

**REPORT AND RECOMMENDATION
OF THE
PRESIDENT
TO THE
BOARD OF DIRECTORS
ON A
PROPOSED LOAN
AND
TECHNICAL ASSISTANCE GRANT
TO THE
REPUBLIC OF UZBEKISTAN
FOR THE
AK ALTIN AGRICULTURAL DEVELOPMENT PROJECT**

July 2001

CURRENCY EQUIVALENTS

(as of 18 May 2001)

Currency Unit		Sum (SUM)
SUM1.00	=	\$0.00285
\$1.00	=	SUM351

ABBREVIATIONS

ADB	-	Asian Development Bank
AERP	-	Agriculture Enterprises Restructuring Project
CAR	-	Central Asian Republic
COM	-	Cabinet of Ministers
COS	-	country operational strategy
EA	-	executing agency
EIRR	-	economic internal rate of return
FIRR	-	financial internal rate of return
ha	-	hectare
HAE	-	Hydrologic Amelioration Expedition
ICB	-	international competitive bidding
IEE	-	initial environmental examination
IPM	-	integrated pest management
km	-	kilometer
MAWR	-	Ministry of Agriculture and Water Resources
MEU	-	monitoring and evaluation unit
MMS	-	Ministry of Macroeconomics and Statistics
MOF	-	Ministry of Finance
NPV	-	net present value
O&M	-	operation and maintenance
PIS	-	project implementation structure
PMO	-	project management office
PSC	-	project steering committee
PSO	-	project site office
RAWD	-	<i>Rayon</i> Agriculture and Water Department
RBAC	-	rural business advisory center
RCC	-	<i>rayon</i> (district) consultative committee
RMP	-	<i>rayon</i> (district) machinery park
RRA	-	Rural Restructuring Agency
t	-	ton (metric)
TA	-	technical assistance
WG	-	working group
WUA	-	water users' association

NOTES

- (i) The fiscal year (FY) of the Government ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

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LOAN AND PROJECT SUMMARY

Borrower	The Republic of Uzbekistan
Project Description	<p>The Project will be implemented in Ak Altin <i>Rayon</i> (district), a typical cotton-producing region that has experienced declining cotton yields, falling farm income, and deteriorating living standards. The Project will support the Government's policy reform initiatives by pilot-testing modifications in the State procurement system for cotton and wheat, strengthening rural institutions to support private farming, and rehabilitating infrastructure to increase crop productivity, with a view to improving farm income in the short run and sustaining agricultural development in the long run. The Project will substantially reduce the State procurement burden on farmers, strengthen the newly established rural business advisory centers (RBACs), establish water users' associations (WUAs), rehabilitate 37,000 hectares (ha) of irrigation and drainage systems, and provide farm machinery services. The Project's experiences in policy reform and institutional strengthening are expected to be replicated nationwide.</p>
Classification	Economic Growth Environmental Protection
Environmental Assessment	Category B. An initial environmental examination was undertaken which indicated that the Project will have no major adverse environmental impacts since most of the components comprise rehabilitation works.
Rationale	<p>Uzbekistan has experienced continuing decline in cotton production in recent years. This has seriously affected the country's balance of payments, resulted in widespread farm losses, and caused serious social and environmental problems. The deterioration of the irrigation and drainage systems and degradation of farmland have affected agricultural production in the country. The Government initiated a reform package in 1999 to promote farm restructuring, increase State procurement prices, and reduce farm losses. These measures have significantly improved the farms' financial status in the short run. Pursuant to policy dialogue with ADB, the Government in May 2001 introduced major policy reforms in Ak Altin <i>Rayon</i> by replacing the production target with much reduced procurement quota for cotton and wheat, and abolishing</p>

joint responsibility for fulfilling the procurement quota. With these reforms, the farmers now have better prospects to sustain their operations if the remaining constraints are addressed in an urgent manner. By providing institutional support for private farming and rehabilitating the deteriorated irrigation and drainage systems, the Project will contribute to a financially viable and sustainable agriculture, and substantially improve the living standards of about 50,400 beneficiaries in the Project area.

Objectives and Scope

The Project will promote agricultural development on a sustainable basis. The primary objective is to improve agricultural performance and increase farm income in Ak Altin district; the secondary objective is environmental protection. The Project will comprise four components: (i) institutional support, monitoring, and evaluation; (ii) rehabilitation of the irrigation and drainage systems; (iii) farm machinery services; and (iv) project management.

Cost Estimates

The total project cost is estimated at \$72.0 million equivalent, composed of \$38.7 million in foreign exchange and \$33.3 million equivalent in local currency.

Financing Plan

Source	(\$ million)			
	Foreign Exchange	Local Currency	Total	Percent
Asian Development Bank	35.2	0.8	36.0	50.0
Government	3.5	30.5	34.0	47.3
Beneficiaries	0.0	2.0	2.0	2.7
Total	38.7	33.3	72.0	100.0

Loan Amount and Terms

The loan of \$36.0 million equivalent from the Asian Development Bank's (ADB's) ordinary capital resources will have a term of 25 years, including a grace period of 5 years, with interest calculated in accordance with ADB's pool-based variable lending rate system for US dollar loans, an annual commitment charge of 0.75 percent, and a front-end fee of 1 percent.

Period of Utilization

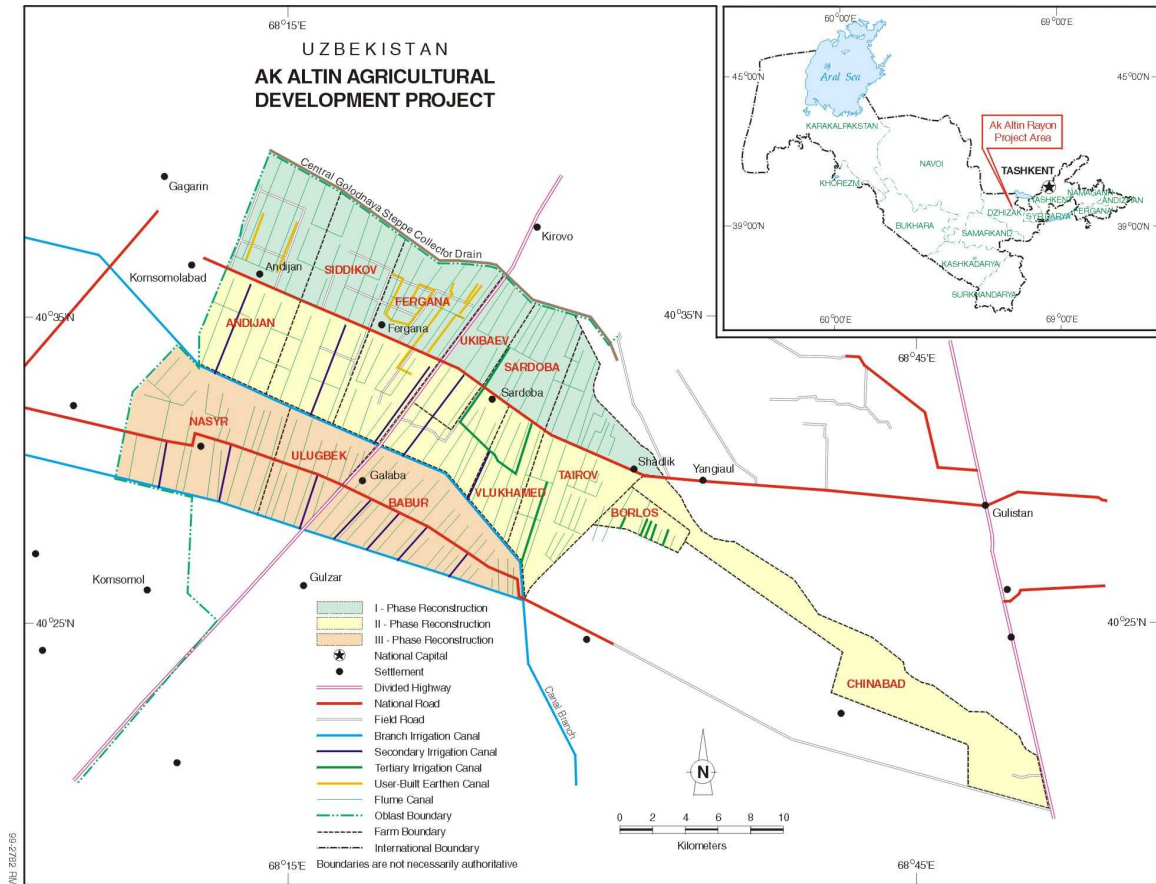
Until 31 March 2007

Executing Agency	Ministry of Agriculture and Water Resources (MAWR)
Implementation Arrangements	<p>A high-level project steering committee chaired by the Deputy Prime Minister in charge of Ministry of Macroeconomics and Statistics, and an interministerial working group have been established to address issues that need interagency coordination. A deputy minister of MAWR has been designated as project director to oversee project implementation. The Rural Restructuring Agency (RRA) under MAWR will be responsible for project implementation. A project management office (PMO) has been established to manage day-to-day project implementation, with a project site office (PSO) in Ak Altin to supervise field activities. A district consultation committee comprising beneficiary representatives will monitor project implementation and liaise with the PSO.</p>
Procurement	<p>The Project will procure machinery, equipment, civil works, services, as well as vehicles, office equipment, and materials. All procurement will be undertaken in accordance with ADB's <i>Guidelines for Procurement</i>.</p>
Consulting Services	<p>The Project will provide for 263 person-months of consulting services (65 international and 198 domestic) to assist the PMO and PSO in (i) design, monitoring and evaluation of pilot farms; (ii) carrying out surveys and investigations, preparing and reviewing designs, and supervising construction of on-farm and interfarm irrigation and drainage facilities; and (iii) project management. The consulting services will be engaged in accordance with ADB's <i>Guidelines on the Use of Consultants</i> and other arrangements satisfactory to the ADB for the engagement of domestic consultants.</p>
Estimated Project Completion Date	30 September 2006
Project Benefits and Beneficiaries	<p>The Project will directly benefit about 50,400 people or 9,640 families in the Project area; most of them are farm workers and their families on the large cooperative farms that have incurred losses, as well as private farmers and other rural residents. Over 50 percent of the potential beneficiaries are women. The Project is expected to increase cotton yield from the current (year 2000) 1.59 ton (t)/ha to 3 t/ha, and wheat yield from 2.19 t/ha to 3.7 t/ha in eight years. With increased crop yields, farm income is expected to double in eight years. The increased crop</p>

production will, in turn, increase the demand for farm labor, especially during the cotton harvest season. Enhanced farm income will improve the local communities' ability to pay for social services, and public health. In the long run, the rehabilitated irrigation and drainage systems will sustain crop production and prevent environmental degradation. The strengthened rural institutions such as RBAC and WUAs will support private farming and proper water management on a long-term basis. The Project's financial internal rate of return is estimated at 13.7 percent and the economic internal rate of return at 26.2 percent.

Technical Assistance

A technical assistance (TA) grant of \$600,000 equivalent from ADB's TA Special Fund will provide services of 20 person-months of international consultants and 44 person-months of domestic consultants to strengthen the newly-established RBAC. The TA will facilitate RBAC to develop its operational strategy and management systems, and provide agribusiness advisory and agricultural extension services to the beneficiaries.



I. THE PROPOSAL

1. I submit for your approval the following Report and Recommendation on a proposed loan to the Republic of Uzbekistan for the Ak Altin Agricultural Development Project. The report also describes proposed technical assistance for Institutional Support for Sustainable Agricultural Development, and if the proposed loan is approved by the Board, I, acting under the authority delegated to me by the Board, shall approve the technical assistance.

II. INTRODUCTION

2. A feasibility study for the Ak Altin Agricultural Development Project was carried out from September 1997 to April 1998 under an Asian Development Bank (ADB) technical assistance (TA).¹ The consultants' findings and their reports were discussed with the Government. A Reconnaissance Mission visited the country in September 1998, followed by a Fact-Finding Mission during November-December 1998, a Follow-up Fact-Finding Mission during August-September 1999, an Appraisal Mission in November 1999, and Follow-up Missions in October 2000 and May 2001.² The lengthy period for project processing reflects the intensive policy dialogue with the Government on proposed policy reforms under the Project, and the time needed for the Government's internal deliberations on the policy issues. This report is based on the consultants' studies, the findings of the missions, and discussions with the national and local government agencies concerned as well as farmers in the Project area. The Project framework is given in Appendix 1.

III. BACKGROUND

A. The Agriculture Sector

1. Macroeconomic Context

3. Following independence in 1991, Uzbekistan embarked on transition from a command economy to a market system, and adopted a gradual approach with the State playing a central role in managing the transition. This gradual approach performed relatively well in maintaining political and social stability, and the Uzbek Government managed to avoid the prolonged recessions encountered by the neighboring Central Asian republics (CARs), where social dislocation due to rising poverty and internal conflicts occurred.

4. However, the slow pace of the transition has delayed the much-needed structural reforms in major sectors of the economy. The State continues to be heavily involved in price control and market monopoly. Furthermore, prompted by a poor cotton harvest in late 1996, which brought severe pressures on the country's balance of payments, the Government, after a gradual lowering of trade barriers during 1995-1996, introduced a number of administrative measures to control imports in late 1996 and 1997. Import restrictions included mandatory registration of import contracts with the Ministry of Foreign Economic Relations and obligation for importing enterprises to obtain an import license from the Ministry of Foreign Economic Relations and a foreign

¹ TA 2798-UZB: *Agriculture Sector Development Project*, for \$1,075,000, approved on 19 May 1997.

² The Appraisal Mission comprised E.Q. Ye, Project Economist/Mission Leader; M.A. Malik, Senior Project Specialist; S. T. Qadri, Senior Environmental Specialist; G.N. Bestari, Project Economist; V.L. You, Counsel; and S. Khan, Farm Machinery Specialist/Staff Consultant. M. A. Malik, Senior Project Specialist/Mission Leader conducted the first Follow-up Appraisal Mission. The second Follow-up Mission comprised M. A. Malik, Senior Project Specialist/Mission Leader; Tumurdavaa Bayarsaihan, Project Economist; and Rustam Abdukayumov, Portfolio Management Officer, ADB Uzbekistan Resident Mission.

exchange license from the Central Bank of Uzbekistan. All import licenses are granted selectively. Other restrictive measures that have directly affected foreign trade include (i) centralized export of gold and cotton, (ii) foreign exchange surrender requirements for exports, (iii) import quotas for basic food stuff through the tender system, (iv) import tariffs and excise duties set at levels higher than the international norm, and (v) the overvalued official exchange rate. As the policy changes introduced in late 1996 were not in accordance with the International Monetary Fund's standby arrangement agreed upon in 1995, the International Monetary Fund's program was suspended in December 1996.

5. The tight trade and price controls discouraged export and foreign investment, weakened the economy, and threatened Uzbekistan's balance of payments position. The Government recognized the need to reassess the current policy and is engaged in a process of policy review and revision. The Cabinet of Ministers (COM) issued on 10 June 1999 a resolution outlining an extensive program of policy reform covering the economic, political, and social spheres for the country to unify the multiple exchange rates. At present, the State procurement price of cotton is based on export parity level using the overvalued official exchange rate; and the cost of less efficient processing, handling, and transportation by various government agencies; and effectively represents an implicit taxation on farms. The unification of the exchange rates, by converting the official exchange rate to its economic value, will reduce the implicit taxation on farms and bring substantial gains to the agriculture sector. In particular, export-oriented cotton production will be promoted.³

6. On 24 June 2001, the Government passed a resolution that substantially changes the foreign exchange regime with effect from 1 July 2001. The resolution reduces the number of products to be traded at official exchange rate and shifts them to the commercial or over the counter (OTC) exchange rate. Export earnings, which are surrendered will be paid at the OTC rate, thereby increasing receipts in domestic currency terms by as much as 45 percent. Even the exports of cotton and gold beyond a pre-specified limit have been permitted at the OTC rate. The resolution provides the incentives for the exporters. Small and medium enterprises have also been allowed to convert their cash earnings at the OTC exchange rate. While the resolution of 24 June 2001 represents a move in the right direction, it has still not fully addressed the problems associated with multiple exchange rates.

2. Features of the Sector

7. Agriculture is the foundation of the Uzbek economy and accounts for about 28 percent of the gross domestic product, 44 percent of employment, and 60 percent of export revenues. About 56 percent of the country's 24.8 million people live in the rural areas. The agriculture sector comprises 60 percent of crops and 40 percent of livestock, with cotton and wheat being the two

³ The current official exchange rate is overvalued, and is maintained for currency transactions conducted at the Uzbek Republican Currency Exchange. The primary sources of supply of foreign exchange at the Uzbek Republican Currency Exchange are mandatory sales of foreign exchange proceeds from cotton and gold at the overvalued exchange rate. The primary uses of foreign exchange sold through the Uzbek Republican Currency Exchange are external public debt service and State-approved imports of capital and other goods for supporting State-sponsored programs and projects. The State allows commercial banks and exchange bureaus to conduct foreign exchange transactions. The exchange rates used in the commercial market are formally determined by market forces, but maintained by the State at below the market clearing level. For example, the commercial exchange rate was SUM675/690 to \$1.00 (actual, May 2001). There is a thriving curb market to cater to the demand for additional foreign exchange. The cash curb rate was at SUM920 to \$1.00 in May 2001. The official segments of the foreign exchange transactions control the bulk of the total transactions in the country. Accurate estimates of the size of the curb market were difficult to obtain. The high curb rate was also influenced by transaction risks and law enforcement.

major products.⁴ Uzbekistan was the largest producer of cotton, fruit, and vegetables in the former Soviet Union and is now the world's fifth largest cotton producer and the second largest cotton exporter after the United States, accounting for 15 percent of the global cotton trade.

8. The most salient feature of Uzbek agriculture is the dominant role of cotton, which occupies 44 percent of the irrigated area and contributes over 40 percent of the country's export earnings. At the macroeconomic level, cotton production in a particular year directly affects the country's balance of payments and State budget revenues. The crop is regarded as a strategic commodity. At the micro level, cotton is the primary source of income of farms. Because it is labor-intensive, cotton production is a major source of rural employment, especially during weeding and harvesting seasons. These features make cotton a critical factor influencing the country's political and social stability.

9. Another feature of Uzbek agriculture is its reliance on irrigation, which determines the size of the cropping area. In Uzbekistan, all cropping area is irrigated, as the continental climate and the concentration of rainfall in the winter months make irrigation an absolute necessity for crop production. The country's massive irrigation systems were expanded during the 1960s-1980s under the central planning system when the State financed all investment costs and was responsible for operation and maintenance (O&M) of all irrigation and drainage systems.

3. Sector Performance

10. The most critical issue in agriculture is the trend of declining cotton production in recent years. Nationwide, cotton outputs declined by over 22 percent from 4.6 million metric tons (t) in 1991 to 3.6 million t in 2000. In 1998, cotton production was only 3.2 million t, the lowest in 20 years. While a part of the decline was attributed to the shift of about 12 percent cotton area to grain production following the Government's policy of grain self-sufficiency,⁵ a more worrisome concern was falling crop productivity. Nationwide, cotton yield declined from about 3 t per hectare (ha) in the 1980s to 2.7 t/ha in 1991, and further to 2.2 t/ha in 2000. The average cotton yield was lowest at 2.1 t/ha in 1998. The declining cotton production led to widespread farm losses and accumulated farm debts, which impaired the capacity of farms to pay cash wages regularly to their workers, and the ability of the local communities to pay for social services. As a result, the living standards of farm workers and social services for rural residents deteriorated.

11. The poor performance of agriculture was attributed to four basic factors: (i) poor producer incentives because of the low output prices fixed under a State order system for cotton and wheat procurement, largely due to the overvalued official exchange rate (para. 5); (ii) excessive State interventions in farm operations, especially the mandatory fulfillment of production targets that controlled the entire cotton and wheat production of farms; (iii) deterioration of irrigation and drainage systems that led to rising groundwater tables, accelerated soil salinity, and falling crop yields; and (iv) lack of timely access to farm machinery services, which delayed farm operations and led to low crop yields and poor product quality. In particular, the continued deterioration of the irrigation and drainage systems, the degraded farmland, and wasted water (one of the most

⁴ Uzbekistan has a comparative advantage in cotton production. Its cotton yield is the second highest (after the People's Republic of China) among the top five cotton producers in the world (the People's Republic of China, USA, India, Pakistan, and Uzbekistan; statistics from the Food and Agriculture Organization, United Nations, 1990-1999). Economic analysis shows that cotton production gives the highest economic return among all crops in the project area. While wheat production in Uzbekistan does not have economic returns as high as those from cotton, the Government considers it politically important to ensure food security through domestic grain production. An important factor underlying the desire for grain self-sufficiency is the landlocked geography of the country amid the political instability in the region.

⁵ The total cotton area was reduced from 1.7 million ha in 1991 to 1.5 million ha in 1998 and to 1.45 million ha in 2000.

valuable resources in the country) have caused serious environmental concerns, directly threatening the country's long-term base for agricultural development.⁶

4. Policy Reforms

12. Since independence in 1991, the Government has initiated reforms in both farm privatization and market liberalization to transform agriculture to a market-based system. Reforms in farm privatization started with an increase of household plots allocated to farm employees, which immediately led to a significant increase in household production and productivity. Constituting about 10 percent of the country's irrigated cropland, these household plots now produce most of the country's vegetables, fruits, meat, and dairy products. The State farms were transformed into collective farms, which were later converted into cooperative farms. However, no real changes occurred in farm management and the incentive structure on these farms, most of which were still led by the same directors, were incurring losses, and were a heavy financial burden to the State budget.

13. Recognizing these problems, the Government launched a nationwide program of farm restructuring in 1998-1999 to break down the inefficient cooperative farms. Under the program, the large cooperative farms are being transformed into shirkats (restructured private farms) with measures to improve farm management and the incentive structure. On a typical shirkat, assets are assessed and valued, and members of the farm are given shares of the assets. A family contract system has been introduced, with farm workers' rights and obligations tied to a demarcated piece of land. Under the family contract system, a farm worker is responsible for producing a certain amount of outputs using a fixed amount of inputs, and the farm is responsible for input purchase, distribution, and output marketing. The system has demonstrated its initial impacts in promoting farm workers' incentive, and the Government plans to transform all remaining cooperative farms into shirkats.⁷ While farm workers on such farms now have better incentives for farm production, they are still under excessive State regulations, particularly by the mandatory State procurement for cotton and wheat (paras. 15-17).

14. The Government has demonstrated a clear intention to promote private farming. Four laws passed in 1998 created a legal basis for private farm operations, including a long-term land lease permit to individuals who wish to establish private farms (para. 39). Incentive measures were introduced, including a three-year tax break to newly established private farms. To support the small private farms, the Government issued a resolution in 1998 to establish a rural business advisory center (RBAC) in every oblast (province) and *rayon* (district) to provide farm extension services. An association of private farmers was also established with offices at the national, province, and district levels. Another Government resolution issued in 1999 promoted private machinery services, with a view to addressing the private farms' lack of access to farm machinery services and promoting market competition in farm input supply and machinery services. However, the low profit in cotton and wheat production and the widespread farm losses, in conjunction with the strict State control on trade and foreign currency, discouraged private sector

⁶ The most critical environmental concern in Uzbek agriculture is not land contamination with chemicals, which has been mitigated as the application of pesticide has been sharply reduced since 1991. According to the Uzbek National Environmental Action Plan, the deterioration of the irrigation and drainage systems is the primary cause of land degradation in the country. A large amount of water leakage from the deteriorated irrigation system, in conjunction with poor water use practice, has led to progressive salinity in the soil. Discharges from the drainage system have further affected fishery in the downstream areas such as Arnasai lake system.

⁷ It is reported that about 30-40 percent of all cooperative farms in the Fergana Valley, the richest and most densely populated area, have been restructured into private farms.

engagement in farm services industries. The RBACs also lacked necessary capacity to provide meaningful business advisory and extension services to private farms.

15. Reforms in market liberalization started in the less strategic subsectors such as vegetables, fruits, and livestock products. The mandatory State procurement (the State order) for these products was abolished, and their prices are now set by market forces. The only agricultural products that are still subject to the State order are cotton and wheat, where the coverage of the State order was reduced from 100 percent to 30 and 25 percent of the production target for cotton and wheat, respectively. However, the mandatory requirement to fulfill the production targets jointly by farms restricted the actual implementation of this policy.⁸ Since most farms (especially the large cooperative farms) could not fulfil their production targets, they ended up selling 100 percent of their cotton and wheat to the State at the fixed prices.

16. Up to the cropping year 2000, all cotton was procured through Khlopkoprom, a State joint stock company which has, throughout the country, processing facilities for cotton including drying, cleaning, grading, ginning, certifying, and packing. The processed cotton was sold to foreign traders through local private trading firms registered with the Ministry of External Economic Relations. These local private traders handled cotton export and were obliged to surrender all foreign exchange earnings to the Government at the official exchange rate.

17. Policy reforms in the cotton subsector have been particularly slow. Cotton farmers continued to suffer from excessive State interventions, including the production targets that control the entire production of farms, and the fixed procurement price that, until most recently, was below production costs. The slow pace of policy reforms in the cotton subsector reflected the Government's deep concern about the potential impacts of cotton liberalization on the country's political and social stability, given the large shares of cotton in the country's export earnings, State budget revenues, and farm income. Such concern was reinforced by the negative results of rapid policy reforms in some neighboring CARs and the financial crisis in the Russian Federation. These countries experienced a severe disruption in agricultural production, sharp rise in rural poverty, and a chronic decline in farm income and farmers' living standards.

18. Recognizing the negative social and environmental impact of the widespread farm losses, the Government initiated a new reform package in 1999 to reduce such losses. These reforms, inter alia (i) raised the State procurement prices of cotton and wheat by 44 percent, which

⁸ This policy required farms to first fulfill their production targets, which were, in most cases, set at the high production levels achieved in the 1980s when the irrigation and drainage systems functioned well. The quantity of wheat procured by the State was set at 50 percent of the wheat production target, where (i) the State procurement prices were applied to the first 25 percent of the production target, and (ii) a price premium of 20 percent over and above the procurement prices was paid to the remaining volume purchased by the State. Although farmers were free to sell wheat in the domestic markets once they had fulfilled the State procurement volume, there was little left for free market sales because actual wheat production levels were consistently below the high production targets. Consequently, the quantities of wheat purchased by the State effectively reached 70-95 percent of the actual wheat production in the Project area. For cotton, there was no price premium. But once the production targets were fulfilled, farmers could receive a financial incentive in the form of additional value derived from cotton by-products, as farmers were given the right to purchase at ex-factory prices the cottonseed oil and seed cake produced out of the cotton seeds extracted from 70 percent of the raw cotton produced. In practice, this incentive did not materialize as cotton production targets were set above actual production levels. Furthermore, a "joint responsibility" in fulfilling the production targets by farms was applied to both large cooperative farms and small private farms. The large cooperative farms typically had several hundreds to over a thousand farm workers, who were divided into small production units (brigades). Even if farmers in a brigade fulfilled their production target, they had to sell 100 percent of their products to the State at the fixed procurement prices without the financial incentive if other brigades on the same farm did not fulfill their production targets. Joint responsibility was later replaced by the family contract system in the restructured cooperative farms (para. 13).

represented an 18 percent real price increase after adjustment for inflation, and brought the farmgate prices of wheat and cotton to their international import and export parity levels valued at the official exchange rate;⁹ (ii) transferred farmers' financial burdens for maintaining social and communal services to the local government budget; (iii) wrote off farm debts to the State, and rescheduled farm debts to input suppliers; and (iv) modified the taxation system to a unified land tax that effectively represents a tax cut for farms.

19. These measures significantly improved the financial status of farms, enabling them to pay their workers on time and leading to improved producer incentives. The write-off of farm debts also reduced restrictions on farm operations, as without outstanding debts, the tax authority and other creditors no longer have access to farms' banking accounts, and so normal farm operations are possible. In conjunction with favorable climatic conditions, cotton production increased by 14 percent in 1999. By addressing the difficult issue of the widespread farm losses, these reforms contribute to maintaining and increasing the State budget revenues in the long run.¹⁰

20. Pursuant to policy dialogue with ADB, the Government took a major step to pilot-test policy reforms in Ak Altin district by issuing on 2 May 2001 COM Resolution No. 201. The main features of the resolution include (i) commencing from the cropping season 2001, the annual state production target of 50,000 t for wheat and cotton will be replaced by a fixed procurement quota of 17,000 t for seed cotton and 12,500 t for wheat, (ii) production above the procurement quota can be sold at mutually agreed upon prices, (iii) each agricultural enterprise will be independently responsible for fulfilling its procurement quota, and (iv) a steering committee would monitor preparation and implementation of the Ak Altin Agricultural Development Project and the impact of policy reforms introduced.

21. The issuance of the COM Resolution No. 201 is the first major policy reform for cotton and wheat procurement. Considering that the above-quota cotton will be sold to private traders in a competitive environment, the Government, taking into consideration the more efficient management by private traders, has estimated the price of above-quota cotton at 40 percent above the State procurement price.¹¹ These calculations indicate the price the Government may have to offer if it wants to procure the above-quota cotton. The Government, however, has no intention of imposing this price or compelling farmers to sell their above-quota cotton to the Government at this price.

22. The year 2001 cotton harvest in Ak Altin *Rayon* will be the first to experience the implementation of the COM Resolution No. 201. It is likely to take a couple of years to develop

⁹ Since the official exchange rate is overvalued (footnote 3), these prices are still below their economic values. In addition, these include cost of less efficient processing, handling, and transportation by various Government agencies.

¹⁰ These reforms had no significant negative impacts on the State budget. First, the price increases brought the State cotton price in the local currency to its international export parity level at the official exchange rate. As the cotton marketing agency received foreign exchange from the entire proceeds of cotton sales to international buyers at prevailing international prices and sold foreign currency to the State at the official exchange rate, there is no loss to the State budget. Second, the transfer of the social charges from farms to local government budget had no impact on the State budget, for utilities such as gas and electricity would be passed on to consumers who had benefited from free communal services in the past. Third, the write-off of farm debts represented more of a book transfer than a real reduction in State tax revenues, as most farm debts had accumulated as arrears for many years, and could not be feasibly collected. Finally, the Ministry of Finance did not anticipate significant negative impacts on the State budget as a result of the consolidation of farm taxes into a single land tax, albeit at a reduced level, as the imposition of multiple taxes on the loss-incurring farms had resulted in tax arrears, rather than increased collection of taxes in the past. Simplified taxation at a reduced rate is expected to increase the effective tax collection.

¹¹ These calculations, presented by the Government, use international price of cotton converted at the official rate and taking into consideration the processing, transportation, storage, insurance, other trading costs, and profit margins of the local private firms.

proper procurement and trading procedures. Although the farmers will be free to sell their above-quota production to any legal trading agency, it is envisaged that during the year 2001, the above-quota cotton production will continue to be procured by Khlopkoprom, albeit at prices significantly above the State procurement price. As farmers gain confidence and experience, they are likely to enter into contracts directly with the local private trading firms (para. 16), paying the service charges to Khlopkoprom for processing. In the long term, particularly if more procurement reforms similar to those implemented in Ak Altin are undertaken in other parts of the country, more trading firms and processing facilities in the private sector are likely to be established, thereby creating a more competitive environment.

23. Despite the achievements mentioned above, deficiencies remain in the policy environment in the overall economy and in agriculture. They include (i) State interventions in farm operations, especially the State procurement; (ii) the multiple exchange rate system and the overvalued official exchange rate that generate significant price distortions; and (iii) lack of market competition in farm input supply, machinery services, output processing, and marketing.¹²

5. The Project Area

a. Geography and Population

24. The Project area covers Ak Altin district, located about 120 kilometers (km) from Tashkent on the Tashkent-Samarkand road in the northwestern part of Syr Darya Province bordering Kazakhstan. Ak Altin was established in 1971 from five experimental State farms during the development of the Golodnaya Steppe. It has an area of about 57,400 ha, of which about 40,380 ha comprises farmland that includes about 37,000 ha of irrigated crop area. The soils are gray, sandy loam with low humus content. The climate is extremely continental, with hot and dry summers and cold winters. Precipitation is low, and 80 percent of the 295-millimeter annual rainfall occurs between October and April. As fixed by the State, the cropping pattern in Ak Altin is dominated by cotton and wheat, which cover 54 percent and 37 percent, respectively, of the total irrigated cropland. The remaining cropland has maize, vegetables, fruits, and alfalfa.

25. Ak Altin has a population of close to 50,400, with about 9,640 families living in 14 villages. Sardoba is the administration center. The district population is young, with 31 percent under age 14, 61 percent aged 14-55, and only 8 percent over age 55. Population density is about 87 persons per square kilometer, lower than the provincial average and the over 500 in the Fergana Valley.

26. Women account for about 51 percent of the population. About 6 percent of them are pensioners and 11 percent have large families with five or more children. Women tend to hold jobs mostly in health care and education as well as seasonal manual work such as cotton weeding and harvesting. Their dominance in these areas results in low wage rates for them, which on the average are about 80 percent of those of men. As in the rest of the country, women's sociopolitical status is formally protected. Basic education indicators show very little gender discrimination in primary and secondary education.¹³ There are women's committees at the national as well as district levels. Women in the district have equal access to land, irrigation water, and credit (in the form of advance payments).

¹² There are no specific regulations against private sector participation in farm input supply, machinery services, output processing, and marketing. The lack of such participation is largely due to the low profitability of cotton and wheat production (para. 14).

¹³ See *Uzbekistan: Country Operational Strategy Study*, March 2000.

27. While there are no official data on poverty in the district, it is estimated that about 1,200 (or 12 percent) of the 9,640 families need social assistance. This figure is similar to the national average.¹⁴ Consultations with local community leaders in Ak Altin showed that most of the poor in the district were farm workers and their families on the large cooperative farms. As these farms incurred losses and were unable to pay cash wages regularly, the farm workers suffered from declining living standards. The most vulnerable groups were the single mothers, single pensioners, disabled persons, and women with a large number of young children. There was a social safety net with a limited amount of financial assistance from the Government as well as formal and informal social organizations that helped their members. However, the farms' poor financial status has reduced the local communities' ability to assist the most needy.

b. Rural Institutions and Farming Systems

28. The district *Hokim* (chief) is the head of the local administration. He is appointed by the provincial *Hokim*, who, in turn, is assigned by the President of the country. As a legacy of a policy experiment in 1995,¹⁵ an organization called Agrofirma integrates all farms and services enterprises in the district, comprising 12 large cooperative farms, 165 private farms, and all input suppliers, processing enterprises, and marketing agencies. Agrofirma is responsible for distributing inputs to farms, based on the cotton and wheat procurement contracts.

29. A typical cooperative farm in the district has 3,000 ha of irrigated cropland and 700-1,000 permanent farm workers. These workers are divided into brigades, which are the basic production units. A brigade typically has four workers and 20-30 ha of irrigated land. Farmland belongs to the State and is leased by the cooperative farm to the brigades on an annual basis, together with the distribution of procurement quota for cotton and wheat. The cooperative farm provides farm inputs and machinery services to the brigades. As part of the nationwide farm restructuring program (para. 13), 2 of the 12 large cooperative farms of the district were restructured into private farms, where the family contract system has replaced joint responsibility in fulfilling the production targets. This new policy has increased farm workers' incentives and provided a basis for further policy reforms under the Project.

30. A private farm is established by separating from a cooperative farm, on recommendation from the council of the cooperative farm and approval by the district *Hokim*. A private farm is a legal entity and has a land lease agreement initially for 10 years. Like the cooperative farms, private farms are subject to the State order system for cotton and wheat procurement and the mandatory fulfillment of production targets. A private farm in Ak Altin typically has 35 ha of irrigated cropland and 8-12 workers. Private farms are generally not burdened with heavy fixed costs due to their lean management structure, and have flexibility in utilizing seasonal labor to complement their small workforce. However, these small farms lack timely access to farm machinery services as most of them cannot afford to buy new machinery (para. 32).

31. All employees of the cooperative and private farms have their own private household plots. With an average size of 0.35 ha of irrigated cropland, these small land plots are the primary source of fruits, vegetables, and potatoes for family consumption. In the absence of the State

¹⁴ There is no officially defined poverty line in Uzbekistan. The Government identifies people and families in need of social assistance by a standard of having an average per capita income of 1.5 times the prevailing minimum monthly wage, which was SUM2,450 (or \$7.1 at the official exchange rate) in May 2001. Using this criterion, the country had 14 percent of people or 11 percent of families in need of social assistance in May 1999 (see *Uzbekistan: Country Operational Strategy Study*, March 2000).

¹⁵ Ak Altin and two other districts were selected under a resolution of the Cabinet of Ministers in May 1995 for pilot-testing vertical integration of all agricultural activities (farms and their forward and backward linkages).

order system, private traders are active in the marketing of fruits, vegetables, meat, eggs, and dairy products. Wheat is also traded in the free markets, but the volume has been rather small as few farms had surplus wheat left after meeting the heavy State procurement requirements and family consumption needs.

32. Within the State order system, farm inputs are provided at fixed prices based on procurement contracts between the State Cotton Agency and farms, and are allocated to farms through Agrofirma (para. 28). Machinery services are provided by the *rayon* machinery park (RMP) as well as by the machinery parks on the 12 large cooperative farms. The RMP is a joint stock company with 35 percent of shares belonging to the State and 65 percent to the 12 cooperative farms. Recently, the Government purchased some new farm machinery for the RMP: large plowing tractors, wheat harvesters, and cotton pickers. The services of the new machinery are charged on a commercial basis. About 90 percent of the RMP's services are for the cooperative farms and only 10 percent for private farms. Services on the 12 cooperative farms are exclusively for the cooperative farms because the number of farm machinery is insufficient. It is estimated that machinery on most private farms is 10-15 years old and requires frequent and major repairs. Furthermore, spare parts of old machinery are not easily available. Insufficient access to timely machinery services has led to frequent delays in farm operations, especially during the peak seasons of planting and harvesting; the result is low crop yields and poor product quality. Since farm inputs and machinery services are financed by advance payments under the State procurement system, rural credit plays a minimal role in cotton and wheat production.

33. Under the State order system, the district had an unrealistic production target of 50,000 t each of raw cotton and wheat, substantially higher than the district's actual production of 27,475 t of raw cotton and 31,239 t of wheat in 1999. These production targets were distributed among the cooperative and private farms. In 1997, all cooperative farms and half of the private farms failed to fulfill their production targets, and all cooperative farms and 28 of 30 private farms incurred losses. Total farm loss amounted to SUM840 million. The farm loss increased to SUM1.13 billion in 1998 after a historically low cotton harvest. By the end of 1998, all cooperative farms and over half of the private farms had accumulated debts. In addition to wage arrears, the farm debts included debts to the State budget, pension fund, unemployment fund, water authority, and suppliers of inputs (fuel, electricity, fertilizer, chemicals, and seed). The situation improved in 1999; of the 65 private farms only 8 incurred losses. The total farm loss went down to SUM1.092 billion in 1999. The situation is expected to improve further in Ak Altin district with the implementation of the policy reforms through COM Resolution No. 201 (para. 20).

c. Issues and Constraints

34. The widespread farm losses have caused serious social issues, the most important being the declining living standards of the rural majority. During two social surveys conducted in the Project area in 1997-1998, 74 percent of the respondents said that their living standards were worse and 54 percent, much worse, than five years ago. As few cooperative farms had the ability to pay cash wages on time, farm workers had to rely on production from their small household plots and irregular payment-in-kind from their cooperative farms. The widespread farm losses further weakened the local communities' ability to pay for social services and the cooperative farms' ability to maintain the communal facilities, which had sharply deteriorated.

35. Farm losses have also led to serious environmental concerns, as the losses restricted the farms' financial ability to pay for O&M of their on-farm irrigation and drainage systems, most of which had not been maintained properly since the early 1990s. The farms' poor financial status also restricted the effective collection of water charges, providing little financial incentive to

farmers to save water. Yet the primary cause of the large amount of water wastage is the poor state of all irrigation distribution facilities, resulting in insufficient water supply to end users as well as rising groundwater tables and accelerated soil salinity. Due to poor and deferred maintenance, the drainage system is now in urgent need of rehabilitation. Of the 186 drainage wells, only 12 are still functioning. The water table in about 83 percent of the Project area has risen to within the root zone. As a result, average crop yields have declined to about half their level in the 1980s, with cotton yield as low as 0.4 t/ha in the most saline areas. Some irrigated lands have been withdrawn from production due to severe salinity.

36. The basic cause underlying the social and environmental problems was the widespread farm losses, which resulted from a number of factors: (i) low output prices for cotton and wheat under the State order system; (ii) high farm operational costs, especially on the large cooperative farms;¹⁶ (iii) multiple and high taxes for farms; (iv) low crop yields; and (v) poor product quality and grades that led to significant price discounts at the expense of the farmers. The recent reforms initiated by the Government (para. 18) to some extent redressed these problems. With the write-off of farm debts, transfer of the farms' social obligations to the local government budget, reduction of the tax burden, and a significant increase in cotton and wheat procurement prices, the financial status of farms significantly improved. As the policy environment improved, the number of private farms in the district increased from 30 in 1998 to 65 in 1999, 102 in 2000, and 165 in 2001. The implementation of policy reforms (para. 20) is expected to make a significant positive impact on the performance of the agriculture sector in Ak Altin.

37. Ak Altin farmers will have better prospects of becoming financially sustainable if the remaining constraints are addressed in an urgent manner. These constraints include (i) the remaining policy restrictions, especially the State procurement for cotton and wheat; (ii) physical constraints, especially the deterioration of the irrigation and drainage systems; and (iii) the lack of supporting system and services including business advice, extension services, and access to farm machinery services. It is estimated that without the rehabilitation of the irrigation and drainage systems, crop yields in the district will further decline to 1.0 t/ha for cotton and 1.7 t/ha for wheat over the next eight years. No farms will be able to sustain operations with such low crop yields.

B. Government Policies and Plans

38. The Government's current agricultural policies and plans are contained in its Program for Strengthening of Economic Reforms in Agriculture during 1998-2000, issued in March 1998 by the COM. The objectives of the Government's sector development strategy are (i) promoting cotton production; (ii) achieving grain self-sufficiency; and (iii) ensuring rural employment, enhanced living standards, and social stability.

39. The traditional mechanism of Government's support to cotton and wheat production was State budget allocations, including allocations for the irrigation and drainage systems, advance payments to finance working capital for cotton and wheat production, and administrative measures to introduce technologies. Without proper producer incentives, these measures had only limited impacts. To promote producer incentives and improve efficiency, the Government launched a set of reform measures (paras. 12-20). For farm privatization, four laws issued in 1998 (Land Code, Law on Private Farm, Law on Cooperative Farm, and Law on *Dekhan* Farm) created a legal framework for private farming.¹⁷ These laws gave permits for long-term land leases to

¹⁶ The large cooperative farms typically have high administrative costs, excessive farm labor, and, until most recently (para. 18), heavy financial burdens for the maintenance of social and communal infrastructures.

¹⁷ *Dekhan* farmers (individual farmers) include operators of small (less than 10 ha) private farms and household plot users.

individual farmers, providing a legal basis for private farming. In addition, the Government has, for pilot testing, initiated policy reforms in Ak Altin (para. 20).

40. Promoting agricultural development is a central issue in the Government's poverty reduction and social policy, which focuses on employment generation and social assistance to the most vulnerable groups. Since the majority of the Uzbek population live in the rural area, the Government emphasizes employment generation in the rural area through development of small enterprises. A number of programs were initiated to support the development of small and medium-size enterprises. The Government has shown great interest in microcredit development, including the creation of rural savings and credit unions.

41. In the irrigation and drainage subsector, the concept of water users' associations (WUAs) was introduced and is supported by the Government. The Government requires farmers to be fully responsible for O&M of their on-farm irrigation and drainage facilities, and repay the full costs of the State investment on rehabilitating on-farm irrigation and drainage systems. For interfarm facilities, the State will continue to be responsible for both investment and O&M expenses. Although water user fees have been introduced, they do not reflect the real cost of water delivery, and their effective collection is limited by the poor financial status of most farms.

42. In May 2001, the Ministry of Agriculture and Water Resources (MAWR) prepared a medium-term (2001-2003) time-bound action plan for economic reforms in agriculture. The plan puts special emphasis on improving the legislative and regulatory framework, deepening privatization, improving agricultural financial systems, capacity building, improving irrigation and drainage infrastructure, and relaxing Government restrictions on pricing and state procurement. The action plan is ambitious and is unlikely to be implemented in the timeframe envisaged, but it points the direction in which the Government intends the agriculture sector to go.

C. External Assistance to the Sector

43. External assistance to agriculture has been modest. So far, a World Bank-funded Cotton Subsector Improvement Project, with a loan amount of \$66 million approved in May 1995, is the single largest operation in this sector. The World Bank is preparing its second agricultural project, Agriculture Enterprises Restructuring Program (AERP) with an original design to pilot-test a full market liberalization program in five districts. After encountering difficulties, the World Bank is now in the process of redesigning the AERP to support the nationwide farm restructuring program initiated by the Government. The World Bank is also working with the Government in preparing two projects on water resources.¹⁸

44. In the agroprocessing subsector, the largest investment is the ADB-financed \$50 million Rural Enterprises Development Project.¹⁹ Other external assistance to this sector includes the Turkish Exim Bank-financed construction of the Khorezm sugar refinery, with a loan amount of \$25 million. The European Bank for Reconstruction and Development has financed several credit lines aimed at supporting small and medium-size enterprises.

45. The European Union has provided a large number of TA grants through the Technical Assistance for the Commonwealth of Independent States program. Major activities of the

¹⁸ These are (i) Karshi Pumping Cascade Rehabilitation Project, and (ii) Amudaria River Basin Drainage Project.

¹⁹ Loan 1504-UZB: *Rural Enterprises Development Project*, for \$50 million, approved on 17 December 1996. The Rural Enterprises Development Project experienced slow disbursement in its initial years of implementation due to lack of qualified subloan borrowers and implementing agencies' lack of experience, but implementation improved in late 1999.

Technical Assistance for the Commonwealth of Independent States program include (i) sectoral support to private farmers, (ii) a pilot integrated development project, (iii) training and education for farmers and allied personnel, (iv) a food and agriculture policy unit, (v) water resources management and agricultural production, (vi) on-farm pilot irrigation management, (vii) land registration, and (viii) crop forecasting by remote sensing.

D. Lessons Learned

46. The Project will be the first ADB investment in agriculture through MAWR.²⁰ ADB's agricultural operations in similar countries, especially the CARs, as well as its operational experience in other sectors in Uzbekistan provided useful lessons to guide the project design and implementation arrangements.

47. ADB's operational experience in agriculture in similar countries, especially CARs, highlighted the critical importance of (i) strong Government ownership of projects and commitment to their implementation, (ii) realistic assessment of institutional capacity of the implementing agencies, and (iii) close monitoring of project implementation. These lessons have been incorporated into the project design. A participatory approach was adopted in project preparation. Government officials in both the central coordination agencies (COM, Ministry of Finance [MOF], and Ministry of Macroeconomics and Statistics) and the Executing Agency (EA), MAWR, actively participated in developing the project design including its cost estimates. Project implementation staff on both national and local levels also participated in the preparations to foster ownership of and commitment to the Project. Their capacity was evaluated during the course of project preparations. Considering MAWR's lack of project implementation experience, the project design emphasizes simplicity and implementability, with adequate resources provided under the Project for institutional development and capacity building. Mechanisms are provided to closely monitor project implementation and its social and environmental impacts (paras. 81-83).

48. ADB's project portfolio in Uzbekistan is relatively young and many EAs do not have sufficient implementation experience. The 1999 Country Portfolio Review Mission identified major implementation problems and the Government agreed on various corrective measures including early establishment of the project implementation structure (PIS) and assignment of the PIS staff. The Mission also recommended ADB's close implementation supervision through various missions; and training for the counterpart staff through advisory TAs, on-the-job training, seminars on ADB policies and procedures, and training programs for PIS staff. The Country Portfolio Review Mission conducted in June 2000 reported overall improvement of the portfolio management. It was noted that (i) the Government and EAs had taken steps to enhance the efficiency of project implementation, (ii) project implementation units were being maintained with qualified staff and staff attrition was minimum, (iii) utmost efforts were being made to improve compliance with loan and TA covenants, (iv) the Government was making necessary arrangements for timely submission of audited financial statements, (v) adequate counterpart funds were allocated, and (vi) the Government and the EA staff had improved their understanding of ADB's policies and procedures.

49. For Ak Altin Project, the Government has already established the PIS at both national and district levels (paras. 78-79) and assigned key staff. Government counterpart staff worked with the ADB processing missions in designing the Project and thus familiarized themselves with ADB operations. Some of the staff also participated in the training seminar on ADB procedures for consultants selection and procurement. International consulting services will be provided to assist

²⁰ The Executing Agency for Rural Enterprises Development Project is the National Bank of Uzbekistan.

the project management office (PMO) and project site office (PSO) to establish sound operational systems. The Government has given assurances on timely allocation and release of adequate counterpart funds, and assignment of qualified and experienced staff to the remaining positions in the PMO and PSO.

E. ADB's Sector Strategy

50. ADB's operations in Uzbekistan have been guided by the country operational strategy (COS) prepared in March 2000, which supports the Government's efforts in transforming the planned system to a market economy. The COS involves providing support for policy reforms, institutional strengthening, and sector investments that promote growth, improve efficiency, and rehabilitate deteriorating infrastructure. The COS emphasizes ADB assistance to three priority sectors: agriculture, infrastructure rehabilitation, and education. Agriculture is considered as key to the country's long-term development and an avenue to address both the environmental and rural poverty issues.

51. The central goal of the COS is to manage the transition to an economy that relies on market-based institutions supporting a sustainable reduction in poverty and increase in living standards. The objectives of ADB operations in Uzbekistan include (i) managing the transition through institutional development, and (ii) fully unlocking the potential for future economic growth. To support rural development, the COS calls for three avenues for ADB assistance to agriculture: (i) pilot projects to demonstrate the utility of sector reforms and selected investments, (ii) support for rural finance institutions, and (iii) direct support to agriculture-related private sector activities.

52. The COS supports ADB's new Poverty Reduction Strategy, which specifically reflects three major aspects of poverty, i.e., income poverty, poor living standards, and social exclusion. The COS suggests that ADB assistance to address poverty in Uzbekistan include creating income opportunities and sustaining social protection and human development, especially in the rural areas. The COS also calls for developing the rural economy through pilot projects, related industries and services, and rural finance. The Project is fully in line with the COS, as it will support the transition to a market system, rehabilitate rural infrastructure, and build up rural institutions.

F. Policy Dialogue

53. Intensive policy dialogue was conducted during project preparation at the highest level of the Government. As a result, important aspects of ADB's policy recommendations have been incorporated into the Government's reform package: farm debt restructuring, abolishing joint responsibility, promoting producer incentives, and encouraging private farming (paras. 13-18). Implementation of policy reforms in Ak Altin (para. 20) is a major focus of the Project.

54. The Project will pilot-test reforms in the State procurement system for cotton and wheat, replacing the production targets with fixed procurement quotas. To encourage farmers to invest in agriculture, the Government has assured that it will not increase the procurement quotas in the future even with substantial yield increases, so that farmers can reap the full returns of their investment (para. 125 [i]). These measures are expected to substantially increase farmers' incentives and reduce their procurement burdens. The free market sales of above-quota cotton and wheat will bring higher returns to farmers and provide them with strong incentives to increase production. Higher returns will induce a demand for farm inputs and machinery services on a commercial basis, which will, in turn, promote private sector participation in these services industries and promote the growth of free markets.

55. The Project will open a window for ADB to continue its policy dialogue with the Government, actively participate in the agriculture sector reforms, monitor the reform process, and provide policy advice on a continued basis. Future policy dialogue will focus on (i) deepening private sector participation in cotton procurement, processing, and trade after the exchange rate unification (para. 5); (ii) promotion of market competition in farm input supply, machinery services, output processing, and marketing, especially when farm profit increases and private companies are interested in providing these services; and (iii) farm restructuring and privatization, especially when farming profit increases under the Project and an increasing number of farm workers want to separate from the large cooperative farms. Specific assurances have been obtained from the Government to periodically review (i) the cotton and wheat procurement policy to foster and develop market competition and participation of the private sector; and (ii) the cotton and wheat procurement prices to ensure that future price revisions fully reflect adjustments for annual inflation and changes in international border prices, and also reflect changes in the exchange rates (para. 125 [iii – v]).

IV. THE PROPOSED PROJECT

A. Rationale

56. The continued decline in cotton production in Uzbekistan in recent years has seriously affected the country's balance of payments and brought financial difficulties to the Government. At the micro level, the declining cotton yield has resulted in widespread farm losses, leading to falling living standards and deteriorating social services for the rural majority. Serious environmental concerns have also arisen as the poor financial status of farms restricted their ability to pay for the O&M of their irrigation and drainage systems. Lack of maintenance has led to deterioration of the irrigation systems, rising groundwater, and accelerated soil salinity. The waste of water resources and degradation of farmland, in addition to short-term losses, are constraining agricultural development in the country.

57. To reduce farm losses, the Government initiated a reform package to increase procurement prices, reduce farm taxes and social charges, and write off farm debts (para. 18). The positive impacts of these reforms cannot be sustained unless the remaining sector constraints are also addressed in an urgent manner. The Project—by modifying the State procurement system to reduce farmers' financial burdens and promote producer incentives, rehabilitating the irrigation and drainage systems to restore crop productivity, and providing institutional support to sustain the O&M of the systems after rehabilitation—will complement the Government's reform efforts. The Government has also launched the nationwide program of farm restructuring with the intention of promoting private farming (paras. 13-14). However, low farm profits have discouraged private farming and restricted the effectiveness of the Government efforts. By doubling crop productivity, the Project will increase farming profit and thus encourage private sector participation in farming and farm services industries (paras. 14 and 22). The Government has agreed to pilot-test further policy reforms on market liberalization under the Project and has substantially (66-75 percent) reduced the mandatory State procurement of cotton and wheat (para. 20). The proposed reform on reducing State interventions and farmers' financial burdens has obtained strong support from farmers in the Project area. The Project's development impacts will be maximized when its pilot experiences, if successful, are replicated nationwide.

58. The Project will strengthen the sector reforms initiated by the Government and enable ADB to remain engaged in policy dialogue to promote market-oriented agriculture. The Project adopts a realistic approach that focuses on increasing crop productivity despite the remaining policy constraints. As crop yields are expected to double in eight years after the rehabilitation of

the irrigation and drainage systems, farm income and farmers' living standards will rise substantially in the Project area. Improved farm profits will encourage private sector participation and market development. The rising cotton production will promote export earnings, improve the country's balance of payments position, release pressure on the foreign currency reserve and State control on foreign currency, and thus provide a better environment for macroeconomic reforms. The substantial gains in crop productivity under the Project will demonstrate tangible benefits to convince policy makers and generate public support for further policy reforms.

B. Objectives and Scope

59. The Project goal is to promote agricultural development on a sustainable basis. The primary objective is to improve agricultural performance and increase farm incomes in Ak Altin district, with focus on cotton and wheat production. The secondary objective is to protect and enhance the environment by improving water management practices and land quality. Successful project interventions are expected to be replicated nationwide.

60. The Project will comprise four components: (i) institutional support, monitoring, and evaluation; (ii) rehabilitation of the irrigation and drainage systems; (iii) farm machinery services; and (iv) project management.

1. Institutional Support, Monitoring, and Evaluation

61. The Project will strengthen the rural institutions to support agriculture sector reforms in Ak Altin, focusing on the newly established RBAC that will play a key role in facilitating the ongoing farm restructuring, supporting private farming, and organizing and training WUAs. Support will be provided for (i) strengthening RBAC, (ii) organizing and training WUAs, (iii) establishing pilot demonstration farms, and (iv) establishing a monitoring and evaluation unit (MEU).

a. Strengthening the Rural Business Advisory Center

62. The RBAC in Ak Altin was established in October 1998 to facilitate farm restructuring and provide extension services to farmers. However, RBAC lacks the necessary capacity to fulfill its responsibilities. The Project will strengthen RBAC by providing equipment, establishing operational systems, and strengthening its staff. RBAC will have nine full-time staff comprising domestic experts specializing in agribusiness, farm management, finance, law, business planning, training and administration, agricultural engineering, agronomy, and entomology. A team of international and domestic consultants will be financed under an associated TA to assist in strengthening RBAC. The consultants will help RBAC develop its operational strategy and management systems, prepare training materials, and strengthen its staff through training courses and hands-on training. Currently, RBAC is self-financing through user fees from farms. It is expected that, with the establishment of sound operational systems, development of training materials, and strengthening of staff capacity, RBAC will be able to independently provide all training, and business advisory and farm extension services required by the Ak Altin farmers after the Project is completed. Its operations will be sustained through user fees from its farmer clients.

63. To strengthen RBAC's capacity in farm extension services, the Project will finance the development of a program for integrated pest management (IPM).²¹ Local agronomists in RBAC will be trained in IPM and, in turn, will conduct training courses for farmers. Improved seed

²¹ IPM is a pest control approach that utilizes regular monitoring to determine if and when treatments are needed and employs physical, mechanical, cultural, biological, and educational methods to keep pest numbers low. Least-toxic chemicals are used as the last resort in pest control.

varieties, new technologies, rational use of inputs especially agrochemicals, and better agronomic practices that fit the conditions of the project area will be studied and introduced as appropriate. The Project will finance the preparation of training materials and conduct of training courses for both trainers and the farmers.

b. Organizing and Training Water Users' Associations

64. The dynamics of farm restructuring implies continued changes in farm organizations in the Project area. The number of small private farms is likely to rise sharply as farm profits increase. Consequently, the existing water allocation and O&M systems will need change as many on-farm systems will become interfarm facilities. To facilitate the transition, the Project will assist in the establishment of WUAs. Currently, no laws or regulations in Uzbekistan specifically relate to WUAs. However, there is also no legal impediment to the establishment of a WUA. The only legal requirement is that a WUA be registered as a legal entity with the local government. The Government has agreed to take necessary actions to ensure that WUAs can perform their functions: organizing and training water users, signing contracts for water allocation and O&M services, collecting from members user fees for O&M activities, introducing water management measures, and assuming responsibility for O&M of their irrigation and drainage systems (para. 125[vij]). The legal department of MWAR will assist in preparing model WUA articles of association, in consultation with the legal consultant under the associated TA.

65. WUAs will be organized on the basis of canal command areas in Ak Altin. The Project will strengthen WUAs to take charge of water allocation, user fee collection for O&M, water management, and O&M activities. TA consultants and RBAC will facilitate WUA establishment. An information campaign at the start of the Project will raise farmers' awareness of the need for WUAs and their functions. WUA staff will undergo training in the preparation of business plans, financial management, bookkeeping, and procurement of goods and services necessary for maintaining the water management systems. WUAs will be responsible for O&M of on-farm systems in the near term, and eventually be capable of taking responsibility for O&M of the interfarm irrigation water supply and drainage systems.

c. Pilot Demonstration Farms

66. To facilitate the dissemination of new technologies and to maximize project impacts, a number of demonstration farms with a total area of about 200 ha will be established in Ak Altin. These farms will demonstrate the impacts of improved seed varieties, optimal use of agrochemicals, on-farm water and land management practices and techniques, IPM, and other new technologies suitable for the district. The Project will enter into agreement with interested farms to use their lands for the demonstration purpose, setting forth the rights and responsibilities of the Government and the participating farmers. The Project will finance civil works, seeds, and agrochemicals; the farms will provide labor, water, and machinery inputs. An information campaign and field visits by farmers will disseminate the results of the demonstration farms. The demonstration farms are expected to play a key role in promoting new technologies and contribute to the improvement of product quality and productivity in the Project area. The farms will be selected pursuant to the criteria agreed upon between the Government and ADB.

d. Monitoring and Evaluation

67. An MEU will be established to monitor the environmental and social impacts of the Project. The MEU will have two full-time staff specializing in environment and sociology, and will be responsible for (i) preparing and analyzing baseline economic, social, environmental, and health

conditions in the Project area; (ii) benefit monitoring during project implementation; and (iii) evaluating the Project's economic, social, and environmental impacts including health conditions in the Project area. The MEU will work with the monitoring and evaluation specialist of PMO to develop and maintain a system for measuring the Project's outputs and impacts. For environmental monitoring, the local office of the Hydrologic Amelioration Expedition (HAE) and the provincial office of the State Committee for Nature Protection will collect and analyze data on the quality of irrigation and drainage water, soil chemistry, and groundwater depth and quality. The laboratories of HAE and State Committee for Nature Protection will be equipped to ensure effective and regular environmental monitoring with specific reference to the quality of irrigation, drainage, and municipal water supply. Benchmark data will be collected to serve as baseline information to compare with data collected during and after project implementation. Environmental monitoring will include a comparative analysis of water and soil samples outside the project area to measure the specific positive environmental impacts generated by the Project.

68. To monitor social impact, the MEU will (i) collect and analyze benchmark information on economic and social conditions, and public health; (ii) assess project benefits during project implementation; and (iii) evaluate benefits at project completion. The participation of women in various project activities will also be monitored. A socioeconomic profile of the beneficiaries—based on gender-disaggregated data on different social groups—will be prepared at the start of project implementation. The social profile will be updated at project completion, and a report will describe the project benefits and impacts on public health and farmers' living standards.

2. Rehabilitation of Irrigation and Drainage Systems

69. The Project will finance the rehabilitation of on-farm and interfarm facilities, including the restoration of the proper functions of the primary open collector and secondary subsurface drainage systems. Components of the irrigation system will be repaired or rebuilt as appropriate. New water control and measurement structures will be built to allow proper control of the irrigation supplies to both small and large water users. The Project will finance the costs of rehabilitating and improving all irrigation and drainage facilities, including the costs of surveys, investigations, design preparation, as well as consulting services for design, review, construction supervision, and other associated costs. The costs of on-farm improvements will be recovered from the beneficiaries.

70. On-farm improvement works to be financed under the Project will cover irrigation, drainage, and land management. The drainage infrastructure will include deepening of about 383 km of field and farm drains, cleaning and flushing of about 424 km of horizontal field drains, providing about 340 km of horizontal subsurface field drains in the vertical drainage area, and installing about 415 km of new horizontal field drains. The irrigation infrastructure works will include rehabilitating about 42 km of concrete canals with bed width of 0.5 meter, 383 flume distribution structures, 255 flume check structures, 255 end-flume transitions; reconstructing about 240 km flumes of various sizes; and realigning about 128 km flumes of various sizes. The land management works will include tertiary field-level distribution systems (pipe or canals) as well as land leveling operations, deep plowing, and remedial subsoiling to break up plow pans; and addition of suitable soil amendments and land leveling to make salt leaching more effective.

71. The detailed design of on-farm rehabilitation work will be based on the results of close consultations with farmer beneficiaries. The Project staff and consultants will present design alternatives to farmer beneficiaries, explain to them the associated costs and other features of each alternative, and assist them in selecting the most appropriate design. Before the start of on-

farm rehabilitation works, farmers will enter into agreement with the Government implementation agency, indicating their approval of the works and readiness to repay the investment costs.

72. Interfarm works will include (i) drainage works, comprising deepening and rehabilitation of 75 km of interfarm collectors; and (ii) irrigation works, including rehabilitation of 10 km of concrete canals and associated structures.

73. To ensure proper O&M of the rehabilitated irrigation and drainage systems, the Project will finance the procurement of maintenance, monitoring, transport, and logistical equipment. The maintenance equipment will be used for the upkeep of the irrigation and drainage facilities, farm roads, and for land leveling of the irrigated fields. The Project will also provide for monitoring equipment for the provincial laboratories of HAE and State Committee for Nature Protection that will regularly monitor the quality of irrigation, drainage, and municipal water supply and of soil. The O&M equipment procured under the Project will be operated and maintained by the *Rayon* Agriculture and Water Department (RAWD), which will charge the respective farms for O&M services for on-farm facilities.

3. Farm Machinery Services

74. To address the key constraint of private farms' lack of timely access to farm machinery services, the Project will provide a set of farm machinery, together with the required civil works, workshop facilities for maintenance and repair, office equipment, and training. The machinery will be operated and maintained by a newly established commercial entity (the RAWD Unit) under the RAWD. MOF and the RAWD Unit will enter into a subsidiary loan agreement for the loan amount to be allocated for machinery purchase (para. 77). RAWD currently operates and maintains the O&M equipment for the irrigation and drainage systems in the district and has the necessary facilities and experience for such activities. The RAWD Unit will provide farm machinery services to private farms and collect service charges from them. The charges will be determined on a commercial basis, which is the current practice in the district (para. 32). The RAWD Unit will use these charges to meet O&M costs for the equipment and to repay the subsidiary loan.

4. Project Management

75. The Project will provide staff complement and necessary vehicles, equipment, and office furniture for a PMO in Tashkent and a PSO in Ak Altin. The Project will finance two international consultants (a project management adviser and a procurement specialist) to assist PMO and PSO to establish their operational systems comprising a sound accounting, internal control, and auditing system as well as effective monitoring mechanisms. The consultants will also provide hands-on training to PMO and PSO staff, especially during the early stages of project implementation. PMO and PSO staff will be trained on project management, coordination of project activities, preparation and review of procurement documents, and other implementation matters.

C. Cost Estimates

76. The total cost of the Project is estimated at \$72.0 million equivalent, comprising \$38.7 million in foreign exchange costs and \$33.3 million equivalent in local currency costs. The estimates include provision for \$6.4 million in taxes and duties, 6.2 percent of base costs for physical contingencies, and 7.7 percent for price contingencies. A summary of the cost estimates is in Table 1 and details are in Appendix 2.

**Table 1: Cost Estimates
(\$ million)**

Component	Foreign Exchange	Local Currency	Total Cost
A. Base Costs			
1. Institutional Support, Monitoring, and Evaluation	0.2	0.9	1.1
2. Rehabilitation of Irrigation and Drainage Systems ^a	22.6	26.2	48.8
3. Farm Machinery Services	5.1	0.9	6.0
4. Project Management	0.9	1.0	1.9
Subtotal (A)	28.8	29.0	57.8
B. Contingencies			
1. Physical ^b	1.7	1.9	3.6
2. Price ^c	2.0	2.4	4.4
Subtotal (B)	3.7	4.3	8.0
C. Interest and Other Charges During Construction^d	5.8	0.0	5.8
D. Front-End Fee	0.4	0.0	0.4
Total	38.7	33.3	72.0
Percent	53.8	46.2	100.0

^a Includes both on-farm and interfarm improvements. See Appendix 2 for details.

^b At 6.8 percent for civil works, services, vehicles, and equipment; and zero for farm machinery.

^c Based on the projections of the MUV indices for inflation in US dollar terms.

^d Includes \$5.1 million for interest during construction, and \$0.7 million for commitment charges.

Source: Staff estimates.

D. Financing Plan

77. It is proposed that ADB provide a loan of \$36.0 million from its ordinary capital resources with an amortization period of 25 years, including a grace period of 5 years, and with interest calculated in accordance with ADB's pool-based variable lending rate system for US dollar loans, a commitment charge of 0.75 percent, and a front-end fee of 1.0 percent of the loan amount. The Borrower will be the Republic of Uzbekistan. ADB financing will be about 50 percent²² of the total project cost, and will cover about 91 percent of the foreign exchange costs including the front-end fee, interest, and other charges during construction, and \$0.8 million equivalent of the local currency costs.²³ The beneficiaries will contribute about \$2.0 million toward project costs in the form of O&M costs of the on-farm facilities during project implementation. The remaining \$34.0 million equivalent will be provided by the Government and includes \$3.5 million for indirect foreign exchange expenditures. For the component for farm machinery services, a subsidiary loan agreement in the amount of \$5.3 million will be entered into between MOF, on behalf of the Borrower, and the RAWD Unit.²⁴ Execution and delivery of a subsidiary loan agreement

²² The Project was prepared substantially during 1999 and 2000, envisioning complete processing by 2000. Therefore, it is proposed that the cost-sharing limit applicable to the Republic of Uzbekistan in year 2000, i.e., 50 percent, be applied to this project.

²³ The local cost financing is primarily for promoting critical capacity building initiatives associated with (i) the establishment of demonstration farms, (ii) provision of rural business advisory services and training, (iii) establishment of alternative farm machinery services, (iv) recruitment of key domestic consultants as counterparts to international consultants, and (v) strengthening of project management and administration. In total, the local cost financing amounts to less than 2.2 percent of the total ADB financing of \$36 million.

²⁴ The terms of subsidiary loan agreement shall not be softer than those of the ADB's loan to the Government.

acceptable to ADB will be a condition for effectiveness of the Loan Agreement. A summary of the proposed financing plan is in Table 2.

**Table 2: Financing Plan
(\$ million)**

Source	Foreign Exchange	Local Currency	Total Cost	Percent
Asian Development Bank	35.2	0.8	36.0	50.0
Government	3.5	30.5	34.0	47.3
Beneficiaries	0.0	2.0	2.0	2.7
Total	38.7	33.3	72.0	100.0

Source: Staff estimates.

E. Implementation Arrangements

1. Project Organization and Coordination

78. MAWR will be the EA of the Project. A deputy minister of MAWR has been appointed as the project director to oversee project implementation. The Rural Restructuring Agency (RRA) under MAWR has been made responsible for project implementation.²⁵ On behalf of MAWR, the director general of RRA will have the authority to undertake financial transactions, sign contracts, and endorse financial statements. The director general will be assisted by a senior financial adviser and a senior project management adviser on all financial and procurement matters.

79. A project steering committee (PSC) has been established in accordance with COM Resolution No. 201 to strengthen the coordination of all matters related to the Project. The PSC is chaired by the Deputy Prime Minister in charge of Ministry of Macroeconomics and Statistics (MMS), and comprises representatives from COM, MAWR, MOF, MMS, State Property Committee, State Tax Committee, State Committee for Land Resources, Cotton Bank, and RRA. An interministerial working group (WG) was also established, with staff from COM, MOF, MMS, MAWR, RRA, and the *Hokim* of Ak Altin district. While the PSC comprises high-ranking officials and is responsible for policy making, the WG comprises working-level Government staff and is responsible for identifying issues that need interagency coordination, investigating factors underlying the issues, and proposing solutions to the PSC. The WG worked closely with ADB missions on the project design. To ensure smooth implementation, the PSC and WG will continue to function during project implementation to handle issues that need interministerial coordination. The PSC will meet quarterly to review implementation progress, identify issues, and determine measures to address the issues.

80. The PMO, established within RRA, is headed by a full-time manager, who will be responsible for the day-to-day tasks relating to implementation. The PMO manager will be assisted by two accountants, a financial specialist, a procurement specialist, an irrigation/drainage engineer, a monitoring and evaluation specialist, and support staff including administrative assistants, translators/interpreters, and secretaries.

²⁵ RRA was established in accordance with the COM Resolution No. 356 dated 19 August 1998 to facilitate the preparation of the World Bank-financed AERP and the ADB's Ak Altin Agricultural Development Project.

81. A PSO was established in Ak Altin to take charge of the day-to-day activities at the field level. The PSO is headed by a site manager who will be supported by an accountant, two irrigation/drainage engineers, a farm mechanization specialist, and an agronomist. The MEU (para. 67) will be established to monitor project implementation, benefits, as well as social and environmental impacts.

82. A team of international and domestic consultants will assist the PMO and the PSO to set up their operational systems and manage project implementation. The Government and ADB will jointly conduct annual reviews of project implementation, including project organization and staffing arrangements. Necessary adjustments will be made on the basis of the implementation experience (para. 98).

83. A *rayon* consultative committee (RCC) will be established in Ak Altin during the first year of implementation to ensure active beneficiary participation in project activities. RCC will be chaired by an elected representative of the project beneficiaries, and comprise other representatives from private farms, cooperative farms, farm brigade leaders, farm workers, family contractors, community leaders, WUAs, women representatives, and the district administration. PSO will submit to RCC quarterly reports on the progress of project implementation. RCC will (i) represent the project beneficiaries to monitor project implementation and its impacts; (ii) provide a forum for addressing beneficiaries' concerns and discuss district-level issues that arise during implementation; and (iii) provide inputs and recommendations for PMO, PSO, and district administration to take corrective and mitigating measures to improve implementation. Appendix 3 illustrates the relationship of the various organizations involved in project implementation.

2. Implementation Schedule

84. The Project will be implemented over five years starting in the fourth quarter of year 2001 (Appendix 4). Project activities during the first year will concentrate on the fielding of consultants, procurement and installation of equipment, development of operational systems for PMO and PSO, and training of their staff. For ease in implementation scheduling, the Project area will be divided into three phases with due consideration to hydrologic boundaries. The civil works component will be implemented in three overlapping packages, each taking two calendar years, with package 1 starting in year 2 and package 3 finishing at the end of year 5. The packages will be designed to ensure that on-farm, interfarm, and commissioned drainage facilities are completed within each major hydrologic supply and drainage unit in a staged fashion. To address an urgent concern of the project beneficiaries, the rehabilitation schedule will give high priority to the drainage systems in the settlement area by including them in package 1. Field surveys, investigations, and preparation of detailed designs of the civil works of package 1 will be conducted in year 1. Establishment of WUAs and their training will be initiated in year 1, with the bulk of the activities conducted in years 2 and 3.

3. Consultation with Project Beneficiaries on Cost Recovery

85. In accordance with the Government policy, on-farm investment costs will be fully recovered from the project beneficiaries over a period of 25 years including a grace period of 5 years pursuant to the cost recovery agreements.²⁶ Full cost recovery will provide farmers with a strong incentive to participate in monitoring the design and implementation of the rehabilitation of their on-farm irrigation and drainage systems, as well as O&M activities after rehabilitation.

²⁶ The beneficiaries will be charged for only those improvements that will be implemented on their farms, except for the drainage wells, which may not necessarily be located on their land.

Farmers will have the option to join the Project. Those who join will be consulted on their choice of alternate plans for the rehabilitation. Rehabilitation work on a specific farm will start only after the farmers approve the investment plan and sign the cost-recovery agreement (para. 71).

86. Farmers' ability to fully repay the investment and finance the O&M costs was confirmed by the results of farm budget model simulations. Using data verified with MAWR, the local administration, and farmers, the results of the model simulations show that, as cotton yields will double in eight years with the rehabilitation, the Project will generate high financial returns and a healthy cash flow for both cooperative and private farms. The farmers will have the ability to finance the O&M costs starting from year 4 and repay the full investment costs starting from year 6.

87. Various farmer groups were consulted on the cost recovery issue during project preparation. Anticipated project benefits and associated investment and O&M costs were presented to the representative farm beneficiaries. The beneficiaries, representing both the large cooperative farms and the small private farmers, unanimously supported the Project and its design, and agreed to fully repay the on-farm investment and finance all O&M costs of the on-farm facilities. To further increase farmers' awareness of their rights, choices, and responsibilities in the Project and cost recovery, an information campaign will be launched at the start of project implementation, with assistance from RBAC and the project consultants, and with active participation of RCC.

4. Operation and Maintenance of the Irrigation and Drainage Systems

88. The O&M arrangements as well as support for WUA establishment and training are designed to develop institutional capacity to facilitate the smooth transfer of O&M responsibilities to the project beneficiaries, with a view to sustaining the project benefits. As at present, O&M of on-farm irrigation facilities and drainage collectors will continue to be the responsibility of the respective farms and/or individual water users. O&M of the drainage wells will ultimately be handled by WUAs after they develop sufficient capabilities and experience. O&M of interfarm canals and drainage collectors, presently the responsibility of RAWD, will be handed over ultimately to WUAs.

89. During the transition period – before all O&M activities are handed over to the beneficiaries – suitable arrangements will be made to ensure proper O&M of the facilities constructed/improved under the Project. During the project period, O&M of the wells and interfarm irrigation and drainage systems will be the responsibility of RAWD, which will undertake these activities through its staff or will contract them out to private enterprises. To sustain its operation, RAWD will collect service charges for the drainage wells. It will divide the amount of actual power bills over the effective drainage area, and collect payments from farmers on a per hectare basis. It will also take charge of the O&M of the farm machinery purchased under the Project. The commercial charges from the farm machinery services will sustain the RAWD Unit's operations.

5. Procurement

90. Machinery, equipment, civil works, and services for rehabilitating irrigation and drainage, as well as vehicles, office equipment, and materials required for project implementation and monitoring will be procured following ADB's *Guidelines for Procurement*. An equipment and material procurement contract estimated to cost the equivalent of \$500,000 or more will be awarded on the basis of international competitive bidding (ICB). Contracts costing less than \$500,000 will be on the basis of international shopping procedures acceptable to ADB. Small

supply contracts costing less than \$100,000 will be procured through direct purchase. The award of all equipment contracts will be subject to approval by ADB.

91. Each civil works contract estimated to cost the equivalent of \$500,000 or more will be awarded on the basis of ICB among prequalified contractors as described in ADB's *Guidelines for Procurement*. Civil works packages costing less than \$500,000 will be carried out on the basis of local competitive bidding procedures acceptable to ADB. MAWR will supervise all procurement. The award of all civil works contracts will be subject to approval by ADB. A list of equipment and materials to be procured is in Appendix 5, and a tentative packaging of major procurement and civil works is given in Appendix 6.

6. Consulting Services

92. The Project will provide for 65 person-months of international consultants and 198 person-months of domestic consultants. The consultants will assist MAWR in (i) monitoring, evaluating, and designing pilot farms; (ii) carrying out surveys and investigations, preparing and reviewing designs, and supervising construction of on-farm and interfarm irrigation and drainage facilities; and (iii) project administration. The consulting services will be provided by international consulting firms in association with domestic consulting firms to be engaged by MAWR in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements acceptable to ADB for the engagement of the domestic consultants. An outline of the terms of reference for consultants is in Appendix 7.

93. The input of international consultants will be limited to the initial years during which they will provide hands-on training to PMO/PSO staff, who will then carry out project activities independently later in the implementation period. To maximize the impacts of the consulting services, the schedule of the consultants' field services will be flexible, with appropriate breaks to increase the total period covered.

7. Advance Procurement Action

94. To expedite project implementation, ADB has approved advance action on the procurement of civil works, construction materials and equipment, as well as recruitment of consultants. The Government has been informed that (i) advance action will cover actions up to, but not including, contract signing; and (ii) approval of advance action does not commit ADB to finance the Project.

8. Disbursement, Accounts, Audits, and Reports

95. After loan effectiveness, an imprest account will be established at the Central Bank of Uzbekistan, or a bank acceptable to ADB, to facilitate the timely release of loan funds for the purpose of making payments in local currency under the Project. During the first year of implementation, the ceiling of the imprest account will be set at \$100,000. Thereafter, and once MAWR has established an adequate accounting system and internal control procedures for the Project, the ceiling for the imprest account will be based on an estimate of expenditures to be incurred during the following 12 months of implementation. In any case, the ceiling for the imprest account will not exceed \$500,000. The imprest account will be established in accordance with ADB's *Loan Disbursement Handbook* and other procedures to be agreed upon by ADB and the Government. The use of ADB's statement of expenditure procedures will be considered after the

first year of project implementation, assuming the establishment of MAWR's separate accounting system and internal control procedures for the Project.

96. MAWR will keep separate accounts and financial statements for the Project (including separate accounts and financial statements for RAWD and RAWD Unit), which will be audited annually by independent auditors acceptable to ADB. Loan proceeds will be used for engaging international auditors acceptable to ADB. Certified copies of the audited financial statements will be submitted to ADB within six months after the end of the fiscal year to which they relate.

97. MAWR, through PMO, will submit quarterly and annual reports to ADB. The reports will indicate progress made and problems encountered during the period under review, steps taken to remedy the problems, proposed program of activities, and expected progress during the remaining implementation period. MAWR will also provide other reports and information relating to the Project as ADB may reasonably request, including the Project's environmental impacts, dialogue with beneficiaries, and any social issues relating to the Project. Within three months after physical completion of the Project, MAWR will submit to ADB a project completion report detailing, among others, information on project implementation, use of the loan proceeds, and the extent to which the objectives of the Project have been accomplished.

9. Midterm Review

98. The Government and ADB will jointly carry out a midterm review at the beginning of year 3 of project implementation. The midterm review will assess, among others, Project implementation status, including (i) design and construction standards, (ii) physical progress and disbursements in relation to the implementation schedule, (iii) performance of the Project consultants and contractors, and (iv) status of compliance with the assurances stipulated in the Loan Agreement. The midterm review will also assess project impacts including (i) the project's environmental and social impacts, (ii) the effects of the procurement system on cotton and wheat yields, farm productivity, market competition and participation of the private sector, and (iii) the feasibility of replicating Project achievements nationwide.

F. The Executing Agency

99. MAWR, the EA for the Project, was created by merging the former ministries of agriculture and water resources. Its primary responsibility is to implement and monitor agricultural policies. MAWR is responsible for coordinating State procurement of cotton and grain, including input delivery, machinery services, financing of cotton production, output processing, and marketing. MAWR is also responsible for ensuring irrigation water supply, which involves civil works as well as maintenance of the irrigation and drainage systems. MAWR has equipment depots and staff in every district and coordinates with more than 20 Government institutions on various agriculture sector issues.

100. MAWR has so far not been involved in implementing ADB-financed projects. However, it has been implementing a World Bank-financed Cotton Subsector Improvement Project and is involved in preparing the proposed AERP to be financed by the World Bank (para. 43). As preparation of the AERP has been slower than anticipated, the Government is considering measures to strengthen MAWR's implementation capacity for this Project by appointing qualified and experienced staff to lead the project implementation offices.

G. Environmental and Social Measures

1. Environment

101. The Project has been classified as environmental category B. Accordingly, an initial environmental examination (IEE) was conducted under the project preparatory TA. The IEE concluded that the Project will have no major adverse environmental impacts since most of the components comprise rehabilitation works. A full environmental impact assessment was, therefore, not required. However, MAWR will need to comply with all applicable environmental requirements in accordance with the Government's regulations to obtain necessary environmental clearances prior to construction, and to undertake environmental monitoring throughout the implementation period, and with ADB's environmental guidelines.

102. For environmental protection and improvement as well as resources conservation, the Project provides for (i) lowering of the water table and reclamation of saline lands, (ii) adoption of IPM techniques and training of local agronomists in alternate pest control methods and rational use of fertilizers, (iii) improvement of the environmental monitoring capacity through provision of appropriate equipment, and (iv) improvement of irrigation and drainage facilities and adoption of improved water management practices. These measures will have positive environmental impacts in the area.

2. Social Analysis

103. The overriding social issues in the Project area are the declining living standards of the rural majority, deteriorating social services, and flooding in the settlement areas during the winter and spring seasons. The major factors underlying these social issues are the falling crop yields, declining farm income, and widespread farm losses caused by the deteriorating irrigation and drainage systems. Social services have deteriorated because the local communities are unable to pay for the services, and the farms responsible for O&M of social facilities are themselves strapped for cash. With the rehabilitation of the irrigation and drainage systems under the Project, farmers will benefit from increased crop yields and farm incomes, and their living standards will improve accordingly. While the Project has no specific components on social services, it is expected that the increased farm income and the communities' strengthened financial status will enable the farmers to pay for social services and the situation will improve significantly. To alleviate the flooding problem in the settlements, the Project will give priority to rehabilitation of the drainage systems in the settlement areas (para. 84).

104. Intensive consultations with farmer beneficiaries were conducted at every step of project preparation. All farmers interviewed expressed their strong support and keen interest in participating in the Project. Recognizing their responsibility in repaying the full investment costs for on-farm rehabilitation, farmers requested close supervision of project implementation by the beneficiary representatives. Accordingly, project implementation arrangements have included the establishment of the RCC (para. 83), which is expected to be an effective mechanism for project monitoring and conveying farmers' concerns and demands to MAWR and ADB. The MEU to be established under the Project (paras. 67) will collect baseline information on the nature and incidence of poverty in the Project area, and develop poverty indicators to monitor and evaluate the Project's impacts on poverty reduction. Women representatives will serve in the RCC and actively participate in monitoring, especially the impacts of the Project on women.

H. Technical Assistance

105. The objective of the associated TA is to strengthen the existing RBAC in the Project area to provide agribusiness advisory and agricultural extension services to the beneficiaries (Appendix 8). The TA will (i) provide institutional support to RBAC, facilitate the development of its operational strategy and management systems, and strengthen its staff capacity; (ii) facilitate the ongoing farm restructuring; (iii) strengthen the agricultural extension system; (iv) improve water management; and (v) promote beneficiary participation in project implementation.

106. The total cost of the TA is estimated at \$860,000 equivalent, of which \$600,000 equivalent will be financed by ADB on a grant basis from the TA Special Fund. The TA will provide for 20 person-months of international and 44 person-months of domestic consultants. The consultants will be selected and engaged in accordance with ADB's *Guidelines on the Use of Consultants* and other procedures acceptable to ADB for the engagement of domestic consultants. The TA will commence during the first year of project implementation and will be completed in 18 months.

V. PROJECT JUSTIFICATION

A. Financial and Economic Analyses

1. Financial Analysis

107. With the Project, the annual production of the major crops (cotton and wheat) will rise steadily over an eight-year period, and will be maintained thereafter. Cotton production in the Project area will rise from about 28,000 t in 2001 to about 56,000 t in year 8, and wheat from about 33,200 t in 2001 to about 49,000 tons in year 8. With increased crop yields and rationalization of the production cost structure of the farms through gradual restructuring (Appendix 9, para. 27), the proposed project investments are projected to generate an overall financial internal rate of return (FIRR) of 13.7 percent in constant 2001 prices. In the event that cotton and wheat yields decrease by 10 percent simultaneously, FIRR would decline to 12.0 percent. A 10 percent reduction in the prices of both cotton and wheat would give a FIRR of 11.1 percent.

2. Economic Analysis

108. The economic analysis was based on the domestic price numeraire, and adjustments were made to reflect the removal of taxes and duties, the exclusion of debt service charges, and the application of a shadow exchange rate factor of 2.0 to the border prices of traded inputs and outputs. Given a situation of less than full employment in the rural areas, a shadow wage rate factor of 0.8 was used in the analysis. The economic internal rate of return (EIRR) of the Project is estimated at 26.2 percent. Essentially, the EIRR is robust. In the unlikely event, that the projected yields of cotton and wheat with the Project were reduced by 10 percent throughout the 25-year period, the EIRR of the Project will be reduced to 23.9 percent. When the projected prices for both cotton and wheat decline by 10 percent, the EIRR would drop to 23.3 percent. Detailed financial and economic analyses are in Appendix 9.

109. The sensitivity of the FIRR to depreciation of the local currency (sum) against the dollar was tested in view of the Government's plan to liberalize the foreign exchange rate regime (para. 5), which would lead to the depreciation of the local currency given the currently overvalued official exchange rate. Depreciation of the sum would cause prices in some of the tradable inputs (such as equipment) and outputs (wheat and cotton) to rise, while prices in sum of nontradable

inputs would lag behind. In general, the overall prices of farm outputs (wheat and cotton) are more sensitive than input prices to the foreign exchange rate, and the net impact of the local currency depreciation against the dollar on the FIRR will be favorable. Therefore, the liberalization of the foreign exchange rate regime will have a substantial favorable impact on the financial conditions and profitability of the farms, and will substantially narrow the gap between the FIRR and the EIRR.²⁷ The significant gap between the FIRR (13.7 percent) and EIRR (26.2 percent) is mainly due to the fact that in the economic analysis, the price distortions created by the fixed exchange rate policy have been removed through the application of a shadow exchange rate factor of 2.0.

3. Cost Recovery

110. Farms will repay the State for the costs of rehabilitating the on-farm drainage and irrigation systems, while the State will pay for (i) the rehabilitation of the interfarm systems; (ii) the costs of institutional support, and monitoring and evaluation; and (iii) all expenses related to project administration and management. The on-farm rehabilitation costs were estimated at \$1,100/ha, equivalent to SUM386,100/ha at the official exchange rate in constant 2001 prices.

111. The State will recover costs from the farms in the form of an infrastructure betterment levy over a period of 25 years including a 5-year grace period. This betterment levy was estimated as follows. The on-farm investment costs were accounted for in the local currency at the prevailing official exchange rate. Interest charges during construction, or the five-year grace period, were capitalized as part of the investment costs. Cost recovery will be made in the local currency. For estimation purposes, an interest rate of 7 percent per annum in real terms was used for calculating interest during the grace period, and for the repayment over the 20-year period. The betterment levy was calculated in equal annual installments in constant 2001 prices, comprising principal repayment and interest charges. Based on the projected cash flow analyses, the farms can afford the cost recovery payments of about SUM50,000/ha in constant 2001 prices from year 6 to 25.

4. Project Risks

112. A number of risks may affect project implementation. Policy deficiencies remain in the overall economy and in the agriculture sector including State control of foreign currency, price distortion caused by the overvalued official exchange rate, State involvement in price fixation, the remaining (although in a substantially reduced volume) mandatory State procurement quota for cotton and wheat, and State control on cropping patterns. The Project's financial and economic analyses, including the calculation of the FIRR and EIRR, are based on a conservative assumption that these policy deficiencies will remain during the entire project implementation period.²⁸ Even under such a restricted policy environment, the Project will remain financially and economically viable and sustainable because of the substantial gains in crop productivity. Using the procurement prices following the stipulations in COM Resolution No. 201, the results of the farm model simulations show that the Project will generate attractive financial returns to farms, allowing the farms to have the financial capacity to fully repay the investment costs of on-farm rehabilitation (Appendix 9). However, the financial analysis assumes that the State procurement prices of cotton and wheat will continue to be set at the international import and export parity levels projected at the prevailing official exchange rate. To safeguard this assumption, specific assurances have been obtained that the Government will annually review the State procurement

²⁷ Unification of the exchange rate will have no impact on the EIRR, which is estimated using a shadow exchange rate factor of 2.0.

²⁸ The project benefits will increase if the policy constraints are further relaxed. In particular, if exchange rate unification occurs (para. 5), the Project's financial returns and farm profits will increase substantially.

prices of cotton and wheat to ensure that future adjustments of these prices fully reflect the annual inflation rate and changes in the international prices, and also adjust for changes in the exchange rate (para. 125 [iii]).

113. The track record of project implementation in Uzbekistan has not been fully satisfactory. Factors underlying this problem were carefully studied during the project design (para. 49). Incorporating lessons learned, the project design emphasizes simplicity and implementability. In particular, the proposed policy reforms are based on the Government's reform initiatives. The implementability of the reform measures is carefully examined through close consultations with Government implementation agencies, and assurances have been obtained from senior Government officials.

114. To simplify the project design, the focus of investment will be the rehabilitation of the irrigation and drainage systems. Since MAWR has a sufficient number of technical staff who are experienced in designing and constructing irrigation and drainage systems, the risk of the EA's lack of technical competence is judged as small.

115. Incorporating lessons learned, the Project has established its implementation structure at an early stage. The staff of the offices that will be involved in project implementation have participated in project design to foster a sense of ownership of the Project and strengthen their commitment to project implementation.

116. To overcome MAWR's lack of project implementation experience and to familiarize it with ADB operations, training in ADB operational policies, guidelines, and procedures has been and will continue to be provided to the project staff. In addition, international and domestic consultants will be recruited to (i) assist PMO and PSO to set up appropriate operational systems, and (ii) provide hands-on training to the project staff. To ensure high-quality project staff and their stability, detailed job descriptions and qualification requirements have been developed in close consultation with the Government. MAWR gave the assurance that qualified and experienced staff acceptable to ADB will be assigned to these offices; measures will be taken to avoid staff turnover; and additional staff will be assigned to PMO, PSO, and WG to support project implementation whenever necessary.

117. Potential delays in release of counterpart funds, slow procedure of Government internal approval for use of loan proceeds, and lack of cooperation among Government agencies may delay procurement and consultant recruitment. These systematic issues have been brought to the attention of top Government officials and a set of measures was developed to improve the situation (para. 48). The Government gave the assurance that counterpart funds will be adequate and timely during the project period. The interministerial PSC and WG will identify and resolve issues that need coordination among multiple Government agencies. The authority to approve for project implementation has been delegated to the director general of RRA (paras. 78-79). ADB's loan review missions will closely monitor the actual implementation of these arrangements and develop remedial measures accordingly.

118. Lack of participation by farmer beneficiaries in the development of the cost-recovery scheme may lead to default in farmers' payments. To minimize this risk, close consultations with farmer beneficiaries were conducted at every stage of project preparation, including the presentation of the estimated investment costs of the on-farm rehabilitation on a per hectare basis, expected crop yield increases under the Project, and farm financial returns and cash flows (paras. 85, 108-109). An information campaign at the start of project implementation will further raise farmer beneficiaries' awareness of their rights, options, and responsibilities in cost recovery;

and will develop a detailed investment plan, cost-recovery scheme, and repayment schedule with them. Suitable mechanisms will need to be developed to collect repayments for the investment and user fees for O&M. In conjunction with training for WUAs, the TA consultants and the RBAC staff will facilitate development of collection mechanisms. The Government has assured it will take necessary actions to ensure that WUAs can perform their functions: organizing and training water users, signing contracts for water allocation and O&M services, and collecting user fees from members (para. 125 [vi]).

119. A number of factors may also affect the achievement and sustainability of the project benefits: (i) lower-than-anticipated crop yields; (ii) falling international prices for cotton and wheat; (iii) default in repayments for cost recovery; and (iv) unsustainable operations of the rural institutions strengthened or established under the Project, such as RBAC, MEU, and WUA. These factors have been considered in the project design. Estimates of the project benefits are deliberately based on conservative assumptions using cotton yields historically achieved in the project area. Prices applied in the analysis are based on the World Bank commodity price forecast (January 2001), which predicts a slow recovery of cotton and wheat prices in 2005 from the current depression. Sensitivity analysis confirms that the Project will generate robust returns to the investment even under adverse conditions (paras. 107-109 and Appendix 9). Finally, Government assurance has been obtained to finance the MEU operations after project completion. To sustain the operations of RBAC and WUA after project completion, substantial efforts will be given during the project period to strengthen their capacity in providing services to farmers and collecting user fees, including the establishment of sound operational systems and capacity building for their staff (paras. 62 - 65).

B. Environment

120. The Project will have an overall positive environmental impact. Lowering of the underground water table, reclamation of saline lands, and reduction in the salinity of drainage water through effective operation of the rehabilitated and improved irrigation and drainage systems will create an environment more appropriate for human health, biodiversity, and crop production. The lowering water table will also reduce the incidence of waterborne diseases. Crop yield increases will improve farm incomes and enable farmers to improve their nutrition, health care, water supply, and sanitation. Such improvement will raise the general health standards of the project beneficiaries. Failure to correct the current problems will almost certainly lead to further deterioration of health standards, and more areas of fertile land will be subject to secondary salinization. Training in IPM, and improved practices in fertilizer application and water management will lead to rational use of agrochemicals and more efficient use of water resources. Strengthening the capacity of the environmental monitoring agencies will ensure regular environmental monitoring and early warning to permit corrective measures. The formation of WUAs and training them in water management and O&M will contribute to sustaining the Project's environmental benefits.

C. Social Dimensions

1. Poverty Reduction

121. The Project will have a significant impact on poverty reduction in the Project area. There are no official data on poverty in Ak Altin; however, it is estimated that about 12 percent of the district's 9,640 families who live on less than \$18 per capita per month (para. 27) are in need of social assistance. The majority of the poor in the Project area are workers on the large cooperative farms, which have been incurring losses and are unable to regularly pay cash wages

to their workers. Lacking alternative income sources, farm workers rely on production from household plots and irregular payment in kind from their cooperative farms, and thus suffer from declining living standards. By doubling cotton yield, the Project is expected to transform the loss-incurring farms into financially sustainable enterprises, including restructured farms and private farms. Farm workers and their families will benefit from increased wage payments in a timely manner; their living standards will be improved accordingly. Furthermore, the rehabilitation of the drainage systems in the settlement areas will directly improve living conditions for the rural residents by lowering the underground water tables and mitigating the flooding problems in the winter and spring seasons. With rising farm incomes, local communities will have the financial capability to spend for social services leading to improved sanitary conditions and public health. Since women and men have equal access to land in the Project area, and since water appears to be equitably distributed and cropping patterns are uniformly based on cotton and wheat across all farms, the benefits are expected to be distributed evenly in the Project area among all social groups, including women farmers and wives of farm workers.

122. Small private farmers will benefit from the machinery services to be provided under the Project. Many small farmers currently do not have sufficient access to timely farm machinery services; thus, farm operations are delayed, crop yields are low, and product quality is poor. The additional choice of renting machinery from the RAWD Unit will further promote competition in farm machinery services, leading to better services and prices for all farmers. Rural people will also benefit from increased employment opportunity, as increased cotton production will use more labor, especially during weeding and harvesting seasons.

2. Improved Rural Institutions

123. The beneficiaries, especially the small private farmers, will benefit from the strengthened rural institutions. WUAs established and strengthened under the Project will organize the small individual farmers, ensure their access to irrigation water supply, and arrange O&M services for them. In the long term, WUAs will become a permanent structure in the rural area to organize farmers in other activities such as input purchasing and output marketing. In addition to promoting farmers' participation in project implementation, RCC (para. 83) will likely empower farmers to actively participate in other local community activities.

3. Women in Development

124. Women will have equal access to all services provided by the Project, including business advice, agricultural extension services, and training provided by RBAC and WUAs. Women will also benefit from the enhanced employment opportunities brought about by increased cotton harvests. Women representatives will serve in RCC and participate in project implementation and monitoring, particularly in the information campaign. Social surveys at the start of the Project will collect benchmark information including gender-disaggregated data, and consult with the project beneficiaries in developing measures to ensure that the rural poor, vulnerable groups, women, and small farmers benefit fully from the Project.

VI. ASSURANCES

A. Specific Assurances

125. The Government has given the following assurances, in addition to the standard assurances, which have been incorporated in the legal documents:

- (i) The Government will not increase the procurement quotas of 17,000 t for raw cotton and 12,500 t for wheat in the Project area.
- (ii) The Government will ensure that farmers in the Project area receive advance payments for cotton and wheat production on time, and the final payments for cotton and wheat within three months after crop delivery.
- (iii) The Government will review annually the State procurement prices for raw cotton and wheat, and ensure that any future adjustments of prices for each quality grade will fully reflect the annual inflation rates and changes in international border prices of input and outputs, and adjust for changes in the exchange rate, so that the procurement prices will give farmers sufficient price incentives for production.
- (iv) In accordance with COM Resolution No. 201, the Government will ensure that the farms and individual farmers are entitled to sell their above-quota cotton and wheat to buyers in the domestic market at mutually agreed upon prices. The Government will review implementation of the Resolution on the basis of experience gained during the first year of project implementation.
- (v) The Government will review periodically its countrywide State procurement policies for raw cotton and wheat to foster and develop market competition and participation of the private sector. The Government will carry out such a review, taking into account an assessment of the impacts of the procurement system in the Project area, on the first year anniversary of the loan effectivity date.
- (vi) The Government will take all necessary actions to ensure that WUAs can perform their functions, including but not limited to organizing and training water users, signing contracts for water allocation and O&M services, collecting from members user fees for O&M activities, introducing water management measures, and assuming responsibility for O&M of their irrigation and drainage systems.
- (vii) The Government will ensure adequate allocation and timely provision of State budgetary funds for O&M of interfarm irrigation and drainage facilities in the Project area until such time when the WUAs possess the necessary financial, administrative, and management capacity to assume this responsibility. The Government will consult with ADB in assessing such capacity prior to transferring O&M responsibility for interfarm irrigation and drainage facilities in the Project area to the WUAs.
- (viii) The Government will ensure that the Project is implemented in accordance with relevant environmental laws and regulations and ADB's environmental guidelines. The Government will also ensure regular monitoring of the Project's environmental impacts in accordance with the relevant national environmental standards. The MEU will be established in Ak Altin with two full-time staff specializing in environment and sociology. It will facilitate regular monitoring of environmental parameters in accordance with the environmental monitoring plan given in the summary initial environmental examination.

B. Conditions for Loan Effectiveness

126. The Government has agreed to the following conditions for effectiveness of the Loan Agreement:

- (i) establishment of the RAWD Unit to operate and maintain farm machinery and earn revenues for farm machinery services; and
- (ii) execution and delivery of a subsidiary loan agreement on farm machinery services between MOF and RAWD Unit, acceptable to ADB.

C. Condition for Disbursement

127. With respect to the loan proceeds for on-farm rehabilitation civil works, the Government has agreed that disbursement will be subject to submission of evidence satisfactory to ADB that the farmer beneficiaries have (i) been presented design alternatives by the Government and the consultants, (ii) understood the costs and cost recovery implications of these alternatives, and (iii) discussed and agreed on (with respect to a majority of farmers) a design for the rehabilitation works and the associated cost-recovery plan.

VII. RECOMMENDATION

128. I am satisfied that the proposed loan would comply with the Articles of Agreement of ADB and recommend that the Board approve the loan of \$36,000,000 from ADB's ordinary capital resources to the Republic of Uzbekistan for the Ak Altin Agricultural Development Project, with a term of 25 years, including a grace period of 5 years, and with interest to be determined in accordance with ADB's pool-based variable lending rate system for US dollar loans, and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan Agreement presented to the Board.

TADAO CHINO
President

30 July 2001

APPENDIXES

Number	Title	Page	Cited on (page, para.)
1.	Project Framework	34	1, 2
2.	Cost Estimates and Financing Plan	39	18, 76
3.	Organization Chart for Project Implementation	41	21, 83
4.	Implementation Schedule	42	21, 84
5.	Equipment and Materials to be Procured	43	23, 91
6.	Tentative Packaging of Major Procurements and Civil Works	45	23, 91
7.	Terms of Reference for Consultants	46	23, 92
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SUPPLEMENTARY APPENDIXES

(available on request)

A	External Assistance to Agriculture Sector
B	Organizational Structure of the Ministry of Agriculture
C	Summary Initial Environmental Examination
D	Operation and Maintenance Arrangements
E	Socioeconomic Profile of the Project Area
F	Agriculture Sector Statistics
G	Detailed Tables of Project Cost Estimates
H	Detailed Financial and Economic Analyses
I	Organizational Arrangements for Project Implementation

PROJECT FRAMEWORK

Design Summary	Project Targets	Monitoring Mechanisms	Assumptions/Risks
1. Sector Goal To promote agricultural development on a sustainable basis	The trend of declining crop yields reversed in the project area starting year 4 of project implementation. High yields achieved in the year 8 will be sustained in the project area (see below for specific targets of the crop yield increase).	<ul style="list-style-type: none"> Statistics from Rayon Statistic Office (RSO) Project Management Office (PMO)/Project Site Office (PSO) reports Asian Development Bank (ADB) review missions Social surveys 	From Sector Goal to Overall Goal <ul style="list-style-type: none"> Political and social stability No major natural disasters No severe decline in international prices for farm products
2. Project Objective To improve agricultural yield performance and increase farm income in Ak Altin district	<ul style="list-style-type: none"> Cotton yield increased from 1.59 to 3 tons per hectare (t/ha) in the project area starting year 8 of project implementation. Wheat yield increased from 2.19 to 3.7 t/ha in the project area 8 years from project implementation. Farm income doubled in the project area 8 years from project implementation. 	<ul style="list-style-type: none"> Statistics from the RSO PMO/PSO reports ADB review missions Social surveys 	From Objective to Sector Goal <ul style="list-style-type: none"> Irrigation and drainage systems will be adequately maintained after rehabilitation. Farm machinery services will be sustained after the Project. The operations of rural business advisory center (RBAC) will be sustained after the Project. Water users' association (WUA) established under the Project will be sustained, capable of managing operation and maintenance (O&M). Farm restructuring will continue with rising number of private farms.
3. Project Components/Outputs 3.1 Institutional Support, Monitoring, and Evaluation 3.1a Strengthening Rural Business Advisory Center <ul style="list-style-type: none"> RBAC strengthened, capable of providing advice, services, and training to farmers on farm restructuring, water management, and new technologies 	<ul style="list-style-type: none"> Number of training courses offered¹ Number of RBAC staff trained Number of farmers trained, by gender Farmers' comments on the quality and impacts of RBAC's services 	<ul style="list-style-type: none"> PMO/PSO reports ADB review missions Social surveys Training courses assessment feedback. 	From Outputs to Objective: <ul style="list-style-type: none"> RBAC continues to provide services to farmers and collect sufficient revenues to sustain its operations after project completion.

¹ The training program targets will be developed during the first year of project implementation.

Design Summary	Project Targets	Monitoring Mechanisms	Assumptions/Risks
3.1b Organizing and Training (WUAs) <ul style="list-style-type: none"> WUAs established and strengthened WUAs trained on O&M 	<ul style="list-style-type: none"> Number of WUA members, by gender Number of WUAs sustained Farmers' comments on WUA performance and their impacts 	<ul style="list-style-type: none"> PMO/PSO reports ADB review missions Social surveys 	<ul style="list-style-type: none"> WUA collects sufficient user fees to sustain system operation and maintenance
3.1c Pilot Demonstration Farms <ul style="list-style-type: none"> Demonstration farms established Demonstration farms' experiences disseminated and adopted by other farmers 	<ul style="list-style-type: none"> Number of demonstration farms established and sustained Farmers' comments on the demonstration farms and their impacts 	<ul style="list-style-type: none"> PMO/PSO reports ADB review missions Social surveys 	<ul style="list-style-type: none"> Farmers are interested in the demonstration farms' experiences and have the capacity and resources to adopt the recommended technologies.
3.1d Monitoring and Evaluation (M&E) <ul style="list-style-type: none"> Environmental monitoring system developed and sustained Socioeconomic profile developed Project impact assessment 	<ul style="list-style-type: none"> Environment monitoring reports Socioeconomic profile including gender-specific data Impact assessment reports during implementation and after completion 	<ul style="list-style-type: none"> PMO/PSO reports ADB review missions 	<ul style="list-style-type: none"> M&E systems are sustained after the Project, with continued Government budget allocation and stable staff assignment.
3.2 Rehabilitation of Irrigation and Drainage Systems			
3.2a On-Farm Improvements <ul style="list-style-type: none"> On-farm drainage rehabilitation completed On-farm irrigation rehabilitation completed On-farm water and land improvement completed 	<ul style="list-style-type: none"> 383 kilometers (km) of field and farm drains deepened 424 km of horizontal field drains flushed 340 km of horizontal field drains provided 415 km of new horizontal field drains installed 42 km of concrete canals rehabilitated 383 flume structure rehabilitated 255 flume check structures rehabilitated 255 end-flume transitions rehabilitated 240 km flumes 	<ul style="list-style-type: none"> PMO/PSO reports ADB review missions 	<ul style="list-style-type: none"> On-farm systems function properly after the rehabilitation.

Design Summary	Project Targets	Monitoring Mechanisms	Assumptions/Risks
<p>3.2b Interfarm Improvements</p> <ul style="list-style-type: none"> • Interfarm drainage rehabilitation completed • Interfarm irrigation rehabilitation completed • O&M equipment procured • O&M equipment maintained properly <p>3.3 Farm Machinery Services</p> <ul style="list-style-type: none"> • Farm machinery procured and properly maintained • Farm machinery services provided to farmers at commercial rates <p>3.4 Project Management</p> <ul style="list-style-type: none"> • PMO and PSO established and strengthened, capable of managing project implementation • Accounting, reporting, and audit systems in PMO/PSO strengthened • Monitoring systems developed and functioning effectively 	<p>reconstructed</p> <ul style="list-style-type: none"> • 127.5 km flumes realigned <ul style="list-style-type: none"> • 75 km of interfarm collectors deepened and rehabilitated • 10 km of concrete canals rehabilitated • O&M equipment procured • Conditions of O&M equipment 5 years after its purchase <ul style="list-style-type: none"> • Revenue of farm machinery services • Farmers' comments on Rayon Water Department's (RWD) machinery services and their impacts <ul style="list-style-type: none"> • Number of PMO/PSO staff trained • Project implemented as per schedule • Performance and financial reports submitted on time 	<ul style="list-style-type: none"> • PMO/PSO reports • ADB review missions <ul style="list-style-type: none"> • PMO/PSO reports • ADB review missions • Social surveys <ul style="list-style-type: none"> • Local government's comments on PMO/PSO • Farmers' comments on PMO/PSO performance • PMO/PSO reports • ADB review missions comments on PMO/PSO performance • Social surveys 	<ul style="list-style-type: none"> • Interfarm systems function properly after the rehabilitation. <ul style="list-style-type: none"> • Farmers are willing to pay commercial prices for farm machinery services. <ul style="list-style-type: none"> • PMO/PSO capable of managing project implementation after training
<p>4. Project Activities</p> <p>4.1 Institutional Support, Monitoring & Evaluation (M&E)</p>	<ul style="list-style-type: none"> • Number of training courses • Number of RBAC staff trained • Number of farmers trained, by gender • Farmers' comments on RBAC services and their impacts • RBAC staff's comments on consultant performance 	<ul style="list-style-type: none"> • PMO/PSO reports • ADB review missions • Social surveys 	<p>From Inputs to Outputs</p> <p>4. General Assumptions:</p> <ul style="list-style-type: none"> • Strong Government ownership of the Project • Timely disbursement of Government counterpart funds • Assignment of qualified and experienced staff to PMO, PSO, and RBAC • Strong support and cooperation from relevant ministries/agencies • Strong support from district administration • Active participation of farmer beneficiaries

Design Summary	Project Targets	Monitoring Mechanisms	Assumptions/Risks
<p>4.1a Strengthening RBAC</p> <ul style="list-style-type: none"> • Prepare training materials • Train RBAC staff in training and consulting services • Conduct training and consulting services for farmers <p>4.1b Organizing and Training WUA</p> <ul style="list-style-type: none"> • Conduct information campaign to raise farmers' awareness of WUA • Organize WUA and train them in O&M <p>4.1c Pilot Demonstration Farms</p> <ul style="list-style-type: none"> • Enter agreement with demonstration farms • Provide civil work and materials • Conduct information campaign to disseminate demonstration farms' experiences and new technologies <p>4.1d Monitoring and Evaluation (M&E)</p> <ul style="list-style-type: none"> • Collect and analyze data on water quality, soil chemicals, and ground-water level • Prepare socioeconomic profile <p>4.2 Rehabilitation of Irrigation and Drainage Systems</p> <p>4.2a On-Farm Improvements</p> <ul style="list-style-type: none"> • Conduct detailed surveys, investigation, and engineering design • Enter agreement with farmers on investment and cost-recovery plans • Carry out construction • Implement water and land improvement plans 	<ul style="list-style-type: none"> • Farmers' comments on WUA • Number of WUAs organized • Number of WUA members, by gender • Number of WUA members trained, by gender • Number of demonstration farms established • Farmers' comments on demonstration farms and their impacts • Data set of water quality and other information • Socioeconomic profile including gender-specific data • Survey reports • Engineering design reports • Agreements between executing agency (EA) and farmers • Reports on quality of construction work 	<ul style="list-style-type: none"> • PMO/PSO reports • ADB review missions • Social surveys • PMO/PSO reports • ADB review missions • Social surveys • PMO/PSO reports • ADB review missions • Social surveys 	<p>4.1a Strengthen RBAC</p> <ul style="list-style-type: none"> • RBAC staff are interested in training. • Farmers are interested in training and new technologies. • Farmers are interested in WUA. • WUA legislation is lacking in Uzbekistan. • Government provides necessary conditions for WUA operations in the project area. • Farmers are interested in the demonstration farms. • Demonstration farms have resources and capacity to implement the new technologies. • Government and local administration are interested in M&E. • PMO/PSO/RBAC staff are interested in M&E training. • Qualified and experienced local experts in rehabilitation design and construction are available. • Support from local administration is strong. • There is cooperation from farmers. • Farmers have the

Design Summary	Project Targets	Monitoring Mechanisms	Assumptions/Risks
<p>4.2b Interfarm Improvements</p> <ul style="list-style-type: none"> • Conduct detailed surveys, investigation, and engineering design • Conduct interfarm irrigation and drainage rehabilitation • Procure and maintain O&M equipment <p>4.3 Farm Machinery Services</p> <ul style="list-style-type: none"> • Procurement of farm machinery • Maintenance of farm machinery by RAWD • Provision of machinery services by RAWD <p>4.4 Project Management</p> <ul style="list-style-type: none"> • Establish PMO and PSO with qualified and experienced staff • Establish and strengthen accounting, internal control, auditing, reporting and monitoring systems 	<ul style="list-style-type: none"> • Survey reports • Engineering design reports • Agreements between EA and farmers • Reports on quality of construction work <ul style="list-style-type: none"> • Farm machinery procured • Farm machinery properly maintained • Services provided to farmers on a timely basis <ul style="list-style-type: none"> • Number and qualification of PMO/PSO staff • PMO/PSO operational systems • PMO/PSO reports and their quality • Farmers' comments on PMO/PSO performance 	<ul style="list-style-type: none"> • PMO/PSO reports • ADB review missions • Social surveys <ul style="list-style-type: none"> • PMO/PSO reports • ADB review missions • Social surveys • Farmers' comments on RAWD's machinery services and their impacts <ul style="list-style-type: none"> • PMO/PSO reports • ADB review missions • Social surveys 	<p>capacity and willingness to pay for on-farm O&M during project implementation.</p> <ul style="list-style-type: none"> • Qualified and experienced local experts in rehabilitation design and construction are available. • The State budget for interfarm O&M is maintained and allocated on time. • There are no delays in O&M equipment procurement. <ul style="list-style-type: none"> • RWD is experienced in O&M of equipment. • RAWD is capable of providing farm machinery services after establishment of necessary operational systems and proper training of staff. <ul style="list-style-type: none"> • Staff qualified to be PMO/PSO accountants are available. • PMO/PSO staff are interested in training. • There is close cooperation between consultants and PMO/PSO staff. • PMO/PSO staff assignment is stabilized.
<p>5. Inputs</p> <ul style="list-style-type: none"> • Interfarm civil works: \$4.5 million • On-farm civil works: \$41.6 million • Pilot civil works: \$86,000 • RAWD civil works: \$324,000 • Inputs for pilot farms: \$186,000 • Training: \$221,000 			
<ul style="list-style-type: none"> • Vehicles: \$87,000 • Equipment: \$11.8 million • Consultants: \$2.1 million • Recurrent costs: \$1.8 million • O&M of infrastructure: \$3.1 million 			
<ul style="list-style-type: none"> • Physical contingency: \$3.6 million • Price contingency: \$4.4 million • Interest during construction and commitment charges: \$5.9 million • Front-end fee: \$360,000 • Total project cost: \$72.0 million 			

COST ESTIMATES AND FINANCING PLAN

Table A2.1: Project Cost Summary

Item	(\$ million)			Percent Foreign Exchange	Percent of Total Base Costs
	Foreign Exchange	Local Currency	Total		
Project Components					
1. Institutional Support, Monitoring and Evaluation	0.2	0.9	1.1	18.2	1.9
2. Rehabilitation of Irrigation and Drainage Systems	22.6	26.2	48.8	46.3	84.4
a. On-Farm Improvements	15.2	22.7	37.9	40.1	65.6
b. Interfarm Improvements	7.4	3.5	10.9	67.9	18.9
3. Farm Machinery Services	5.1	0.9	6.0	85.0	10.4
4. Project Management	0.9	1.0	1.9	47.4	3.3
Total Base Costs	28.8	29.0	57.8	49.8	100.0
Physical Contingencies ^a	1.7	1.9	3.6	47.2	6.2
Price Contingencies ^b	2.0	2.4	4.4	45.5	7.6
Total Project Costs	32.5	33.3	65.8	49.4	113.8
Interest During Construction and Commitment Charges ^c	5.8	0.0	5.8	100.0	10.0
Front-End Fee	0.4	0.0	0.4	100.0	0.7
Total Costs	38.7	33.3	72.0	53.8	124.6

^a At 6.8 percent for civil works, services, vehicles, and equipment; and zero for farm machinery.

^b Based on the projections of the MUV indices for inflation in US dollar terms.

^c Includes \$5.1 million for interest during construction, and \$0.7 million for commitment charges.

Source: Staff estimates.

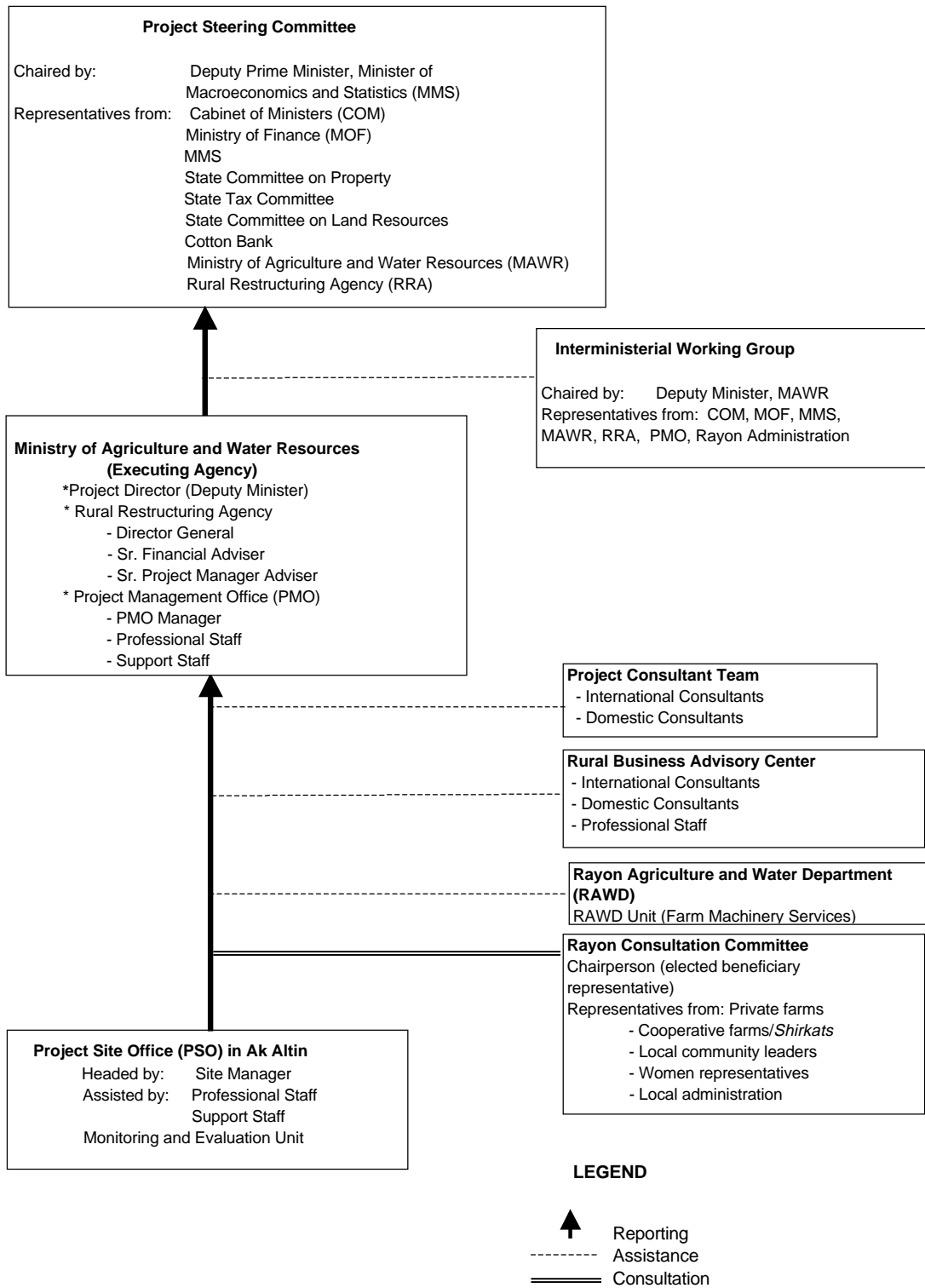
Table A2.2: Expenditure Accounts By Financiers
(\$ million)

Item	ADB		Beneficiaries		Government of Uzbekistan		Total		Foreign Exchange	Local (Excluding Taxes)	Duties and Taxes
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent			
I. Investment Costs											
A. Interfarm Civil Works	0.000	0.0	0.000	0.0	4.527	100.0	4.527	6.3	1.810	2.264	0.453
B. On-Farm Civil Works	16.208	39.0	0.000	0.0	25.350	61.0	41.558	57.7	16.623	20.779	4.156
C. Pilot Farm Civil Works	0.034	39.5	0.000	0.0	0.052	60.5	0.086	0.1	0.034	0.043	0.009
D. RAWD Civil Works	0.130	40.0	0.000	0.0	0.195	60.0	0.325	0.5	0.000	0.292	0.032
E. Seeds and Agrochemical for Demonstration Farms	0.134	72.0	0.000	0.0	0.052	28.0	0.186	0.3	0.075	0.093	0.019
F. Training	0.198	90.0	0.000	0.0	0.022	10.0	0.220	0.3	0.066	0.132	0.022
G. Vehicle	0.022	25.3	0.000	0.0	0.065	74.7	0.087	0.1	0.082	0.004	0.000
H. Equipment											
1. Maintenance and Monitoring Equipment	5.323	90.0	0.000	0.0	0.592	10.0	5.915	8.2	5.323	0.000	0.591
2. Agricultural Machinery and Equipment	5.213	90.0	0.000	0.0	0.579	10.0	5.792	8.0	5.213	0.000	0.579
3. Office Equipment	0.082	90.1	0.000	0.0	0.009	9.9	0.091	0.1	0.082	0.000	0.009
Subtotal (H)	10.618	90.0	0.000	0.0	1.180	10.0	11.798	16.4	10.618	0.000	1.179
I. Consultant services											
1. International Consultant	1.822	100.0	0.000	0.0	0.000	0.0	1.822	2.5	1.823	0.000	0.000
2. Domestic Consultant	0.146	80.2	0.000	0.0	0.036	19.8	0.182	0.3	0.000	0.164	0.018
3. Financial Audit	0.114	100.0	0.000	0.0	0.000	0.0	0.114	0.2	0.114	0.000	0.000
Subtotal (I)	2.082	98.3	0.000	0.0	0.036	1.7	2.118	2.9	1.937	0.164	0.018
Total Investment Costs	29.426	48.3	0.000	0.0	31.479	51.7	60.905	84.6	31.245	23.771	5.888
II. Recurrent Costs											
A. Recurrent costs	0.331 ^a	18.3	0.000	0.0	1.475	81.7	1.806	2.5	0.000	1.626	0.180
B. Incremental O&M of Infrastructure	0.000	0.0	1.977	64.3	1.099	35.7	3.076	4.3	1.230	1.538	0.308
Total Recurrent Costs	0.331	6.8	1.977	40.5	2.574	52.7	4.882	6.8	1.230	3.164	0.488
III. Interest During Construction and Commitment Charges	5.883	100.0	0.000	0.0	0.000	0.0	5.883	8.2	5.883	0.000	0.000
IV. Front-End Fee	0.360	100.0	0.000	0.0	0.000	0.0	0.360	0.5	0.360	0.000	0.000
Total	36.000	50.0	1.977	2.7	34.053	47.3	72.030	100.0	38.718	26.935	6.376

ADB = Asian Development Bank, O&M = operation and maintenance, RAWD = Rayon Agriculture and Water Department.

^a Provision for loan financing (80 percent) of the remuneration costs of ten contracted staff, and the rehabilitation costs of the project management office.

ORGANIZATION CHART FOR PROJECT IMPLEMENTATION



IMPLEMENTATION SCHEDULE

Components/Activities	2001	2002				2003				2004				2005				2006		
	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III
0. Motivation																				
- PMO staff training in project implementation																				
- PSO staff training in project implementation																				
- RCC establishment in Ak Altin																				
- PMO development of work plans																				
- PSO development of work plans																				
- Procurement of office equipment for PMO and PSO																				
- Procurement of maintenance and monitoring equipment																				
1. Institutional Support, Monitoring, and Evaluation																				
1a. Strengthening rural business advisory center																				
1b. Organizing and training of water users associations																				
1c. Establishing pilot demonstration farms																				
1d. Monitoring and evaluation																				
2. Rehabilitation of Irrigation and Drainage Systems																				
2a. On-Farm Improvements																				
2a1. On-farm drainage infrastructure improvements																				
Package 1:																				
Field surveys, investigations, design																				
Bidding, evaluation, and award of contracts																				
Construction																				
Package 2 (same type of activities as in package 1)																				
Package 3 (same type of activities as in package 1)																				
2a2. On-farm irrigation infrastructure improvements																				
Package 1:																				
Field surveys, investigations, design																				
Bidding, evaluation, and award of contracts																				
Construction																				
Package 2 (same type of activities as in package 1)																				
Package 3 (same type of activities as in package 1)																				
2a3. On-farm water and land management																				
Package 1:																				
Field surveys, investigations, design																				
Bidding, evaluation, and award of contracts																				
Construction																				
Package 2 (same type of activities as in package 1)																				
Package 3 (same type of activities as in package 1)																				
2b. Interfarm Improvements																				
2b1. Interfarm drainage infrastructure improvements																				
Package 1:																				
Field surveys, investigations, design																				
Bidding, evaluation, and award of contracts																				
Construction																				
Package 2 (same type of activities as in package 1)																				
Package 3 (same type of activities as in package 1)																				
2b2. Interfarm irrigation infrastructure improvements																				
Package 1:																				
Field surveys, investigations, design																				
Bidding, evaluation, and award of contracts																				
Construction																				
Package 2 (same type of activities as in package 1)																				
Package 3 (same type of activities as in package 1)																				
3. Farm Machinery Services																				
- Procurement of farm machinery																				
- Maintenance of farm machinery																				
- Machinery rental to farms																				
4. Project Management																				

PMO = Project Management Office, PSO = Project Site Office, RCC = Rayon Consultation Committee.

EQUIPMENT AND MATERIALS TO BE PROCURED

Equipment/Materials	No. of Units	Unit Cost (\$'000)	Total Cost (\$'000)
A. Institutional Support, Monitoring, and Evaluation			74
1. Transport Equipment (Vehicles)			40
2. Office Equipment			34
Computers	4	2	8
Printers	2	0.75	2
Computer Software	Lump Sum		2
Fax Machine	1	0.5	1
Photocopier	1	3	3
Demonstration Video Unit	1	3	3
Overhead Projector	1	1	1
Office Furniture	Lump Sum		5
Miscellaneous Equipment	Lump Sum		10
B. Drainage and Irrigation Rehabilitation			5,100
1. Maintenance and Monitoring Equipment			4,770
Dragline	5	200	1,000
Excavator - Standard Boom	1	100	100
Excavator - Long Boom	2	230	460
Subsurface Drainage Layer	1	400	400
Subsurface Jetting Equipment	5	30	150
Road Grader	4	100	400
Laser Leveling Equipment	1	100	100
Cranes	5	100	500
Bulldozers	5	100	500
4-Wheel Drive Trucks	5	80	400
4-Wheel Drive Tractors	5	40	200
Water Trucks	5	40	200
Water Tankers	5	10	50
Compaction Equipment	2	5	10
Env. Monitoring Eqmnt. (HAE Gulistan)	Lump Sum		
Materials (Reagents, Stationery, etc)			5
Glassware and Plasticware			5
Field Testing Equipment			5
Standard Lab. Equipment			10
Electronic Lab. Equip. incl. Computers			25
Env. Monitoring Eqmnt. (SCNP Gulistan)	Lump Sum		
Materials (Reagents, Stationery, etc)			20
Glassware			10
Field testing Equipment			20
Standard lab. Equipment			50
Electronic Lab. Equip. Computers			140
Field Vehicle			10
2. Transport and Logistical Equipment			330
Buses for Workers	2	30	60
Sleeping Cars for Workers	4	5	20
4-Wheel Drive Station Wagons	2	25	50
4-Wheel Drive Pickup Trucks	2	25	50
Workshop and Field Repair Equipment	1	30	30
Communications System	1	80	80
Miscellaneous Office Equipment	Lump Sum	40	40

Equipment/Materials	No. of Units	Unit Cost (\$'000)	Total Cost (\$'000)
C. Project Management Office, Tashkent			45
1. Transport Equipment (Vehicle)			20
2. Office Equipment			25
Computers	2	2	4
Printers	1	0.75	1
Computer Software	Lump Sum	2	2
Fax Machine	1	0.5	1
Photocopier	1	3	3
Office Furniture	Lump Sum	5	5
Miscellaneous Equipment	Lump Sum	10	10
D. Project Site Office, Ak Altin			45
1. Transport Equipment (Vehicle)			20
2. Office Equipment			25
Computers	2	2	4
Printers	1	0.75	1
Computer Software	Lump Sum	2	2
Fax Machine	1	0.5	1
Photocopier	1	3	3
Office Furniture	Lump Sum	5	5
Miscellaneous Equipment	Lump Sum	10	10
E. Farm Machinery ^a			5,686
Heavy-Duty Tractors	35	65.4	2,289
Light Tractors	25	28.5	713
Moldboard Plow	23	7	161
Cultivator (Vertical)	5	17	85
Harrows/ Disk Harrows	2	10	20
Chisel Cultivator	5	3	15
Land Levelers	7	10	70
Ridger/Leveler	7	2.4	17
Leveling Equipment	12	4.5	54
Fertilizer Spreaders	18	1.25	23
Manure Spreaders	4	1.25	5
Cultivator for Ridging	34	3	102
Sprayers	8	2.25	18
Transport Trolleys	68	4.7	320
Cottonseed drill	25	1.9	48
Cotton Combines/Pickers	7	126.8	888
Cotton Closed Ball Picker	5	4.2	21
Cotton Precleaner	3	4.3	13
Cotton Loader	5	4.2	21
Cotton Plant Removers	10	1.3	13
Wheat Seed Drills	7	4	28
Wheat Harvesters	3	156	468
Straw Collectors/Bailers	4	8	32
Maize Harvester	1	55	55
Fodder Combine Harvester	2	93	186
Mower/Grinder	4	2.2	9
Subsoiler	3	5	15

^a The list of farm machinery is tentative and subject to revision by the Ministry of Agriculture and Water Resources.

TENTATIVE PACKAGING OF MAJOR PROCUREMENTS AND CIVIL WORKS

Component/Package	Tentative Value (\$)	Mode of Procurement ^a
A. Institutional Support, Monitoring, and Evaluation	74,000	
1. Transport Equipment	40,000	IS/DP
2. Office Equipment	34,000	IS/DP
B. Rehabilitation of Irrigation and Drainage Systems	33,282,000	
(See note below for civil works packages)		
1. Survey, Investigation, and Detailed Design: Package 1	602,000	ICB
2. Rehabilitation of Irrigation and Drainage Facilities: Package 1		ICB
3. Survey, Investigation, and Detailed Design: Package 2	692,000	ICB
4. Rehabilitation of Irrigation and Drainage Facilities: Package 2	13,140,000	ICB
5. Survey, Investigation, and Detailed Design: Package 3	687,000	ICB
6. Rehabilitation of Irrigation and Drainage Facilities: Package 3	13,061,000	ICB
7. Supply of Maintenance Equipment	4,470,000	ICB
8. Supply of Transport and Logistical Equipment	330,000	IS/DP
9. Supply of Environmental Monitoring Equipment	300,000	IS/DP
C. Farm Machinery Services	6,000,000	
1. Supply of Farm Machinery	5,400,000	
Schedule (a): Supply of Heavy-Duty Tractors and Related Implements	2,180,000	ICB
Schedule (b): Supply of Light Tractors and Related Implements	2,100,000	ICB
Schedule (c): Supply of Self-Powered Machinery	650,000	ICB
Schedule (d): Supply of Transport Trolleys	470,000	IS
2. Supply of Workshop Equipment	200,000	IS/DP
3. Civil Works	300,000	LCB
4. Supply of Office Equipment	100,000	IS/DP
D. Project Management	90,000	
1. Supply of Transport Equipment	40,000	IS/DP
2. Supply of Office Equipment	50,000	IS/DP

Notes on Civil Works Packages:

Package 1 with a gross area of 12,800 hectares (ha) comprises the northern strip of the project area bounded by the Central Golodnaya Steppe Collector Drain and the road passing through Andijan and Sardoba.

Package 2 with a gross area of 14,700 ha comprises the middle strip of the project area bounded by the road passing through Andijan and Sardoba, and the Right Branch Canal.

Package 3 with a gross area of 14,612 ha comprises the southern strip bounded by the Right Branch and the Left Branch canals.

^a DP = direct purchase, ICB = international competitive bidding, IS = international shopping, LCB = local competitive bidding.

TERMS OF REFERENCE FOR CONSULTANTS

A. Introduction

1. The Project will require 65 person-months of international and 198 person-months of domestic consulting services to assist the Ministry of Agriculture and Water Resources (MAWR), the executing agency (EA), in monitoring and evaluation, design and implementation of physical infrastructure, and project administration. The list of consultants to be engaged is in Table 1.

Table 1: Consulting Services Requirements

Expertise	Person-Months
A. International Consultants	
1. Team Leader/Construction Supervision Engineer	18
2. Drainage Design Engineer	9
3. Irrigation Design Engineer	9
4. Procurement Specialist	17
5. Project Management Advisor	12
Subtotal	65
B. Domestic Consultants	
1. Deputy Team Leader / Drainage Design Engineer	42
2. Irrigation Design Engineer	30
3. Construction Supervision Engineers (3)	126
Subtotal	198
Total	263

2. The services will be provided by an international consulting firm in association with a domestic consulting firm. The consultants will work very closely with the staff of MAWR and provide them hands-on training in their work. The consultants will interact frequently with the project beneficiaries, particularly on the interventions proposed for on-farm improvements. The consultants may be required to perform tasks other than those specified here, determined as necessary by the project management office (PMO) to comply with the prevailing requirements of the Asian Development Bank (ADB) and the Government. Specific terms of reference for various fields of specialization are given below.

B. Team Leadership, Construction Management, and Supervision

3. This group of consultants will be stationed at the project site office (PSO); facilitate coordination with PMO; coordinate with all other parties involved, including international and domestic consultants, consultants hired under the technical assistance associated with the Project, Rural Business Advisory Center, EA staff, contractors, design institute, local administration, and the beneficiaries. In addition, this group will be responsible for construction management and supervision. Its main tasks are as follows:

- (i) coordinate with all parties involved for on-the-job-training of MAWR and other local staff, and coordinate closely with the project beneficiaries at all stages of project implementation;

- (ii) ensure strict adherence to ADB guidelines in procurement of works, services, equipment, and materials; expeditious and timely preparation of tender documents; and evaluation and award of contracts of various claims for payments;
- (iii) supervise and monitor the implementation of civil works, including preparation of progress reports and maintenance of records related to the contracts and civil works, etc.;
- (iv) monitor the fieldworks under implementation, issue early warnings as soon as targets are deemed to be missing, and coordinate with the concerned staff for remedial measures;
- (v) certify withdrawal applications and keep accounts for the loan; and
- (vi) provide overall guidance to the EA staff and contractors in respect of quality control and conformity of the works with contract provisions.

C. Drainage Engineering

4. The drainage engineering works include on-farm horizontal and vertical drainage facilities, collector drains, main drains, and all other project works associated with the drainage of agricultural lands. This unit will assist PMO and PSO in conducting these tasks:

- (i) for field surveys and investigations, prepare specifications and tender documents, evaluate proposals, award contracts, and supervise fieldworks;
- (ii) review the record of previous investigations, original design of the drainage systems, and performance monitoring of the systems; compare it with the results of the field surveys and investigations; and, working closely with the irrigation engineering unit, calculate drainage requirements and prepare alternate designs with bills of quantities and costs for reconstruction/improvement of the drainage facilities, comparing the suitability and overall cost effectiveness of on-farm vertical versus horizontal drainage;
- (iii) for on-farm drainage facilities, discuss the alternate designs and associated costs with the farmers of the area, explain to them the pros and cons of the alternatives, and help them in selecting the design most appropriate for their conditions;
- (iv) for interfarm drainage facilities, select the most cost-effective design with the help of the EA staff, local administration, and the beneficiaries;
- (v) prepare detailed designs for the selected alternatives, prepare tenders, invite and evaluate proposals, award contracts, and assist in construction supervision of the works; and
- (vi) prepare a schedule for operation and maintenance (O&M), and an operational manual for the drainage facilities reconstructed/improved under the Project.

D. Irrigation Engineering

5. The works comprise on-farm and interfarm irrigation facilities. The on-farm irrigation facilities include tertiary field-level distribution systems (pipe or canals), concrete canals, flume and flume distribution structures of various sizes, flume check structures, end-flume transitions, and the main and branch canals with all associated structures. This unit will assist PMO and PSO in conducting the following tasks:

- (i) for field surveys and investigations, prepare specifications and tender documents, evaluate proposals, award contracts, and supervise the fieldworks;
- (ii) review the record of previous investigations, original design of the irrigation systems, and performance monitoring of the systems; compare it with the results of the field surveys and investigations; calculate irrigation water requirement for the cropping pattern, and in close consultation with the drainage engineering team, prepare alternate designs for reconstruction/improvement of irrigation facilities, with bills of quantities and costs;
- (iii) for on-farm irrigation facilities, discuss the design and associated costs with the farmers of the area, explain to them the pros and cons of the alternatives, and help them in selecting the designs most appropriate for their conditions;
- (iv) for interfarm irrigation facilities, select the most cost-effective design with the help of the EA staff, local administration, and the beneficiaries;
- (v) prepare detailed designs for the selected alternatives, prepare tender documents, evaluate proposals received, award contracts, and supervise construction works; and
- (vi) prepare a schedule for O&M of the irrigation facilities reconstructed/improved under the Project and prepare an operational manual.

E. Procurement

6. An international procurement specialist will advise on procurement procedures, administration, and management; and provide on-the-job training to the EA staff. The specialist will conduct the following tasks:

- (i) familiarize the project staff with the procurement requirements of the Project, including specific ADB guidelines and procedures on procurement; develop the contracting capacity of the EA, by providing on-the-job training to transfer knowledge;
- (ii) based on the procurement requirements of the project components, prepare detailed procurement plans and packages, and determine realistic time-bound schedules for procurement, including parallel and sequential steps for completing procurement activities from initial planning to delivery of goods and services;
- (iii) advise and assist project staff in organizing and managing procurement activities, review the appropriateness of various procurement packages with respect to their methods of procurement, ensure that procurement can be undertaken in the

most efficient and cost-effective manner in accordance with ADB guidelines applicable to the Project;

- (iv) assist in preparing bidding documents, including a) invitation to bid; (b) instructions to bidders; (c) form of bid; (d) form of contract; (e) conditions of contract, both special and general; (f) specifications and drawings; (g) list of goods or bill of quantities; (h) delivery time or schedule of completion; and (i) all the necessary appendices and formats;
- (v) advise on the application of procedures and requirements related to bid opening, evaluation, and award of contracts, with particular attention to the time allowance for preparation of bids, bid opening procedures, circumstances related to clarifications or alterations of bids, confidentiality, examination of bids, evaluation and comparison of bids, and applicable domestic preferences;
- (vi) interpret various contract provisions and settle disputes with the contractors as necessary;
- (vii) establish a procurement monitoring system in PMO to allow collection and recording of procurement data for (a) timely information flow, submission, and approval of terms of reference, shortlists, and other requirements; (b) tracking all necessary and critical procurement actions and activities including advertising, bidding, contract award, and completion time for individual contracts; (c) prompt reporting of contract award information by the EA to ADB; and (d) preparation of quarterly reports to ADB; and
- (viii) develop a contract management system to ensure that records and data are stored systematically, and cross-referenced with the financial accounts of the Project (the system must allow safekeeping of procurement documentation for easy retrieval and referencing, with adequate paper trails in accordance with generally accepted standards, and must be designed to also support loan disbursement, reporting, and accounting requirements of the Project); familiarize PMO staff with the documentation requirements of loan disbursement applications, as well as the necessary records that the Project must keep to support these loan disbursement applications.

F. Project Management

7. A project management specialist will assist the PMO manager in overall project management. The specific tasks are as follows:

- (i) assist the PMO manager in coordinating all matters related to project implementation with relevant ministries of the Government of Uzbekistan (MAWR, Ministry of Finance, Ministry of Environment and Bioresources, and others), PSO, design institute, the consulting companies providing services for the Project, the local administration, ADB, and any other organization that may be associated with project implementation;
- (ii) provide the EA staff with on-the-job training in ADB guidelines and procedures, modern project management, and scheduling techniques;

- (iii) assist the PMO manager in programming project activities, estimating the financial requirements for these activities, and facilitating the release of the required funds in adequate amounts and on time;
- (iv) assist the PMO manager in coordinating with PSO and other agencies to ensure that the tendering procedures for procurement of works, services, equipment, and materials are in line with ADB procedures, and that all steps are taken expeditiously and in a transparent manner;
- (v) assist PMO to ensure that the accounting standards for the Project meet ADB requirements and that the withdrawal applications sent to ADB are complete and are sent on time; and
- (vi) assist PMO to ensure that all periodic reports are prepared systematically and submitted on time, and reflect the real picture of project implementation; that major issues relating to project implementation are brought to the attention of the concerned parties; and that necessary remedial measures are implemented.

TECHNICAL ASSISTANCE FOR INSTITUTIONAL SUPPORT FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT

A. Objective

1. The objective of the technical assistance (TA) is to strengthen the existing Rural Business Advisory Center (RBAC) in the project area to provide agribusiness advisory and agricultural extension services to the project beneficiaries. The TA will provide institutional support to RBAC, facilitate the development of its operational strategy and management systems, and strengthen its staff capacity. Given the important role of RBAC in nationwide farm restructuring and promotion of private farming, the TA's experiences in strengthening RBAC can be replicated nationwide.

B. Consultants

2. The TA will require the input of 20 person-months of international consultants: one team leader/agribusiness specialist (8), one water users' associations (WUAs) specialist (5), one IPM specialist (3), one O&M specialist (2), and one legal expert on WUA (2). In addition, 44 person-months of domestic consultant inputs will be required: one WUA specialist (18), one O&M specialist (6), one gender and development specialist (3), and a number of WUA training specialists (17). The Asian Development Bank (ADB) will select and engage a suitably qualified firm of international consultants with domestic associates, to provide services in accordance with the terms of reference in para. 3, following ADB's Guidelines on the Use of Consultants and other arrangements for the selection and engagement of domestic consultants.

C. Description of Tasks

3. The TA consultants will work closely with staff of RBAC, the project management office (PMO), project site office (PSO) as well as the project beneficiaries and the local administration. The consultants will accomplish the following tasks:

- (i) Develop operational systems for RBAC
 - (a) Examine the mandate and function of RBAC, study the demand for RBAC's services and its potential clients, assess its capacity in meeting the demand and delivering the services, and identify constraints and propose measures for improvement.
 - (b) Assist RBAC to develop its operational strategy and work programs, including operational systems, procedures, and staff development plans. After the pilot testing, these programs and operational systems can be used in other regions.
- (ii) Facilitate farm restructuring
 - (a) Study the ongoing farm restructuring in the project area; identify problems, analyze underlying factors, and propose measures for improvement; identify the role of RBAC in facilitating farm restructuring.
 - (b) Analyze training needs and develop training materials, which may cover agricultural enterprises establishment, farm management, marketing,

financial management, business transaction and contracting, debt restructuring, accounting and record keeping, reorganization and legal implications, as well as microenterprise establishment and related technologies, with particular attention to addressing women's needs.

- (c) Provide training and hands-on coaching to RBAC staff on the conduct of training courses and provision of advisory services.
- (iii) Strengthen the agricultural extension system
 - (a) Study the current agricultural production systems in the project area; identify problems and analyze underlying factors; assist RBAC to develop programs for introducing technologies that are suitable for the district, such as improved seed varieties, efficient input usage, and better farming practices.
 - (b) Assess the effectiveness, costs, and related issue of pest control in the project area; assist RBAC to develop plans to introduce integrated pest management (IPM) and assist in its implementation.
 - (c) Assist RBAC to use the pilot demonstration farms established under the Project to promote the adoption of new technologies; and ensure women's equal access to the extension services and training provided by RBAC.
- (iv) Improve water management
 - (a) Study the existing water management systems and practice in the project area; identify problems and analyze underlying causes.
 - (b) Assist PMO, PSO, and RBAC to develop plans for establishing and operating an efficient water management system in the project area, including the establishment of WUAs, operation and maintenance (O&M) systems, water allocation, and collection of water charges.
 - (c) Develop detailed procedures and training materials for the establishing and operating WUAs as well as O&M systems (the training materials will cover training of trainers, with a view to duplicating the training courses and experiences in other regions); introduce WUA experiences of other countries that are applicable to the project area; identify constraints and propose realistic measures; assist PMO and PSO to organize workshops for consulting project beneficiaries on WUA and O&M issues; train RBAC staff in conducting WUA and O&M training, ensuring women's equal access to such training. The pilot experiences of WUA in Ak Altin will serve as a basis for drafting WUA legislation in Uzbekistan later.
 - (d) Study water charge and fee collection systems in the project area; identify problems and analyze underlying causes; assist PMO and PSO to develop an appropriate water charge system and fee collection mechanisms, and organize workshops to present the plans to farmer beneficiaries and build up consensus; develop step-by-step procedures

for negotiating and contracting with individual farmers on cost recovery of their on-farm rehabilitation.

- (v) Promote beneficiaries' participation
 - (a) Assist RBAC to develop an information campaign program to raise farmers' awareness of their rights and responsibilities in project implementation, with particular attention to promoting women's participation in the program; develop training materials for the campaign program, and train PMO, PSO, and RBAC staff to conduct the information campaign.
 - (b) Assist PMO and PSO in establishing the Rayon Consultation Committee (RCC) that will become an effective mechanism for project beneficiaries to monitor implementation; develop the mandate, procedure, and operational systems for RCC; facilitate the election of beneficiary representatives in RCC and assist in its early operations, with particular attention to women's representation and their active roles in project monitoring.

D. Implementation Arrangements

4. The Ministry of Agriculture and Water Resources (MAWR), through PMO and PSO, will be the Executing Agency for the TA. A deputy minister of MAWR, who will be the project director, will supervise the overall implementation of the TA. PMO, PSO, and RBAC will provide up to 54 person-months of counterpart staff to work with the consultants.

E. Implementation Schedule, Reports, and Documents

5. The TA will be undertaken over 18 months continuously, starting from the first year of project implementation. The consultants will submit to MAWR and ADB an inception report in the middle of the second month, a progress report in the middle of the 5th, 11th, and 14th months, a midterm report at the end of the 8th month, a comprehensive draft final report at the end of the 16th month, and a final report by the end of TA implementation.

F. Estimated Costs

6. The total cost of the TA is estimated at \$860,000 equivalent, of which \$600,000 equivalent will be provided by ADB on a grant basis from the TA Special Fund. The remaining \$260,000 equivalent will be financed by the Government through in-kind contribution. The estimated breakdown of the costs is given in Table A8.

Table A8: Cost Estimates and Financing Plan (\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. ADB Financing (TASF)			
1. Consultants			
a. Remuneration and Per Diem			
i. International	400	0	400
ii. Domestic	0	66	66
b. International and Local Travel	24	15	39
c. Reports and Communications	13	0	13
2. Equipment and Supplies	5	0	5
3. Office Assistance and Interpreters	0	12	12
4. Representatives at Contract Negotiations	7	0	7
5. Contingencies	49	9	58
Subtotal (A)	498	102	600
B. Government Financing			
1. Office Accommodation and Local Communication	0	14	14
2. Data Compilation	0	13	13
3. Counterpart Staff and Support Services	0	43	43
4. Travel and Per Diem Costs of Counterparts	0	16	16
5. Workshops and Seminars	0	15	15
6. Information Campaign Program	0	50	50
7. Pilot Demonstration Farm Program	0	60	60
8. Logistical Support in Oblast and District	0	18	18
9. Contingency	0	31	31
Subtotal (B)	0	260	260
Total	498	362	860

TASF = Technical Assistance Special Fund.

Source: Staff estimates.

FINANCIAL AND ECONOMIC ANALYSES

A. Land Area and Cropping Pattern

1. The project area in Ak Altin district covers approximately 37,000 hectares (ha) of irrigated cropland. As of May 2001, about 5,855 ha was cultivated by 165 small private farms, and the remainder by 12 large cooperative farms. The two major crops in Ak Altin are cotton and wheat, annually utilizing 54 percent and 39 percent of the irrigated cropland, respectively. The remaining 7 percent of the irrigated cropland is planted to several minor crops: maize (3 percent), fruit (2 percent), vegetables (1 percent), and alfalfa (1 percent). This cropping pattern is expected to remain, as the Government pursues an import substitution policy for wheat and relies heavily on cotton to generate foreign exchange.

2. Agricultural lands in Ak Altin were originally converted from steppes by installing and operating irrigation and drainage systems on which crop cultivation depends. Following the collapse of the former Soviet Union, State farms were reorganized as new cooperative farms, which essentially retained the organization, management, and operational features of the old State farm. However, changes were introduced recently to revitalize the incentive structure for the production units of the farms. Typically, a cooperative farm has 3,000 ha of irrigated cropland. Although crop cultivation and harvesting are generally mechanized, an average cooperative farm maintains a large workforce of 700-1,000 people. Until early 1999 when the Government introduced measures to reduce the financial burden of the farms, the responsibilities of cooperative farms were more than just farming. The cooperative farms were obliged to provide funds for the operation and maintenance (O&M) of schools, hospitals, and public facilities such as water supply, electricity, heating, sewage, etc.

B. State Procurement of Wheat and Cotton

3. The State controls the cropping pattern of the farms, cotton procurement, and to some extent wheat procurement to provide financial incentives to the farms. The Government in May 2001 replaced the annual production target of 50,000 tons (t) for cotton and wheat separately with a fixed procurement quota of 17,000 t for cotton and 12,500 t for wheat. The Government also abolished joint responsibility for fulfilling the procurement quota.

4. The production target of wheat, which was valid until May 2001, was effectively equivalent to a yield target of 3.5 t/ha, compared with the actual average wheat yield of 2.2 t/ha. The quantity of wheat procured by the State from the project area farms represented 50 percent of the wheat production target of 50,000 t, which is equivalent to 25,000 t annually. Given the declining wheat yields in the district, the State procurement has increased proportionally against the actual production and effectively amounted to about 95 percent of the district's actual wheat production of 26,978 t in 2000. Given the amount of wheat procured by the State, little was left for farmers to sell at the local markets. Farmers sold much of the remaining wheat to their own workers at prices equivalent to the State procurement prices. Nonetheless, the State provided a 20 percent price premium over and above the published procurement prices of wheat for the quantities purchased by the State exceeding 25 percent of the production target. Thus, the price premium applied to State purchases of wheat over and above 12,500 t.

5. The annual fixed quota of 12,500 t of wheat is equivalent to 0.9 t/ha, compared with the average wheat yield of about 2.2 t/ha in 2000 in the district. Once farmers have fulfilled their State procurement obligation, they can sell their above-quota wheat at the local markets at prevailing prices. State procurement prices of wheat presently reflect a range of quality grades,

and are essentially equivalent to farmgate import parity financial prices at the official exchange rate. Nevertheless, wheat prices at the local markets are generally higher than the State procurement prices. In May 2001, the price of wheat at the local markets was at least 50 percent higher than the State procurement price. By limiting the State procurement of wheat, the Project will create a financial incentive for farmers to increase wheat crop productivity.

6. Up to the cropping year 2000, all cotton was procured through Khlopkoprom, a State joint stock company which has, throughout the country, processing facilities for cotton including drying, cleaning, grading, ginning, certifying, and packing. The processed cotton was sold to foreign traders through local private trading firms registered with the Ministry of External Economic Relations. These local private traders handled almost all cotton export and were obliged to surrender all foreign exchange earnings to the Government at official exchange rate. At the local level, farms entered into contractual agreements with designated cotton ginning factories. These contracts covered scheduled advance payments, crop deliveries, and other obligations. State procurement prices for cotton were determined by the State, taking into account quality grades; international prices (cost, insurance and freight [CIF] Liverpool); the official exchange rate; freight, insurance, and ginning costs; and less efficient management by various Government agencies.

7. While the cotton procurement arrangements mentioned above will continue for the rest of the country, procurement in Ak Altin Rayon will be governed by the Cabinet of Ministers Resolution No. 102 issued on 2 May 2001. The farmers of Ak Altin Rayon will be free to sell their above-quota cotton production to legal trading entities at mutually agreed upon prices. Although the Government has estimated the price premium for above-quota cotton at 40 percent, a conservative price premium of 12 has been used in financial and economic analysis.

C. Potential and Challenges

8. All farms in Ak Altin, with the exception of a few private ones, have been unprofitable in recent years as they face (i) declining crop productivity due to deteriorating conditions of the drainage and irrigation systems, (ii) excessive labor costs and social obligations, (iii) heavy financial burdens for maintaining social and communal infrastructure, (iv) high administrative costs, (v) multiple and high taxes, and (vi) low prices for their crops under the centralized State procurement system. Average yields of cotton and wheat have declined to 1.4 t/ha and 2.3 t/ha, respectively, due to the poorly functioning irrigation and drainage systems. Without rehabilitation of these systems, per hectare yields are expected to decline further to 1.0 t/ha for cotton and 1.4 t/ha for wheat over the next eight years. Essentially, farms have been squeezed by a combination of high production costs and fixed costs, and low revenues. This dismal operating environment has led the farms to accumulate massive debts to the State and their input suppliers.

9. Given the momentum generated by the reform initiatives and the pricing incentives for wheat and cotton, the Project is designed to improve agricultural productivity in the district and increase farm incomes and profitability by rehabilitating the irrigation and drainage systems. With the improved infrastructure restoring crop productivity rapidly, farms are expected to improve their financial health and profitability. Although the financial responsibility for maintaining social and community infrastructure has been removed from the farms and transferred to the State, cooperative farms still face high fixed costs and inefficient use of inputs. The farms will be encouraged to undertake a number of measures to achieve higher revenues, and introduce financial discipline to reduce costs. The Rural Business Advisory Center (RBAC) will provide advisory services to participating farms, in the context of an overall business

planning and farm management initiatives, including aspects related to agronomy, pest management, and O&M of the irrigation and drainage systems.

10. With the Project, three major factors will lead to higher farm revenues: (i) incremental crop yields and prevention of further decline in crop yields due to the deteriorating irrigation and drainage systems; (ii) prevention of crop losses by improving the timeliness of cultivation and harvests through increased availability of farm machinery services. and (iii) higher prices for above-quota cotton and wheat through crop quality improvements. The analyses here were deliberately conservative to exclude the potential additional benefits from quality grade improvement. At present, the crop quality grades of Ak Altin farms are below standard. Consequently, the prices the farms receive for these commodities have been substantially discounted at rates ranging from 5 to 30 percent of the listed State procurement prices for the highest quality grades. In the medium term, over a period of 5-10 years, there is much room for improving crop vigor and quality grade through (i) better selection of seeds, (ii) improved agronomic practices, and (iii) upgraded pest management.

11. Farms can undertake several cost-saving measures in the medium term, without resorting to drastic measures that may have negative social impacts. The cooperative farms generally have a large permanent workforce of 700-1,000 workers although farm operations are typically seasonal. In addition, the cooperative farms also have a heavy layer of administrative and management staff, and face excessive overhead expenses for administration and management. The workforce may be gradually reduced through natural attrition over a period of eight years, without replacement, as many workers are retiring or leaving the farms on their own volition. Labor requirements at peak times can then be satisfied with seasonal labor, thereby reducing fixed expenses on wages and benefits. Essentially, the farms can gradually streamline their labor force and social obligations, and increase their seasonal labor inputs, when required, at peak times. Additionally, the farms can also rationalize their farm machinery operations to save costs by (i) limiting the use of transport facilities to farming purposes only, and preventing unauthorized uses of trucks, tractors, and wagons for other activities; (ii) improving agronomic practices to minimize seeding failure, and therefore avoid repeated mechanization for seeding; (iii) minimizing turnaround and idle running time for machinery to save fuel; and (iv) improving preventive maintenance to avoid costly machinery repairs and overhaul. There are other possibilities for cost savings (effective application rates of fertilizers and agrochemicals for specific crops), but specific measures will have to be designed according to the circumstances faced by the farms. The services of RBAC will therefore address the overall farm management initiatives that can be feasibly undertaken in the context of the progressively changing environment for market-oriented farming.

12. At present, there is little flexibility for changing the cropping pattern dictated by the State. The following analyses are conservative, essentially assuming no change in the current practice. However, in the event the State relaxes its control on the cropping pattern and allows the farms to determine their own cropping pattern for as long as they meet the State procurement quotas for wheat and cotton, the farms will very likely grow less wheat in favor of cotton. The gross margins per hectare for cotton are expected to be higher than those for wheat when potential incremental yields are fully realized.

D. Typical Farm Models

13. To illustrate the financial viability of farms in the project area, two typical farm models were developed: (i) a cooperative farm with a landholding of 3,000 ha of irrigated cropland, employing a permanent workforce of 700 workers; and (ii) a private farm with 125 ha of irrigated

cropland, employing 15 permanent workers. Both types of farm maintain the same cropping pattern as described in para. 1. Although the variable costs of production on these farms are similar, the cooperative farm has proportionally higher fixed costs than the private farm. These fixed costs are mainly associated with (i) the wages and social benefits for the permanent workforce, (ii) power and energy consumption, (iii) maintenance for farm buildings and facilities, and (iv) administration and management costs. The private farms are generally not burdened with heavy fixed costs, given their lean management structure and flexibility in utilizing seasonal labor to complement their small workforce.

E. Major Assumptions

14. Typical 1 ha crop budgets were estimated for scenarios with and without rehabilitated irrigation and drainage systems. Direct farm inputs consisting of seeds, fertilizers, agrochemicals, labor, mechanization, and transport were estimated to reflect present practices and achievable improvement over an eight-year period.

15. With the Project, crop yields are expected to increase progressively over a period of eight years: (i) cotton from an average of 1.4 t to 2.8 t/ha, (ii) wheat from 2.3 t to 3.4 t/ha, (iii) maize from 2.3 t to 3.1 t/ha, (iv) fruit from 3.2 t to 4.5 t/ha, (v) vegetables from 9.5 t to 13.3 t/ha, and (vi) alfalfa from 8.0 t to 11.2 t/ha. Without the Project, crop yields are expected to decline to (i) 1.0 t/ha for cotton, (ii) 1.4 t/ha for wheat, (iii) 1.2 t/ha for maize, (iv) 1.7 t/ha for fruit, (v) 5.0 t/ha for vegetables, and (vi) 4.2 t/ha for alfalfa. The assumed yield gains with the Project are deliberately modest and realistic, and are based on historical yields of the project area.

16. Foreign inflation rates follow the World Bank's projection of the manufacturing unit value (MUV) indices for inflation in US dollar terms of manufactures exported from the G-5 countries (France, Germany, Japan, United Kingdom, and United States), weighted proportionally to the countries' exports to the developing countries. Accordingly, foreign inflation was projected at 0.61 percent in 2001, 1.60 percent in 2002, 2.50 percent in 2005, and 2.48 percent in 2010 and thereafter.

17. Both financial and economic analyses were for a period of 25 years in 2001 constant prices and in the local currency, the sum. Year 1 represents year 2001, the year in which the Project is expected to commence.

18. The Government official exchange rate¹ was assumed at SUM345.00 to \$1.00 (actual, April 2001). Direct and indirect foreign exchange contents of input and output prices were converted to the local currency using the official exchange rate.² The use of the official

¹ This official exchange rate is overvalued, and is maintained for currency transactions conducted at the Uzbek Republican Currency Exchange (URCE). The primary sources of supply of foreign exchange at the URCE are mandatory sales of foreign exchange proceeds of cotton and gold at the overvalued exchange rate; and the primary uses of foreign exchange sold through URCE are external public debt service and State-approved imports of capital and other goods to support State-sponsored programs and projects. The State allows commercial banks and exchange bureaus to conduct foreign exchange transactions. The exchange rates in the commercial market are formally determined by market forces, but are maintained by the State at below the market clearing level. The commercial exchange rate was SUM675.00/690 (buying/selling) to \$1.00 (actual, May 2001). There is a thriving curb foreign exchange market to cater to the excess demand for foreign exchange. The cash curb rate was SUM920 to \$1.00 (May 2001). The official segments of the foreign exchange transactions control the bulk of the total transactions in the country. Accurate estimates of the size of the curb market were difficult to obtain. The high curb rate was also influenced by transaction risks and law enforcement.

² The State procurement prices of tradable cotton and wheat, as determined at export and import parity levels using the overvalued official exchange rate, and less efficient processing and management by various government agencies effectively represent an implicit taxation on the farms. The financial farmgate prices of cotton and wheat

exchange rate for the financial analysis is appropriate, considering that (i) cotton is subject to a 100 percent foreign exchange surrender requirement at the official rate; (ii) financial prices of fertilizers and other inputs, including machinery services, are controlled by the State, using the official exchange rate for converting foreign contents to the local currency; (iii) State procurement prices for the major crops, cotton and wheat, are linked to the official exchange rate; and (iv) the State uses the official exchange rate for converting foreign exchange investment costs to the local currency.

19. Cotton, wheat, and fertilizer prices were projected using the World Bank's commodity price projections. Various adjustments for transport, handling, storage, insurance, intermediary margins, and physical losses were made for determining farmgate prices. The financial and economic farmgate prices of urea, potassium chloride, and phosphate were derived on an import parity basis, and expressed in terms of their nitrogen, potassium, and phosphorus nutrient contents. The domestic prices of tradable fertilizers are presently controlled by the State and are largely distorted. In August 1999, the actual prices of fertilizers, on the basis of their pure nutrient contents, were below their import parity equivalents at the official exchange rate by about 44 percent for nitrogen, 62 percent for potassium, and 12 percent for phosphate. Farmgate financial prices of fertilizers were projected to reach import parity levels at the official exchange rate over a period of five years, consistent with the Government's plan to reduce payments for farm support gradually.

20. Uzbekistan is a wheat-importing country. Thus, farmgate prices of wheat were derived on an import parity basis, using neighboring Kazakhstan's export parity border prices. Kazakhstan's wheat exports to the Russian Federation compete with wheat exports to the Russian Federation from the United States (US) and Canada. Therefore, the projected international prices of wheat for the region were based on the Russian markets, around Moscow, as a destination reference for major exports in the region. The average local wheat grades are of the third quality grade, carrying a price discount of about 15 percent on average against the first grade. The projected international prices of wheat (free on board [FOB], US) for US No.1 hard red winter wheat were used for estimating the equivalent border wheat prices after adjustments for quality, freight and insurance costs, and charges for handling and transport. In deriving farmgate prices of wheat, further adjustments to the border prices were made to account for costs associated with elevator storage, physical losses, drying, and local transport.

21. Uzbekistan is a major cotton exporter in the world. Accordingly, farmgate prices of seed cotton (raw cotton) were derived from the projected international prices of cotton fiber ([CIF], Europe), by adjusting for (i) quality discount of about 8 percent for Uzbekistan's average grades; (ii) railway transport and insurance; (iii) intermediary costs including ginning costs; and (iv) the value of by-products such as seeds, fluff, and lint. On average, the quantity of fiber produced amounts to about 30 percent of seed cotton by weight. The value of by-products represents about 10 percent of the value of the fiber equivalent.

22. The economic analysis was based on the domestic price numeraire, and adjustments to financial prices were made to reflect the removal of taxes of 10 percent, the exclusion of debt service charges, and the application of a shadow exchange rate factor (SERF) of 2.0 to the border prices of tradable inputs and outputs. The basic wage rates on the farms in 2001 were

in 2001 were estimated at \$273/t (export parity) and \$124/t (import parity), respectively. On the other hand, the use of the overvalued official exchange rate for pricing tradable agricultural inputs represents an implicit subsidy to the farms.

estimated at SUM388/day, excluding pension and insurance charges amounting to 40 percent of the basic wages. Given a situation of less than full employment in the rural areas, a shadow wage rate factor (SWRF) of 0.8 was used in the analysis. The labor content for civil works was estimated at 35 percent. Therefore, the economic prices of civil works were calculated by applying a conversion factor of 0.93 to the net-of-tax financial prices of civil works.

F. Benefits

23. The benefits from rehabilitating irrigation and drainage were derived from the expected increases in crop yields, and prevention of further decline of crop yields. With the Project, the expected annual production levels of the cultivated crops were estimated to rise steadily over an eight-year period: (i) cotton, from 27,972 t to 55,736 t; (ii) wheat, from 33,189 t to 49,035 t; (iii) maize, from 2,553 t to 3,417 t; (iv) fruit, from 2,368 t to 3,321 t; (v) vegetables, from 3,515 t to 4,930 t; and (vi) alfalfa, from 2,960 t to 4,152 t. Without the Project, the annual crop production levels would decline over an eight-year period to 19,117 t for cotton, 20,276 t for wheat, 1,347 t for maize, 1,250 t for fruit, 1,855 t for vegetables, and 1,562 t for alfalfa.

G. Farm Net Incomes, Cash Flows, and Cost Recovery

24. For estimating the profitability of the farms and their capacity to repay the Government for part of the investment costs, financial projections estimated farm net income before debt service. Both income and cash flow analyses were performed in constant 2001 prices, rather than in the conventional current terms, for two reasons: (i) the domestic inflation forecast was highly speculative, with a history of hyperinflation; and (ii) the present exchange rate regime is a highly administered system, with two different legal exchange rates (official and commercial rates), against a backdrop of a thriving curb market. Thus, a cash flow analysis in constant prices provides a fair estimate of the magnitude of farm profitability and liquidity in real terms, especially with the expectation that the Government will unify and float the exchange rates in the near future. A number of key assumptions were made for the analysis:

- (i) The Government would continue to provide scheduled installments of advance payments to farmers over the crop growing period for both cotton and wheat in an amount equivalent to 90 percent of the expected value of the crops. At present, there are no alternative sources of trade financing to provide the farms with the required working capital. Therefore, the State must provide assurances that advance payments to the farms for cotton and wheat would continue for as long as the State (a) retains certain controls over cotton marketing, (b) controls domestic wheat production, and (c) dictates the cropping pattern for cotton and wheat.
- (ii) On-farm investments for improving the drainage and irrigation systems were estimated at \$1,100/ha. Beneficiaries would repay the Government only for the on-farm investment, in the form of an infrastructure betterment levy over a period of 25 years, including a grace period of 5 years. The Government would bear fully all other investment costs. This betterment levy was estimated as follows. The on-farm investment costs were accounted for in the local currency at the prevailing official exchange rate. Interest charges during construction, or the five-year grace period, were capitalized as part of the investment costs. Repayment would be made in the local currency. For estimation purposes, an interest rate of 7 percent per annum in real terms was used in calculating interest charges during the grace period, and in amortizing the repayment of the on-farm

investment cost by the farms. The cost recovery payments were calculated in equal annual installments comprising capital repayment and interest charges.

- (iii) A single and unified land tax of SUM1,842/ha was applied to the farms, based on an average land fertility score for the district. Sales of farm outputs would continue to be exempted from value-added taxes, as currently practiced. As of 2001, there were practically no income taxes applicable to the farms. The farms simply paid a single tax, which is the unified land tax.
- (iv) Cooperative farms would undertake measures to reduce fixed charges related to excessive administrative costs and redundant labor. Such measures would be carried out gradually at an attainable rate of 2.5 percent annually for a maximum period of eight years.
- (v) Cooperative farms would no longer be burdened with the financial obligation to pay for maintaining public, social, and community infrastructures. It was projected that the transfer of this financial obligation from the farms to the State budget would not be reversed.
- (vi) The cost for O&M of the rehabilitated irrigation and drainage systems was estimated at \$25/ha.
- (vii) Rehabilitation of the irrigation and drainage systems would be undertaken in a fashion that would minimize disruption of farm operations and prevent crop production losses. With adequate planning and coordination, no crop losses were anticipated during the construction period.
- (viii) The Government would periodically adjust the State procurement prices of cotton and wheat for inflation, changes in international prices, and movements in the exchange rate. Given that a double-digit inflation is expected to continue in the medium term, the State procurement prices would rapidly be eroded in real terms if the Government would not periodically adjust the prices for inflation. Therefore, for as long as the State administers the procurement prices of cotton and wheat, the State must ensure that adjustments for inflation would be made periodically, in addition to adjustments due to changes in the international prices for the commodities and the exchange rate. The financial viability and sustainability of the Project, including the profitability of the farms, will be seriously jeopardized if the State allows inflation to erode the procurement prices in real terms.
- (ix) No provision was made for payment of dividends to shareholders. This assumption was made to show cash balances that would reflect retained earnings fully.

25. The summary results of income and cash flow analysis for a representative cooperative farm are shown in Table A9.1. Essentially, the cooperative farms were projected to have higher per ha expenses, including production and fixed costs, than the private farms. The cooperative farms are expected to continue with a large permanent labor. With the expected increases in fertilizer prices to reach import parity levels, and increases in O&M costs for the irrigation and drainage systems, the total expenses of the cooperative farms were estimated to climb from SUM160,000/ha in year 1 to SUM226,000/ha in year 8 in constant 2001 prices. However, with the expected improvement in international prices of wheat and cotton, coupled with the

increases in yields due to the Project, a typical cooperative farm with 3,000 ha area is expected to improve its profitability, from a loss of about SUM34.7 million in 2001 to a net income before debt service in constant 2001 prices of SUM44.5 million in year 4, and SUM272.3 million in year 8. With this improvement in financial performance, the large farms are expected to have the capacity to pay for the betterment levy for on-farm rehabilitation over a 20-year period, and generate a net cash flow of SUM121.5 million in year 8 and thereafter. The debt service coverage ratio was estimated at 1.8 in year 8 and thereafter. The detailed farm budget analysis for a representative cooperative farm is provided in Supplementary Appendix H (Detailed Financial and Economic Analysis).

26. The summary results of income and cash flow analysis for a typical small private farm with 1,500 ha area are shown in Table A9.2. For such small private farms, per ha expenses were estimated to rise from SUM143,000/ha in year 1 to SUM212,000/ha in year 8 in constant 2001 prices. The private farms are projected to improve their profitability steadily with the improvement in crop yields. Net incomes before debt service were calculated to increase from SUM0.7 million in year 1 to SUM13.0 million by year 8. The small private farms are also expected to be able to pay for the betterment levy for on-farm rehabilitation cost over a period of 20 years, starting from year 6. The debt service coverage ratio was estimated at 2.0 in year 8 and thereafter, generating a net cash flow of about SUM6.7 million annually after debt service, in constant 2001 prices. The detailed farm budget analysis for a representative private farm is provided in the Supplementary Appendix H (Detailed Financial and Economic Analysis).

H. Rates of Return on Rehabilitation of the Irrigation and Drainage Systems

27. The overall project investment is expected to generate a financial internal rate of return (FIRR) of 13.7 percent with a financial net present value of SUM2,035 million at a discount rate of 12 percent per annum. With economic prices calculated on the basis of the domestic price numeraire, the overall economic internal rate of return (EIRR) of the Project was estimated at 26.2 percent with an economic net present value of SUM23,913 million. The significant gap between the FIRR (13.7 percent) and EIRR (26.2 percent) is mainly due to the fact that in the economic analysis, the price distortions created by the fixed exchange rate policy have been removed through the application of a shadow exchange rate factor of 2.0.

I. Sensitivity Analysis

28. The sensitivity of the FIRR and EIRR to decreases in yield and prices are presented in Table A9.3. The sensitivity of the FIRR to depreciation of the exchange rate of the local currency to the dollar is shown in Table A9.4.

29. In the unlikely event, that the projected yields of cotton and wheat with the Project were reduced by 10 percent throughout the 25-year period, the FIRR and the EIRR of the Project would reduce to 12.0 percent and 23.9 percent, respectively. When the projected cotton prices alone declined by 10 percent, the FIRR and the EIRR would decline to 11.9 percent and 23.0 percent, respectively. Should the projected wheat prices decline by 10 percent, the FIRR and the EIRR of the Project would drop to 13.1 percent and 25.7 percent, respectively.

30. In the unlike event that the prices of both cotton and wheat decrease by 10 percent simultaneously, the FIRR and EIRR would decline to 11.1 percent and 23.3 percent respectively.

Table A9.1: Typical Farm Budget
Cooperative Farm, 3,000 ha
 ('000 Sum in Constant 2001 Prices)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8-25
REVENUES, COSTS								
Total Revenues^a	445,123	490,784	554,007	631,158	719,458	820,598	889,496	949,227
Total Costs^b	479,857	500,058	530,941	586,657	624,745	641,848	661,581	676,965
Net Income before debt service	(34,734)	(9,274)	23,066	44,500	94,713	178,750	227,915	272,262
Net Income (before debt service) per ha	(12)	(3)	8	15	32	60	76	91
Total cost per ha	160	167	177	196	208	214	221	226
CASH FLOW								
Cash Inflow								
Net Income before debt service	(34,734)	(9,274)	23,066	44,500	94,713	178,750	227,915	272,262
Cash Outflow	0	0	0	0	0	150,727	150,727	150,727
Net Cash flow	(34,734)	(9,274)	23,066	44,500	94,713	28,023	77,188	121,535
Ending Year Balance	(34,734)	(44,008)	(20,942)	23,558	118,271	146,294	223,482	345,017
Estimated Debt Service Coverage Ratio^c	(5.5)	(0.6)	4.6	7.2	13.0	1.2	1.5	1.8

^a The revenues from seed cotton, wheat, maize, fruit, vegetable, and alfalfa.

^b This includes direct and indirect production costs.

^c The ratio of net income (excluding depreciation, non-cash charges, interest and other charges on debt) against debt service including long-term loan principal repayments, and interest charges.

Table A9.2: Typical Farm Budget
Private Farm, 125 ha
 ('000 Sum in Constant 2001 Prices)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8-25
REVENUES, COSTS								
Total Revenues^a	18,547	20,449	23,084	26,298	29,977	34,192	37,062	39,551
Total Costs^b	17,822	18,810	20,242	22,192	23,924	24,783	25,750	26,537
Net Income before debt service	725	1,640	2,841	4,107	6,053	9,409	11,312	13,014
Net Income (before debt service) per ha	6	13	23	33	48	75	90	104
Total cost per ha	143	150	162	178	191	198	206	212
CASH FLOW								
Cash Inflow								
Net Income before debt service	725	1,640	2,841	4,107	6,053	9,409	11,312	13,014
Cash Outflow	0	0	0	0	0	6,280	6,280	6,280
Net Cash flow	725	1,640	2,841	4,107	6,053	3,129	5,032	6,734
Ending Year Balance	725	2,364	5,206	9,312	15,366	18,494	23,526	30,259
Estimated Debt Service Coverage Ratio^c	4.3	7.7	11.6	14.8	19.5	1.5	1.8	2.0

^a The revenues from seed cotton, wheat, maize, fruit, vegetable, and alfalfa.

^b This includes direct and indirect production costs.

^c The ratio of net income (excluding depreciation, non-cash charges, interest and other charges on debt) against debt service including long-term loan principal repayments, and interest charges.

31. The sensitivity of the FIRR to depreciation of the local currency to the dollar was tested. In the event that the sum experiences a 20 percent depreciation, from SUM345.00/\$1 to SUM431.00/\$1, the FIRR is expected to rise to 14.5 percent. The FIRR will rise to 15.4 percent when the local currency depreciates by 30 percent. Depreciation of the sum would cause prices in sum of tradable inputs (such as equipment) and outputs (wheat and cotton) to rise, while prices in sum of nontradable inputs would lag behind. The overall prices of farm outputs (wheat and cotton) are more sensitive than input prices in general to the foreign exchange rate. The net impact of the local currency depreciation against the dollar on the FIRR is favorable. Given the currently overvalued official exchange rate, the liberalization of the foreign exchange rate regime would effectively lead to the depreciation of the local currency. The liberalization of the foreign exchange rate regime will have a substantial favorable impact on the financial conditions and profitability of the farms.

Table A9.3: Switching Values for FIRR and EIRR

Item	Base Case (%)	10% Decrease in both Cotton and Wheat Yields	10% Decrease in Cotton Price	10% Decrease in Wheat Price	10% Decrease in both Cotton and Wheat Prices
FIRR ^a (%)	13.7	12.0	11.9	13.1	11.1
EIRR (%)	26.2	23.9	23.9	25.7	23.3

EIRR = economic internal rate of return, FIRR = financial internal rate of return.

^a Includes all project investment costs.

Table A9.4: Sensitivity of FIRRs to Local Currency Depreciation

Item	Base Case	20 percent Sum Depreciation	30 percent Sum Depreciation
FIRR ^a (%)	13.7	14.5	15.4

FIRR = financial internal rate of return.

^a Includes all project investment costs.