An Economic Impact Assessment of the USAID/IFDC Kosovo Agribusiness Development Program (KADP)

by

Carlos A. Baanante
Consultant
IFDC

IFDC

An International Center for Soil Fertility and Agricultural Development

P.O. Box 2040
Muscle Shoals, Alabama 35662 (U.S.A.)

February 2003

Table of Contents

Acronym List

AKA	Alliance of Kosovo Agribusiness
ATA	Agribusiness Trade Associations
CAN	calcium ammonium nitrate
DAP	diammonium phosphate
FYR	Former Yugoslavia Republic
GDP	gross domestic product
ha	hectare
KADP	Kosovo Agribusiness Development Program
KODAA	Kosovo Dealers of Agri-Inputs Association
LBK	League of Beekeepers of Kosovo
NPV	Net Present Values
SHMK	Kosovo Flour Millers Association
SHPUK	Kosovo Association of Poultry Producers and Feed Manufacturers
UNMIK	United Nations Mission in Kosovo
USAID	United States Agency for International Development

An Economic Impact Assessment of the USAID/IFDC Kosovo Agribusiness Development Program (KADP)

Background and Program Rationale

As part of the Former Yugoslavia Republic (FYR), Kosovo was organized in 29 communes and based on a command economy. Within each commune a communal assembly and directorates controlled all aspects of public service, education, finance, taxation, the agricultural sector, and food. After the armed conflict ended in the summer of 1999, Kosovar Albanian refugees returned to find that institutional and physical infrastructure were seriously disrupted and often completely destroyed. That destruction resulted in a humanitarian crisis and a tremendous challenge to the local population and the international community. Donors responded generously with humanitarian aid and assistance to restore public services and the institutional infrastructure required to improve the productive capacity of farmers, entrepreneurs, and the population in general. Initial support for agriculture in the amount of US $19 million was provided mainly by the United States. The assistance provided by the United States Agency for International Development (USAID) focused mainly on efforts to facilitate the timely and efficient supply and distribution of agri-inputs that are essential to enhance the productivity of crop production in particular and the agricultural sector in general.

The Agricultural Sector

At least 35% of the gross domestic product (GDP) and 60% of employment in Kosovo is based on a broadly defined agricultural sector that includes farmers and agribusiness enterprises involved in the procurement, processing, and distribution of farm inputs and marketing and processing of agricultural outputs. About 600,000 hectares (ha) of land in Kosovo is agricultural. Of that area, approximately 408,000 ha are cultivated mostly with cereals (about 200,000 ha of maize and wheat), pastures on about 176,000 ha, and vegetables, fruit, and vineyards. About 80% of the agricultural land is at elevations ranging between 300 and 400 meters. The plains of Kosovo and the Dukagjini are the most productive areas for wheat with yields of 3.2-3.7 tonnes/ha and maize with yields of 3.5-4.2 tonnes/ha. However, average yields of these cereals in Kosovo are, as a whole, substantially lower. Most cereal production is used for human (wheat) and livestock (maize)

consumption in the rural areas and urban populations depend on supplies from other sources. Vegetables are grown mainly for domestic consumption, with some exports to Croatia and Slovenia. Investments in fruit production were important in the 1990s, and because they are mostly privately owned (about 85%), those orchards, in addition to vegetable production and possibly viticulture (fresh grapes), will be important components of private sector participation in agriculture.

Although about 85% of the agricultural land is privately owned by thousands of small family farms of less than 3 ha, there are also a number of state-owned farms varying in size from 200 to 600 ha. Some farms produce crops and others are engaged in livestock production and processing. Before the 1999 conflict, there was a large livestock population of over 400,000 cattle and sheep, 60,000 pigs, and about 4.5 million poultry, but only limited private veterinary services and no organized service for the protection and monitoring of livestock and food safety standards.

In 1999, 75% of all field operations of Kosovo agriculture were mechanized. On average there was one tractor for every 14 ha of cultivated land; in recent years there has been large investments in mini-tractors. However, none of the machinery was purchased with credit but exclusively in cash.

Economic Policy Environment and Services—Prior to the armed conflict in 1999, prices for agricultural products and essential commodities were controlled by the state. Price controls were established in the public and private sectors and included wheat, flour, bread, cooking oil, sugar, and milk. All other products were market priced. Currently, all prices are market determined, but humanitarian food supplies appear to have depressed the prices of essential foodstuffs.

The availability of agricultural credit in Kosovo is seriously constrained. The National Bank of Kosovo was closed on May 5, 1990, and became an affiliate of the National Bank of Yugoslavia, which destroyed the banking system in Kosovo. For nearly a decade, no agricultural credit was available in Kosovo. At present the Economic Bank in Gjakova provides some very basic banking services to private shareholders as does the Institutuo Bankario di Torino, that is also considered a private local bank. Donor-supported (European Agency for Reconstruction/Agri-Business Unit,

Micro-Enterprise Bank, and American Bank of Kosovo) banking services have provided most of the agricultural credit since the 1999 conflict.

In regard to the availability of services for the agricultural sector, it should be noted that the autonomy of Kosovo was suppressed and services in all areas of the economy, including agriculture, were reduced. This was particularly evident for the state enterprises that were substantially dependent on state support. Private farmers operated on a cash-only basis and supplemented incomes and investments by remittances from emigrated family members. Although land titles were well developed and legal, it was illegal to sell land between ethnic groups. The loss of land title documentation may well be a factor that suppresses land markets and the use of land for collateral in the post-conflict era.

The University of Pristina has faculties of natural science, economics, medicine, philosophy, and agriculture. A veterinary school was opened some years ago, but there is no department of crop protection. Assistance is needed to improve the capacity and level of research and training in agricultural sciences and to implement modern technological standards.

Agribusiness Subsector

Agri-Inputs Supply—Prior to the 1998/99 conflict, there was a multi-channel system for the distribution of agricultural inputs consisting of state-operated public sector agribusiness corporations (Agro-Kombinats), cooperatives, and private sector channels. The system included 17 Agro-Kombinats, approximately 65 socialized cooperatives, about 70 producer association cooperatives, and 150 to 200 private sector dealers or “apoteks.”

Private sector farm input dealers emerged during 1988-98. Three apparent types of business enterprises emerged during that period: (a) sole owner businesses (150-200) usually with only a small retail outlet, (b) consolidated medium size enterprises (approximately 20) having between 2 and 10 retail outlets and some having central warehouses, and (c) large private enterprises (18) that can procure farm inputs from regional and international markets and distribute them to farmers through their own and independent marketing channels. The private sector input supply network conducts businesses in seed, fertilizers, pesticides, irrigation equipment, small tools, and farm machinery.

Some are diversified integrated businesses, others are specialized (particularly machinery), and still others provide market outlets for farm produce.

The Serbian repression imposed during the last decade stimulated the development of parallel Albanian Kosovar economic activity. The emergence of an active private agri-inputs supply network is part of that activity. Although, the agri-inputs supply system in Kosovo was far more advanced than in other transitional economies, it confronted several important constraints and limitations, namely, (a) lack of competition within and outside the private sector; (b) lack of access to market information and markets for agri-inputs and farm outputs at regional and international levels, (c) lack of access to institutional and commercial credit for trade and commercial transactions that results in the inefficiencies of a cash-only economy, and (d) lack of access to modern updated technology and use to improve the economic efficiency and impact of a more dynamic farm inputs supply system.

Some large private enterprises are struggling to gain access to (and import) inputs from sources outside Serbia, but restrictions in communications, information, and travel are difficult constraints and a barrier to such trade. A policy issue that requires attention emerges from the need to establish an extensive network of regional trade contacts. Without these developments, the dependency on established suppliers in Serbia will continue, smuggling will increase, and there will be serious limitations in access to improved inputs, especially seeds, fertilizers and agrochemicals. Also, the lack of competition will result in higher prices for agricultural inputs.

Processing of Agricultural Products—The food processing industry was partially state-owned and partially private. Virtually all flour mills, bread factories, distilleries, and seed conditioning plants in the public sector were associated with the state farms and cooperatives. Many smaller private-sector processing plants were also operating, particularly in the flour milling, feed milling, fruit and vegetable processing, and wineries.

An evaluation of the private flour mills in Kosovo by IFDC in December 1999 determined that there were 50 private flour mills that had sufficient capacity to meet the 500,000 tonnes of flour per year that were needed by the province but were constrained by poor power supply, wheat supply, and insufficient warehouse space. The flour mills in the public sector had a processing capacity

equivalent to that of the private sector and confronted more drastic constraints imposed by the poor and intermittent supply of electric power.

Although there is considerable potential for developing a diverse small-scale agro processing enterprises that could have significant impact on rural employment, this effort would also require substantial assistance and aid resources. A more effective means to achieve a greater and more immediate impact is to focus on those agro-processing developments that will benefit the largest number of farmers and entrepreneurs and provide the strongest and most immediate impact through rapid cash turnovers and multiplier effects. It was expected that such an impact in the agro-processing industry could be achieved through the revitalization of the flour mills (about 50) and the feed mills (about 40) considered to be economically viable and by improving seed production and supply for key crops. All of these efforts should be conducted in conjunction with the efficient supply of fertilizers and other required agro-chemicals.

Flour Mills—A well-established demand for flour ensures revenues and rapid cash flow to flour mills and wheat farmers producing surplus wheat. Imports of flour must be coordinated with the production of local flour mills to prevent the depression of flour prices due to excessive flour imports.

Feed Mills—Poultry production appears to have the greatest potential for rapid revitalization. The development of feed mills especially for producing poultry feed will (a) facilitate the establishment of an efficient poultry and egg production industry, (b) promote the development of an expanding domestic market for animal feed, and (c) provide an outlet to the expected increased maize production.

In regard to seed production, the restoration of production of improved seed of wheat, and of alfalfa to meet the increased demand for seed, is important for Kosovo to increase its seed production and enhance food security.

Reliance on Serbian technology, especially for seeds and fertilizers, has been regressive. Opportunities exist to improve access to improved seed varieties, hybrid maize, domestically selected wheat varieties, seed potato, and a wider range of fertilizer materials that are more cost effective and

tailored to domestic soil and crop requirements. Such improved access needs to be matched with technology transfer to ensure appropriate application of this technology.

Program Rationale

The circumstances that Kosovo (United Nations Mission in Kosovo [UNMIK]) confronted after 1999 with a seriously damaged physical and institutional infrastructure required aid and assistance programs that could provide (a) an immediate impact in alleviating the humanitarian crisis, (b) the rebuilding of the physical infrastructure, and (c) the rapid establishment of an effective and efficient institutional infrastructure conducive to promote rapid economic growth and stability. The crucial importance of the agricultural sector in general and the agribusiness subsector in particular is described and briefly assessed above. This assessment clearly indicates that assistance to address and relax key constraints to agribusiness development will have a rapid and strong impact on economic efficiency, growth and employment. A greater and more immediate impact of the program is expected by focusing on the development of agribusinesses that will benefit the largest number of farmers, entrepreneurs, workers, and consumers and also have the strongest and most rapid impact on employment and the economy. The USAID/IFDC program was designed to achieve such an impact by removing or relaxing key constraints to the development of more dynamic and efficient private sector agribusinesses and a more open and competitive market for agricultural inputs and processed and unprocessed agricultural products. The program included assistance for (a) the development of institutions such as trade associations, private sector extension services, information systems and credit services and (b) support for development of policies that facilitate competition, availability and access to credit and information, and access to modern updated technology.

Given the circumstances and the nature of constraints prevailing in Kosovo in 1999, there was a very sound and rational basis for USAID to fund a program having as major goals the development of effective and sustainable Agribusiness Trade Associations (ATA), the expansion of markets for targeted agribusinesses, and improvement of their economic efficiency and competitive edge.

Program Description

A comprehensive approach to the development of the private sector and a more competitive market environment was adopted as a basis to design and implement the program. IFDC experiences in Albania were extremely useful and instructive in providing a general framework for designing and conducting the program under very challenging circumstances. The development of ATA is used as the primary means for institutional capacity building and to enhance prospects for the sustainable impact of the program after USAID assistance is discontinued.

Goals, Areas of Support, and Activities

The program includes the achievement of two main goals or tasks:

1. Development of ATA.
2. Market development for targeted agribusinesses.

To achieve these goals, a set of key interrelated program areas of intervention and support to assist ATA and targeted agribusinesses were identified and implemented as critical components of the program. These areas of support focus on the following highly complementary elements contributing to the development and growth of Trade Associations and agribusiness enterprises:

1. Facilitation of Trade and Procurement.
2. Policy Analyses and Implementation.
3. Facilitation of Access to Institutional Credit.
4. Agro-Processing and Marketing Expertise.
5. Establishment of Private Sector Extension Service.
6. Access to Market Information.
7. Development of Technical Publications and Use of Mass Media.
8. Monitoring and Evaluation.

To provide support in these critical components, comprehensive work plans of activities were prepared, implemented, and updated frequently as required by the evolving demands and changing circumstances that confronted the ATA and targeted agribusinesses. All activities are described in

detail in the program work plans and progress reports. However, the basic generic activities of the program are summarized as follows:

1. Assist in the planning and implementation of Board and coordinating meetings of targeted ATA.
2. Provide services for conducting policy analyses and assist in policy advocacy on issues affecting ATA and targeted agribusinesses.
3. Continuous interaction with ATA officials and personnel and monitoring of ATA and targeted agribusiness activities to identify constraints to the profitability, growth, and development of agribusinesses and the financial situation of ATA.
4. Monitoring of potential demand for targeted agribusiness products and provision of assistance for assessing the need for restructuring agribusiness production and distribution systems.
5. Assistance for designing and implementing pilot credit programs for agri-input dealers and farmers.
6. Provision of training and technical assistance to ATA and targeted agribusiness personnel on the efficient organization and financially sound management of targeted ATA.
7. Provision of services, training, and information to facilitate access to credit—preparation of investment plans and business plans for loan applications.
8. Assist in the preparation of comprehensive business plans to enhance the effectiveness of financial management and sustainability of targeted ATA.
9. Preparation of materials and design of strategies to use mass media for enhancing the image of ATA, conducting membership drives, and gaining public support (advocacy).
10. Compilation and dissemination of market information useful to ATA and targeted agribusinesses.
11. Conduct surveys and studies to monitor implementation of program activities and assess their effectiveness and shortcomings.
12. Provide support for establishing extension services and identifying technology packages (seed, fertilizer, and crop protection products) to optimize maize and wheat production.

Program Implementation

A program entitled “Kosovo Emergency Agri-Input Program” covering the period October 1999-May 2000 was first implemented by IFDC. The first work plan for the Kosovo Agribusiness Development Program (KADP) was submitted to the USAID Mission in Kosovo in June 2000. The KADP was initially a 2-year project but was amended and extended to 32 months and a total of

$4.2 million so that IFDC could incorporate in the program evolving demands and needs of ATA and achieve the objectives and goals of the programs.

Evolution in the program implementation shows an apparent gradual path toward the disengagement of the targeted ATA and agribusiness enterprises from the assistance and advisory services provided by IFDC. This should facilitate the sustainability of the ATA in Kosovo and enhance their role in ensuring the continuous future success of agribusinesses and farmers.

Performance Indicators and Outputs

Several measurable elements of the consequences and benefits of the program on the targeted beneficiaries can be used as performance indicators. These indicators are usually the values of quantifiable variables that are directly or indirectly affected by the program activities and interventions. Performance indicators are often used to assess the consequences of program activities and interventions in terms of outputs that are in fact intermediate benefits to be transformed into micro and aggregated impacts on the beneficiaries, the economy, and the resource base. Performance indicators should reflect changes in measures of properly defined variables that are associated with the program activities and interventions. Then, ideally, assessments are better conducted when baseline values of performance indicator variables are well defined and established at the beginning of program implementation. Quantitative and qualitative variables can be used as performance indicators.

Due to the challenging and extenuating circumstances surrounding the beginning of the KADP, only limited information on baseline performance indicator variables were collected and are available. Some key indicators of performance that can be used to assess the success (or failure) and impact of the program in regard to the general goals of ATA Development and Market Development for targeted agribusinesses are described here.

- Change in number and size of agribusiness members in targeted ATA.
- Change in agribusiness diversification and specialization induced by ATA.
- Change in the number, scope, and diversity of services and products provided by ATA.
- Change in the financial situation of ATA and their prospects for long-term financial sustainability and self-reliance.

- Production increase and per unit cost of production decrease due to investments of targeted agribusinesses in refurbishing of plants, for example, flour millers.
- Volume and value of imported products (flour, animal feed) that are replaced with increased domestic production.
- Lower costs and increased profitability of targeted agribusinesses as a result of better trade policies (tariffs, taxes) and access to credit and external markets.
- Increased use of fertilizers and improved seeds resulting in added crop production, employment of farm labor, productivity of land, and fixed factors of production.
- Inflows and conservation of plant nutrients (N, P_2O, K_2O) in the soils of agricultural lands to maintain high productivity on a sustainable basis.

Impacts on Economy, Resource Base, and Food Security

The effectiveness of a technical assistance program for development is ultimately determined by the tangible impact that a well structured set of activities and technology transfer efforts provide as a stream of measurable benefits to targeted beneficiaries, the economy, and the resource base. Such benefits represent the impacts of the program and are outputs and outcomes of the program expressed in terms of monetary values, quantities of goods, and/or services, and measures of proxy variables that are sometimes used to assess impacts on the resource base, food security, and socioeconomic welfare.

Key measures of impact of the KADP on the economy, the resource base, and food security are:

1. Economy:
    - Increased volume of business generated by ATA and their effect on GDP, economic growth, and employment as a result of direct and multiplier effects.
    - Savings in costs of inputs purchased and gains in revenue attributable to better prices received for products sold, both as a result of economies of scale associated with ATA transactions.
    - Increased domestic production and supply of agricultural products (wheat, maize) and processed products (flour, animal feed), impacts measured in terms of quantities and value.
    - Increased Euro earning and capacity to purchase goods and services from other countries (import)—impact on foreign exchange purchasing power.

- Expansion of GDP and employment associated with investments in refurbishing of processing plants and other facilities.
- Increased economic returns to land and fixed factors of production, farmers' income and earnings of hired labor due to increased use of fertilizer and improved seeds.

2. Resource Base:
   - Natural resource base—Improved plant nutrient balances in soils of agricultural land will increase and sustain the productivity and economic value of agricultural land.
   - Human resource base—Increased economic returns to labor and the associated economic value of "human capital" as a result of improved skills, knowledge and capabilities of workers.
3. Food Security:
   - Increased production of food products, namely, wheat, maize, potatoes, and poultry, will improve the availability of food and food security situation in Kosovo and at the regional level.
   - Increased earning of Euros that may be generated through the export of the targeted agribusinesses, and farmers will enhance the purchasing power of Kosovo to import food from other countries.

The remaining sections of this report focus on the impact assessment of the KADP mainly on the basis of measures of impact of the program on the targeted beneficiaries, the economy, and the resource base.

Program Performance and Impacts

Impact on Agribusiness Development

The program efforts in agribusiness trade association development focused mainly on strengthening the establishment and effectiveness of the three most important ATAs in Kosovo; namely, the Kosovo Dealers of Agri-Inputs Association (KODAA); the Kosovo Flour Millers Association (SHMK), and the Kosovo Association of Poultry Producers and Feed Manufacturers (SHPUK). Later in the program implementation (2002), the program was also involved in the

establishment of an apex association, the Alliance of Kosovo Agribusiness (AKA) to coordinate the work of the associations in policy formulation and advocacy. In addition to the three associations that IFDC assisted from the beginning of the program (KODAA, SHMK, and SHPUK), AKA also includes the League of Beekeepers of Kosovo (LBK) with about 2,000 members, and the Drini Valley Vegetable Producers Association.

Impact on Volume of Business—Impacts of the KADP on the volume of business, level of investments, and employment observed in the three-targeted ATA are shown in Table 1. The volume of business includes sales and purchases of agribusinesses in each association. These data show that the volume of business increased substantially for these agribusinesses during the period 2000-2002. Increases of annual business volume between 2000 and 2002 were approximately (a) 64% or €7 million for dealers of agri-inputs in KODAA, (b) 74% or €5 million for flour millers in SHMK, and (c) 47% or €5.3 million for poultry producers and feed manufacturers in SHPUK. The impact of the KADP on the total volume of direct agribusiness transactions in the three targeted trade associations was about €17.3 million.[1] That figure is an important contribution of the KADP to the economy of Kosovo and represents a substantial impact on the gross domestic product (GDP) of Kosovo. Because multipliers associated with this type of growth in business activity are usually greater than one, the actual impact of the growth in volume of business on GDP will be greater than estimated here.

Impact on Investments—The KADP, through the ATA, also had a significant impact on the investments of the targeted agribusinesses in the refurbishing and improvement of facilities. A summary of the size of these investments for the three targeted trade associations is also presented in Table 1.

These results show that over the 3-year life of the program (2000 to 2002) agri-inputs dealers of KODAA invested €4.3 million, flour millers in SHMK invested €5.3 million, and poultry producers and feed manufacturers in SHPUK invested €5.9 million. For agribusinesses in the three targeted ATAs, these investments amount to a total of €15.5 million over the 3-year life of the

[1] An exchange rate of 1 Euro (€) per US $ is adopted for the estimates and valuations presented in this paper. The €/US $ exchange rate has fluctuated from 0.90 in early 2002 to about 1.10 recently.

program. Investments of this nature have multipliers that are greater than one in terms of their effects on the GDP and the economy. Therefore, the impact of the KADP on the Kosovar GDP due to these investments are at least €16.0 million.

Table 1. Impact of KADP on Business Volume, Investments, and Employment of Trade Associations

Trade Associations	Year	Number of Members	Volume of Business (VB)—Sales and Purchases		Investment in Improvement of Facilities		Employment			
						Average	Person/ Year	Average	Percent Using Averages as Reference	Number of Persons Trained
			(million €/year)	(%)	(million €/year)	(€/year per member)		(persons/year per member)	(%)	
Kosovo Dealers of Agri-Inputs Association (KODAA)	2000	140	11.020	100	1.500	10,714	255	1.82	100	67
	2001	90	15.280	139	1.000	11,111	183	2.03	112	32
	2002	53	18.030	164	1.800	33,962	147	2.77	152	21
	3-year total				4.300					120
Increase 2000 to 2002			7.010							
Kosovo Flour Millers Association (SHMK)	2000	85	6.732	100	1.500	17,647	460	5.41	100	0
	2001	42	10.731	159	1.700	40,476	520	12.38	229	20
	2002	45	11.723	174	2.127	47,267	543	12.07	223	34
	3-year total				5.327					54
Increase 2000 to 2002			4.991							
Kosovo Association of Poultry Producers and Feed Manufacturers (SHPUK)	2000	120	11.450	100	3.039	25,325	271	2.26	100	57
	2001	54	9.822	86	1.418	26,256	292	5.41	239	33
	2002	61	16.780	147	1.450	23,767	379	6.21	275	44
	3-year total				5.907					134
Increase 2000 to 2002			5.330							
Totals	2000	345	29.202	100	6.039	17,504	986	2.86	100	124
	2001	186	35.833	123	4.118	22,139	995	5.35	187	85
	2002	159	46.533	159	5.377	33,816	1,069	6.72	235	99
	3-year total				15.534					308
Increase 2000 to 2002			17.331							

Impact on Employment—Another important benefit of the KADP, through the development of trade associations, is the direct impact on the level of employment. The direct effect on employment in targeted agribusinesses is presented in terms of increased employment in Table 1. Impact on labor employment was greater in the flour miller agribusinesses (over 450 persons/year) than among the agri-inputs dealers, and the poultry producers and feed manufacturers. For agribusinesses in the three targeted trade associations, employment increased by about 1,000 persons/year, and in terms of the average number of persons per year per member, the level of employment more than doubled.

Improvement of Human Resource Base—The human resource base benefited from additional employment in targeted agribusinesses and also through improvement in the skills and knowledge of a number of employees that received training as part of the KADP. A total of 308 persons in the three targeted trade associations received training during the 3-year life of the program. Returns to investments in training occur over the life span of the persons receiving the training and are usually high when the economy is growing and there is need for well trained personnel to facilitate the rapid transfer and adoption of improved technology, as is the case in Kosovo.

Savings Due to Economies of Scale—Trade associations made it possible for agribusinesses to take advantage of larger volume transactions to reduce the prices and costs for inputs and raw materials. Large-scale operations and transactions may also lower operating costs and facilitate access to new markets. Size of operations has a limit because excessively large size of operation may result in increasing costs and diseconomies of scale. The impact of the KADP on savings in costs of input purchases, due to larger volume transactions facilitated by the trade associations, are shown on Table 2 for the three targeted trade associations, KODAA, SHMK, and SHPUK. During the 3-years 2000-2002, estimated savings in these costs were approximately €5.28 million for the dealers of agri-inputs, €0.51 million for the flour millers, and €0.53 million for the poultry producers and feed manufacturers. Because of advantages gained in the purchasing of larger quantities of agri-inputs, mainly fertilizers, savings were substantially higher for the agri-input dealers (KODAA). The three targeted trade associations saved a total of €6.32 million during the 3-year program.

Table 2. Impact of KADP on Savings in Transactions of Trade Associations and Agribusinesses Due to Economies of Scale

Agribusiness Trade Associations (ATA)	Year	Volume of Business	Estimated Savings in Transactions Due to Economies of Scale	
				Percent of Total Volume of Business
		(million €/year)	(million €/year)	(%)
Kosovo Dealers of Agri-Inputs Association (KODAA)	2000	11.02	0	
	2001	15.28	2.40	16
	2002	18.03	2.88	16
	3-year total		5.28	
Increase 2000 to 2002		7.010	2.88	
Kosovo Flour Millers Association (SHMK)	2000	6.73	0	
	2001	10.73	0.25	2
	2002	11.72	0.26	2
	3-year total		0.51	
Increase 2000 to 2002		4.99	0.26	
Kosovo Association of Poultry Producers and Feed Manufacturers (SHPUK)	2000	11.45	0	
	2001	9.82	0.32	3
	2002	16.78	0.21	1
	3-year total		0.53	
Increase 2000 to 2002		5.33	0.21	
Totals	2000	29.20	0.00	
	2001	35.83	2.97	8
	2002	46.53	3.35	7
	3-year total		6.32	
Increase 2000 to 2002		17.33	3.35	

Impacts on Agricultural Sector and Resource Base

Impacts of the KADP on the agricultural sector and resource base occur as a result of the consequences that the outputs and outcomes of the program have on agribusiness development and growth, the productivity of the agricultural sector, and their forward linkages to the resource base. In this section, impacts of the KADP on the agricultural sector and the resource base are assessed and discussed.

Impact on Agricultural Production and Productivity

The impact of the KADP on agricultural production in general, and food production, in particular, is a direct result of the impact that the KADP has had on the productivity of crop production through the increased use of fertilizers in conjunction with improved seeds and weed control practices (herbicides). The development and increased effectiveness of the ATA in Kosovo, specially the agri-inputs dealers association KODAA, contributed to the increased use of fertilizers and improved wheat and maize seed by farmers. The timely and proper availability of agri-inputs to farmers supplied by a more effective network of dealers made an essential contribution to the increased use of these inputs by farmers in 2000, 2001, and 2002.

Increased Use of Fertilizers—Impacts of the KADP on fertilizer use in Kosovo in years 2000 to 2002 are presented in Table 3. The increase in fertilizer use was greater in 2000; possibly because the need for agri-inputs (demand) was greater just after the conflict in 1999, but one must recognize that donor credit was more easily obtained at that time. In 2000, the increase in fertilizer use due to the KADP was 30,000 tonnes, 20,000 tonnes of 15-15-15, and 10,000 tonnes of calcium ammonium nitrate (CAN). About 56% of these fertilizers were for wheat, 42% for maize, and 2% for other crops such as vegetables, potatoes, and fruit crops. In 2001, it is estimated that fertilizer use increased by 21,000 tonnes as a result of the KADP. In that year, use of urea, 15-15-15, and CAN increased by 8,000, 10,000, and 3,000 tonnes, respectively. Most of the increase (10,300 tonnes) was for wheat (49%)—about 41% or 8,700 tonnes was used by maize farmers and about 10% or 2,000 tonnes was used on other crops. In 2002, the impact of the KADP on fertilizer use was very similar to that in 2001, fertilizer use increased by 20,000 tonnes, 6,000 tonnes of urea, 12,000 tonnes of 15-15-15, and 2,000 tonnes of CAN.

Table 3. Impact of KADP on Fertilizer Use

Year	Fertilizer Use Increase		Used on Wheat						Applied on Maize and Other Crops								
			Fertilizer Product		Quantities of Nutrients				Fertilizer Product Used on Maize		Fertilizer Product Used on Other Crops		Total Used on Maize and Other Crops	Quantities of Nutrients			
	Fertilizer Product	Total Quantity Supplied to Farmers	Percent Used	Quantity	N	P_2O_5	K_2O	Total Nutrient	Percent Used	Quantity	Percent Used	Quantity		N	P_2O_5	K_2O	Total Nutrient
		(tonnes)	(%)	(tonnes)	(tonnes)				(%)	(tonnes)	(%)	(tonnes)	(tonnes)	(tonnes)			
2000	15-15-15	20,000	60	12,000	1,800	1,800	1,800	5,400	40	8,000	0	0	8,000	1,200	180	1,200	2,580
	CAN	10,000	50	5,000	1,350	0	0	1,350	45	4,500	5	500	5,000	1,215	0	0	1,215
Total Year 2000		30,000	56	17,000	3,150	1,800	1,800	6,750	42	12,500	2	500	13,000	2,415	180	1,200	3,795
								64%									36%
2001	Urea	8,000	55	4,400	2,024	0	0	2,024	40	3,200	5	400	3,600	1,472	0	0	1,472
	15-15-15	10,000	50	5,000	750	750	750	2,250	40	4,000	10	1,000	5,000	600	600	600	1,800
	CAN	3,000	30	900	243	0	0	243	50	1,500	20	600	2,100	405	0	0	405
Total Year 2001		21,000	49	10,3000	3,017	750	750	4,517	41	8,700	10	2,000	10,700	2,477	600	600	3,677
								55%									45%
2002	Urea	6,000	60	3,600	1,656	0	0	1,656	35	2,100	5	300	2,400	966	0	0	966
	15-15-15	12,000	50	6,000	900	900	900	2,700	40	4,800	10	1,200	6,000	720	720	720	2,160
	CAN	2,000	20	400	108	0	0	108	40	800	40	800	1,600	216	0	0	216
Total Year 2002		20,000	50	10,000	2,664	900	900	4,464	39	7,700	12	2,300	10,000	1,902	720	720	3,342
								57%									43%

It is interesting to note that in terms of major plant nutrients, N, P_2O_5, and K_2O, the proportions of nutrients added (inflows) to soils by wheat farmers compared to the nutrients applied to maize and other crops are greater than those calculated on the basis of quantities of fertilizer products. About 64%, 55%, and 57% of the increased quantities of plant nutrients applied in 2,000, 2001, and 2002, respectively, were for wheat production.

Impact on Crop Productivity and Profitability—Estimated potential impacts of fertilizer use on wheat and maize yields and on economic returns to farmers are presented in Tables 4 and 5. The data in these tables are from reports on the results of field trials conducted by the KADP. Therefore, fertilizer use technologies shown in these tables are those of the field trials. The two technologies evaluated on wheat (Table 4) showed a significant impact on yields. The "traditional" and "modern" technologies increased yields by 2,640 kg/ha (64%) and 2,840 kg/ha (69%), respectively, while profitability in terms of net added returns to fixed factors increased to €132.6/ha and €202.6/ha, respectively.

The estimated impacts of fertilizer use on maize yields and economic returns to farmers are shown on Table 5. The "traditional technology" involving the use of 15-15-15 and CAN increases maize yields by 5,460 kg/ha (133%) and provides €564.6/ha of net added returns to fixed factors of production. Adoption of the "modern" technology using DAP and urea results in a higher maize yield increase, 6,200 kg/ha (150%) and greater net added returns, €726.5/ha. Estimated increases of maize yields and net added returns shown here are the result of the joint impact of using fertilizers in conjunction with the proper application of herbicides and the use of improved seeds.

Given the average crop yields that currently prevail in Kosovo, the results presented on Tables 4 and 5 show that there is substantial but unrealized potential to improve the productivity of agriculture by increasing the use of fertilizers in conjunction with the adoption of improved seeds and management practices.

Table 4. Potential Impact of Fertilizer Use on Wheat Yields and Economic Returns to Farmers[a]

Technology and Fertilizer Products	Fertilizer Use					Wheat Yields			Average Crop Prices Received by Farmers	Added Returns	Average Fertilizer Price Paid by Farmers	Added Costs of Fertilizer Use Technology				Net Added Returns to Fixed Factors of Production	Value/ Cost Ratios
	Product Rate	N Rate	P_2O_5 Rate	K_2O Rate	NPK Rate	Average Yield	Average Yield Increase	Percent Yield Increase				Added Cost of Fertilizer	Added Labor Cost	Added Herbicide Cost	Total Added Cost		
	(kg/ha)					(kg/ha)		(%)	(€/kg)	(€/ha)	(€/kg)	(€/ha)				(€/ha)	
1. No Fertilizer																	
No fertilizer	0	0	0	0	0	2,260	0	0									
No herbicide																	
2. Traditional																	
15-15-15	300	45	45	45	135	4,900	2,640	64	0.14	369.6	0.24	112	95	30	237	132.6	1.56
CAN	200	54	0	0	54						0.20						
Total	**500**	**99**	**45**	**45**	**189**												
With herbicide																	
3. Modern																	
DAP	200	36	92	0	128	5,100	2,840	69	0.14	397.6	0.25	70	95	30	195	202.6	2.04
Urea	100	46	0	0	46						0.20						
Total	**300**	**82**	**92**	**0**	**174**												
With herbicide																	

a. Data used are from results of field trials conducted by the KADP.

Table 5. Potential Impact of Fertilizer Use on Maize Yields and Economic Returns to Farmers[a]

Technology and Fertilizer Products	Fertilizer Use					Wheat Yields			Average Crop Prices Received by Farmers	Added Returns	Average Fertilizer Price Paid by Farmers	Added Costs of Fertilizer Use Technology				Net Added Returns to Fixed Factors of Production	Value/ Cost Ratios
	Product Rate	N Rate	P_2O_5 Rate	K_2O Rate	NPK Rate	Average Yield	Average Yield Increase	Percent Yield Increase				Added Cost of Fertilizer	Added Labor Cost	Added Herbicide Cost	Total Added Cost		
	(kg/ha)					(kg/ha)		(%)	(€/kg)	(€/ha)	(€/kg)	(€/ha)				(€/ha)	
1. No Fertilizer[b]																	
No fertilizer	0	0	0	0	0	4,750	0	0									
No herbicide																	
2. Traditional																	
15-15-15	400	60	60	60	180	10,210	5,460	133	0.16	873.6	0.24	156	125	28	309	564.6	2.83
CAN	300	81	0	0	81						0.20						
Total	**700**	**141**	**60**	**60**	**261**												
With herbicide																	
3. Modern																	
DAP	250	45	115	0	160	10,950	6,200	150	0.16	992	0.25	112.5	125	28	265.5	726.5	3.74
Urea	250	115	0	0	115						0.20						
Total	**500**	**160**	**115**	**0**	**275**												
With herbicide																	

a. Data used are from results of field trials conducted by the KADP.

b. Controls with no fertilizers were not included in field trials. Therefore, in order to obtain an estimate of yields with no fertilizer, the average maize yield for 2002, 3.8 tonnes/ha, was adjusted upward by 25% to account for the better than average crop management associated with the implementation of the field trials.

Aggregated Farm-Level Impacts—A summary of the aggregated farm-level impacts of the KADP is presented in Table 6. Aggregate indicators or measures of impact are calculated on the basis of results of estimated impacts of increased use of fertilizers on crop yields and profitability that are shown in Tables 3-5. Estimates of aggregated impact shown in Table 6 are calculated by using data and results pertaining to the "traditional technology" specified in Tables 4 and 5. Also, in order to obtain estimates of impact that represent better the farmers' management and circumstances, estimates of crop yield increases (and expenditures in harvesting of additional output) were adjusted downward by 30%. Estimates of farm-level impact of the KADP over the 3 years of the program, 2000 to 2002, show the following:

1. Fertilizer use increased by 71,000 tonnes in terms of fertilizer products and 28,730 tonnes in terms of plant nutrients ($N+P_2O_5+K_2O$).
2. A total of about 83,000 ha of wheat and 50,000 ha of maize were fertilized with the 71,000 additional tonnes of fertilizers used as a result of the KADP.
3. About €17 million were expended by farmers in fertilizers.
4. Although not all farmers that used fertilizers also used improved seeds and herbicides, an apparent market (demand) of more than a million Euros per year was created by the program—an apparent demand of about €3.9 million over the 3-year period.
5. Crop yield increases of about 1.85 tonnes/ha for wheat and 3.82 tonnes/ha for maize are associated with the increased use of fertilizers.
6. Crop production increased by approximately 153,800 tonnes of wheat and 190,400 tonnes of maize during the 3-year program.
7. Net added returns to land and other factors that are fixed in the short-run (crop season) increased by approximately €6.09 million, €4.94 million, and €4.63 million in years 2000, 2001, and 2002, respectively, that is a total of approximately €15.66 million over the 3-year program—these impacts represent the main stream of economic benefits to be included in the benefit/cost analysis presented in the next section of this paper, and are by and large, increases of farmers incomes. In the economic analysis, however, adjustments are made to account for the event that not all of the fertilizer use increase may be attributed to the KADP.
8. The increased use of fertilizers had an impact on the employment of hired labor to apply the fertilizers and also to harvest the additional crop output, about 216,000 workdays of employment and an income of approximately €1.73 million for hired farm workers were generated during the 3-year program.

Table 6. Aggregated Farm-Level Impact of the KADP

Impacts	Measures of Impact	Year 2000			Year 2001			Year 2002			3-Year Totals		
		Wheat	Maize	Totals	Wheat	Maize	Totals	Wheat	Maize	Totals	Wheat	Maize	Totals
Increased use of fertilizers	Increased quantities of fertilizer applied (tonnes)[a]	17,000	13,000	30,000	10,300	10,700	21,000	10,000	10,000	20,000	37,300	33,700	71,000
	Increased quantities of nutrients applied ($N+P_2O_5+K_2O$) (tonnes)	6,750	4,950	11,700	4,517	4,173	8,690	4,464	3,876	8,340	15,731	12,999	28,730
	Increased area fertilized (ha)	35,714	18,966	54,680	23,899	15,989	39,888	23,619	14,851	38,470	83,232.80	49,804.60	133,037
	Total added expenditure of farmers in fertilizers applied (€ million)	4.00	2.96	6.96	2.68	2.49	5.17	2.65	2.32	4.96	9.32	7.77	17.09
Increase in use of other inputs	Added expenditure of farmers in improved seeds and herbicide (€/ha)	30.00	28.00		30.00	28.00		30.00	28.00				
	Potential additional sales of improved seeds and herbicide (€ million)	1.07	0.53	1.60	0.72	0.45	1.16	0.71	0.42	1.12	2.50	1.39	3.89
	Added expenditures of farmers in harvesting of increased yield (€/ha)	21.00	42.00		21.00	42.00		21.00	42.00				
	Additional expenditures of farmers in harvesting of increased crop production (€ million)	0.75	0.80	1.55	0.50	0.67	1.17	0.50	0.62	1.12	1.75	2.09	3.84
Increased productivity of agriculture and food security	Crop yield increase (tonnes /ha)	1.85	3.82		1.85	3.82		1.85	3.82				
	Total increase in crop production ('000 tonnes)	66.0	72.5		44.2	61.1		43.6	56.8		153.8	190.4	344.2
Increased income to farmers and rural labor	Net added returns to land and other fixed factors (€/ha)	30.7	263.2		30.7	263.2		30.7	263.2				
	Aggregated net added returns to land and other fixed factors of production[b] (€ million)	1.10	4.99	6.09	0.73	4.21	4.94	0.73	3.91	4.63	2.56	13.11	15.66
	Total additional income of hired labor (€ million)	0.464	0.247	0.711	0.311	0.208	0.519	0.307	0.193	0.500	1.082	0.647	1.729
Increased employment of rural labor	Additional hired labor (work hours/ha)	13	13		13	13		13	13				
	Additional hired labor (workdays/year)	58,036	30,819	88,855	38,837	25,981	64,818	38,381	24,132	62,513	135,253	80,932	216,186

a. Quantities of fertilizers applied to maize also include the fertilizers used on other crops, namely, 500, 2,000, and 2,300 tonnes in years 2000, 2001, and 2002, respectively. This is to account for the benefits of these fertilizers by assuming that the benefits on the crops on which they were used (vegetables, potatoes, and others) would be similar to those for maize.

b. These are returns to land and fixed factors of production that result from the use of fertilizers and improved technology and include the impact on profits. Data on fertilizers use correspond to the "traditional technology" from Tables 4 and 5. Also, in order to reflect better farmer's management and circumstances crop yield increases and expenditures in harvesting of additional output were adjusted downward by 30%.

Impact on Resource Base

Through the provision of short specialized and well-focused training programs, the KADP had a significant impact on the human resource base by improving the technical and managerial skills of agribusiness entrepreneurs, policymakers, farmers, and workers. About 300 persons in the agribusiness subsector and a number of personnel working in agricultural extension services received training and acquired knowledge and skills useful to enhance the potential for better management, efficiency, and growth of agribusiness enterprises. Because the impacts and benefits of investment in human resource development occur over the life span of those receiving the training and education, the benefits of these investments are substantial but very difficult to measure in the short run. They are, however, essential components of development assistance programs such as the KADP. The KADP has been successful in providing the training required to facilitate the success of the program.

The KADP also contributed to the conservation of the agricultural resource base, namely, the conservation of the pool of plant nutrients in the soils of agricultural land. Increased agricultural production without the use of fertilizers is difficult to achieve and always involve the mining of plant nutrients from the soil. In the long run, the continuous cultivation of cropland without the application of fertilizers results in the gradual depletion of plant nutrients from the soil, decline of soil fertility, and lower crop yields and productivity.

Given the increases of maize and wheat production that are estimated to occur as a result of increased use of fertilizers associated with the KADP, it is possible to calculate the quantities of plant nutrients (N, P_2O_5, and K_2O) that would have been "mined" from the soils of wheat and maize croplands to produce wheat and maize in quantities equal to those increases. Estimates of the quantities of nutrients in the soil that have been prevented from being mined by the KADP through the increased use of fertilizers are calculated here for three scenarios of possible (and potential) increases of wheat and maize production.

Scenarios	Wheat Production	Maize Production	Nutrients Mined From Soils ($N+P_2O_5+K_2O$)		
			By Wheat	By Maize	Total
	(tonnes)	(tonnes)	(tonnes)		
If production increase is equal to field trials	219,735	271,933	8,284	4,892	13,176
If production increase is 80% of field trials	175,788	217,546	6,627	4,892	11,519
If production increase is 70% of field trials	153,815	190,353	5,799	4,892	10,691

These estimates show that the KADP has contributed to the conservation of cropland resources in Kosovo by preventing the mining of at least 10,000 tonnes of plant nutrient (N, P_2O_5, and K_2O) during cropping seasons of 2000 to 2002. With a farm-level cost of €5.9 million, 15,873 tonnes of 15-15-15 and 10,582 tonnes of CAN would be required to restore the 10,000 tonnes of nutrients that would have been mined from the soil.

Benefit-Cost Analysis

Economic Benefits

Economic benefits of the KADP are net added economic returns to factors of production that occur as result of the outputs and impacts of the KADP. These benefits are expressed in monetary units and for the KADP are associated with (a) the increased use of fertilizers and improved seeds and crop management practices that were induced by the activities of the program and (b) the increased efficiency and profitability of targeted agribusinesses.

Estimates of economic benefits of the KADP are presented in Table 7. These estimates are derived from the measures of impact shown on Table 6 in regard to returns to farm-level fixed factors of production and hired labor and from Table 2 regarding increases of agribusinesses' profits. Benefit estimates shown on Table 7 are based on the assumption that (a) 100% of the increase in fertilizer use is attributed to the KADP and (b) increase in profits of agribusinesses are estimated to be equal to 50% of the estimated savings (or gains) in transactions that occurred as a result of cost and price advantages provided by large-volume transactions (economies of scale).

To conduct a simple benefit/cost analysis in terms of present values and benefit/cost (B/C) ratios, the annual stream of benefits was estimated and determined to be €6.8 million, €6.946 million, and €6.809 million for 2000, 2001, and 2002, respectively. Because of data limitations, a very crude estimate of the increase of agribusinesses' profits is included.

Present Values and Benefit-Cost Ratios

The flows or streams of benefits and costs and estimates of present values and B/C ratios of the KADP for three scenarios involving different levels of impact that may be attributed to the program are presented in Table 8. The stream of costs is actual annual expense incurred by IFDC (USAID) in the implementation of the program.[2]

Net present values (NPV) calculated using an annual rate of discount of 12% show a NPV of US $208,000 and a B/C ratio of 2.9 for Scenario 1. That is, if only 50% of the fertilizer use increase is attributed to the program and the other two benefits are as estimated in Table 7. If only 50% of all three estimated benefits are attributed to the program, then, the NPV is reduced to US $140,000 and the B/C ratio is 2.28.

[2] Because the program started in June 2000, expenditures (costs) for that year are adjusted to reflect an estimate of the cost for the whole year.

Table 7. Estimates of Economic Benefits of KADP

Economic Benefit	Year 2000			Year 2001			Year 2002			3-Year Totals		
	Wheat	Maize	Totals	Wheat	Maize	Totals	Wheat	Maize	Totals	Wheat	Maize	Totals
Aggregated net added returns to land and other fixed factors of production (€ million)	1.097	4.992	6.089	0.734	4.208	4.942	0.726	3.909	4.634	2.557	13.108	15.665
Additional income of hired labor (€ million)	0.464	0.247	0.711	0.311	0.208	0.519	0.307	0.193	0.500	1.082	0.647	1.729
Increase in profits of agribusiness estimated as 50% of the savings in transactions due to economies of scale (€ million)			0.000			1.485			1.675			3.160
Total (€ million)			**6.800**			**6.946**			**6.809**			**20.554**

Table 8. Sensitivity Analysis for Estimates of Net Present Values and Benefit Cost Ratios[a]

Scenario	Year	Benefit	Cost	Net Benefit
		($ million)	($ million)	($ million)
1. Only 50% of fertilizer use increases are attributed to the project	2000	3.755	1.266	2.489
	2001	4.475	1.910	2.565
	2002	4.492	1.535	2.957
	Present value	0.317	0.109	0.208
	B/C ratio			2.90
2. Only 50% of all estimated benefits are attributed to the project	2000	3.044	1.266	1.778
	2001	2.471	1.910	0.561
	2002	2.317	1.535	0.782
	Present value	0.250	0.109	0.140
	B/C ratio			2.28
3. Only 25% of all estimated benefits are attributed to the project	2000	1.522	1.266	0.256
	2001	1.236	1.910	-0.674
	2002	1.159	1.535	-0.376
	Present value	0.125	0.109	0.016
	B/C ratio			1.14

a. Calculated using an annual discount rate of 12%.

The economic effectiveness of USAID investment in the KADP is clearly demonstrated by the estimates obtained for Scenario 3. These very conservative estimates show that even in the extreme case of considering that only 25% of all estimated benefits are attributed to the KADP, the program still has a positive NPV of US $16,000 and a B/C ratio of 1.14.

Summary and Conclusions

Although this is not a comprehensive program assessment document, an effort has been made to conduct an economic assessment of the program in terms of its most relevant and quantifiable benefits. Despite some data limitations, reliable estimates of key impacts and benefits of the KADP were obtained. These estimates show clearly that the program had very significant positive impacts on the development of a more dynamic and effective agribusiness subsector and in the productivity of agriculture. Significant increases in the volume of business and investments of agribusinesses occurred as a result of the impact of the KADP on ATA and targeted agribusiness enterprises. At the farm level, the program has increased the productivity and income of farmers using fertilizers and, even more, in the case of those farmers adopting improved seeds and weed control in conjunction with the use of fertilizers. Thus, in terms of impacts the program has been very successful.

Despite the fact that all the economic benefits in the agribusiness subsector were not properly included and estimated due to data limitations, the economic returns to USAID investment in the KADP are positive and significant. Net present values (NPV) calculated at a 12% rate of discount vary from US $208,000 for a scenario reflecting realistic expectations to US $16,000 for an extreme case scenario based on the assumption that only 25% of all estimated benefits are attributed to the KADP. B/C ratios vary from 2.9 to 1.14.

Finally, it is important to note that there is still a great potential for Kosovo to increase agricultural productivity through the adoption of improved technology by farmers and the development of agribusinesses that provide important value added to agricultural outputs and can become “captive” market outlets to farmers. Technical assistance for development programs that

focus on these issues and are sponsored by USAID should have important impacts, good economic returns on investment, and will be successful programs.