50 %. The 10 % of resident landowners (116) not directly involved in farming are assumed to be deriving their income from rents received and employment in the related industries such as processing of farm products, which are expect to expand and grow as the project production comes on stream.

In order to visualize the transition of farm types from without to with Project conditions, the following figure has been prepared together with the land use of without and with Project conditions.

Transition of Farm Type from without to with Project



Transition of Land Use from without to with Project



(3) Proposed Cropping Pattern

Cropping patterns were developed for five main farm types; small farms of 15 ha average size, medium farms of 40 ha, partnerships of 65 ha, large farms of 300 ha, and cooperatives of 1000 ha average size. These five cropping patterns were then used to develop the farm budgets and the project returns. For further details see (3-1-2 Farm Management Plan) and Chapter 4 Project Evaluation. The table below shows the proposed cropping pattern at the end of ten years. It represents an aggregate of the five different cropping patterns, which are shown in detail in Appendix D.

The areas for the without Project cropping pattern were calculated as an average using the figures for crops grown in the project area over the last few years supplied by the agronomist Nova Zagora Municipality. The yields for the without project cropping pattern came from a variety of sources, including the farm survey. The areas and yields for the with Project scenario represent a conservative estimate of what is certainly possible in the Nova Zagora area after ten years assuming good varieties, irrigation (where appropriate), availability of labor and machinery, and the appropriate use of fertilizer and pesticides. Other assumptions used to develop the cropping patterns include: that barley and wheat, given the good winter rains in most years, will always be grown as a dryland crop; that any maize grown will always be irrigated; that the majority (84%) of the sunflower will be grown without irrigation; that the area under fodder and vegetables will greatly increase as the economy improves and concurrently the demand for meat and fresh vegetables increases; that the current average yields of fruit and grapes are very low, as large areas under vines and orchards are almost completely out of use, but with investment into rehabilitation, new varieties and irrigation large average increases are possible.

(4) Achieving these Potential Yield Increases

These projected yield increases and shifts in the cropping pattern are predicated on a number of assumptions, many of which have been mentioned elsewhere. These include the completion of the land restitution process, access to credit at economic rates, and land consolidation. Direct project interventions that will be pre-requisites to increased agricultural production include: that the irrigation system is rehabilitated, that water user groups are established, (or some other system for improving the maintenance and management of the on-farm facilities); that the marketing of cereals and horticultural crops in the project area is enhanced; and that farmers access to information, machinery and inputs is improved.

Nova Zagora M3 Canal Pilot Project Area : With and Without Project Cropping Patterns

Crops	Target area w/o Project		Target area With Project		w/o Project Yield	With Project Yield	w/o Project Production	With Project Production	Production Increase
	Hectares	%	Hectares	%	kg/ha	kg/ha	ton	ton	ton
Wheat (non-irrigated)	4,434.0	33.6%	4,620.0	35.0%	3,500	3,800	15,519	17,556	2,037
Barley (non-irrigated)	2,444.8	18.5%	2,244.0	17.0%	3,300	3,600	8,068	8,078	11
Grain Maize (irrigated)	1,512.7	11.5%	1,716.0	13.0%	4,000	7,500	6,051	12,870	6,819
Sunflower (irrigated)	0.0	0.0%	264.0	2.0%	1,250	1,650	0	436	436
Sunflower (non-irrigated)	2,155.8	16.3%	1,320.0	10.0%	1,100	1,500	2,371	1,980	-391
Sunflower (total)	2,155.8	16.3%	1,584.0	12.0%			2,371	2,416	44
Millet	396.9	3.0%	396.0	3.0%	800	1,100	318	436	118
Main Crop Vegetables	113.5	0.9%	660.0	5.0%	7,750	14,080	879	9,293	8,414
Melons	21.1	0.2%	66.0	0.5%	6,500	9,000	137	594	457
Other crops	343.2	2.6%	396.0	3.0%	2,910	3,900	999	1,544	546
Fruit (irrigated)	0.0	0.0%	172.0	1.3%	3,500	7,500	0	1,290	1,290
Fruit (non-irrigated)	164.9	1.2%	0.0	0.0%	1,500	2,750	247	0	-247
Fruit (total)	164.9	1.2%	172.0	1.3%			247	1,290	1,043
Grapes (irrigated)	305.1	2.3%	620.4	4.7%	4,500	10,000	1,373	6,204	4,831
Grapes (non-irrigated)	305.1	2.3%	0.0	0.0%	2,100	4,500	641	0	-641
Grapes (total)	610.2	4.6%	620.4	4.7%			2,014	6,204	4,190
Alfalfa (irrigated)	132.0	1.0%	528.0	4.0%	4,500	6,500	594	3,432	2,838
Alfalfa (non-irrigated)	264.0	2.0%	0.0	0.0%	2,750	3,250	726	0	-726
Alfalfa (total)	396.0	3.0%	528.0	4.0%			1,320	3,432	2,112
Pasture (non-irrigated)	191.4	1.5%	132.0	1.0%	1,000	1,500	191	198	7
Unplanted	151.8	1.1%	132.0	1.0%					
On-Farm Roads	264.2	2.0%	264.0	2.0%					
GRAND TOTAL	13,200	100.0%	13,530	102.5%			38,114	63,911	

The MAFI proposes to develop the capacity of its regional office in Sliven to serve as an extension service. Nova Zagora itself is another candidate for an new extension office. The role of this particular project in these offices, which will be funded primarily by MAFI and EC-PHARE, will be support and liaison, including the collection and provision of technical and market information, funds for its dissemination, improving the access of extension staff to new and improved technologies and training opportunities, as well as improving the liaison between the field extension officers and the national Extension Centers and centers of excellence within the Agricultural University and Research Systems.

As part of this latter recommended project intervention, the project budget includes a provision for sufficient resources to allow the MAFI's Extension Service to provide on-farm demonstrations. To give an example, current maize yields in the Project area vary quite widely from farm to farm. The current average yield is well below the yield potential. As a way to rapidly achieve project benefits, the extension officers will demonstrate improved maize technology on farmers fields throughout the project area. High yielding maize lines are currently available in Bulgaria, and yields of up to 10,000 kilos per ha are possible. Within each village, maize plots can be established working with local farmers, with supervision of planting and fertilization rates, application of the necessary pesticides, and irrigation of the right amount at the appropriate time these plots can be used for field days later in the season to encourage neighboring farmers to use the improved varieties and practices.

Given the expected increases in production following the improvement of the irrigation infrastructure, in the short run, basic facilities should be either be provided or rehabilitated at appropriate locations for the on-farm storage of cereals and for the collection and transport of fruits, vegetables and flowers to the Wholesale Market at Sliven. This is dealt with in more detail in the Marketing section. The project will also develop and strengthen producer and marketing groups in collaboration with the MAFI, which would also be responsible for establishment and enforcement of grades and standards, as well as supply and collection of market information. With time, storage, grading and packaging and pre-cooling could be added to a central location as and when appropriate.

3-1-2 Farm Management Plan

The farm management plan is formulated taking into account the development strategy of the pilot project area. Accordingly, the plan is assumed the land restitution in the area is completed, i.e., after definite farmland boundary and notary deeds have been issued to all farmers in the pilot project area.

(1) Farm Management

On the basis of the cropping pattern, land use, and past cropping performance, the plan is formulated applying the following assumptions:

- Cropping pattern: No major alteration of the current cropping pattern would be applied due to climatic and other conditions. Accordingly, cropping pattern is 1 crop per year with a maximum cropping intensity of 102.5 percent. (vegetables: 2 crops a year)
- Land use: Wheat, maize vegetables areas are expanded.
- Management: Agricultural production cooperatives and private farmers. Cooperatives operate mechanized farming. Private farmers use mechanized services and/or own machinery for land preparation and harvesting works.

Model Farm Size: (assumption)

Small-scale private farm	15.0 ha
Medium-scale private farm	40.0 ha
Partnership farm	65.0 ha
Large-scale private farm	300.0 ha
Agri. cooperatives	1,000.0 ha

Details of the proposed farm management of model farm is shown in Table F-II-1 and 2, Appendix F.

(2) Farm Labor Demand

Farm households in the area are assumed 1,971 with a total farm population of 6,747 (EAP: 3,556). Farm family labor force is estimated at 106,680 man-day per month. (Bogdanovo excludes from these figures because of small area-90 ha included to the area.)

Monthly labor requirement calculated on the basis of cropping pattern and cropping intensity under the proposed farm management are as follows:

Month	Labor Requirement
February	686
March	28,956
April	85,732
May	48,472
June	53,725
July	55,024
August	86,454
September	78,841
October	28,153
Total	431,384

On the basis of the above, peak labor demand occurs in April and August. The proposed requirement would be contributed to reduce unemployment condition in the area. The requirement in the peak month under the proposed agricultural plan represents a 2.8 fold increase in employment opportunities over the current requirement of 32,900 man-day. (see Table F-II-3-1 and 2, Appendix F)

(3) Balance of Farm Management

Increased productivity as a result of irrigated cultivation and strengthened extension activities under the plan will be total US$ 1,993 thousand annually. The balance of farm management in the area is summarized as follows:

Unit: US$ 1,000

	Revenues	Expenditure	Profits
With Project	8,165	4,023	4,142
Without Project	5,268	3,077	2,191
Balance	2,897	946	1,951

Details of the balance of farm management in the pilot project area are as shown in Table F-II-2-5 and 6, Appendix F.

(4) Farm Management of Model Farm

Based on the proposed farm management, farm economy of four model farm is estimated. The results of the analysis are presented as follows:

Unit: Lev 1,000

Category/Farm	Small-	Medium-	Partners	Large-
Farm size	15 ha	40 ha	65 ha	300 ha
Farm income	2,453	5,904	9,100	40,274
Off-farm income	320	320	0	0
Gross income	2,733	6,224	9,100	40,274
Production costs	1,230	2,987	4,379	18,903
Other expenditure*	519	1,497	20	10,928
Return	984	1,740	4,701	10,443

Note: * Living expenses are excluded.

Family labor costs are excluded from production costs.

After implementing the project, the returns of their farms are considerably increased even small-scale farm. In addition, farming conditions of the farms will be substantially improved and it can afford to manage the farm sufficiently, viewing from cash flow of small- and medium-scale farms. (see Table F-II-5-1 and -5-3, Appendix F)

In case of agricultural production cooperatives, the reserve is remarkably improved compared with existing typical cooperatives, as shown below. (see Table F-II-5-2, Appendix F)

Unit: Lev 1,000

Farm size	1,000.0 ha
Farm income	123,885
Gross income	123,885
Production costs	53,296
Other expenditure	21,626
Reserves	48,963

As a result of farm management analysis, all farms have afford to share the water fee.

(5) Farm Mechanization

After completion of the land restitution scheme in the area, land condition will be improved notably together with enforcement the law on lease of agriculture. Considering this situation, farm mechanization of the model farms has been estimated as shown in Table F-II-6-2, Appendix F.

i) Small-scale farm:

At the initial stage, 3 farms possess one tractor with 18 h.p. by joint ownership. However, it seems that most farmers intend to have own tractor in near future from economic view, after completion of the project. Concerning deep ploughing and harvesting, mechanized services by new agricultural center and agricultural high school in Nova Zagora will be used.

ii) Medium-scale farm:

This farm have own tractor with 25 h.p. He also uses mechanized services for deep ploughing and harvesting as well as small-scale farm.

iii) Partnership farm:

The farm have own tractors by joint management. Existing farms of this type already have own farm machinery which obtained from ex-cooperative's liquidation. Farm machinery of the new farm will be brought by partners.

iv) Large-scale farm:

This farm has already sufficient operating capacity of farm machines and implements, and own workshop for repairing.

v) Agri. production cooperative:

Most of farm machinery of the cooperative are obtained from ex-cooperative's liquidation. Therefore, over 30 percent of machinery (deteriorated) should be renewed to the appropriate capacity and size. Provision of sufficient parts and machinery for repairing will be expected to the workshop. At no operating time of combine harvester and/or tractor for deep ploughing will rent for small- and medium-scale farms.

For the purpose of promotion of agricultural production by mechanized farming of small- and medium-scale farmers, it is proposed to establish the farm mechanization services in new Agricultural Extension Service Office, at the initial stage of the project. The services aim to provide maintenance, repairing, and rental services of farm machinery for farmers. The organization of this service is composed of the operating section, and workshop section with the necessary staff for smooth and effective operation.

The services with 5 ha will be located adjacent to the planned agricultural center in Nova Zagora, which has convenient road access. Accordingly, it could be expected that the servicing would cover the area which is assumed about 6,100 ha for small-scale farm and 1,400 ha for medium-scale farm. This plan comprises construction of necessary buildings,

provision of farm machinery and equipment. The following work items are proposed to be carried out.

- Construction of buildings:
  - i) Workshop with office, storage and workshop equipment — 1 unit
  - ii) Garage for farm machinery — 2 units
- Supply of farm machinery and vehicles:
  - i) Tractors with attachments — 5 units
  - ii) Combine harvesters with adapters — 9 units
  - iii) 4 ton Trucks — 3 units
  - iv) 4WD wagon type — 2 units
  - v) Motorcycles — 4 units
- Supply of office equipment:

3-1-3 Institutional Development Plan

Proposed project components are defined based upon observations and analysis of the agricultural production patterns and farm management practices in the M3 Canal Pilot area. Institutions represent the human, management, mechanisms for enhancing production, improving and adjusting on-farm practice. Institutional weaknesses, and proposed interventions, are categorized to include: (A) The organization of a water management system on a regional level and ISC/Sliven's link with Water User Associations, (B) Local government leadership and legal guidance, and organization of product and market information for farm producers through establishment of an Agribusiness Information Center (ABC), and (C) Expansion of Local Advisory Offices (LAO) of the MAFI-lead Extension service to deliver technical advise to crop and livestock producers.

(1) Improvement of Water Management Structures

ISC has established itself as a cost-recovery service organization in three short years of operation. ISC aims to be self-financing in the future. The management and employees of ISC have adopted a common definition of their function to manage natural and constructed waterways, reservoirs in order to deliver a cost-effective service for the supply of water to a range of users. Branch managers in Sliven are capable, and the office is staffed with skilled engineers. Branch officers are granted a reasonable degree of freedom to operate in line with the cost and expenditures goals of ISC as a national organization. The challenge is to begin planning to move forward and further decentralize, and localize, the operation to meet the demands of a new and changing client base.

Current ISC/Sliven Branch performance, like other ISC branches, is measured almost entirely in financial terms. Over the longer term, a movement towards performance measured by the quality of services delivered will encourage responsibility and effective branch management. The current pricing strategy is reasonable in the short-term to provide equity in the face of economic difficulty, but it penalizes areas like Sredna Tundja with a natural comparative advantage for gravitational irrigation. Such cross-subsidies also reduce the incentives for cost-effective branch management.

Key ISC/Sliven training issues include:

- WUA relations and contract arrangements
- public affairs and local government relations management
- pricing strategies and techniques for financial appraisal of irrigation
- cash flow analysis and discounting
- investment project planning and appraisal
- inventory control
- expansion of staff familiarity with international mechanized irrigation equipment.

Overseas study tours for branch management, and technical assistance is suggested to encourage the establishment of local, independent, water management systems.

Exposure to modes of operation in other countries operating water resource authority and regional utility commissions will be advantageous to ISC. Increasing regional branch autonomy is one way to move the organization forward. Expanding branch authority, ownership of reservoirs and main network facilities, will be supportive of an operational style that has a client orientation. The large reservoir resource, and extensive (potential) irrigated farming area suggests the ISC/Sliven Branch is a suitable model for decentralization, since it is endowed with a resource base that over time will facilitate movement toward financial autonomy. Examples in the Sacramento valley, and Colorado in the USA offer interesting case-studies for independent water authority management, and the dynamics of relationships with farmers and water user associations. ISC management and branch structure is encouraged to examine "water management systems/structure" in other countries to move towards a model of autonomous branches that operate as regional water authorities.

Training Program of the Water Management

Project training and human resource development activities under the water management component are defined for an initial 5 year period, including:

- Training programs will be valuable to expose regional water and irrigation management staff to the practices of western countries with similar geographic and agricultural activities. Training about and in third countries has been shown to be a powerful tool to raise awareness and improve the motivation of managers in transitional economies. Training for a small group of leaders will help to illustrate operations of an independent regional water authority, and a regional authority's relationship to farm WUAs in countries that have had experiences with modern farm management;
- District, in country, WUAs training workshops in issues for the WUA operation will help work through concerns and difficulties in the implementation of these new farm-level groups. Topics for discussion might include: joint ownership of on-farm facilities, managing irrigation operation and maintenance of on-farm facilities, coordinating scheduling, measuring and delivery of water on the farm, and, business planning for implementing irrigation construction and rehabilitate on-farm facilities, and water pricing and fee collection;
- Management support from ISC/Sliven and the Irrigation Institute will be important to sustaining and nurturing WUAs in a revised regional management structure. Short-term training courses in project supervision, WUA group dynamics, and price and water management policy will serve to strengthen regional operations;
- Farmer training on participation in WUAs will require attention to help re-build trust among producers and encourage cooperation across villages. In addition, farmer training seminars are also a forum for exposing farmers to new irrigation equipment and O&M practices; and
- Resident expatriate training advisers will serve to support WUAs and to strengthen the regional management structure of ISC/Sliven. Consistent, on-the-job training services will facilitate working through many of the day-to-day challenges that will arise in the implementation of these new irrigation management organizations.

WUAs. A key component of encouraging a regional and locally based ISC depends on the establishment of a network of functioning water user groups. WUAs need to be defined along technological lines, to maintain consistency with how water is used along the pipeline and canals and encourage economic incentives for organizing into a group.

ISC / Sliven as a model branch is encouraged to take responsibility for reservoir and main canal facilities, and transfer responsibility for on-farm facilities to WUA composed of cooperatives, associations, lessees, and private agricultural producers. ISC is well placed to assume a coordinating role in the establishment of WUA, but ISC/Sliven's role should be limited in order to encourage WUA and farmer responsibility. WUAs are envisioned to be the point of contact for ISC, and the contractor for specified amount of water and timing of

water delivery. Local government, at the municipal level, also needs to play a positive role in nurturing WUAs. The Municipality, in conjunction with ISC and the Irrigation Institute might be a point of intervention to provide training to a network of WUAs. Technical assistance and short, intensive training for WUAs and local government officials will be important here.

WUA groups are encouraged to assume numerous roles, including: (1) ownership of on-farm facilities, (2) management responsibility for the operation and maintenance of on-farm facilities, (3) responsibility for scheduling, measuring and delivery of water on the farm, (4) authority to construct and rehabilitate on-farm facilities, and (5) collecting water charges.

Rationale for WUAs. The benefits of WUAs for ISC are to reduce its O&M responsibilities. By reducing the scope of work for ISC, its costs of operation will also decline. Services on the main facilities will improve with more concentrated application of staff and financial resources. The task of contracting many users is reduced if contracts for water are arranged in groups. Water charges, might also show modest declines, and thus prove supportive of developing a larger ISC/Sliven client base.

For farmers, the benefits of forming WUAs are several. Groups will be able to more efficiently contract for water, and schedule water deliver by time, amount and location. Experience in other countries suggests this role is best defined by the users, i.e. the people actually demanding and making use of irrigation water. Maintenance of on-farm facilities today is a daunting task for farmers. However, with improved facilities, the ownership and regularity of maintenance is likely to improve through farm-based and group responsibility.

It is important to be clear in the justification for the establishment of WUAs. The benefits of WUAs will not alone be a solution to generating interest in irrigation use. On the contrary, the impetus for the establishment of WUAs will follow from stimulated irrigated agriculture.

The overriding issues for the effective transfer from ISC to WUAs focus on several factors. First, facilities need to be in operational condition, or credit support provided to get them into operational shape as the land is consolidated, and transfer of responsibility to WUAs is completed. Second, water users must be able to afford to use water, such that the price of water will be within their repayment ability as determined by the benefits of water use.

(2) Agri-Service Center

a) Agribusiness Information Center (ABC)

An ABC in the Nova Zagora Municipality is recommended as a focal point for project activities. The Center is designed to respond to a number of recognized needs.

The ABC will provide a missing link in local government involvement in the promotion of new forms of agricultural development, while bringing central structures of MAFI and ISC closer to producers. It may serve as a point to unify a redundant set of parallel functions. Establishment of the ABC is aimed also to accelerate the establishment of support services for agricultural producers in the municipality to form a model unit delivering irrigation, production, livestock, and business management advice to local farmers. The functions of the Center will further modernize the information roles the municipality plays in collection of price and production data.

The ABC will be launched within the auspices of the offices of the municipal government of Nova Zagora. The basic structure and functions of the Center are diagramed in Figure G-1, Appendix G, defining a dynamic local service organization staffed by 6 personnel.

The ABC will provide an impartial open door, offering services for entrepreneurs and village leaders seeking printed information, access to electronic files, and technical advice with referral to a local extension service of trained personnel. The client base for the Center will be built by advertising through the radio and printed media developed under Center, and later, its reputation will grow through personal networks.

Municipality of Nova Zagora
Agribusiness Information Center - Services and Clients

Services	Potential Clients
- Business planning - Association formation and management - Marketing (Linking to existing MAFI & SAPI Information System, and Wholesale market information system) - Credit advice - WUA formation and irrigation extension advice - Financial planning - Training in accounting and financial management - Communication outlet for products & supplies - Publishing and printing educational materials, including legal advice on legislative changes - Links with suppliers and buyers - Facilitation of contract farming schemes	- Reorganized farms and villages - Private businesses - Private farmers' associations - Village entrepreneurs - Marketing agents - Banks and other financial institutions - Village leaders and social services planners - Village WUAs and ISC

Training Program for Agribusiness Information Center

Project training and human resource development activities under the Agribusiness Information Center (ABC) component are defined for an initial 5 year period, including:

- Training in local government management will support a re-definition of roles and responsibilities of municipal and regional government officials. Topics include the role of local government in economic development, strategies for promoting community organizations and agribusiness enterprises, and re-thinking patterns of oversight to facilitate sound business practices and eliminate unnecessary regulation. Exposure to the experience of other countries, the best practices applied in these countries, will be valuable to creating a new vision for local government staff emerging out of the soviet-style system;
- Quarterly district-wide farm training workshops will be one tool for bringing farm producers and emerging agribusiness enterprises together to improve communication and collaboration with local government officers. Information dissemination lead by local leaders on such topics as: interpreting new legal codes, how to take advantage of government incentive programs for agricultural investment, and opening and managing foreign business links, are just a sample of the topics of interest. These training programs will provide opportunities for local government and farmers to build new strategies for organizing themselves, and venues for policy discussion;
- Promotion of linkage between local government leaders and MAFI's Crop Production Department and Research and Education Department will be a new and important

channel to open to encourage policy discussion and feedback from the local level. Financial support to implement regular management group meetings between the central and local level will be vital to transforming the agricultural bureaucracy to meet the challenges of a market economy;

- Farmer training and study tours to expose Bulgarian producers to modern practices in areas with similar geography, under similar cropping patterns have proven successful under bilateral and multilateral donor programs. Short, intensive programs conducted outside the normal setting have been successful in raising awareness, and motivating farmers in the midst of the transition from a socialist economic system. Model practices may best be learned when exchanging ideas with counterpart farmers living and working in an actual market economy. Preparation and adequate financial support for intensive training and study tours are critical to their success. Training needs to be appropriately tailored, and detailed, to respond to local needs; and
- Highly qualified resident technical assistance advisers will help to support establishment and growth of the ABC. On-the-job assistance and training is an important component of building a sustainable local agribusiness support center.

b) Extension Service

A key component of the proposed project interventions is the establishment of Nova Zagora Branch (Local Advisory Office (LAO)) of the national extension service. MAFI's Department of Research and Education provides direction for the newly established, and expanding, network of branch extension offices. Accelerated establishment of a Nova Zagora office will be supportive of the objectives for the development of the M3 Canal system as a pilot area.

The Nova Zagora Extension office will be consistent with MAFI's LAO expansion plans, and this office will be able to take advantage of technical and administrative links with the very active Experiment Station / LAO based in Yambol. The national strategic plan for Extension (National Agricultural Advisory System, NAAS) has launched 19 offices in 1996, and will seek to open 20 offices per year until the Year 2000 for a total of 80-100 LAOs across the country. Nova Zagora is already recognized as a target site in this plan given the Municipality's agribusiness potential. This NAAS program has been developed and financed jointly between EC-PHARE and MAFI. Synergy with the EC-PHARE and MAFI Extension plan is strongly encouraged and coordinated with this assistance programs.

The main purpose of the Nova Zagora Extension Office will be to provide technical advisory services on crop production and animal husbandry techniques to producers and

farm enterprises in the Municipality. The Extension Office will provide leadership to the 3-5 village-based demonstration plots defined within the M3 Canal Pilot Area. The LAO will provide an important link to applied research and experiment station activities, and infuse local producers with new ideas and techniques to improve yields, and farm management practices.

Agricultural Machinery Workshop

For the purpose of promotion of agricultural production by mechanized farming of small- and medium-scale farmers, it is proposed to establish the farm mechanization services in new Agricultural Extension Service Office, at the initial stage of the project. The services aim to provide maintenance, repairing, and rental services of farm machinery for farmers. The organization of this service is composed of the operating section, and workshop section with the necessary staff for smooth and effective operation.

This plan comprises construction of necessary buildings, provision of farm machinery and equipment. The following work items are proposed to be carried out.

- Construction of buildings:
  - i) Workshop with office, storage and workshop equipment — 1 unit
  - ii) Garage for farm machinery — 2 units
- Supply of farm machinery and vehicles:
  - i) Tractors with attachments (80 Ps) — 5 units
  - ii) Combine harvesters with adapters (120 Ps) — 9 units
  - iii) 4 ton Trucks — 3 units
  - iv) 4WD wagon type — 2 units
  - v) Motorcycles — 4 units
- Supply of office equipment:

An important and new initiative now under discussion with MAFI and EC-PHARE is to begin irrigation extension services with technical leadership from the Institute for Irrigation and Hydroamelioration. The Irrigation Institute is envisaged to travel from its Sofia headquarters to provide technical guidance and organizational support to emerging WUAs. Irrigation extension services will fit well into plans in Nova Zagora and the M3 Canal pilot area concept.

Training Program for Extension Service

Project training and human resource development activities under the Extension Services component are defined for an initial 5 year period, including:

- Training to expose a small group of extension service professionals to the roles and organizational structure extension programs in other countries will be supportive of improved farm productivity. Knowledge and understanding of best practices, and different models of support services, will encourage creative management as Bulgaria builds its new extension network. A comparative perspective across different countries is particularly valuable for MAFI and local leaders looking to build a western-style extension service and move away from old socialist practices;
- District training workshops to support demonstration plot activities, quarterly, will be an important link between extension managers and farmers. Farmers require new information and knowledge of improved practices, and extension workers will look to develop new avenues for meeting and interacting with producers. Demonstration plots within the villages encourage extension services too move closer to the farmer, and deliver support services;
- Management support from MAFI/Extension Department will be important to nurture the development of the Nova Zagora office and ensure its development meets the national advisory system goals. Training activities aim to financially support regular workshops for central and local staff to exchange ideas;
- Training to operate farm machinery and renting management of the machinery to the private farmers;
- Farmer training on WUAs and new irrigation equipment will be a new and useful addition to the extension service portfolio. Irrigation institute staff need to be supported to routinely deliver irrigation advisory services to local producers. Technical guidance from the Institute for Irrigation & Hydroamerioration will encourage a stronger client orientation by researchers in the Institute, bringing their knowledge closer to the users so that farm irrigation practices incorporate lessons gained in applied research; and
- Long-term technical assistance through resident advisor(s) will support local extension activities, and help build a link between WUAs and local economic development planners. Sustained on-the-job tainting is equally, if not more important, than short-training programs in order to facilitate problem-solving in the transitional setting and encourage public sector management that incorporates a client-orientation.

3-1-4 Farmers Organizations

Nova Zagora provides the opportunity to develop a model and methodologies for restructuring Bulgaria's rural agribusiness areas. Nova Zagora M3 canal area, as a pilot project, sets the stage for implementation of new approaches to the complex problems

confronted in rural Bulgaria. The establishment of an "Agribusiness Information Center" in the municipality of Nova Zagora is an important focal point for project activities.

The pilot program will seek to encourage a range of cross-village associations and organizations to support the reform and revitalization of agriculture in the area. New organizations will aim to address needs in the provision of quality and low-priced inputs, credit, support services for machinery and on-farm facilities, and marketing associations. Supply organization, credit unions, and marketing groups will be important additions to move beyond the current production cooperative organizations.

(1) Business Alliances and Legal Guidance

In rural Bulgaria, young organizations - including business and farming associations, service organizations, emerging financing institutions - seek alliances to facilitate their development. For example, private farmers' associations seek links to an emerging credit cooperative, and credit institutions need the support of local farm and village communities. All new business entities need the support and approval of local government officials. New laws and methods of doing business in a market economy require interpretation and producers seek technical and administrative guidance. Access to information on modern inputs, equipment and techniques will have a powerful impact. The Agribusiness Information Center will assist young organizations to connect with other organizations and institutions.

The ABC might develop a referral network of businesses, input suppliers, service providers (such as insurance companies and accountants), financial institutions, and marketing organizations (or individual marketing agents). Referrals will help forge linkages into a market-based economy, domestic or foreign. The Center might become the source of new associations like private farmers' associations and business clubs to assist producers to organize and promote their views and strengthen support ties among the community. The office will also serve as a consultancy office, providing extension advice to producers and associations. The Center might also be a clearinghouse for consultation and application to make use of state irrigation and agricultural funding.

(2) Restructuring Cooperatives (Establishment of Private Farmers' Organization)

Restructuring the Bulgarian cooperative farm system requires changes in basic social and economic processes at all levels. Rural Bulgarians seek decent living standards and basic comforts of modern life. Yet fear of the unknown and deeply ingrained (and justifiable) distrust prevent many from making long-term investments, and solid commitments to new ideas and basic change. Commitment, essential to achieving and maintaining successful

reformed social institutions and economic enterprises will have to be earned through demonstration of new management systems.

Ownership, profit, and competition drive a market-based economy. These are the incentives for entrepreneurial ventures, objectives of capital investment, and the reasons market economies succeed. The absence of economic incentives, ownership, and competition in the socialist system was a factor leading to its failure. Although some Bulgarians remain opposed to the market-oriented economy, many farmers and agribusiness entrepreneurs understand the role of markets, although they may still lack sufficient knowledge to run efficient, commercial businesses and farms.

However, understanding the fundamentals of capitalism does not automatically translate into dynamic rural economies or profitable agribusiness enterprises. Creating productive economic enterprises through new forms of management and land consolidation are the most important factors. The reform process will halt if existing cooperative farms are not converted into profitable enterprises, and the concentration of resources equalized. Large cooperative structures control of major resources (land, machinery, credit) will not change unless opportunities for alternative production management make economic sense and the markets expand, incomes rise, employment increases, and wealth is generated to support the rural population.

(3) Committee of the Farmers' Organization

A committee of farm organizations is one mechanism for gathering producer groups together within the Municipality. Group formation across villages may help to re-build lost trust among farmers, facilitate an exchange of ideas, and encourage the creation of new support mechanisms for credit, inputs, marketing or other functions. A committee of new farm organizations may also spur the creation of more equitable producer organizations and open reform-minded policy dialogue with MAFI and local political leaders.

3-1-5 Marketing and Distribution System Development

(1) Background

The basic problem of distribution and marketing of agricultural produce is that while the vertically integrated distribution and marketing system constructed around state procurement companies ceased to function, systematic market channels between producers and the procurement companies are yet to be developed. Regarding cereals, while procurement companies are well equipped in terms of storage and processing capacities, producers in general do not have adequate on-farm facilities. Therefore, they are forced to

be "price takers" and have little opportunities of negotiation. As for vegetables and fruit, great potential exists for diversification of selling channels taking into account of the future wholesale market in Sliven. However, current inadequate post harvest practices will hinder producers to take the opportunity.

Based on these constraints the following two components are proposed for pilot project area in order to improve these situations. They are 1) improvement of on-farm storage facilities of cereals and 2) improvement of an existing collecting point for vegetables and fruit.

(2) Improvement of On-Farm Storage Facilities of Cereals

a) Purposes

Facilitating on-farm storehouses is planned in order to meet with increased production after project implementation. The planning concept is shown in Figure E-3-1, Appendix E. Based on an assumption that the number of private farmers organizations will be increased in the future, improvement of their access to on-farm storehouses is planned. Provided that these on-farm storehouses are owned and operated by the farmers organizations producers can benefit from group selling and quality improvement. The storehouses will provide producers with opportunities of negotiation with various purchasers which will become an impetus for increasing cereal and sunflower production.

b) Project Components

As Table E-3-2, Appendix E shows, there exist some on-farm storehouses owned by cooperatives except for Zagortzi. Rehabilitation of these facilities is designed as these are old and most of them are not equipped with ventilation facilities. For three villages, Korten, Lyubenetz and Nova Zagora, no design is included as existing storage facilities are adequate for meeting with an increase in production after the project implementation qualitatively and quantitatively.

Within villages where storage capacities of existing on-farm storehouses are inadequate for an increase in production, new construction of storehouses are designed. Planned storage capacities are as follows.

Name of Village	New Facility	Rehabilitation
Asenovetz :	301 ton	500 ton
Bryastovo	-	400 ton
Karanovo :	668 ton	400 ton
Sabrano :	72 ton	600 ton
Stoil Voivoda :	390 ton	800 ton
Zagortzi :	1,771 ton	-

c) Market Organization

i) Access to storehouses

Producers can bring produce to storehouses by own horse carts and cars.

ii) Operation

Storehouses are utilized during harvest season from July to September for winter crops and from October to November for Spring crops. A manager for weighing, book-keeping, cleaning of facilities and a guard man are required during the time

iii) Recurrent costs

As storage fees, Lev 60 per month is planned to be collected from users. In addition, certain percentage of sold value will be needed in order to maintain the facilities. These administrative principles are determined among members of farmers organizations who own the storehouses.

d) Physical Distribution to Procurement Companies

Physical distribution is conducted by procurement companies and traders. Therefore, after facilitating on-farm storehouses produce will be brought to procurement companies by them.

(3) Effective Utilization of the Existing Collecting Point at Korten

a) Purposes

Since labor shortage is a serious constraint for vegetables and fruit producers facilitating a collecting point in the study area is designed in an attempt to save time allocated for transportation to markets. Even though horticulture wholesale markets are planned to be operated in Sliven and Stara Zagora by the EBRD and GTZ in the near future, these markets cannot be accessed by producers as the distances from Nova Zagora area to Sliven and Stara Zagora are 39 km and 34 km, respectively. Therefore, facilitating a collecting

point in the study area where produce is sold in certain lots will benefit both producers and buyers from these markets.

b) Project Component

A collecting point is designed at Korten where existing post harvest cooling storage facilities exist. Its 30,000 tons of cooling rooms are planned to be utilized for an increase in fresh fruit and vegetable production after the project implementation. Emphasis needs to be put on quality improvement achieved by adequate post harvest practices.

i) Planned traded volume and existing facilities

Volume of produce supposed to pass on the collecting point at Korten with project and the existing cooling storage facilities are written below.

	Production (W/P) (ton)	Required Storage Capacity per Day (ton)	Collecting Cells (cu.m)
Vegetables	9,293	155	2,000 cu.m x 5 rooms
Melons	594	20	+
Fruit	1,290	43	1,000 cu.m x 10 rooms
Total	11,177	218	30,000

The collecting point will be operated from April to September, but the peak will come from July to August. Basic activities are: temporary storage, grading and packaging. Assuming that these produce are stored at the Korten collecting point for a day before selling to other markets, required capacity of cooling storage facilities is 218 tons per day. In order to improve post harvest practices, the following equipment is planned to be introduced to the collecting point.

Tomato grading equipment	1 unit
Fruit grading equipment	1 unit
Cucumber Sealer	1 unit
Crates (40x60x15)	46,520 units
Pallets (80x120)	1,400 units

c) Ownership, Operation and Management

Due to the characteristic of public goods, the majority of the shares of the collecting point are owned by municipality(s). Operation and management are separated from owners. Basic operation principle is determined by various interest parties such as producers, wholesalers, retailers, processing companies, management company of Sliven wholesale

market, Nova Zagora Municipality and MAFI. It is worth considering to use Project Cycle Management (PCM) method to formulate such principle.

d) Formulation of Producers Groups

Through the Agribusiness Center and demonstration farm, merits associated with group selling will be transferred to producers. In particular, important change in concept "from quantity to quality" is expected to be realized through improvement of post-harvest practices such as improvement in grading and packaging.

e) From Quantity to Quality

One idea is to establish "Nova Zagora" brand. Produce which meets certain criteria will be sold under the name of brand name "Nova Zagora" with producer's name on the seal. Qualification criteria are suggested to be determined acceding to the recent ratified law on commodity exchange and wholesale market. For example, with certificates of origin of produce, mandatory quality and safety requirements and conformity with sanitary, veterinary and plant health, hygienic and other standards, Nova Zagora brand produce will obtain trust from consumers in the long run.

f) Market Information

Market price information including Sliven wholesale market is designed to be provided by the agribusiness center within the Nova Zagora Municipality. Links to the wholesale markets where imported goods will also be traded will show producers post-harvest practices favored by EU and other countries. Information regarding EU quota allocation to Bulgarian agricultural produce exports will be provided indirectly though the Sliven wholesale market.

g) Physical Distribution to Procurement Companies

The Sliven wholesale market is planning to dispatch ten trucks to production areas. In addition, a private transportation in Nova Zagora has capacity of transporting 210 tons by using 10 trucks. Therefore, the planned collecting point at Korten will be included in the already constructed physical distribution system.

3-1-6 Infrastructure Development Plan

(1) Development Concept

For infrastructure development, the following basic concepts are set up.

a) Although surface irrigation is now the dominant irrigation method, existing irrigation facilities of the Sredna Tundja system were designed based on the mechanical irrigation methods for saving water losses. Therefore, the first step of the development is reconstruction or rehabilitation of the existing irrigation facilities to original designed system, if land use patterns justify such developments.

b) Land restitution is under way and land consolidation is encouraged to create economical sized agricultural plots. The irrigation development concept is based on completion of the land restitution and land consolidation process.

c) Agricultural farming size will be reduced 2 % with construction of farming roads following land consolidation; and

d) Measuring devices will be design on each irrigation block to improve scheduling, delivery and accounting.

(2) Main Irrigation Facilities

a) Main Canal

The M-2 & M-3 main canal are lined by the concrete and are well maintained. No repair is required. Measuring staff were installed on the lined canal, and canal discharge can be measured.

b) Main Pipe

Measuring devices will be considered to be installed on the main pipes.

Name of Main Pipe	Number to be installed
No.1 Main Pipe	1
No.2 Main Pipe	1
No.3 Main Pipe	4
No.4 Main Pipe	3

(3) Sample Design for On-Farm Facility

a) Selection of Sample Area

Sample design on a representative area will be prepared:

i) To present the sample design of distribution pipe networks for fitting the agricultural farming lot after land restitution and land consolidation; and

ii) To estimate the construction cost of any additional on-farm facilities is required. Total cost will be estimated based on the cost per unit area.

The sample area is selected as part of the Zagortzi-Karanovo irrigation block and northern part from rail way of Stoil Voivoda irrigation block which are commanded area of No. 3 Main Pipe. The sample area is the representative of the Nova Zagora agricultural land. Namely, Zagorti-Karanovo irrigation block is representative of slopping agricultural land and northern part of Stoil Voivoda irrigation block is flat agricultural land.

b) Present Conditions of Sample Area

Three kinds of mechanized irrigation equipment; pivot, reel and sprinkler were applied in the sample area, and irrigation distribution pipe networks and hydrants are existing for these mechanized irrigation equipment and with the following acreage;

Irrigation Equipment	Acreage	Percentage	Interval of Pipe	Interval of Hydrant
Center Pivot	4,290 dca	25.4 %		
Reel	5,280 dca	31.2 %	420 m	76 m
Sprinkler	7,330 dca	43.4 %	420 m	36 m
Total	1,690 dca	100.0 %		

Irrigation area of each irrigation equipment is as follows;

Irrigation Equipment	One watering area
Center Pivot	122.54 dca
Reel	1.50 dca
Sprinkler	0.71 dca

c) Proposed Cropping Pattern & Water Requirement

According to the proposed cropping pattern, land use intensity and irrigation intensity is 99.5 % and 33.5 %, respectively. Irrigation water requirement of the Pilot Project is estimated based on proposed cropping pattern and "The Irrigation Region of Agricultural Crops", which is applied for calculation of the irrigation water requirement in Bulgaria, as 16.717 mcm for Pilot Project Area. (refer to Table J-2-6, Appendix J)

d) Agricultural Management Lot

According to the farm management plan, farmers are divided into four categories by management size; small farmer, medium farmer, large farmer and cooperative. The agricultural management land will be scattered into 3 to 4 agricultural management lots even after land restitution and land consolidation. The smaller size of agricultural lot can

be estimated based on small scale farmer having average 61 dca of agricultural land as 20 dca lots.

e) Design of Sample Area

According to the farm management plan, about half of the Projected acreage will be allocated to small farmers, and smaller agricultural management lot is estimated as 20 dca.

On the other hand, 25.4 % of sample area are occupied by the center pivot which can irrigate 122.54 dca at one time, this irrigation equipment will not be fitted for future's agricultural management lot.

Therefore, design of sample area will be made as follows;

Irrigation Equipment	Present Acreage	Planned Acreage
Center Pivot	4,290 dca	0 dca
Reel	5,280 dca	676 dca
Sprinkler	7,330 dca	1,014 dca
Total	16,900 dca	16,900 dca

(4) Implementation Plan

a) Executing Agency

Executing agency of the Project will be the MAFI and executing body is the Irrigation System Company. Organization chart of the ISC is presented in Figure N-1-3, Appendix N.

b) Project Executing Office

ISC will open the project executing office in the ISC Sliven for executing of the Project.

c) Implementation Method

Implementation will be carried out by the contractor selected by the international competitive bidding which will be made among the qualified construction companies.

d) Land Acquisition & Land Compensation

It is very difficult to discuss the land acquisition even for the Project at moment. However, necessary construction works of land acquisition are only discharge measuring boxes on Main Pipe Lines and total area of land acquisition necessary is about 50 sq.m at 11 places.

It is general rule for repair of existing underground pipes and new underground pipe construction to compensate the standing crops and agricultural product of during construction period.

e) Engineering Services

Consultant as engineering service for the project implementation such as detailed design and construction supervision of schedule control and quantity control will be employed, if appropriate.

f) Implementation Schedule

Detailed design by the consultant will be started at beginning of 1998, successively construction works will be completed during four (4) years, as shown on Table K-6-9, Appendix K.

(5) Maintenance Plan

a) Maintenance Agency

Maintenance works of the irrigation facilities are carried out by the ISC Sliven. The ISC Sliven office who operates and maintains the Sredna Tundja irrigation system has three (3) operating units; dam operating unit, Sliven west and Nova Zagora Branch. Nova Zagora branch of ISC will operate and maintain the irrigation facilities of the Project with Nova Zagora west and Shivachevo irrigation block which is out of Pilot Project Area.

b) Scope of Maintenance

As mentioned before, main irrigation facilities such as main canal and main pipe lines have been operated and maintained by the ISC from the establishment. The distribution pipe networks were operated and maintained by the ex-cooperative but without ownership after dissolution of ex-cooperatives, ISC repairs and maintains the distribution networks by using amelioration fund.

Main irrigation facilities will be operated and maintained by the ISC, however after establishment of water users association, it is recommended that distribution pipe networks will be operated and maintained by the water users association, defined on a technological principle.

c) Water Cost

It is very difficult to estimate the water cost only for the Pilot Project, because Nova Zagora ISC branch office operates and maintains not only irrigation facilities of the Pilot Project

area but other area such as Shivachvo. Therefore, irrigation water cost estimation is carried out based on the results of 1996 and following conditions.

- Water cost in ISC Sliven is same,
- Office expenditure in ISC Sliven is same as 1996, and
- Water supply volume other then the Project area is same as water volume supplied and water supply volume for the Project area is proposed water requirement.

Actual results in 1996 is as follows:

- Water cost in ISC Sliven is 1.65 Lev/cu.m
- Total water volume supplied is 17,205,000 cu.m
- Expenditure covered by water cost is Lev 28,388,250 (=17,205,000 x 1.65)
- Water volume supplied to the Project area is 7,912,000 cu.m

Estimation of water cost is made as follows:

- Projected water supply volume is 26,010,000 cu.m (17,205,000 - 7,912,000 + 16,717,000)
- Irrigation water cost will be 1.09 Lev/cu.m (≒1.10 Lev/cu.m)

3-1-7 Other Additional Development Plan

(1) Relation to the Food Processing Industries

In the first place, it is necessary to increase production volume of good quality agricultural products as raw materials for food processing companies by producers. The sufficient supply of good raw materials will improve the management condition of the food processing companies, and form the sound trade relationship between producer and food processing companies, through the impartial market competition based on the market oriented economic mechanism.

To promote and secure the producers who produce the high quality raw material, it should be an effective business strategy to deliver the supporting service such as supply of the agrochemical and seeds, lending agromachinery, advanced payment for producers or credit service. For the producer, these services are great assistance given the present financial difficulty.

For getting rid of a breach of the agreement, delayed and unpaid payment and gaining unfair profit, the municipality should have some coordinate function to create fair trade relation between producers and food processing companies during the unstable economic condition.

Without improvement of management efficiency of food processing companies, it is difficult to increase the purchase price of the products from the producers. In the future after attaining production increase of raw materials, it will be needed to reconstruct the management, improve the equipment and implement the modern technology for increasing the efficiency of food processing companies in the region, as their equipment and processing technology are not advanced. Inducing new technology such as freeze dry and retort packaging etc. will be enlarge the valuation of products type and market.

For improvement of management in food processing companies, technical assistance for reforming management organization, marketing activity, reconstruction of processing line and improving the equipment and implementing new food processing technology and financial support to invest for renovating equipment and implementing new technologies will be necessary.

(2) Agricultural Credit

Agricultural credit advice and access to affordable credit are both essential elements to revitalize production in Nova Zagora. MAFI has encouraged the establishment of a credit cooperative supported by the EC-PHARE program. The credit follows the French Credit Agricole model. Support and expansion of the credit cooperatives in the pilot project area, including the cooperative "Kaln", is encouraged.

After completion of the land restitution scheme in the area, it is supposed that a high demand for farm credit will be appeared (about Lev 72.3 million for input of only small- and medium-scale farms). Consequently, links with the activities of the credit cooperatives and the function of new farmers' organization is encouraged as a component of the development plan, in order to support farming activities of private small- and medium-scale farms.

(3) Expected Alterations under the Project in Social Reality of the Pilot Area

The orientation of the Project as a platform for developing of agriculture through proven efficient models of organizing its vital components will imminently bring about developments in rural social life that need to be monitored and directed. Considering the vital role of education in any development activities, the social development program of the project includes 5 components: migration, aging, unemployment, minorities, and education.

a) The Migration

It is unrealistic to predict a quick flow of urban people to the rural areas even with the perspective of an economical prosperity in the region driven by agriculture. It will take more than higher agricultural incomes to stabilize the rural to urban migration. As far as this project is concerned, a two stage plan for curbing the migration is prescribed:

i) Stage One: Rural-bound labor migration (it will yield results from 2-3 years after the implementation of the Project). There have already been cases of labor migration to rural areas, mainly involving former villagers who live in urban areas and who lost or were not satisfied with their town occupations, and who have inherited land. These people commute daily but dwell permanently with their families in Nova Zagora or other urban places. An increase of farm incomes and labor shortages will attract more people to settle in farming districts. Seasonal workers will be also a part of the labor migration during harvest periods.

Transportation network, links and communication connections with the villages kept in a good condition are vital to encouraging the urban to rural labor migration.

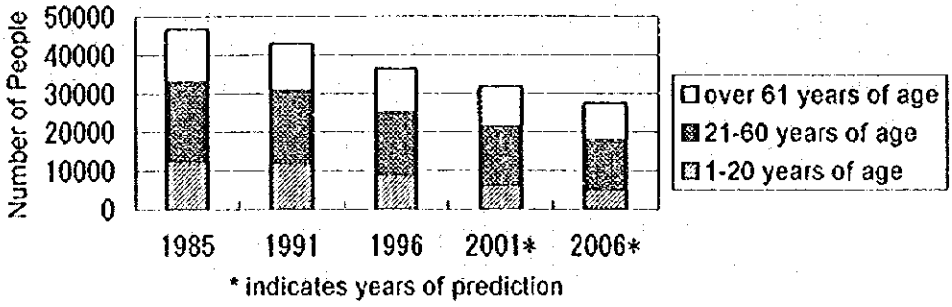
ii) Stage Two: The commuters settle permanently in rural areas (it will take from 5-10 years after the implementation of the Project).

Most of the people who cause the urban to rural migration have their own or their parents dwellings in the rural areas. It is expected that once they are convinced in the profitability of farming they will decide to move permanently to the settlement where they make a living. Their successful story will appeal to other natives who live in more distant places than Nova Zagora but still hesitate to move to the country. In addition, in order to reduce transportation cost the local entrepreneurs will erect accommodations for seasonal workers who will dwell there for the time of harvest. Some of the workers may also decide to settle down in the area.

The local mayors may consider spots or even houses for commuters who wish to settle down in their settlements. In Stoil Voivoda the idea has been already realized.

b) The Aging

The following figure illustrates that the decrease of the number of people in the pilot area will continue and it will be attributed primarily to birthrate decrease and migration. While the number of people of age between 21 and 60 years stays stable (44-48%) in per cent of the total population, it has decreased by 21% in 1995 compared to 1985 and is foreseen to drop further to 32% in the year of 2006 . Number of young people between 1-20 years of age will be 19% of the total area population in the year of 2006, down from 28% in 1991.



Pilot Area (10 Settlements) Population Prediction

Establishing family small-size farm product processing factories in the settlements out of Nova Zagora will go parallel with the project objectives and it will definitely help to attract young labor (the example of Stoil Voivoda dairy with 80% of its workers below 40 years of age).

Private, family-type small-size producers are extremely important for reviving the vitality of rural areas. For the purpose investments should be by priority directed to such kinds of businesses.

c) The Unemployment

The project will reconsider the existing crop patterns emphasizing on cultures of high annual benefits such as vegetables, fruits, grapes, etc. All of them are hand work consuming with high demand for marketing that will create more job openings. Markets for these crops are not secured but if the agriculture and the processing industry of the pilot area is to be restructured and modernized before the same sectors of the rest of the country are done, the market of the whole country could be regarded as a potential market. The example of the "Milky Way" factory, a dairy processor in Nova Zagora established after 1990 and already the best known cheese maker in Bulgaria, is encouraging.

Cattle, sheep, fowls are among the traditionally bred stocks in the region. Expanding the magnitude of stock breeding will improve the on-farm production cycle and will create more than two thousand jobs if livestock production is to be recuperated at its 1985 level. With additional jobs in related industries, like transport, marketing, processing, trade and etc., the existing at present about 3000 unemployed people in the municipality would turn to be a potential labor force of an expanding farm driven local economy.

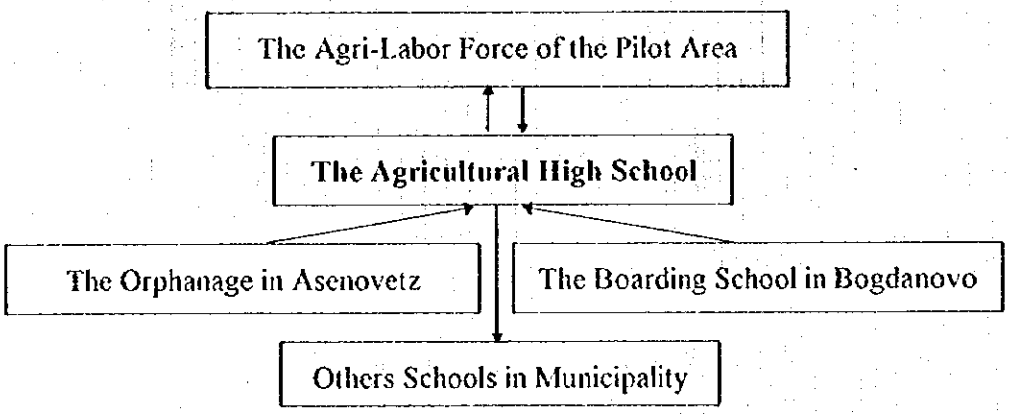
d) The Minority

The approximately 8000 gypsies that live on the territory of the pilot area are predominantly concentrated in Nova Zagora and Karanovo. They must be considered as a potential low

qualified farm labor. Some of them have already worked under the former socialist cooperatives and have experience as machine operators, shepherds. With the Project and its jobs creating opportunities most of the gypsies, unemployed at present, could be engaged seasonally. Certainly, those who are qualified could be employed on longer term basis. Therefore, chances to bring down the crime record attributed to them will increase. Finally, it should be clear that the perspectives for gypsies are not bright in any projections but it is obvious that without employment and incomes they will never improve their life and therefore they will always be a trouble for their neighbors. Re-qualifying programs for gypsies will take a great part of patience and endurance but should be considered as an option. Moreover, agriculture is the only sector of the economy that has the capacity to employ a great number of low qualified people .

e) Education

During the village interviews with the people engaged in farming , the question "what would you like to study if given a chance" was asked repeatedly and "management" was the most frequently given answer. The analysis on managerial skills of the existing cooperatives shows serious flaws. The cooperatives are still managed inefficiently employing more than necessary people and operating with an excess of farm machines. The proposed in the project three types of management for the cooperatives will equally require all of the present and future managers to acquire proper knowledge of farm management literacy.



A scheme for Recruiting Young Professionals or the Needs of Agriculture of the Pilot Area

Further, a scheme for recruiting young and qualified reliable farm workers was discussed with municipal officials. It can provide vocational education to farmers, management, and all interested in people with its professionals and facilities.

The orphanage in Asenovetz needs a small sum for re-furnishing its old, currently unused dormitory which can accommodate up to 20 pupils after their graduation from the junior high school. The students then can join the agricultural high school as full-time students or as apprentices in especially designed vocational programs at the school. The orphans, by the opinion of their teachers, feel native to the Nova Zagora area and often come back even sent to other schools in distant places.

In order to recruit future farm labor among the pupils of the boarding school in Bogdanovo, it is necessary farm education programs to be introduced at an early stage of education. Regular schools also send students to the agricultural school in Nova Zagora, but few of the students choose to work in agriculture after graduation due to several reason, one of which is the poor working conditions. Incentives, such as better incomes, better living conditions and better prospective, however, could improve the tarnished image of agriculture.

3-2 Cost Estimation

3-2-1 Conditions of Cost Estimate

Project cost consists of following components:

- Construction Cost (direct cost and indirect cost);
- Engineering Fee;
- VAT (22 %);
- Land Acquisition, if necessary;
- Contingency; and
- Price Escalation.

Conditions of cost estimate are set up as follows:

- Construction works will be made based on the contract basis by the construction company;
- Indirect cost (10 % of direct cost) is considered; and
- The cost estimates foreign currency (F/L) and local currency (L/C), separately.

Project Cost is estimated by the US$, because the inflation rate of Bulgaria is very high. The exchange rate of Lev to US$ is used as following figure:

1 US$ = Lev 224.3 as of average of Oct. 1996

Escalation rate of Project cost is applied as 6 % for each year, since escalation rate of local cost is considered to incorporate by cost estimation by US$.

Unit cost for the cost estimation were collected as of October 1996 without VAT.

The rate in F/C and L/C of unit cost of important materials are tabulated below.

Materials	F/C	L/C
Labor	0	100
Cement	20	80
Wood ware	0	100
Reinforcing Bar	30	70
Heavy construction machine	80	20
Mechanical parts	15	80

The Project is planned for engineering detailed design at first year and implementation is scheduled to start from second year and completed fifth year.

3-2-2 Agri-Service Center (Agribusiness Information Center and Extension Service Office)

(1) Cost Estimate

Agribusiness Information Center (ABC) and Extension Service Office are planned in the same building and named as Agri-Service Center with 16 m in width and 42 m in length. (refer to Figure K-6-1, Appendix K) Building and facility for ABC and Extension Service Office are tabulated below.

Description	Quantities
Main Building	672 sq.m
Equipment for office	1 lot
Furniture	1 lot
Station Wagon	2 units
Motorcycle	4 units

The cost for establishment of ABC and Extension Service office is estimated at US$ 682,000. (for details refer to Table K-6-1 and -11, Appendix K)

(2) Disbursement Plan

The facilities of the Agri-Service Center consisted of the Agribusiness Information Center and Extension Service Office will be constructed at second year, and furniture and equipment are scheduled to be procured at third year of the period. Disbursement

schedule of implementation cost with engineering fee, contingency, VAT, land acquisition and price escalation is given on Table K-6-12, Appendix K and total annual disbursement is tabulated below.

(unit: US$)

Year	L/C	F/C	Total
1998	114,000	12,000	126,000
1999	214,000	45,000	259,000
2000	71,000	226,000	297,000
Total	399,000	283,000	682,000

(3) Operation Cost

Training fee and annual operation cost for 5 years are estimated as shown follows;

First 5 years	268,860 US$
ordinary year	18,000 US$

3-2-3 Agri-Service Center (Agricultural Machinery Workshop)

(1) Cost Estimate

Agricultural Machinery Workshop is planned to be constructed in the same place of Agri-Service Center as a part of function of Extension Service Office. (refer to Figure K-6-1, Appendix K)

The cost for establishment of Agri-Machine Workshop is estimated at US$ 1,331,000. The procurement cost of agricultural machines is estimated at US$ 3,619,000. (for details refer to Table K-6-2 and -11, Appendix K)

(2) Disbursement Plan

The facilities for Agri-Machine Workshop will be constructed at second year, and furniture and equipment are scheduled to be procured at second year of the period. Procurement of agricultural machines will be carried out at second year. Disbursement schedule of implementation cost without procurement with engineering fee, contingency, VAT, land acquisition and price escalation is given in Table K-6-13 and -14, Appendix K and total annual disbursement is tabulated below.

(unit: US$)

Year	Workshop & Store			Machinery		
	L/C	F/C	Total	L/C	F/C	Total
1998	751,000	13,000	764,000	58,000	40,000	98,000
1999	327,000	66,000	393,000	663,000	2,858,000	3,521,000
2000	42,000	132,000	174,000	0	0	0
Total	1,120,000	211,000	1,331,000	721,000	2,898,000	3,619,000

(3) Operation Cost

Annual operation cost is estimated at US$ 13,560.

3-2-4 On-Farm Storage Facilities

(1) Cost Estimate

The cost is estimated at US$ 2,263,000 as shown in Table K-6-3 and -11, Appendix K.

(2) Disbursement Plan

The storehouses to be rehabilitated will be constructed at second year of implementation period and new storehouses are scheduled to be constructed at third year of implementation period. Disbursement schedule of construction cost with engineering fee, contingency, vat and price escalation is given in Table K-6-15, Appendix K and total annual disbursement is tabulated below.

(unit: US$)

Year	L/C	F/C	Total
1998	543,000	36,000	579,000
1999	399,000	87,000	486,000
2000	993,000	205,000	1,198,000
Total	1,935,000	328,000	2,263,000

(3) Operation Cost

Annual operation cost is estimated at US$ 14,920.

3-2-5 Korten Collecting Point

(1) Cost Estimate

Cost for procurement of new machines is estimated at US$ 629,000 (for detail refer to Table K-6-4 and -11, Appendix K).

(2) Disbursement Plan

The procurement of new machines will be carried out at second year, and consumption such as creates, pallets, etc. are procured at third and fourth year of the period. Disbursement schedule of procurement with engineering fee, contingency, VAT and price escalation is given in Table K-6-16, Appendix K and total annual disbursement is tabulated below.

(unit: US$)

Year	L/C	F/C	Total
1998	19,000	13,000	32,000
1999	81,000	342,000	423,000
2000	82,000	2,000	84,000
2001	87,000	3,000	90,000
Total	269,000	360,000	629,000

(3) Operation Cost

Annual operation cost is estimated at US$ 8,680.

3-2-6 Rehabilitation of Irrigation Facilities

(1) Cost Estimate

The direct cost for rehabilitation of irrigation facilities is estimated at US$ 9,014,000 as shown in Table K-6-5 and -11, Appendix K.

(2) Disbursement Plan

Disbursement schedule of the cost for rehabilitation of irrigation facilities is estimated at follows: (for details refer to Table K-6-17, Appendix K)

(unit: US$)

Year	L/C	F/C	Total
1998	125,000	87,000	212,000
1999	1,216,000	336,000	1,552,000
2000	2,052,000	225,000	2,277,000
2001	2,176,000	238,000	2,414,000
2002	2,306,000	253,000	2,559,000
Total	7,875,000	1,139,000	9,014,000

(3) Operation Cost

Training fee and annual operation cost for 5 years are estimated as shown follows;

First 5 years	108,400 US$
ordinary year	5,600 US$

3-2-7 Summary of the Project Cost

Total project cost with price escalation is summarized as follows (for details refer to Table K-6-11, Appendix K);

1) Construction Cost

(unit: US$)

Name/L/C	L/C	F/C	Total
Agri-Service Center (ABC & Extension Service Office)	399,000	283,000	682,000
Agricultural Machinery Workshop (Facilities)	1,120,000	211,000	1,331,000
Agricultural Machinery Workshop (Machines)	721,000	2,898,000	3,619,000
On-Farm Storage Facilities	1,935,000	328,000	2,263,000
Korten Collecting Point	269,000	360,000	629,000
Irrigation Facilities	7,875,000	1,139,000	9,014,000
Total	12,319,000	5,219,000	17,538,000

2) Training Fee (5 years)

Name/L/C	L/C	F/C	Total
Agri-Service Center (ABC & Extension Service Office)	252,900	0	252,900
Agricultural Machinery Workshop (Facilities)	0	0	0
Agricultural Machinery Workshop (Machines)	0	0	0
On-Farm Storage Facilities	0	0	0
Korten Collecting Point	0	0	0
Irrigation Facilities	108,400	0	108,400
Total	361,300	0	361,300

3) Annual Management Cost

Name/L/C	L/C	F/C	Total
Agri-Service Center (ABC & Extension Service Office)	15,960	0	15,960
Agricultural Machinery Workshop (Facilities)	13,560	0	13,560
Agricultural Machinery Workshop (Machines)	0	0	0
On-Farm Storage Facilities	14,920	0	14,920
Korten Collecting Point	8,680	0	8,680
Irrigation Facilities	5,600	0	5,600
Total	58,720	0	58,720

CHAPTER 4. PROJECT EVALUATION

4-1 Methodology of the Project Evaluation

4-1-1 Methods of the Evaluation

The pilot project area (Nova Zagora M3 Area) covers 13,200 ha.
As a result of the Feasibility Study, the project components are proposed in Chapter 2. 2-1, Part III. Among those, the Team proposes the following project components as those of Agriculture Reform Project in Bulgaria.

Those are;

1. Establishment of Agribusiness Information Center as part of Agri-Service Center
2. Strengthening Extension Service Office as part of Agri-Service Center (Supplement of MAFI extension service, demonstration plot and Agricultural Machinery Workshop)
3. On-farm storage facilities (village-base storage facilities)
4. Rehabilitation of Korten collecting point
5. Rehabilitation of Irrigation facility
6. Establishment of Water Management System (Management of WUAs and training of ISC staff)
7. The establishment of Farmers' organization

(1) The Establishment of Agribusiness Information Center

The cost which requires office space, equipment, staff and operating costs is estimated at project level. The center makes it possible to make use of better information resulting in better inputs, varieties, improved machinery and farming technique and will contribute to increase income of farmers through crop yield increase. Therefore the cost of Agribusiness Information Center is included in Economic Evaluation, the benefit is reflected on yield increase as the result of a comprehensive pilot project.

(2) Strengthening Extension Service (Supplement of MAFI extension service, demonstration plot and Agricultural Machinery Workshop)

The cost which requires necessary office equipment, staff salary, operating cost etc. is estimated at project level. Same with the Establishment of Agribusiness Information Center, if well functioned, it would contribute to the adoption of better farming, better inputs, mechanization suitable for small scale farming etc. However, the procurement cost of Agricultural Machinery which is one of costs of Extension Services is excluded from the economic evaluation because the cost is already included as production cost on each crop.

The benefit is reflected on yield increase as the result of a comprehensive pilot project as well.

(3) On-farm Storage Facilities

On-farm storage facilities to be managed by newly established farmers' association would increase incomes of private farmers and voluntary-established associations by making it possible to take strategic marketing on village basis.

The facilities will contribute to get higher income for farmers by making it possible to handle their selling time of their products in association with Korten collecting point which enable to improve quality of products through sorting, grading, packaging. Therefore the cost of Agribusiness Information Center is included in Economic Evaluation, the benefit is reflected on future crop price increase as the result of a comprehensive pilot project.

(4) Establishment of Korten Collecting Point for Fruits and Vegetables with Sorting, Grading, Packaging Equipment

Establishment of Korten collecting point contributes to put additional value on vegetables and fruits through quality management of products through sorting, grading, and packaging. The cost which includes grading and packaging equipment, staff, and operation and maintenance etc. is estimated at project level and is included in Economic Evaluation. The benefit is reflected on future crop price increase as the result of a comprehensive pilot project.

(5) Rehabilitation of Irrigation Facility

The economic benefit by this component will be reflected on yield increase, land use change between without project and with project. Farmgate prices of tradables and potentially non-tradables are calculated and adjusted from international price and prices of nontradables is calculated and adjusted from local prices in Pilot Project Area.

(6) Establishment of Water Management System (WUAs and training of ISC staff)

The establishment of WUAs makes it possible to define responsibilities for water management to improve operation and maintenance of main, subsidiary, and on-farm irrigation facilities. And reliable relation between WUAs and ISC office contribute to enhance water delivery, scheduling and timing. And Its effect will be finally reflected on crop yield increase. Therefore the cost of Water Management System is included in Economic Evaluation, the benefit is reflected on yield increase as the result of a comprehensive pilot project.

(7) The Establishment of Farmers' Organization

Farmers' organization in new agriculture structure definitely plays a key role to recover the strong Bulgarian agriculture in capitalist economy.

However, as it is difficult to measure the benefit quantitatively, but it will be mentioned qualitatively.

4-1-2 Fundamental Figures of the Analysis

In Economic Evaluation, following figures have been used.

- Economic Cost includes following project components : Agribusiness Information Center as part of Agri-Service Center, Extension Service Office as part of Agri-Service Center (excludes the cost of Agricultural machinery center), On-farm storage facilities, Korten collecting point, Irrigation Rehabilitation, Water Management System. As benefit from those project components is reflected on crop yield increase and future crop price increase as the result of the implementation of one comprehensive pilot project.
- The benefits expected by the implementation of the project are composed of direct and indirect benefits. However, the evaluation focuses on the tangibly direct benefit.
- The "Without project" situation is assumed to be same with the "Current one".
- All prices of inputs and outputs are expressed by hard currency $US because of the unstable and fluctuating exchange rate of domestic currency.
- The exchange rate 224.3 Lev/US$ of October 1996 average rate was used to convert Lev into US$.
- Estimation of project benefit will generate for project period 30 years.
- For crops which could be exported and substituted for imports, the latter reflects more accurate value of additional agricultural output because the value of domestic currency Lev is highly distorted and doesn't reflect the real exchange rate. Therefore international prices by "World Bank commodity market review" and "the Public Ledger" are used for calculating farmgate price. As for fruits and vegetables, those are mainly consumed in domestic market, those are treated as non-tradables and the prices of non-tradable were presented by adjusting local prices in Pilot Project Area.
- The cropping pattern and unit target yield are decided based on Development Plan, as presented in 3-1, PART III.
- Standard conversion factor (SCF) which is to be decided by considering the amount and tax of import and export uses 0.91 to convert financial value to economic value.
- Farm labor wage was considered to reflect correctly their economic value.

4-2 Evaluation of the Pilot Project Area

4-2-1 Project Costs

Project costs to be proposed are summarized as follows.

Project Cost (Economic Cost)

(US$)

Components	Local Cost	Foreign Cost	Total
Agri-Service Center			
ABC and Extension Service Office	148,980	248,274	397,254
Agricultural Machinery Workshop (Workshop and Store)	211,953	186,682	398,635
On-farm Storage Facility	820,142	291,583	1,111,725
Korten Collecting Point	109,715	330,183	439,898
Rehabilitation of Irrigation Facilities	4,299,959	974,899	5,274,858
Total	5,590,749	2,031,622	7,622,370

Irrigation facilities will be rehabilitated in five years. Other project components will be basically completed within 3 years although the starting period of construction varies on each.

Operation and Maintenance Costs are summarized as follows.

Annual Operation and Maintenance Cost (Economic Cost)

(US$)

Components	Cost
Agri-Service Center	
ABC and Extension Service Office	15,960
Agricultural Machinery Workshop	13,560
Training for Staff (5 years)	28,900
On-farm Storage Facility	14,920
Korten Collecting Point	8,680
Irrigation Facilities	5,600
Training for Water Management (5 years)	21,680

Operation and maintenance cost of each components includes staff salary, fuel fee etc. Regard to the Agribusiness Information Center, the Extension Services, the Water

management system includes the training course. And the training course is planned to be conducted for five years.

4-2-2 Project Benefits

Farmlanduse (ha)

Crop	Without	With	Incremental
Wheat (non-irri)	4,434	4,620	186
Barley (non-irri)	2,445	2,244	-201
Maize (irri)	1,513	1,716	203
Sunflower (non-irri)	2,156	264	-1892
Sunflower (irri)	0	1,320	1320
Vegetables (irri)	134	726	592
Other crops (irri)	343	396	53
Grapes (non-irri)	305	0	-305
Grapes (irri)	470	792	322
Alfalfa (irri)	132	528	396
Alfalfa (non-irri)	661	396	-265
Unplanted or roads	607	528	-79

Annual Crop Benefits (US$/ha)

	Without	With	Incremental
Wheat (non-irri)	504	352	-152
Barley (non-irri)	327	400	73
Maize (irri)	438	858	420
Sunflower (non-irri)	177	300	123
Sunflower (irri)	194	329	135
Vegetables (irri)	365	912	547
Other crops (irri)	709	1050	341
Grapes (non-irri)	197	566	369
Grapes (irri)	521	1232	511
Alfalfa (irri)	756	958	202
Alfalfa (non-irri)	466	523	57

Proposed project components will bring about the benefit of $US1,707,000 at full development. The increased benefit is due; 1. Irrigation Rehabilitation improves the water use efficiency; 2. The introduction of machinery reduces the production cost of crop, finally contributed to the crop yield increase; 3. The establishment of Marketing facilities brings future crop price increase of vegetables. Especially, the effect by irrigation is tremendous on Maize, Vegetables, and Grapes. Other components also help build fundamental development condition of agriculture to generate the benefit comprehensively.

Besides tangible benefit mentioned above, numerous intangible benefit will generate by the pilot project. For example, Korten collecting point would contribute to provide producers

with various information such as prices, export markets, quality controls conducted in other countries and enable producers to save their time allocate for transporting and selling.

Farmers organization in new agriculture structure is based on farmers' own will to facilitate and formulate profitable new type organization in capitalist economy. And it, through large scale farming, would facilitate to supply grains with consumer at stable prices and make up the regional agriculture structure which enable to compete with other countries in the EU.

Finally, proposed project components will improve the environment for agriculture in Pilot Project Area. The Pilot Project Area will function as a future model of Bulgarian agriculture.

4-2-3 Economic Evaluation

The economic feasibility of project is evaluated by Internal Rate of Return (IRR) and Net Present Value (NPV). Sensitivity Analysis is carried out according to the change of benefit and project cost.

Project benefit in crop production is generated by comprehensive effect by proposed project components. The project incremental benefit is computed based on the unit production yield, price, cropping pattern, unit production cost including agricultural input and labor at year of "With project" and "Without project" and financial value will be converted to economic value. "With project" is set on the condition that land restitution has been completed. As the result of project analysis, the project brings about the IRR of 24.4% and NPV of 3.79 million US$. This means that the project to be proposed is feasible.

Sensitive Analysis for Project Economic Evaluation

		IRR (%)
Cost	10% increase	21.7
	10% decrease	27.8
Benefit	10% increase	27.4
	10% decrease	21.5

Also the result of the sensitivity analysis, the project is roved to be feasible.

4-3 Intangible Benefit

Proposed project components will stimulate regional agricultural activity from various aspects and bring about direct benefit to farmers.

Besides that, agriculture production increase as the result of the implementation of the project will stimulate the capacity of agri processing factories, require the expansion of those capacities, and also encourage the related industry such as chemical industry and machinery factory. Furthermore, it contributes to the restructuring of the distribution system in regional economy.

At the same time, the active regional economy leads to the increase of employment in regional economy, the increase of income, the expansion of the consumption of rural people, and finally would improve the social welfare.

CHAPTER 5. CONCLUSION AND RECOMMENDATIONS

(1) According to the studies, investigations, survey and analysis for the Agricultural Reform Project for the Nova Zagora M3 Canal Pilot Project Area, the economic feasibility, technical soundness as well as the advantageous impacts were verified in this report, and an early implementation of the Project is strongly recommended in order to achieve rural development and thus contribute to the development of the regional and nation as a whole.

(2) As the objectives of the Pilot Project is to be a model area in Bulgarian agriculture, it is necessary to keep in mind to reflect and to diffuse the results of the Project to the other areas.

(3) Among the 6 project components, priority component will be given to the establishment of ABC and Machinery Center which can be expect quick yield with small investment. The final location of the ABC and personnel for operation will be necessary to discussed in detail with the Nova Zagora Municipality and MAFI, though it was basically approved by the Mayor.

(4) Among the components of extension service, distribution and marketing and establishment of WUA, there are on-going similar projects financed by international agencies, such as EC-PHARE, EBRD/GTZ and World Bank, it is necessary to coordinate with such international agencies and related local organizations.

(5) Since the Pilot Project Area in the Nova Zagora M3 Canal Area is a part of Sredna Tundja Irrigation Area, establishment of water management structure in the Pilot Project Area should be adjusted and coordinate with other irrigation block such as Binkos Marash etc., especially water distribution from the Djirevchevo Dam.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