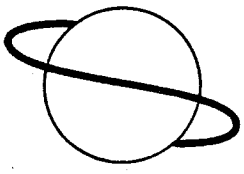


GEF

Global Environment Facility

April 13, 2000

Dear Council Member:

The World Bank, as the Implementing Agency for the project entitled, *Georgia: Agricultural Research, Extension and Training (ARET)*, has attached the proposed project document for CEO endorsement prior to final approval of the project document in accordance with World Bank procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by the Council in May 1999 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by the World Bank satisfactorily details how Council's comments and those of the STAP reviewer have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at www.gefweb.org. If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to down load the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such request, please confirm for us your current mailing address.

Sincerely,

Mohamed T. El-Ashry
Chief Executive Officer
and Chairman

cc: Alternates, Implementing Agencies, STAP

GEF SECRETARIAT, 1818 H STREET NW, WASHINGTON, DC 20433 USA
TELEPHONE (202) 473 0508 FAX (202) 522 3240/3245

THE WORLD BANK/IFC/M.I.G.A.

OFFICE MEMORANDUM

DATE: April 12, 2000

TO: Mr. Andrea Merla, Consultant, GEF

FROM: John Hayward, Sector Manager, ECSSD

EXTENSION: 36086

SUBJECT: **Georgia: Agricultural Research, Extension and Training (ARET) Project (PE-P065715; GE-64091)**
Clarifications to Support GEF CEO Endorsement

1. In response to your request for clarifications on the above project prior to GEF CEO endorsement, please note the following:

A. Change in Title of Project. The name of the project was changed from its more generic name of Agricultural Development II Project to the Agricultural Research Extension and Training project, at the request of the Georgian Government, to better reflect the scope of the project. However, the scope of the project itself and the GEF funded activities under the project remain the same as originally proposed and accepted by the GEF Council in March 1999.

B. Change in Project Duration. As mentioned in the project document accepted by the GEF council, this project is viewed as the first project in a series of investment loans to promote environmentally sustainable agricultural practices in Georgia. This is still the case. It is anticipated that the pilot watershed pollution reduction program, funded by the GEF under this project, would be expanded to other watersheds in subsequent stages of the investment program. The other components of the project will also be expanded in subsequent phases. As a point of clarification, while this project is planned to be the first phase of a ten year investment program, the project is not an Adaptable Program Loan (APL). Prior to the GEF council approval of this project in March 1999, the management of the World Bank decided that a series of Investment Loans would be a more suitable instrument for implementing this program than an APL. The implementation period for the Agricultural Research, Extension and Training Project, which is the first phase of this program, was increased during project appraisal from four years to five years, to allow adequate time for implementation of the competitive grant program. Based on past experience in Georgia, this implementation period is more realistic. This increase of the implementation period does not change the scope of the project.

C. Allocation of GEF funds. The key activities and the total amount of GEF funding under the project, equivalent to $2.5 million, remain the same. The following table shows the minor changes in the allocation of funding between activities from allocations approved by the GEF Council in March 1999. Under the revised allocation, no GEF funding will be used for funding the Project Coordination Unit, thus moving GEF funds to activities that have direct environmental benefit. There is

therefore an increase in the amount of funds allocated to investments in improved agricultural practices and biodigesters. The investment in water quality monitoring remains the same. The cost of the project management unit will be covered by IDA funding.

D. The GEF funding for on-farm trials and demonstrations of suitable agricultural practices, such as reduced tillage and manure handling was originally listed as Sub-component 3 (a) in the Incremental cost table of March 1999, but because this program will be managed through the Competitive Grant Scheme, it was decided for editorial purposes to list this activity as sub-component (b) under Component 1. Competitive Grant Program. This is not a change in design, but an editorial change, so that it is clear to project implementers how this component will be managed. Despite these minor reallocations, the design of these components, funded by GEF, has not changed since GEF Council approval in March 1999.

Component	March 1999[1]	Current Allocation
1. Competitive Grant Program Sub-component (b) Improve agricultural practices to reduce Pollution, - On-farm trials and demonstration of sustainable.	1.15	1.19
2. Reform of Agricultural Research	0.0	0.0
3. (a) Pilot Environmental Pollution Control Program – Biogas Units	0.85	0.94
3 (b) Pilot Environmental Pollution Control Program - Water Quality Monitoring	0.35	0.35
4. Project Implementation Unit	0.35	0.0
TOTAL	2.5	2.48

Footnote 1. The numbers in this column do not total to 2.5 because of rounding error.

2. On the basis of these clarifications, we would kindly request you to expedite GEF CEO endorsement.

THE WORLD BANK/IFC/M.I.G.A.

OFFICE MEMORANDUM

DATE: March 24, 2000

TO: Mr. Mohammed El-Ashry, CEO/Chairman, GEF

FROM: Lars Vidaeus, GEF Executive Coordinator

EXTENSION: 34188

SUBJECT: **Georgia: Agricultural Research, Extension and Training (ARET) Project Final Council Review/CEO Endorsement**

1. Attached please find an electronic copy of the Project Document for the above-mentioned project for review by the Secretariat staff, prior to circulation to Council and your final endorsement.

2. The project is fully consistent with the objectives and scope of the proposal endorsed by the Council as part of the May 1998 work program and reflects comments made during work program endorsement by GEF Council members as follows:

GEF COUNCIL COMMENTS	RESPONSE/COMMENTS
Comments from France	
Diagnostic analysis has shown that non-point source pollution, principally from agriculture is the most serious problem. However, there is a general lack of data on non-point source pollution and the importance of Georgia as compared to other riparian countries.	Non-Danube river systems carry about 50% of the non-point source pollution to the Black Sea, estimated to be over 0.5 million tonnes of dissolved N & P in 1990. This is estimated to have decreased to about 35,000 tonnes today because of decreased fertilizer application. While the Dnieper and Dniester rivers are the principal sources of Black Sea pollution, the Georgian rivers could carry about 10% of the above dissolved minerals into the Black sea as well as a similar percentage of agricultural suspended solids. It is true that there is a general lack of data on non-point source pollution and more specifically in Georgia. Part of the GEF component is to undertake intensive monitoring and evaluation (M & E) on a discrete catchment area comprising the Khobis/Tskali rivers. This will be pooled with information from similar projects in the Black Sea area.
The incremental cost analysis is very detailed for the biogas units, but weakly analysed for non-point source pollution.	The incremental cost analysis has been updated. Information from other Black Sea countries indicates that it is possible to obtain a reduction of about 30 kg./ha. of N & P. But such specific reductions have to be tested. This is why emphasis is being placed on M & E for nutrient discharge in water bodies across the project area. It is estimated that there could be a reduction of 20-30% of chemicals and organic solids from the project area (PAD Annex 2).
What is the respective importance of animal and cereal production	Information has been collected particularly by region for Western Georgia on a) agricultural land distribution by crop types: b) number

systems? If animal numbers are too dense, excess manure cannot be absorbed by the cereal system.	of farming families and average land holdings; c) type and number of domestic animals; d) type of animal farms. It was determined that animal numbers are not too dense and all the manure could be used on farm as fertilizer. (See pad Annex 2)
How is the approach to reduce non-point source pollution innovative and replicable?	The project is the first Bank project which mainstreams environmental considerations into an agriculture project. It is the first example of its kind to bring the Ministries of Agriculture and Environment together on a common project and training will be provided to appropriate staff of both ministries. The project aims to demonstrate environmentally friendly agricultural practices, which will not only reduce non-point source pollution levels, but also improve farm profitability. This will be done through demonstration units, advising farmers on manure storage, handling and application, determining fertilizer application rates based on soil testing, providing farmer training and retraining, and offering technical backstopping through the competitive grants scheme. All these initiatives will be monitored, and where deemed appropriate, adjusted. The project is designed to foster broad-based stakeholder participation, which should ensure that initiatives developed are demand-driven and fully responsive to the farmer's needs. This will ensure the project's replicability.
What decrease in nutrient loading can be expected for the rivers and for the Black Sea?	As indicated above, it has been estimated that an expected reduction in Georgia's pollution load to the Black Sea (based on the 1988 level) of between 20% and 30% is anticipated. This will be monitored throughout the lifetime of the project and beyond. Because the project is concentrated on a specific watershed with little point-source pollution, agricultural pollution can be confidently determined.
The participation of the GEF to the PIU is too important with respect to its participation to the project	The GEF component is an integral part of the project, and jointly supports a common PIU with the IDA financed activities.
As a conclusion, the project is a better fit for OP. 6 rather than OP. 8	The main objective of the project is reducing pollution in groundwater and rivers and the Black Sea. The Biogas sub-component under manure storage handling and use will demonstrate an alternative way of handling manure, while at the same time providing an additional (and renewable) energy source to the farmer. The slurry produced from the digester is also a superior form of organic fertilizer. While it is easier to quantify the benefits from discrete biogas units, the greatest projects benefits will come from pollution reduction. Thus the project fits best under OP 8.
Comments from the Netherlands	
In addition to saving carbon, the treatment of manure means that it will not end up in groundwater or in the Black Sea. Improved environmental management on-farm is designed to prevent chemicals from fertilizers and pesticides from polluting the water resources. The impacts of these two factors are not worked out in the proposal other than in very general terms. The whole package is designed to make farming more attractive economically and environmentally. It is hoped that	The PAD and the PIP have provided additional information on other pollution benefits. Indeed the project is designed to make farming more attractive economically and environmentally and to help boost the economy and reduce poverty in rural areas. The project has been designed so that activities for the achievement of these objectives will be primarily financed by IDA resources; additionally, GEF resources will also contribute to the realization of these objectives. The GEF contribution to the project is commensurate with the transboundary or global benefits the project can achieve.

more people will enter farming, boosting the economy and reducing poverty. But most of this is not financed out of the GEF component.	
Target group is small farmers, but because of animal numbers per farm, the market for biodigesters is obviously very restricted, so 50,00 units is very optimistic. Much grazing land is in the hands of "commercial farmers" who are not targeted. There seems to be a mismatch between social and environmental aims. There is no information on cattle distribution and numbers, thus making biogas digester potential difficult.	A survey has been done on farm size, animal numbers and potential. There are over one-half million cattle and over one-quarter million pigs in Western Georgia. Thus, there is a large potential for digesters. In many of the rural areas, there is no electricity and many of the small farmers do not have access to cooking gas. Detailed surveys will be undertaken during the project to determine how much of the potential can be achieved. About 200 units will be built during the project to test their suitability and acceptability. A GTZ study indicated the potential for biogas digesters at about 100,000 units. The project is principally aimed at the arable/mixed farmers with 3 to 6 cattle unit equivalents. It is not aimed at the pastoral communities. However, small community-level manure management practices will also be supported. The information on cattle distribution and numbers were collected during project preparation and used to determine project activities.
The cold-weather factor has been taken into account, but the assumption that the digesters can work for 2/3 year should be checked.	The design of the digester requires the substrate to be heated with some of the produced gas. Therefore, it is capable of working for 2/3 of the year as it does not totally depend on the ambient temperature. Prototypes of biodigesters have been developed and tested in Georgia and will be further tested before large-scale replication.
The idea of working through the CGS (Competitive Grants Scheme) is interesting. It invites innovative proposals, supervised by the PIU.	The CGS should make the various initiatives very attractive. Detailed procedures of CGS are provided in the *Operation Manual for Competitive Grant Systems in Agriculture.*
The calculations on manure savings may be suspect, but the fuel substitution savings are reasonable. There is no cost/benefit assessment of preventing run-off of manure, mineral fertilizers and chemicals into rivers and lakes although the cost for these is greater than for the biogas initiative. The links between manure handling and improved water quality are tenuous. No firm link is given.	The various savings are best estimates. They will be checked during the project through extensive and intensive monitoring and evaluation. Cost/Benefit analysis was not undertaken because of a lack of data. Estimates have been undertaken for similar initiatives in the Chesapeake Bay and other Black Sea countries. These show a positive B/C ratio. Through the monitoring activities of the project, more data will be forthcoming which will help in a reliable C/B analysis. Information from various sources such as the lessons learnt from the Chesapeake Bay in Maryland USA on best management practices for agricultural non-point source pollution, provide concrete links between manure handling and improved water quality. These practices are incorporated into the project
Balance in the funding. The GEF component is $ 2.5 million out of $ 8.5 million, yet the GEF component of the PIU is more than 50%. Why is this?	In the revised PAD, total project cost is US$12.41m. Total support to the PIU over the project life is US$750,000. The share of GEF funds towards the PIU is US$58,000 which is less than 1%.
The biogas proposal is not acceptable as it stands. More socio-economic, marketing and technical analyses required in terms of functioning and likely carbon saving impacts. Someone with local knowledge and someone with biogas knowledge	This is a pilot project to test the acceptability of biogas digester in the field. Georgia has the technical expertise to design and build digesters. Prototype digesters have been successfully developed and tested in Georgia by Georgians and GTZ. It has competent scientists with detailed knowledge of the digestion process. There are also people engaged on the project with local knowledge. During project preparation, additional socio-economic, marketing, export and technical information was collected. The project will also obtain

required.	socio-economic and marketing information during its lifetime. Once the Project demonstrates the successful functioning, acceptability and benefits of the biodigesters to farmers, only then will they be adopted on a wider scale.
Information needs to be provided on the impacts of reduced water pollution. This should include how this will be achieved. At present positive outcome cannot be assessed	The impact of reduced water pollution in the Black Sea has been prepared by the Danube Program Coordination Unit as well as the Black Sea Partnership Program. The project will contribute to the overall objectives of nutrient pollution control of the Black Sea. The project plan details the various kinds of information required to monitor water pollution which include: soil and ground water testing; testing of pollution in still and flowing water bodies; monitoring water turbidity etc. Samples will be taken and analyzed at frequent intervals, throughout the project's lifetime. Some information is available from the Chesapeake Bay's publication on financial cost effectiveness of point and non-point source nutrient reduction technologies, (Report # 8, 1992). This has been used in the updated incremental cost analysis.
Comments from Switzerland.	
Project touches a sector of great importance, but the goals are ambitious. Doubts about its economic sustainability as most inputs are to be provided on a grant basis.	This project is part of a larger agricultural development project. The government has put much emphasis on this initiative and two ministries are working in partnership to ensure its success. It is also demand driven. It is recognized that this pilot project will test and demonstrate the environment-friendly agricultural practices, manure management and biodigesters. For farmers to accept some of these practices, it would be necessary to provide incentives to adopt these practices. At the initial stage, farmers will share the cost of civil works.
Agree with the main issues facing the agro-sector, but do not think most urgent problems have been addressed. When grants terminate, farmers may lose interest.	Implicit and explicit in the project is improving the economic situation of the farmer, base on sustainable and environmentally friendly agricultural practices. Thus when the grants terminate, the farmers would have learned and adopted the environment-friendly agricultural practices and seen the benefits of these. They would also have sufficient economic incentives to continue and expand.
Acknowledge that project is well coordinated with other international efforts.	This is further reinforced by a new multi-million-dollar initiative to be undertaken jointly by GEF and the World Bank entitled Strategic Partnership for Nutrient Reduction in the Danube River basin and the Black Sea. The Project will also support the proposed Strategic Partnership for Black Sea/Danube.
In general agree with the risk assessment, but far less optimistic as far as the macro-economic side is concerned, including export market potential.	This project is part of a larger Agricultural Development Project, and is linked to several Black Sea initiatives. A new WB/GEF Strategic Partnership for nutrient reduction in the Danube Basin and the Black Sea is proposed which will build on the experiences of this and other projects. The agricultural component of the project will also support agricultural research, marketing and exports of priority agricultural commodities.
Attention should be given to political tension in the region.	While such political tensions cannot be dismissed, drawing all the governments together in such things as the Strategic Partnership may help to ease tension and concentrate effort on increasing the economic prosperity of the area. Increased wealth may have a multiplier effect on tension reduction.
Special attention given to potential conflicts of interest. This might occur within the Competitive Grants Board and between different units within the affected administrative bodies.	The CGS Board comprises of different stakeholders, including ministries of agriculture, finance and environment, members of Parliament, Agrarian University, Farmers' organizations, NGOs, etc. Such a composition diminishes the potential for conflict of interest. (Operation Manual, p.5)
The long time horizon is positive	This has been stressed in the Project Appraisal Document.

and required to achieve objectives.	
The process of participant selection is well devised. However, no explanation is given of how the representative villages were selected.	The representative villages were chosen based on two principal criteria. First, the villages must be in a watershed that has little, if any, point-source pollution. Secondly, it must be in a small enough area that the majority of farms close to the rivers will be willing partners in the project. This should enable any effects of the project's interventions to be translated into positive or negative pollution measurements without being masked by other influences. After a process of selection and elimination, a watershed in western Georgia covering three districts of Khobi, Chkhorotsku and Tsalenjika was chosen and endorsed by the appraisal mission. This covers a river system flowing into the Black Sea.
It would be interesting to know more about the implementation degree of the "Concepts of Agrarian Policy of Georgia" and the practical application of the cited laws. A graph giving organizational structure would be helpful.	The Agrarian Policy is summarized in the PAD and described in more detail in supporting documentation. An Organizational Chart is given in the Project Operational Manual.
Little is said on the methodology or approach to achieve goals. However, of these questions may be addressed during pre-appraisal mission.	The methodology and approach for the competitive grant scheme is detailed in the PAD and the Operational Manual for the Competitive Grant Scheme for Agriculture, prepared by the project team.

GEORGIA

AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

Project Appraisal Document

Europe and Central Asia Region
ECSSD

Date: January 11, 2000	**Team Leader:** Iain G. Shuker
Country Manager/Director: Judy M. O'Connor	**Sector Manager/Director:** Kevin M. Cleaver
Project ID: P065715	**Sector(s):** AE - Agricultural Extension, AR - Research, VM - Natural Resources Management
Lending Instrument: Specific Investment Loan (SIL)	**Theme(s):** ENVIRONMENT; RURAL DEVELOPMENT
	Poverty Targeted Intervention: N
Global Supplemental ID: P064091	**Team Leader:** Jitendra P. Srivastava
	Sector Manager/Director:
Supplement Fully Blended? Yes	**Sector(s):** AY - Other Agriculture

Project Financing Data

☐ Loan ☒ Credit ☒ Grant ☐ Guarantee ☐ Other (Specify)

For Loans/Credits/Others:

Amount (US$m): 7.54 (IDA); 2.50 (GEF)

Proposed Terms: Currency Pool Loan (CPL)

Grace period (years): 10 **Years to maturity:** 35

Commitment fee: 0.00 **Service charge**: 0.75%

Financing Plan: Source	Local	Foreign	Total
Government	1.01	0.71	1.72
IBRD			
IDA	5.04	2.50	7.54
BENEFICIARIES	0.50	0.16	0.66
GLOBAL ENVIRONMENT FACILITY	1.84	0.64	2.48
Total:	8.39	4.02	12.41

Borrower/Recipient: GOVERNMENT OF GEORGIA

Responsible agency:

Ministry of Agriculture and Food
Address: 41 Kostava Street, Tbilisi, Georgia
Contact Person: Mr. George Maglakelidze
Tel: 995.32.999.942 Fax: 995.32.934.651 Email: ppiu@wbagro.ge

Estimated disbursements (Bank FY/US$M):

FY	2001	2002	2003	2004	2005		
Annual	1.8	2.5	2.0	0.6	0.7		
Cumulative	1.8	4.3	6.3	6.9	7.6		

Project implementation period: 5 Years

Expected effectiveness date: 07/01/2000 **Expected closing date:** 12/31/2005

GEF Estimated disbursements (Bank FY/US$M):							
FY	2001	2002	2003	2004	2005		
Annual	0.4	0.4	0.5	0.6	0.6		
Cumulative	0.4	0.8	1.3	1.9	2.5		

A. Project Development Objective

1. Project development objective: (see Annex 1)

The *Overall Development Objective* of the Project is to initiate the development of an efficient and cost-effective agricultural knowledge system to demonstrate, disseminate and promote the adoption of appropriate technologies that increase sustainable agricultural production and reduce pollution of natural resources. In support of this objective, the Project would assist the Government of Georgia to:

- Put in place a Competitive Grant Scheme for agriculture to be used as a vehicle for funding: (i) appropriate on-farm technology acquisition, adaptation and dissemination to enable the new farmers to respond better to the challenges of a privatized economy based on market principles; and (ii) environmentally-friendly agricultural practices to reduce negative impacts on soil and water quality;

- Support Reform of the Agricultural Research System through preparation of a detailed implementation and investment plan for one high priority research direction, followed by investments to implement this plan; and

- Invest in Environmental Pollution Control (manure storage and handling facilities and biogas digesters, as well as soil and water quality monitoring programs) to reduce agricultural nutrient pollution of the Black Sea.

2. Global objective: (see Annex 1)

Project Global Environmental Objectives. The Project will initiate measures aimed at improving on-farm environmental practices, which over the long-term would reduce nutrients entering the Black Sea. The Project activities, especially those relating to better manure management, including its storage and application, are linked directly to "The Black Sea Strategic Action Plan" formulated with the assistance of GEF. It developed a systematic approach to policy development through the application of a Trans-Boundary Diagnostic Analysis. Results of the pollution source inventory conducted during the preparatory work show that non-point sources of agricultural pollution are a serious problem facing the Black Sea. In addressing this problem, through support for relatively low-cost investments, policy adjustments, changes in consumers' practices and employment of alternative technologies, the Project would also complement the Danube Delta Environmental Program and assist the government in meeting its international commitments under the Bucharest Convention. An ancillary global environmental objective of the Project is to reduce greenhouse gas emissions from stored manure by promoting the use of biogas energy among rural farmers.

3. Key performance indicators: (see Annex 1)

B. Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project: (see Annex 1)

Document number: 1700-GE **Date of latest CAS discussion:** 09/12/97

The Project is consistent with the Bank's Country Assistance Strategy, which identifies agriculture as one of the priority sectors, and fully supports the CAS objectives of: (i) deepening and diversifying the sources of growth; (ii) reducing poverty; and (iii) protecting the environment through sustainable natural resource management.

The main thrust of the Project is on providing services to private farmers in terms of technology dissemination and adaptation so that they are better prepared to respond to the emerging market conditions and global environmental needs. Strengthening the agricultural knowledge system and adopting environmentally sustainable agricultural practices would assist farmers in realizing their potential for increased agricultural productivity and profitability, and improve the competitiveness of Georgia's agricultural sector. In line with government policy, the provision of more productive technologies and improved access to information would also support more efficient and profitable production for traditional export markets as well as the development and addition of new products. Higher farm-level output and increased productivity would also have the consequent impact of raising rural incomes and reducing poverty.

1a. Global Operational strategy/Program objective addressed by the project:

The Strategic objectives of this project are directly tied to the objectives of the Strategic Action Plan for the Black Sea, supported by GEF, and would complement the initiatives under the Danube Delta Environmental Program. The Project's objective of reducing non-point source pollution from agriculture is consistent with GEF Operational Program Number 8, "*Waterbody Based Operational Program,*" which focuses "mainly on seriously threatened water-bodies and the most important trans-boundary threats to their ecosystems". Under the Program, priority is accorded to projects that are aimed at "changing sectoral policies and activities responsible for the most serious root causes or needed to solve the top priority trans-boundary environmental concerns".

The objective of promoting the use of biogas is consistent with GEF Operational Program Number 6, " *Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs."* The Program is designed to promote widespread use of renewable energy technologies, such as bio-digesters, because they "offer some of the best prospects for achieving deep reductions in greenhouse gas emissions at the global level".

The Project will provide an opportunity for the GEF to be a catalyst for actions to bring about the successful integration of land and water resource management practices. GEF support will reduce costs of and barriers to farmers in adopting improved sustainable agricultural practices (including the use of bio-digesters). It will also help develop mechanisms to move from demonstration level activities to operational projects that reduce non-point source pollution from agriculture to the Black Sea and reduce carbon emissions to the atmosphere. The Project builds on the Poland – Rural Environment Project funded by IBRD and GEF, and is expected to serve as a "model" for initiatives to be launched in the other littoral states for which a strategic partnership between the GEF and Bank is envisaged. The World Bank is preparing a Black Sea/Danube Strategic Partnership paper for GEF Council discussion in May 2000.

2. Main sector issues and Government strategy:

Agriculture sector highlights: Agriculture is the mainstay of the Georgian economy, accounting in 1997 for about 28% of GDP and about 55% of employment. The country produces a variety of agricultural crops, including grain crops (54%), and fruits (11%). Agricultural production was seriously disrupted during the civil conflict that followed independence in 1991. Since 1994, however, agricultural output has started to recover and some progress has been made in areas of land reform and farm restructuring. Of the total land area, only about 26% is privately owned; the rest is still owned by the Government, including some arable land that is leased to farmers and most of the rangeland areas. In terms of land under arable crops and perennial trees, about 58% is in private hands and a further 25%-30% is leased, implying that approximately 85% of the total arable land is farmed privately. Distribution of land has essentially created a smallholder, or subsistence sector, and a commercial sector. Smallholders, estimated to number 1.02 million, on average own less than 1.0 ha of garden and farmland in rural areas. About ten percent of smallholder farmers lease additional land from the Government land reserve, increasing their farms by a few hectares. As for the commercial sector, it comprises 41,000 individuals and 5,500 enterprises, with farm size ranging from five ha to more than 100 ha, including leased land, and a few farms even larger than this.

Main sector issues reflect the shift from a command economy to a market-based economy and the problems faced by emerging private farmers, who have little experience with farm management or operating in a market economy. These problems include, *inter alia*: a collapse of markets for Georgian products, particularly high-value products, in the former Soviet Union (FSU); cash constraints and limited access to credit; outmoded agronomic and farm management practices, ill suited to meet the needs of the emerging market economy; shortage of inputs, particularly the lack of good seeds; obsolete agricultural machinery and shortage of spare parts, equipment and service facilities; and inadequate rural infrastructure, including roads and electricity supply.

Environmental Issues. During Soviet times, agriculture and livestock production systems were highly intensified in Georgia to meet the needs of the FSU. Intensification resulted in the heavy use of mineral fertilizers and pesticides. Georgia imported large amounts of pesticides, fertilizers, growth regulators and other chemicals to meet the needs of agriculture. For example, in 1986, about 35,000 tons of pesticides and 250,000 tons of fertilizers were imported. The lack of conservation tillage systems and crop rotations promoted the movement of fertilizers and pesticides to rivers, resulting in the pollution of the Black Sea from agricultural production systems. In addition, animal production systems were highly industrialized, resulting in large amounts of manure flowing into major water bodies and causing large scale pollution of the Black Sea. Since 1991, although livestock production has dwindled and been decentralized, there is almost no adequate manure storage and management. Also, Georgia's biodiversity is under threat from unsustainable agricultural practices, environmental pollution, over-exploitation of forests for commercial purposes, drainage, eutrophication of lakes and other water bodies, and deforestation. The majority of Georgian high mountain settlements are concentrated in sub-alpine zones and farms/meadows in these areas are highly degraded because of agricultural activities and over-grazing. This is causing severe soil erosion resulting in the loss of flora and fauna.

Government Strategy: Government strategy for the sector is set out in the Ministry of Agriculture and Food's "Concept of Agrarian Policy of Georgia" (issued as a Presidential Decree, April 7, 1997). The main strategic thrust is to ensure the country's food security and to strengthen the country's independence by using its agro-industrial potential, both to meet internal demand and increase income from exports. Government policies support the deepening of the reforms in the sector, particularly with regard to land reform, the formation of an environment to stimulate competition, and the development of a market

infrastructure. Only those assets that are of strategic importance will be retained in state ownership for the time being.

With the assistance of several donors, the Government is implementing its strategy by addressing the sector issues laid out above. First, a number of donor-supported initiatives (including the World Bank Agriculture Development Project (ADP)) to develop agricultural credit programs for farmers and agro-processors are in progress. Success is dependent on the soundness of the overall financial system and an encouraging start has been made working through commercial banks and the establishment of Credit Unions. Second, an USAID-assisted project implemented by ACDI/VOCA in conjunction with GTZ and CARE, is tackling the problem of improving seed production and getting it into private hands. Third, a number of organizations (TACIS, British Know How Fund and GTZ, as well as several NGOs) have pilot projects underway to provide private farmers and agro-processors with technical, price and business planning advice. Fourth, a large number of donors, including KfW, USAID, Sweden, UNDP, and the Bank are supporting the government's land titling program.

The Bank is supporting the Government in implementing the strategy through the ADP, which is co-financed by IFAD. Its key components include: loans to private enterprises engaged in economic activities in rural areas; a credit scheme for small farmers and micro-enterprises; promoting the development of land markets through a systematic program of land titling; and preparation of an agricultural sector investment program.

Two years ago, the Bank began supporting the reform of the agricultural research system through its " Regional Initiative on Reforming Agricultural Knowledge Systems in Central Asia and the Caucasus". In May 1998, the Government established a high level Inter-Ministerial Commission (IMC) to oversee the reform process. Also, with the support of ISNAR (IFAD financing), the status of the agricultural knowledge and information systems has been reviewed and a Country Profile report has been issued. ISNAR also helped with the preparation of a conception framework for Reform of the Agricultural Research, Extension and Training System.

Environmental issues: Georgia has entered a new phase of environmental activism, with the transition to a parliamentary democracy. The Ministry of Environment, responsible for coordinating government efforts to protect and conserve the country's environment, has made important progress in strengthening the legal and regulatory instruments for improved management of Georgia's environment through enactment of major environmental legislation. These include the "Environment Protection Law," (1996), the "Law on Environmental Permits" and the "Law on State Ecological Expertise." A National Environmental Action Plan (NEAP) is under consideration for formal adoption by the Government. Georgia has also ratified the Bucharest Convention for the Protection of the Black Sea Against Pollution (1992), the Odessa Ministerial Declaration (1993) and is a participating in the preparation of the Strategic Action Plan for the Rehabilitation and Protection of the Black Sea (1996).

3. Sector issues to be addressed by the project and strategic choices:

Issues to be addressed. The Project will build on the initiatives currently being implemented under the ADP, and extend and deepen the reform of the sector through measures aimed at addressing the following key issues:

- developing the capacity of private smallholder and commercial farmers through introduction, validation and dissemination of improved technologies at the farm level, covering production, post-harvest operations, inputs, marketing and natural resource management;

- making research, extension and training more responsive to the needs of farmers and relevant to the emerging market conditions;

- fully integrating environmental concerns into agricultural practices to make them more sustainable, including the better management of nutrient and chemical loads; and

- as part of the overall management of nutrient load, demonstrating environment-friendly bio-digesters and removing barriers to their more widespread use.

There is an immediate need to address the priority problems of private farmers through the validation of improved technology (production, post-harvest operations, inputs, marketing and natural resource management) and dissemination at the farm level, as well as to undertake studies to identify policy and regulatory reforms needed to eliminate bottlenecks affecting the sector. Towards this, the Project will support initiatives directed at on-farm technology adaptation and dissemination, i.e., support research (adaptive – field trials and demonstrations), extension and training activities that would directly impact productivity and incomes of private farms, both smallholder and commercial.

To achieve the objectives of the Project, Georgia's agricultural knowledge system needs to be reformed. Currently, Georgia's agricultural research, extension and training system faces five major challenges: (a) to re-orient the system to make it serve private agriculture based on market principles; (b) to adopt socio-economic ecological and business criteria in planning, priority setting, monitoring and evaluating agricultural knowledge systems; (c) to restructure, selectively rehabilitate, decentralize and consolidate the system to make it efficient, effective and financially sustainable; (d) to develop and strengthen the linkages between researchers and users, and among research, extension and training activities; and (e) to facilitate increased investment in agricultural knowledge systems (AKS), both public and private.

Reforming Georgia's AKS will require fundamental changes in decision making, priority setting, incentive systems, cost-effectiveness, potential revenue generation through cost recovery and accountability to stakeholders. These changes are long-term and would require about 10 years to achieve. As a first step, however, there is a need to selectively support the research and extension system to serve private agriculture with already available or selectively introduced technology and information. This is expected to bring increased productivity of crop and livestock, increased profitability through better farm management and collective bargaining for inputs and markets, and increased sustainability through more environmentally sound technologies and practices. At the same time, it is important to assist the government in a longer-term action plan to reform the agricultural knowledge system. Thus, the project has a two-pronged approach: (1) support targeted, priority activities in research and extension that will provide immediate benefits to farmers and agro-processors and will serve as a catalyst to jump-start the reform process; and (2) provide assistance in developing a national strategy for reform of Georgia's AKS, in preparing implementation and investment plans for one high priority research direction (to develop a model for wider application), and in making investments in this selected area to act as a demonstration and pilot project for restructuring the rest of the AKS.

The main vehicle to be used to support initiatives directed at on-farm technology adaptation and dissemination, is the proposed Competitive Grant Scheme for Agriculture (CGS). The CGS will fund adaptive research (essentially field trials and demonstrations), extension and training activities that would directly impact productivity and incomes of private smallholder and commercial farms, as well as actions to reduce agricultural pollution of the environment. Both private and public sector agencies would be able to compete for funds under the CGS. Funds from the CGS would be additional to existing, core funds for the research system. It will be essential to maintain this core funding but link it to a wider reform of the agricultural research complex which would also be supported under the project.

The CGS will encourage, *inter alia:* (i) user participation in setting priorities for research and extension activities; (ii) increased emphasis on cost effectiveness; (iii) shift from basic to applied research; (iv) resource commitments based on monitorable outcomes; (v) cooperative research/extension by multi-disciplinary teams; (vi) selectivity in research/extension programs; (vii) equitable access to research/extension funds for research institutions, extension agencies and universities, private industry and NGOs; and (viii) linkage with global research/extension community and private sector. Experience with the CGS will feed into the recommendations for the reform of the agricultural research, extension and training system to be prepared as part of the Project.

Strategic Choices. Two strategic choices were made before proceeding with the preparation of the Project.

First, whether investments in Georgia's agricultural knowledge system were justified at this juncture. In this regard, land reform, an initiative supported by the Bank, had resulted in ownership of farmland being vested in individuals with minimal experience with small-scale or commercial farming. Without providing the smallholders and commercial farmers access to information on agricultural practices and technology, it was highly unlikely that the reform would yield anticipated benefits. That existing institutions would be able to provide such information in an efficient and cost-effective manner was also equally unlikely, given that they were not designed to meet the needs of the sector as it has evolved. On that basis, the need for and timing of the operation were deemed appropriate.

Second, whether to reform the existing institutions or build new ones. The latter was rejected on the grounds that this would not only be divisive but also protracted and, hence, not in the interest of the country. Also, institutional reform is a long-term process and it was agreed that the immediate need of the country was to identify those priority areas of activities that could demonstrate quick successes and underscore the importance of reforming the countries agricultural knowledge base. The reforms envisaged are designed to meet three requirements: transparency through greater stakeholder participation; accountability; and greater efficiency and cost-effectiveness. For this, establishing the proposed Competitive Grant Scheme (CGS) is a key innovation of the Project. The CGS should not be seen as a replacement for core funding of the research complex. However, it will encourage reallocation of limited budgetary funds to relevant and effective institutions. Details of the CGS are discussed in the attached Operational Manual.

C. Project Description Summary

1. Project components (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown):

Project components: The proposed 5-year project seeks to reform the Georgian agricultural knowledge system through appropriate technology acquisition, adaptation and dissemination that would respond better

to the new realities and needs of the emerging private farmers, while at the same time promoting environmentally friendly agricultural practices to protect Georgia's surface and ground water and reduce agricultural pollution to the Black Sea.

The project will comprise four components: (i) Competitive Grant Scheme; (ii) Support for Reform of the Agricultural Research System; (iii) Environmental Pollution Control; and (iv) Project Management Unit.

Component 1: Competitive Grant Scheme (US$5.6 million -- IDA Credit + GEF Grant)

The Competitive Grant Scheme (CGS) will support the following activities: (i) Adaptive Research and Technology Dissemination (IDA funding); and (ii) Environment-friendly Agricultural Practices to reduce negative impacts on soil and water quality (GEF funding).

(a) Adaptive Research and Technology Dissemination. This will combine a program of on-farm technology acquisition, adaptation and dissemination, as well as the provision of agricultural advisory services, to tackle immediate priorities for improving on-farm productivity, profitability and long-term sustainability on private farms, both small-holder and commercial. The project will encourage the participation of farmers, farmers' organizations, NGOs and other stakeholders in "needs assessments" of farmers' priorities and constraints, identification of priority activities and their implementation. These activities, to be funded under the Competitive Grant Scheme, will build national capacity and increase the competitiveness of Georgia's agricultural sector.

The terms and conditions for operating the CGS have been set out in an Operational Manual, which has been approved by the Inter-Ministerial Commission (IMC) and the Bank. The CGS will be implemented by a Competitive Grant Board (CGB) that is responsible functionally to the IMC and administratively to the Ministry of Agriculture and Food. The CGB will be serviced by a full-time Secretariat that would report to the CGB and be responsible for day-to-day operations. Terms of Reference and job description details are provided in the Operational Manual in Annex 12.

The British Know How Fund (KHF) is considering providing parallel financing of about US$400,000 to support the dissemination of agricultural knowledge and encourage active participation of farmers, farmers' organizations and NGOs in these activities. It is envisaged that KHF will support the training, technical assistance and operating costs of the "needs assessments" for priority setting in developing contracts between farmers associations and providers of agricultural advisory services to be funded by the CGS.

(b) Support for Agricultural Practices to Reduce Environmental Pollution. The project will be used to fund activities to improve Georgian surface and groundwater and reduce the nutrient load entering the Black Sea from point and non-point sources of pollution from agricultural practices in Georgia. The selected project area in Western Georgia comprises three districts – Khobi, Chkhorotsku and Tsalenjikha – bordering the Black Sea. Activities to be implemented in these pilot watersheds would include: (i) promotion of efficient manure management practices; and (ii) conducting on-farm trials and demonstrations of improved sustainable agricultural practices, including reduced tillage, better chemical management systems, contour farming and buffer strips for water quality benefits.

The testing and introduction of the above environmentally-friendly agricultural practices to reduce negative impacts on water quality, would be funded through the Competitive Grant Scheme. Procedures would be similar to those for adaptive research as described in the Operational Manual. The CGS Research Specialist and Environmental Engineer would together handle the review of project proposals.

Component 2: Reform of the Agricultural Research System (US$3.52 million)

A Conceptual Framework for a National Strategy for Reform of the Agricultural Research, Extension and Training System was approved June 17, 1999, by the Inter-Ministerial Commission set up by the President to support reform of the Georgian AKS, and published. The Government has agreed with the Bank to pilot reforms in one priority research direction, namely Horticulture and Viticulture. This component will provide a combination of technical assistance, training and investments to pilot reforms in this research direction.

At appraisal, an action plan to develop an Institutional Reform Implementation Plan for the Horticulture, Viticulture and Winemaking Institute (HVWI) was agreed with MAF. It is expected that the draft implementation and investment plan would be completed and the final plan agreed with all stakeholders by December 2000. Finalization of this plan, and its subsequent approval by the Government, with agreement by the Bank, is a Condition for Disbursement for the US$2.0 million (IDA credit) which is allocated for implementation of the reforms. The project will thus earmark an amount of US$2.0 million for such implementation efforts which will include activities related to civil works and rehabilitation; procurement of laboratory and field equipment and goods; human resource streamlining; training and operational costs.

Component 3: Pilot Environmental Pollution Control Program (GEF funding -- US$1.17 million)

The project would support a pilot program in one watershed, in the areas of Khobi, Chkhorotsku and Tsalenjikha in Western Georgia, and cover the following activities: (i) the promotion of efficient manure management practices - installation of manure storage tanks/pits; (ii) adaptive research, on-farm testing and demonstration of the use of bio-gas digesters in the villages to provide bio-gas for cooking and other domestic use to rural families and to reduce methane emissions into the atmosphere; and (iii) the establishment of a watershed scale water quality monitoring program to monitor agricultural pollution of major rivers draining into the Black Sea.

Bio-digesters will be tested and evaluated for their performance in these villages to select the most desirable design and size for western Georgia before moving into installing relatively large number of bio-gas digesters. Following work on design issues during the pre-project period, in year 1, the project will install about 10 bio-gas digesters in the project area. In the second year, the number of bio-digesters installed will be nearly doubled, with a target of about 200 by project end. Pilot project activities to test the design of bio-gas digesters will be launched in early Spring and completed in the Fall of 2000.

This demonstration component will familiarize and widen the understanding of farm/rural families and the public at large of the benefits accruing from the use of bio-gas units through study tours, farm visits, seminars/workshops and other outreach methods, including radio, video, leaflets and the Internet. Part of the GEF funds will be used to provide training to technicians who will assist farmers in installation, operation and maintenance procedures for the bio-gas units. The aim of this component is to pilot the introduction of bio-digesters and manure management in one watershed and study its effectiveness at reducing non-point source pollution, with the expectation that the program could be expanded at other watersheds in the future.

The environmental pollution control investments above will be undertaken once the pilot project (due to start in February 2000) is completed in end-2000, and these activities would follow normal Bank procurement procedures for civil works and goods. Accordingly, investments in manure storage and handling facilities and bio-gas digesters, as well as soil and water quality monitoring programs in the

selected watershed of western Georgia rivers that drain into the Black Sea would be handled under the supervision of an environmental engineer located in the Project Management Unit.

Component 4: Project Management Unit (US$0.71 million)

The Project would provide for a Project Management Unit (PMU) to co-ordinate project implementation and handle monitoring and evaluation of project activities (Figure 1). The PMU would be headed by a Project Manager, who would report to the Minister of Agriculture and Food, and would comprise the Environmental Engineer (heading the Environmental Pollution Control component), the Reform Component Coordinator, an Administrative Officer and Secretary/Interpreter.

Component	Sector	Indicative Costs (US$M)	% of Total	GEF financing (US$M)	Bank-financing (US$M)	% of Bank-financing
Component 1: Competitive Grant Scheme. Subcomponent (a): Adaptive Research and Technology Dissemination.	Agricultural Extension	4.71	38.0	0.00	4.07	54.0
Component 2: Reform of the Agricultural Research System.	Agricultural Extension	4.14	33.4	0.00	2.76	36.6
Component 4: Project Management Unit	Agricultural Extension	0.85	6.8	0.00	0.71	9.4
			0.0			0.0
			0.0			0.0
			0.0			0.0
Total Project Costs		12.41	100.0	2.48	7.54	100.0
Total Financing Required		12.41	100.0	2.48	7.54	100.0

2. Key policy and institutional reforms supported by the project:

The project would support the Government in improving the efficiency and cost effectiveness of the agricultural knowledge system to meet the needs of the private farming sector (smallholder and commercial). It would also assist the Government to honor its commitments under the Bucharest Convention to protect and rehabilitate the Black Sea through, *inter alia*, the adoption of environmentally sustainable agricultural practices. An initial review of the organization of agricultural research, extension and training activities, undertaken with the assistance of ISNAR, underscores the need for making these more cost-effective and efficient and equally importantly, responsive to the emerging needs of the smallholder and commercial farmers, i.e. demand-driven. The CGS would launch the reforms needed to foster the achievement of these objectives. Specifically, it would promote decentralized project implementation, introduce greater transparency and accountability through broader stakeholder participation in priority setting, reduce costs and promote efficiency by encouraging partnerships between researchers, farmers, extensions workers and NGOs. At the same time, the Project would provide direct assistance for testing approaches for the medium-term reform of the agricultural research, extension and training system.

3. Benefits and target population:

Private farmers and agro-processors will be the main beneficiaries of the Project. Introduction of improved technologies would result in agricultural diversification, higher productivity and lower costs of production and, in turn, increase profitability and improve living standards in rural areas. Higher productivity and better management will bring about improvements in product quality to meet specific market needs, including those of export markets. The types of farms benefiting will range from smallholders (average farm size one hectare) and part-time farmers with small crop or livestock surpluses to sell from time to time, to larger leased farms with land ranging in size from 5 ha to about 50 ha.

Investments in applied agricultural research, coupled with effective technology transfer, can yield relatively high returns, especially when starting from a low technological base, as is the case in Georgia. The involvement of a broad range of stakeholders, especially farmers, in adaptive agricultural research will increase its practical relevance, a related benefit of the Project. The establishment of CGS along with capacity building and training will help build a sustainable system capable of generating improved technologies responsive to the needs of end-users.

The country, the public at large and the global community would also benefit from the adoption of environmentally sustainable activities to be implemented under the Project. Specifically, reducing the discharge of nutrient load into the Black Sea will promote the maintenance of productive ecosystems and critical natural habitats in the freshwater, estuarine and near shore waters along the Black Sea Coast. Broad-based stakeholder participation will increase public awareness and demand-driven approaches for protecting the Black Sea. Promotion of bio-gas digesters in the rural areas will help to meet the heating and cooking needs of the rural communities, reduce felling of trees, and strengthen the global climate change objectives.

The approach adopted under this project to reduce non-point sources of pollution to the Black Sea is innovative and replicable. During Soviet times, manure management practices (such as manure storage tanks, use of manure for crop production, and use of manure for biogas production, use of manure slurry from biogas digesters) were almost absent and very little, if any, manure was disposed of in an environmentally acceptable fashion. Reduced tillage, crop rotations, buffer strips, and other soil erosion control practices will be first tested and evaluated on farmers' fields. If successful, these technologies will be demonstrated to other farmers of western Georgia. Farmers will teach other farmers the usefulness of these sustainable technologies and assist in such technology replication.

4. Institutional and implementation arrangements:

Project Co-ordination: The Project would be implemented under the aegis of the Ministry of Agriculture and Food (MAF), with specific responsibility for overall co-ordination assigned to a high level Project Manager, who would be selected following World Bank guidelines. The Inter-Ministerial Commission (established by Presidential Decree #357 of May 28, 1998, to oversee the reform of the Agricultural Research, Extension and Training System) Membership comprises: Minister of Agriculture (Chairman); Ministers of Education and Environment, Deputy Ministers of Finance, Economics and Justice; Chairman Agrarian Parliamentary Committee, Secretary Agricultural Science Department, Georgian Academy of Sciences, President GAAS, Rector GAU, and PCU Director. The IMC, involving broad participation from relevant ministries and agencies, including Ministry of Environment, will provide overall guidance and support at the highest level (Figure 1).

The Project Manager would have the overall responsibility for the project and would report to the Minister of Agriculture and Food. He would head the PMU comprising the Environmental Engineer (heading the Environmental Pollution Control component), the Reform Component Coordinator, an Administrative Officer and Secretary/Interpreter. In consultation with the Project Manager, accounting, financial management, procurement and disbursement matters would be handled by the already existing World Bank Projects' Coordination Unit (PCU). The expenses incurred by PCU, including staff time related to the proposed ARET project, will be covered by the Project. This arrangement will make full use of already available expertise at the PCU without hiring new personnel. The ARET Project Manager will discuss and agree with the PCU Director on processes for budgeting and release of funds.

Implementation arrangements: Activities under component 1 will be implemented through the Competitive Grant Scheme (CGS), to be managed by a Competitive Grant Board and Secretariat. The members of the Competitive Grant Board (CGB) were appointed in December 1998 and comprise a Chairman and fourteen members representing all relevant stakeholders, including farmers, farmers associations and NGOs. Member affiliation is as follows: Private farming sector - 4; NGOs – 1; Georgian Academy of Agricultural Sciences – 1; Agrarian University – 1; MAF – 1; Ministry of Finance – 1; Ministry of Economy – 1; Ministry of Environment – 1; PCU – 1; Parliament – 1; Head of Secretariat – 1. The Chairman and one-third of the members have no affiliations with either the Government or the research, extension and training complex. The Secretariat will comprise three technical specialists covering research, extension and economics disciplines plus administrative staff. The Head of the Secretariat, who will act as the economist, has been appointed and is also a member of the Board as its executive secretary. Functionally, the Secretariat would be responsible to the Competitive Grant Board, but administratively to the Project Manager. Staff would be recruited on a competitive basis according to terms of reference acceptable to the Bank.

The terms and conditions for operating the CGS have been set out in an Operating Manual that has been approved by the Inter-Ministerial Commission and the Bank. Priority areas for technology validation, adaptation and dissemination for which proposals would be requested under the CGS, have been finalized under three categories – import substitution, export-orientated production and services for production, processing and marketing – and approved by the CGB. The range of activities deemed eligible would be reviewed annually as the reform process proceeds.

Proposals for work on priority areas will be solicited publicly by the Competitive Grant Board following the procedures set out in the Operating Manual. The Secretariat will collect and collate relevant information on the proposals provided by the applicants and also obtain comments of the pre-approved local and international peer reviewers, who will evaluate the proposals against predetermined criteria such as, relevance to the farming community, contribution to national priorities, technical quality and scientific merit, qualifications and experience of the sponsor, plans for transfer of technology and environmental impacts. The Secretariat will subsequently submit the proposals, with all the information, to the CG Board for their decision for awards.

The Chairman of the Board will assign each proposal for in-depth review to 2 relevant Board members who will lead the discussion on their projects at the Board meeting. Successful applicants would be contracted by the CGB (contracts to be drawn up by the PMU/PCU on the instructions of the Secretariat) to carry out the agreed works over a period of up to three years. Funds to be covered for approved proposals could include laboratory equipment, vehicles, materials, office equipment, travel costs, short-term training, field labor, fuel, supplies and up to 20% administrative overheads (see CGS Operational Manual Section 6). Large items of equipment would not be normally financed under the Project. Institutions would contribute 15-20% of sub-project costs in cash or kind. The level of the initial payment would be determined by the Secretariat and subsequent payments would be made on the basis of progress against specific milestones.

Overall policy direction and support for Component 2 – the reform of the agricultural research system - would be overseen by a small committee comprising the president of the Georgian Academy of Agricultural Sciences (GAAS), the Rector of the Georgian Agrarian University (GAU), MAF's Representative and the Project Manager. A coordinator for the component has been selected, following World Bank procedures, to prepare implementation and investment plans for priority research at HVWI.

Financial Management:

The overall responsibility for the financial management of the project will rest with the PCU originally established for the ADP by the Ministry of Agriculture. The Association conducted a financial management assessment of the PCU during the appraisal of the ARET Project and concluded that while the financial management arrangements of the PCU were sufficient for the existing project, they did not meet the minimum requirements for the ARET project. The financial management arrangements of the project will therefore be strengthened prior to project effectiveness and it is a condition of Board Presentation that the financial management arrangements of the project are satisfactory to the Association. A time-bound borrower-agreed action plan to strengthen the project's financial management arrangements is included in Annex 6.

Staffing: The PCU already has a complement of accounting staff working under the supervision of a Financial Manager for the project work for whose financial management the PCU is already responsible. In addition, prior to project effectiveness, the PCU/PMU will hire another accountant for the specific needs of the ARET project.

PMRs and disbursements: The format of the Project Management Reports (PMRs) for the project has been agreed with the PCU and is enclosed as an annex to the PIP. The PCU will produce a complete set of PMRs for every calendar quarter throughout the life of the project. The project will initially disburse under the Association's traditional disbursement procedures, with the option of moving to the PMR-based disbursement method at the mutual agreement of the Borrower and the Association. The Borrower and Association will consider such a move on December 31, 2000 once the PCU has gained sufficient experience in producing the PMRs and these PMRs have been judged to be reliable, particularly in respect of their forecasting information.

Audit arrangements: External audits in accordance with International Standards on Auditing by independent auditors and on terms of reference acceptable to the Association are already being satisfactorily performed in respect of the projects for whose financial management the PCU is currently responsible. The terms of reference for these audits will therefore be amended to include within its scope the ARET project's: (i) the financial statements of the project as maintained by the PCU; (ii) the project's Statements of Expenditures (SOEs); and (iii) the project's Special Account(s). The final audit report will be presented to the Bank within six months of the end of every fiscal year.

Monitoring and Evaluation arrangements: Project monitoring and evaluation would be the responsibility of the PMU. An international expert would assist the PMU to design a simple management information system for M&E, reporting formats for each component, including targeted annual performance objectives and monitoring indicators using Annex 1 details as the basis. Quarterly reports will cover progress in physical implementation, the use of project funds and project impact. The format of reports will be agreed with the Bank. Evaluation of completed research and extension projects on a sample basis would be undertaken as a regular part of M&E. The results of these M&E activities will be fed back into the implementation process as improved practices.

Quarterly reports will be consolidated by the PMU into half-yearly progress reports to be submitted through MAF to the Bank within two months of the end of each six-month reporting period. These half-yearly progress reports will also include an implementation plan and work program for the six months following the reporting period.

A mid-term review will be carried out to assess overall progress. Lessons learned from the CGS and progress with the reform of the research and extension complex would be used in restructuring the Project, if necessary.

The PMU will continuously monitor and evaluate the project using performance indicators detailed in the Project Design Summary in Annex 1.

D. Project Rationale

1. Project alternatives considered and reasons for rejection:

Alternatives considered were: (a) to make direct investments in the existing knowledge and information systems institutions (universities, research institutes etc.) once a complete implementation plan for restructuring the agricultural research, education and extension system had been agreed; (b) to attach a small field trials and demonstration component to the Irrigation and Drainage Rehabilitation Project (IDRP); and (c) whether to add an environmental component to the project to reduce non-point source pollution entering the Black Sea from Georgia. With regard to (a), it was concluded that the work already done in collaboration with ISNAR (including the conception framework for a national reform strategy) demonstrated the readiness of the Government and agricultural research complex to tackle reform of the system. However, it was considered desirable to proceed in a step-wise process, with the project first providing technical assistance and capacity building to develop a reform investment plan for one research direction and institution. Provision would be made for selected investments in physical structures, equipment and training of personnel for the one research area/institution to develop a model approach to institutional reform. Furthermore, farmers and agro-processors were urgently in need of technical and business information and the longer-term building up of research institutes was therefore not considered to be the best short-term strategy because it would delay addressing immediate needs. With respect to option (b) above, simply adding a small component to the IDRP would unlikely have the desired results, as it would not get the necessary attention of the research system nor of the management of the IDRP. It would also not bring about effective reform of the Agricultural Knowledge System in Georgia.

With regard to (c), it was decided to expand the scope of the project and include an environmental component. The Black Sea plays a crucial role in the welfare of Georgia's population. Sustainability of Georgia's economic growth will depend, in part, on the Government's ability to integrate development of the many productive sectors of the Black Sea coast, including agriculture and forestry. Over the past decade, uncontrolled pollution from point and non-point sources, coastal erosion, intensified by human intervention, and off-shore dumping in the region has devastated the Black Sea and its littoral zone. Lost revenues from these traditional sectors and the cost of mitigating future environmental impacts from non-point source agricultural pollution could have serious adverse impacts on public sector resources and places of strategic and economic importance. To address this, the scope of the project was expanded to include a component aimed at protecting the water quality of the Black Sea from non-point sources of agricultural pollution.

Also, the task of promoting environmentally sustainable agricultural practices could have been left to the Ministry of Environment or NGOs. However, it was decided that to ensure the participation of all relevant stakeholders, to develop a firm commitment for promoting sustainable agricultural practices, and to build national capacity for improving and protecting the waters of the Black Sea, the best route would be to ensure the participation of both MAF and MOE. Thus the Competitive Grant Scheme System would be used for testing environment-friendly agricultural practices, while investments would be made in manure handling and biogas digesters following a pilot period to test bio-gas digester design.

2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned).

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)

Bank-financed		Implementation Progress (IP)	Development Objective (DO)
Land reform, agro-processing, agricultural credit	Agricultural Development Project	S	S
Urgent investments for reduction of pollution in Black Sea cities	Municipal Infrastructure Rehabilitation--MIRP	S	S
Environmentally Sustainable Agricultural Practices and Protection of the Black Sea	National Environment Action Plan (IDF/Bank)		
	Forestry Biodiversity Project		
	Cultural Heritage Project	S	S
	Biodiversity Strategy and Action Plan (GEF/Bank)		
	Integrated Coastal Management Project	S	S
Other development agencies			
Credit for grain production and support to creation grain market	TACIS – RARP1		
Establishment of rural information centers	TACIS		
Development of agro-business consultancy centers	TACIS – ABC		
Agro-business development, preparation of business plans	Know How Fund		
Seed privatization	FAO		
Supply of agricultural machinery	Japan Grant		
Development of private sector agriculture	GTZ		
Small farmer extension	CARE		
Development of Maize, Wheat, Potato and Sunflower seed production in private sector	USAID		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. Lessons learned and reflected in the project design:

Previous experience of agricultural support services aimed at developing private farming sector in other countries in the region has shown that such projects must be focused on private farmer needs, facilitate farmer participation in decision making and implementation, and have attainable objectives and targets particularly in terms of sustainability. Competitive Grant Scheme funding has proved effective in improving client orientation and the productivity of the agricultural knowledge system as well as in reforming the supply-driven, centralized research management prevalent in many transition economies.

Key lessons learned from agricultural and environmental projects in the region include:

- The need for long-term commitment to address agriculture and environment issues through phased programs of interventions and broad-based participation;

- The need to work directly with farmers and agro-processors to encourage ownership of the initiatives;

- The high capacity of local and national Government officials for innovation and effective management;

- The importance of calculating and disseminating the benefits of improved environmental management in rural areas;

- The importance of adequate counterpart training and specialized support for project related activities, especially procurement, disbursement and supervision; and

- The benefits of catalyzing support from within relevant government ministries, and other stakeholders, for policy and environmental reforms.

The project design team consulted with and incorporated ideas from members in similar projects in the region and across the Bank, as well as stakeholders in the country including government officials, researchers, practitioners and farmers through public seminars and workshops. Lessons learned from Bank-supported CGS in other countries are as follows:

- there must be strong commitment from the government and managing organization to the concept of CGS;

- although the number of proposals received for evaluation may be small initially, there is an increase over time as applicants and grant recipients become more aware of the benefits of participation;

- CGS need to be designed after extensive consultation with potential participants ensuring both awareness, a feeling of ownership and enthusiastic participation;

- in the initial stages, applicants may face problems in completing application forms, and it may be necessary to allow for a learning period and to provide some instruction;

- project quality gradually improves as experience and awareness of the value of accurately articulated proposals for successful competition become accepted;

- transparency in operations and decision making is essential to remove suspicion that grants are destined only for a favored few and that applications are not being fairly assessed; and

- decision-makers should avoid any suspicion of a conflict of interest by absenting themselves from the decision making process for any proposals with which they are personally associated or which involve their institutions.

These lessons were taken into account when designing the CGS for the proposed Project. PPF funds have been used for pre-project training in CGS procedures and include provisions for encouraging greater private sector participation, including NGOs, farmers and farmer organizations. The Competitive Grant Board and its Secretariat are: (a) running a publicity campaign to explain the CGS opportunities and procedures to the agricultural research, extension and training community; and (b) holding training

workshops prior to project effectiveness to facilitate an early uptake once funds become available. Also, procedures for the award and implementation of research projects are being tested through a pilot program funded by the PPF – 3 pilot technology adaptation projects together with one pilot project for the environment component, are expected to be awarded and underway by Spring 2000. The risk of a potential conflict of interest on the Competitive Grants Board (members representing a diversity of organizations that could benefit from competitive grant funding) will be mitigated by: (i) setting clear criteria against which submissions under each technology adaptation and dissemination category would be evaluated; (ii) the process of evaluation using local and international specialists to do the technical evaluation of proposals; and (iii) inclusion of farmer and private sector representatives on the Board.

The recipients of funds under the CGS would be expected to contribute either in cash or kind 15-20% of the cost of any individual research project and about 20% to 25% of the cost of equipment for environmental management. This provision would encourage institutes, individuals and other agencies submitting requests, to confirm up-front the priority they give to the proposal. However the difficulty of meeting this contribution under present budgets would be mitigated by including the salary costs of research staff assigned to the proposal, as well as a value for existing building and machinery assets to be used. Nevertheless, in some exceptional cases, and with prior approval of the Bank, this requirement could be waived. Funds from the IDA credit will support the purchase of research equipment, machinery and materials, training of researchers, incremental operating costs and 20% administrative/overhead charges.

4. Indications of borrower and recipient commitment and ownership:

In reaffirming its commitment to the Project, the Government established an Inter-Ministerial Commission in May 1998 to oversee the reform of the agricultural research, extension and training complex. A working group was established to work on initial data collection and analysis with the assistance of ISNAR. The information collected by the working group formed the basis of a workshop held on September 15 and 16, 1998, which was chaired by the Minister of Agriculture and attended by representatives of research organizations, development agencies, civil society, farmers associations and NGOs. A good dialogue was established and a number of institutional issues were clarified, both during the workshop and the Bank's Identification and Preparation Missions.

In December 1998, the Minister of Agriculture nominated the Chairman and members of the Competitive Grant Board and a first meeting was held on December 10. The Competitive Grant Scheme was established by Ministerial Order issued February 26, 1999, and a meeting of the Inter-Ministerial Commission (IMC) on March 3, 1999, approved the Chairman of the CGB and the Head of the Secretariat. An Operating Manual detailing the procedures for the CGS has been prepared and approved by the Bank, CGS Board and the Inter-Ministerial Commission. Agreement has been reached between MAF and the Ministry of the Environment to collaborate on the environmental component funded by the GEF.

Arrangements for handling the reform of the Agricultural Research, Extension and Training system were agreed between the President of the Georgian Academy for Agricultural Sciences (GAAS), the Rector of the Agrarian University (GAU) and MAF, in March 1999. A Working Group has prepared a vision document, "Conceptual Framework for a National Strategy for Reform of the Agricultural Research, Extension and Training System," which was approved by the Inter-Ministerial Commission June 17, 1999.

The appraisal mission agreed with MAF on an action plan covering the period from October 1999 to expected project effectiveness July 1, 2000. This plan is proceeding satisfactorily.

5. Value added of Bank and Global support in this project:

Assistance from other donors in research and advisory services has rightly focused to date on tackling credit and input issues as well as establishing some fledgling farmer information services. Now there is a need for critical technological and information backstopping to support the Government's efforts to improve the performance of the agricultural sector. Bank experience in other countries would help map the transitional steps and create and maintain ownership for such transition on the basis of demand-driven investments. The Bank's value added derives from its experience worldwide in reforming agricultural research, extension and training services.

The principal value added of GEF support for the Project comes from providing additional funds to promote address the priority trans-boundary water problems of the Black Sea and promote renewable energy. The GEF has already added value by supporting the Poland – Rural Environmental Project, which underpins the Project.

Of the practices supported by this Project, GEF funds will specifically help reduce the barriers to farmers' adoption of environmentally sensitive practices and will allow the Government to consider expanding early pilot operations into a larger program. Without GEF support to coordinate these activities, Georgia might undertake a series of small activities in different parts of the country to address these issues. It would lack a mechanism to coordinate the financing, approaches and geographical targeting of activities. Without support from the GEF, the project would lack sufficient resources to accelerate the program, to demonstrate measures on a wide range of farm types and to undertake a public outreach program. The GEF is thus leveraging funds from other donors and stimulating a program to coordinate activities, increase coverage and generate a larger impact.

Because of their international scope, the World Bank and GEF can provide funds and finance the incremental costs for replicating such activities both within Georgia and in other countries in the region. This is particularly important, as agricultural pollution is a major local and trans-boundary problem in most ECA countries, particularly those in the Baltic, Danube and Black Sea drainage basins. Some level of financial support from the public sector and the international community will continue to be necessary, particularly in lower income countries, because these activities address externalities, affect trans-boundary pollution and involve an element of public good.

E. Summary Project Analysis (Detailed assessments are in the project file, see Annex 8)

1. Economic (see Annex 4):

○ Cost benefit NPV=US$ million; ERR = % (see Annex 4)
○ Cost effectiveness
○ Incremental Cost
● Other (specify)

Predicting and quantifying economic costs and benefits ex-ante of research and extension activities is problematic because the outcomes of the technology innovation or dissemination are not defined at the time of project design, but instead evolve with the project through a process of priority setting and consumer demand for the technologies. As a result, economic returns from such an exercise are therefore difficult to predict. However, ex-post analysis of agricultural research and extension over the past two decades shows that in most countries there are high returns to these investments, often in the range of 35-75% or higher. For public sector agricultural research, average returns were 48 percent for developed countries and 80 percent for developing countries. Similarly, for agricultural extension, the average returns were 63 percent for developed countries and 50 percent for developing countries. In Georgia, with the new private farmers starting at such a low production and productivity base, the returns to the transfer of technology and information are likely to be high.

The range of benefits likely to be realized by testing alternative technologies and methods, and promoting their replication and adaptation would be diverse. New farming methods could lower production costs, increase output efficiency; produce more profitable crops and livestock; improve product quality; reduce capital expenditures on machinery, irrigation equipment and buildings; reduce crop and livestock losses; make better use of available land, labor and other resources; and improve environmental sustainability of production systems.

In many countries, ex-ante quantification of benefits of research and extension investments (rates of return) is usually not undertaken, as it is difficult, if not impossible, to anticipate precisely the outcome of these activities. Even large surveys give spurious results. This is mainly due to constraints in terms of non-availability of reliable technical and economic data on different variables, including farmer adoption rates, and difficulties in linking cause (costs) and effect (outcomes). Whatever parameters one includes would be questionable. Social and environmental benefits of research and extension projects are particularly difficult to express in monetary terms.

The Competitive Grant Scheme (CGS) will be implemented using a set of rigorous criteria and indicators already established. These criteria and indicators will assess proposed investment priorities (in sector development), client relevance, and cost-effectiveness in terms of providing immediately needed technology, information and training which are critical to increase agricultural productivity, sustainability and incomes. Since the conventional FRR/ERR analysis will not be done for purposes of investment decision-making in the CGS, the project's M & E system has been designed to ensure that the proposals funded by the CGS in applied research and extension are implemented in a cost-effective and efficient manner.

The goal of the Reform of the Agricultural Research System Component of the Project is to restructure the Horticulture Institute. This is expected to increase the efficiency of resource use at the institute by reorganizing the assets of the institute, modernizing equipment and reducing staff, to ensure that the level of funding per staff is adequate to conduct research, and the research conducted by the institute is well-focused on a few key priorities. While the direct benefits of restructuring this institute are relatively small, the completion of this restructuring exercise is expected to have a demonstration effect that would in time allow the restructuring of the whole National Academy of Agricultural Sciences. This restructuring would have a significant positive benefit in terms of the efficiency with which Government expenditures on research are used. At the present time, the Academy of Agricultural Sciences has about 2,700 staff, of which 870 are considered to be scientists, operating in 16 institutes. In 1998, it had a total annual budget of GEL 810,000. This is less than GEL 1,000 (or $750 at the time) per researcher per year, which is not sufficient for conducting any meaningful research. In the longer run, the restructuring of the Academy is expected to resolve this problem, and make more effective use of Government research funds.

The *incremental cost analysis* for the GEF-funded component is described in Annex 13. The analysis assumes a baseline under which the prevailing agricultural practices are only partially corrected, resulting in continued discharge of nutrients into the Black Sea and emissions of methane. Continued reliance on fossil fuels and unsustainably harvested fuelwood, the source of energy in rural areas, further increases greenhouse gas emissions. The Project would introduce and demonstrate more sustainable and environmentally benign technologies and practices at an estimated incremental cost of US$2.5 million.

2. Financial (see Annex 5):
NPV=US$ million; FRR = % (see Annex 4)

Fiscal Impact:

The introduction of a CGS combined with the restructuring of one public research institute is expected to initiate a process of increasing the cost effectiveness of publicly funded research in Georgia, while at the same time increasing the overall level of government expenditures on agricultural research, in order to make Georgia more competitive in this area. The project is designed to gradually introduce these changes at funding levels that would be sustainable at the end of the project, given Georgia's very tight fiscal situation. The CGS will shift current emphasis of Government funding for the AKS from the Georgian Academy of Agricultural Sciences (GAAS) to strengthening national research, extension and training systems, broadly defined to include agriculture research institutes, universities, private sector, farmer organizations and NGOs, thus increasing competition and the efficiency of research, extension and training. Supporting both public and private institutions may also gradually reduce the total dependence of research and extension institutions on public funding by bringing diversification of funding support. However, it should be pointed out that the CGS builds on, but does not replace, the need for government funding for the core functions of key public research institutes. If the project is successful in enhancing the confidence of farmers and other stakeholders in research and extension institutions as providers of new technologies, information and training, it should convince policymakers to increase government budgets for research to levels that are more in line with international standards, thus increasing Georgia's competitive position in the longer run. The average expenditure on agricultural research in developed countries is about 2.4 percent of agricultural GDP, whereas developing countries invest about 0.5 percent. Georgia currently invests about 0.3 percent of agricultural GDP in agricultural research, and is therefore lower than the developing countries average. In summary, a system of providing core budgets only to key public research institutions combined with the supplemental funding from the CGS, is expected to lead to a research, extension and training system that is more efficient, and therefore makes better use of Government expenditures in this area. If the system is successful in delivering good results, it is expected that both government and private expenditures in this area will increase.

3. Technical:

Based on available information, the majority of Georgian farmers would benefit from advice and technology on: (a) farm planning and management; (b) crop agronomy and integrated cropping systems; (c) new crops to diversify systems; (d) livestock management; (e) good quality seeds and planting material; and (f) sustainable on-farm environmental management. During project preparation, farm surveys were reviewed and additional information sought to better define priorities. These priorities will be used to define the focus areas for which CGS proposals will be solicited and evaluated. In addition, an inventory will be carried out of “on the shelf technology” to identify relevant farm and environmental technologies that are fully developed and have been adopted in certain areas, but not yet promoted across the country. The technologies for reducing water pollution are known; however, these have to be validated and demonstrated under Georgian conditions. For example, bio-gas digester technology will require fine-tuning

and adaptation to Georgian conditions.

4. Institutional:

4.1 Executing agencies:

Ministry of Agriculture and Food has significantly changed its role in the Agricultural sector since independence in 1991. It has disposed of most of its commercial activities and is beginning to focus more on policy making and the provision of public services. This process is still ongoing and is expected to last at least another five years. In the implementation of this program the Ministry has been open to the introduction of new ideas and approaches that will enhance its role and position in a market economy. The ministry has strong management, and has demonstrated in the ADP project that it has the capacity to successfully implement a complex project. The project coordination unit for the ADP project is an incremental part of the Ministry of Agriculture and Food and was established to supplement the capacity of the Ministry. It has been instrumental in providing implementation capacity to the Ministry on new initiatives. The Project Management for the ARET project will also be housed in the Ministry and be an integral part of the Ministry's operations. It will also make use of the existing accounting and procurement management capacity built up in the ADP project.

The Georgian Academy of Agricultural Sciences is in a financial crisis and has been unable to adjust to the new economic environment. However, the leadership in the GAAS has demonstrated that they are open to new concepts and are willing to pilot the restructuring of one research institute. The management of the Horticulture Institute has also agreed to participate in program. They will be supported in the implementation of their restructuring by local consultants and through a twinning relationship with an international research institute.

4.2 Project management:

In order to supplement the capacity of the Ministry of Agriculture and Food, day-to-day project management will be carried out by a project management unit hired under the project. The management structure is presented in Figure 1. The CGS under component 1 will be managed by the Competitive Grant Board with representation from government, GAAS, Agrarian University, farmers and agribusiness. The 15-member Board that has been established comprises an independent chairman together with fourteen members, including representatives from the Georgian Parliament, Ministry of Agriculture and Food, Ministry of Finance, Ministry of Economy (Department of Science and Technology), Ministry of Environment, Georgian Academy of Agricultural Sciences, the Agrarian University, Farmers' Organizations, Private Farmers and NGOs. The Chairman and a third of the members are independent of GAAS and government Ministries. A list of the membership of the Inter-Ministerial Commission and CGS Board are included.

The work of Reform of the Research System (Component 2) will be managed by the four-member MAF/GAAS/GAU/Project Manager Advisory Committee with the assistance of the full-time Reform Component Coordinator assigned to the PMU. Findings and recommendations together with implementation and investment plans for the selected, priority research direction will be submitted to the Inter-Ministerial Commission.

Component 3 will be managed by the Environmental Engineer in the PMU.

4.3 Procurement issues:

4.4 Financial management issues:

5. Environmental: Environmental Category: **C**

5.1 Summarize the steps undertaken for environmental assessment and EMP preparation (including consultation and
disclosure) and the significant issues and their treatment emerging from this analysis.

It is anticipated that the project would contribute to a more sustainable and environmentally responsible use of agricultural resources.

Efficient use of farm inputs has been identified as one of the priority areas of research and extension needs of farmers and agro-processors. Some of the CGS funds would be directed to contracts to address this concern of farmers and agro-processors and would, over time, contribute to a reduction in nutrient runoff from the agricultural sector. In the livestock sector, the project is expected to support interesting and innovative adaptive research, demonstrations and proposals relating to the management and use of organic wastes.

The Project will support environmentally-friendly and socially sensitive agricultural practices. Demand-driven, productivity-oriented agricultural practices are expected to promote the efficient and effective use of agricultural inputs. Proposals that imply any adverse environmental effects will not be funded. In fact, because of the nature of the work likely to be funded, there should be long-term environmental, and health and safety benefits.

5.2 What are the main features of the EMP and are they adequate?

5.3 For Category A and B projects, timeline and status of EA:
Date of receipt of final draft:

5.4 How have stakeholders been consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed environment management plan? Describe mechanisms of consultation that were used and which groups were consulted?

5.5 What mechanisms have been established to monitor and evaluate the impact of the project on the environment? Do the indicators reflect the objectives and results of the EMP?

6. Social:

6.1 Summarize key social issues relevant to the project objectives, and specify the project's social development outcomes.

Three recent farm-level studies (including a rural Poverty Study by IFAD) describe the existing farm structure in specific regions. The results of these studies have been used for the priority setting process to define topics for support by the CGS that would provide smallholders on-farm demonstrations of appropriate agricultural and environmental management technologies. Sociological studies conducted as part of the preparation of the Irrigation and Drainage Rehabilitation Component (IDRC) have identified the

different target groups within the areas to be rehabilitated. "Needs assessment" surveys will be carried out during the project prior to funding of advisory services/extension sub-projects for farmers groups in specific irrigated or rain-fed areas.

6.2 Participatory Approach: How are key stakeholders participating in the project?

The primary beneficiaries of this project are private farmers, i.e. individual producers that produce a surplus for sale, members of family associations and formal associations, agro-processors, and contractors for CGS projects. During project preparation, private farmers, agro-processors, and members of the development community were consulted to ensure that adequate mechanisms are built into the project design. A number of small consultative workshops and a national level workshop were held as part of project design. This will be extended to more formal "needs assessment" surveys in selected areas as the project proceeds. Two of the members of the Competitive Grant Board are private farmers and two other members represent farmers' organizations.

6.3 How does the project involve consultations or collaboration with NGOs or other civil society organizations?

For projects expected to receive authorization to appraise/negotiate (in principle) prior to April 30, 2000, this section may be left blank.

6.4 What institutional arrangements have been provided to ensure the project achieves its social development outcomes?

For projects expected to receive authorization to appraise/negotiate (in principle) prior to April 30, 2000, this section may be left blank.

6.5 How will the project monitor performance in terms of social development outcomes?

For projects expected to receive authorization to appraise/negotiate (in principle) prior to April 30, 2000, this section may be left blank.

7. Safeguard Policies

7.1 Do any of the following safeguard policies apply to the project?

Policy	Applicability
☐ Environmental Assessment **(OP 4.01, BP 4.01, GP 4.01)**	☒ Yes ☐ No
☐ Natural habitats **(OP 4.04, BP 4.04, GP 4.04)**	☐ Yes ☒ No
☐ Forestry **(OP 4.36, GP 4.36)**	☐ Yes ☒ No
☐ Pest Management **(OP 4.09)**	☒ Yes ☐ No
☐ Cultural Property **(OPN 11.03)**	☐ Yes ☒ No
☐ Indigenous Peoples **(OD 4.20)**	☐ Yes ☒ No
☐ Involuntary Resettlement **(OD 4.30)**	☐ Yes ☒ No
☐ Safety of Dams **(OP 4.37, BP 4.37)**	☐ Yes ☒ No
☐ Projects in International Waters **(OP 7.50, BP 7.50, GP 7.50)**	☐ Yes ☒ No
☐ Projects in Disputed Areas **(OP 7.60, BP 7.60, GP 7.60)**	☐ Yes ☒ No

7.2 Describe provisions made by the project to ensure compliance with applicable safeguard policies.

F. Sustainability and Risks

1. Sustainability:

The objective is to build a cost-effective and efficient institutional infrastructure for research, extension and training services and promote environmentally sustainable agricultural practices, with the participation of all stakeholders. The result should be technology adaptation and transfer programs responsive to the needs of the end-users and in which they will share the costs. The CGS has deliberately been kept to a fairly modest level of funding which could be further funded by the Government budget, other bilateral donors, or a combination of the two, by the end of the project implementation period. The program is therefore designed to be fiscally sustainable, within reasonable expectations for increases in government budget over the next few years. The parallel reform and restructuring of the agricultural research complex will result in a leaner, more efficient public sector structure. The project, through education, familiarization and demonstration of environment-friendly practices, strives to increase the acceptability of these practices by a large number of farmers, leading to commercialization of manure management and bio-gas digester services.

2. Critical Risks (reflecting assumptions in the fourth column of Annex 1):

Risk	Risk Rating	Risk Minimization Measure
From Outputs to Objective		
Research does not develop appropriate new technologies to raise productivity and conserve the environment.	M	Encourage development of strategic alliances with national and international partners and finance specific, well-defined projects with agreed performance indicators.
Domestic and Export markets unable to absorb increased production.	M	Promote increased exports through line of credit under ADP.
Farmers don't have access to credit, machinery and inputs, as well as land.	S	Continue to work on land reform and development of rural credit under ADP.
Farmers not sufficiently organized to develop partnerships with other farmers and the development community.	M	Provide training and encourage formation of farmer groups and associations under this project.
Participating farmers implement unsustainable agricultural practices and continue to do so after project completion.	M	Careful validation of proposed practices, staff and farmer training methods; on-location advice; and advocacy of long-term benefits of the project activities. Monitoring of adoption rates.
Low/inadequate commitment of GAAS and support from local and national governments	N	Participatory approach in developing plans and staff training.
From Components to Outputs		

Ministry of Finance unable to maintain core funding for the agricultural research complex and research salaries remain very low.	S	Agreements to be reached with the Ministry of Finance at credit negotiations. Disbursements will be dependent upon continued government contributions.
Process dominated by current research structure.	N	Ensure participation of all stakeholders in priority setting process.
Number of grant applications insufficient to apply stringent evaluation criteria.	N	Provide up-front training for potential applicants.
CGS is not sustainable after project completion.	N	Ensure that reform of agricultural research complex proceeds in parallel and seek other sources of funding. The program has been kept modest so that it can continue to be funded by Government after the project closes.
Current technology in bio-digesters does not work in Georgia.	M	Use experiences with biodigester technology from similar climatic conditions in other countries. Monitor developments closely and stop program early if implementation is not working.
Farmers are not willing to accept improved, environmentally-friendly agricultural practices.	N	Similar work has been done in Poland and project will learn from experiences there. Adoption rates will be monitored and analyzed to determine why farmers are or are not adopting new technologies.
New private sources of funding don't come forward.	M	Ensure their participation in project design.
Overall Risk Rating	M	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N(Negligible or Low Risk)

3. Possible Controversial Aspects:

None

G. Main Credit Conditions

1. Effectiveness Condition

- PMU fully staffed, meaning hiring of: Project Manager; technical specialists for the Competitive Grant Scheme, Reform, and Environment components; Office Manager; Office Assistants; and other relevant staff as needed.

Condition of Disbursement

- Prior to disbursement of any of the allocated funds for implementation of Component 2: "Reform of the Agricultural Research System", the government, with the assistance of international experts, will prepare a detailed plan for the reform of the HVWI, and present the plan for Bank approval. Disbursement of any of the allocated funds under this category is contingent upon Bank approval of this reform plan.

2. Other [classify according to covenant types used in the Legal Agreements.]

- The CGB will implement the CGS in accordance with the requirements of the Operational Manual.
- Government shall make annual budgetary allocations and contribute to the Agricultural Research, Extension and Training System sufficient to maintain a level of core funding to be agreed with the Bank.

H. Readiness for Implementation

☐ 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.
☒ 1. b) Not applicable.

☐ 2. The procurement documents for the first year's activities are complete and ready for the start of project implementation.
☒ 3. The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.
☐ 4. The following items are lacking and are discussed under loan conditions (Section G):

PPF funds have been used to launch three pilot projects on Adaptive Research and Technology Dissemination (Component 1). Also, under the GEF-assisted activities, a pilot study for validating bio-gas digester technologies (prior to the investment phase under Component 3) has been started. The PHRD grant will be used to continue preparing the detailed plan for HVWI under Component 2: "Reform of the Agricultural Research System".

I. Compliance with Bank Policies

☒ 1. This project complies with all applicable Bank policies.
☐ 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.

Iain G. Shuker	Kevin M. Cleaver	Judy M. O'Connor
Team Leader	**Sector Manager/Director**	**Country Manager/Director**

Jitendra Srivastava, GEF TL

Annex 1: Project Design Summary

GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
Sector-related CAS Goal: Economic growth, poverty alleviation and environmental protection.	**Sector Indicators:** Rural household incomes. Capacity to address environmental degradation of the Black Sea.	**Sector/ country reports:** Agricultural statistics National reports	**(from Goal to Bank Mission)** Government policies do not change adversely. Policy and economic environment encourages use of improved agricultural practices, which contribute to the national economy and welfare of population. Investments in environmental planning and management yield concrete results in reducing environmental damages.
GEF Operational Program The project's objective of reducing non-point source pollution to the Black Sea is consistent with the GEF Operational Program No. 8 - *Waterbody Based Operational Program* The objective of promoting the use of biogas is consistent with GEF Operational Program No. 6 - *Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs*			

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
Project Development Objective: The overall development objective of the Project is to create an efficient and cost-effective agricultural knowledge system to demonstrate, disseminate and promote the adoption of appropriate technologies that increase sustainable agricultural production and reduce pollution of natural resources.	**Outcome / Impact Indicators:** **End of Project Indicators**: 1. 20% of farmers in project area adopting improved farm production, marketing, management, and post-harvest technologies. 2. 10% of farms in project area adopting production and resource conservation technologies (environmentally-friendly agriculture practices). 3. 10% of farmers in project area adopting manure management plans, including the use of bio-gas units.	**Project reports:** Agricultural statistics Social assessment Economic and Financial Assessment PIU progress reports Annual regional and national reports Interviews with farmer groups and local government.	**(from Objective to Goal)** Technologies respond to farmers' needs. Markets and prices provide sufficient incentives to producers and processors. Continuing government commitment Continuing political stability.

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
Output from each component:	**Output Indicators:** **End of Project:**	**Project reports:**	**(from Outputs to Objective)**
1. An effective system for agricultural technology development, acquisition and adaptation established.	1. Technology Development, Acquisition and Adaptation: ● Competitive Grant Scheme established with peer review and monitoring systems in place, sufficient to attain self-sustainability post-project. ● Quality of proposals received is consistently high. ● For both Technology Development and Adaptive Research, the total number of approved grants by project end should be at least 40. ● At least 40 institutions participating with active grants.	Monitoring system to be established by CGS Secretariat. Project Monitoring and Evaluation unit.	Research can develop appropriate new technologies to increase productivity and conserve the environment. Export and domestic markets develop to absorb increased production. International research programs continue to supply basic strategic research to support new technology development.
2. Responsive production, post-harvest and natural resource management technologies developed and transferred.	2. Development of Appropriate Technology: ● Release of at least 15 new technologies in priority directions responding to producer and processors' needs. ● Release of at least 40 improved, environmentally-friendly, agricultural practices responding to producers' needs. ● 2400 farmers in areas served by advisory/extension providers receiving services.	Agricultural statistics and Special surveys CGS monitoring system Project Monitoring and Evaluation unit.	Farmers have access to credit, machinery and inputs, as well as land. Farmers are sufficiently organized to develop partnerships with other farmers and the development community.

3. Effective linkages between the agricultural research complex and other public and private sector development agencies created.	3. Effective Research/Extension Linkages: ● Joint proposals received from GAAS and development agencies (NGOs, Farmers Associations etc.)	CGS monitoring system Project Monitoring and Evaluation unit	GAAS remains committed to reform of the system. Participating farmers implement sustainable agricultural practices and continue to do so after completion of Bank/GEF investments-technical and financial.
4. Reform of the overall agricultural research complex accelerated, with particular emphasis on completion of reform and rehabilitation of HVWI.	4. Reform of agricultural research complex: ● Conceptual Framework adopted. ● Implementation and investment plans agreed for one priority research direction. ● Successful completion of the reform and rehabilitation plan for HVWI.	Project Monitoring and Evaluation Unit.	Support from local and national government continues.
5. Improved capacity for research planning and priority setting created .	5. Training and capacity building: ● 180 staff trained in needs assessment and priority setting for advisory/extension proposals.	Project Monitoring and Evaluation Unit.	
6. Adoption of improved, sustainable agricultural practices to reduce environmental pollution.	6. Environmental Pollution ● 700 farms in project area with improved manure handling and storage. ● Installation of 196 biogas units and associated slurry tanks.	Resource tracking system. Water quality monitoring	

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
Project Components / Sub-components:	**Inputs: (budget for each component)**	**Project reports:**	**(from Components to Outputs)**
1. Competitive Grant Scheme (includes IDA Credit and GEF Grant). Includes cost of CGS Secretariat.	1. CGS – US $5.68 million.	Project Monitoring and Evaluation Unit.	Ministry of Finance initially maintains and then increases core funding, and does not reduce core funding when CGS introduced. The CGS is made sustainable.
2. Reform of Agricultural Research System.	2. Reform of Agricultural Research System – US $3.52 million.	Project Monitoring and Evaluation Unit.	The reform of the agricultural research system proceeds and achieves cost savings which are reinvested in the system.
3. Pilot Environmental Pollution Control Program (Biodigesters) (GEF).	Environmental pollution Control – US $1.17 million.	Project Monitoring and Evaluation Unit.	NGOs continue to support the system and new private sources of funding come forward.
4. Project Management Unit.	4. PMU – US $0.71 million.	Project Monitoring and Evaluation Unit.	Farmers and other end-users are able to contribute to cost sharing. Project incentives are sufficient to motivate farmers to participate in the project.

Annex 2: Project Description

GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

By Component:

Project Component 1 - US$5.68 million

Competitive Grant Scheme

This component comprises a Competitive Grant Scheme (CGS) to fund: (a) a program of on-farm technology adaptation and dissemination with provision of agricultural advisory services to tackle immediate priorities for raising on-farm productivity, profitability and sustainability on private farms, both smallholder and commercial (IDA funding); and (ii) support for environmentally-friendly agricultural practices to reduce negative impacts on soil and water quality (GEF funding).

The Competitive Grant Board (CGB) for Agriculture was established by Ministerial Order No 2-55 of February 26, 1999. The CGS will create a mechanism in Georgia's agricultural research, extension and training system to provide, on a competitive basis, direct assistance for adaptive research, extension and environmental activities that address the practical problems of increasing on-farm productivity and the processing/marketing system. CGS will not replace the core funding of the agricultural knowledge system. While the CGS will provide funds for priority activities in technology adaptation and dissemination and environment-friendly agricultural practices, it should not be seen as a solution to the overall funding needs of the agricultural knowledge system complex.

The purpose of the CGS would be to achieve full stakeholder participation in the adaptation and transfer of technology responsive to the needs of the emerging private farming sector, both smallholders and commercial farmers. It would foster a close association between the research scientist and the needs of the private farmers in setting priorities for adaptive research and in the formulation and evaluation of adaptive research project proposals. The CGS would also build more effective linkages between the agricultural research, extension and training complex and the rest of the development community including universities, NGOs working with small-holders, Farmers Associations and private industry, as well as the various Georgian Farmers Unions and donor-assisted initiatives for establishing farm advisory services.

The CGS would be managed by a Competitive Grants Board (CGB), on which are represented all key stakeholders, served by a Secretariat to handle day-to-day work. The charter of the Board including its composition Member affiliation is as follows: Private farming sector - 4; NGOs – 1; Georgian Academy of Agricultural Sciences – 1; Agrarian University – 1; MOAF – 1; Ministry of Finance – 1; Ministry of Economy – 1; Ministry of Environment – 1; PCU – 1; Parliament – 1; Head of Secretariat – 1. and the Chairman (who is a well-known citizen independent of MOAF and the GAAS) for the first term were approved by the Inter-Ministerial Commission on March 3, 1999. The head of the Secretariat has also been appointed.

Specifically the CGS would fund two categories of activities:

1. **Adaptive Research and Technology Dissemination.** The CGS will fund proposals on priority topics of technology adaptation, validation (crop and livestock production, post-harvest operations, inputs, marketing and natural resource management) and dissemination (including pilot extension activities, use of media etc.). The CGS would also support studies to identify policy and regulatory reforms needed to eliminate bottlenecks affecting the sector. Priority areas of technology validation, adaptation and dissemination for which the CGB would request proposals from the research and development community, would reflect farmers immediate needs and would meet the national research priorities as set out in the "Concept of Georgian Agrarian Policy" (issued as Presidential Decree, April 7, 1997). However, priorities would be periodically examined and up-dated as the project proceeds, and commensurate with changes in state policy with regard to the agro-industrial sector.

The broad areas of research and development have been provisionally identified as falling under three main categories: (i) improved productivity in import substitution products; (ii) export product development and (iii) production, processing and marketing services. A list of specific topics responding to immediate on-farm needs has been identified for the first announcement of CGS grants within this broad classification and approved by the CGB. Proposals would be evaluated against clear criteria on a competitive basis. Proposals would be requested for work that could be completed in four years and progress would be closely monitored against specific milestones. Payments would be made on the basis of progress against these markers.

Proposals for funding under the CGS would be evaluated by the Secretariat with the assistance of local and international peer reviewers, against pre-determined criteria (e.g. relevance to farming community, contribution to sector strategy, technical quality and scientific merit, qualifications and experience of researchers, plans for transfer of technology, and environmental impact). Funds for approved projects could cover laboratory and field equipment, materials, vehicles, office equipment, computers, staff allowances, travel costs, short term training, field labor, fuel and supplies. Large items of equipment would not be funded. Participating institutions would provide 15-20% of costs in cash or kind.

In addition, the CGS will fund advisory services/extension activities to tackle immediate priorities for improving on-farm productivity, profitability and sustainability on private farms, both smallholder and commercial, in irrigated and rainfed areas. The objective of the CGS extension component would be to help address the priority needs of rural agricultural producers and, at the same time, nurture embryonic advisory services. Support for advisory services would be provided in areas likely to be receptive (to be measured against agreed criteria). Some criteria to be used in determining eligibility for assistance are as follows:

- Farmers are organized in an association, e.g. Water User Association, Credit Union, Producer Association, Service Union, NGO etc;
- Farmers have access to a minimum level of inputs needed to benefit from extension services;
- Other investments planned in an area (e.g. investments in rehabilitation of water management schemes by the Irrigation and Drainage Rehabilitation Project, or support for establishing a Credit Union etc.);
- The association is able to provide up to 15-20% of the cost of services in cash or kind; and
- The experience is likely to be replicable in other parts of Georgia.

CGS grants would fund contracts between farmers associations and service providers Eligible agencies to supply services could include the ABCs established with TACIS support, Rayon Department of

Agriculture, Georgian Farmers Union, Farmers Service Union, GAAS Agricultural Research Institutes, Agricultural College, NGOs etc. who have, or have the potential to form strong links with local farming communities, and who are able to demonstrate their abilities to address priority problems as identified through "needs assessments". The contracts (generally for a two-year period) would cover the provision of agricultural advice, carrying out on-farm trials and demonstrations, assistance with accessing inputs and markets etc. The contracts would be drawn up following on-farm "needs assessments" conducted by the service provider and farmer association with technical assistance (in the form of a facilitation team) provided by the project.

The CGS Secretariat would contract an agency(s) to establish three facilitation teams (in west, center and east) to work with farmers associations and potential service providers on the "needs assessments" and drawing up contract proposals for evaluation by the CGS Secretariat and peer reviewers. The project would provide the technical assistance, training and operating costs required for setting up the facilitation teams and conducting the "needs assessments".

Technical Assistance from United Kingdom Know How Fund. The United Kingdom's Know How Fund (KHF) participated in the appraisal mission and is considering funding the technical assistance, training and operating costs (to a total of about US$400,000) of the "needs assessments."

2. **Support for Agricultural Practices to Reduce Environmental Pollution.** The CGS will act as a channel for the testing and introduction of environment-friendly agricultural practices to reduce negative impacts on water quality. This activity, together with those described in Project Component 3 below, comprise the GEF-funded program to promote agricultural practices that will improve the surface and groundwater quality of Georgia's water bodies as well reduce nutrient loads entering into the Black Sea from point and non-point sources of pollution.

Under the CGS, the project will invite competitive proposals from eligible research institutes and universities for conducting on-farm trials of best management practices to control soil erosion and reduce the leaching of nutrients from fertilizers and animal manure to surface and ground water. Proposals selected for funding would conduct on farm experiments at farmers' field to demonstrate the use of reduced tillage, different cropping systems, manure and chemical management practices, and buffer strips for environmental benefits.

Project Component 2 - US$3.52 million

Reform of the Agricultural Research System

The long-term productivity, profitability and sustainability of Georgian agriculture will be determined to a large extent by the capacity of its agricultural knowledge system, public and private, to respond to emerging problems and opportunities. While the agricultural knowledge system (AKS) in Georgia is gradually adjusting to changes in the economic systems and policy reforms, serious problems remain. The AKS, comprising agricultural research, extension and training, needs to be critically analyzed and examined for its relevance, efficiency and cost-effectiveness. It should then be re-structured to make it responsive to market conditions, the needs of new stakeholders and financially sustainable. These changes will require a longer-term vision for a reforming AKS for Georgia and an action and implementation plan to rationalize the programs, structure, organization, management and financing of a lean, integrated functional and viable AKS.

During project preparation, a "Conception Framework for a National Strategy to Reform the Agricultural Research, Extension and Training System" has been prepared under the guidance of the Reform

Component Management Group. This framework, which reflects comments by the Bank on an earlier draft, was approved by the Inter-Ministerial Commission on June 17, 1999. The Reform Component Management Group has selected one priority research direction - Horticulture and Viticulture – for the preparation of implementation and investment plans to provide a model for institutional reform. The Reform Management Group would develop a reform strategy, action and investment plans with the help of consultants working with the Reform Component Coordinator by October 31, 2000. Subsequently, upon approval by the Government of Georgia and the Bank of the final plans, an amount of US$2.0 million (IDA loan) will be made available for implementing these plans. The project will thus earmark an amount of US$2.0 million for such implementation efforts which will include activities related to civil works and rehabilitation; procurement of laboratory and field equipment and goods; human resource streamlining; training and operational costs.

Project Component 3 - US$ 1.17 million

Pilot Environmental Pollution Control Program

Investments in manure storage and handling facilities and bio-gas digesters, as well as soil and water quality monitoring programs in a selected watershed of western Georgia rivers that drain into the Black Sea will include the following activities:

- install and promote manure storage facilities/pits and handling system in villages for efficient manure management;
- test, demonstrate and promote the use of bio-gas digesters in the villages to provide bio-gas for cooking and other domestic use to farming families as well as to reduce methane emissions into the atmosphere and to; and
- establish a water quality monitoring program for the rivers in the project area that drain into the Black Sea.

The selected watershed in western Georgia comprises three districts: Khobi, Chkhorotsku and Tsalenjika The selection of the watershed by the Ministry of Agriculture and Food and Ministry of Environment was endorsed by the appraisal mission.. The investment phase will be preceded by a pilot study (in Terjola, Imereti) to determine the best design for the bio-gas digesters. This pilot phase is expected to start in February 2000 with financing from the PPF and be completed by end-2000.

Investments in Manure Storage Facilities and Promotion of Best Management Practices. This sub-component will aim to install and promote manure storage and handling facilities for eligible farmers of western Georgia in selected villages for efficient manure management. Since 1991, animal and cereal production systems have both been decentralized and under the present crop production systems, the manure produced from decentralized animal production systems can be easily absorbed by the cereal production system. This sub-component will also provide environmental advice to farmers on adaptive technologies for efficient and cost-effective use of manure and slurry on croplands to reduce the risks of water contamination from manure use and handling. These activities will include investments in manure storage tanks, slurry pits, specialized equipment for manure spreading and handling, and on extension and outreach activities.

Following the pilot phase, in the first year the project will install about 30 manure storage tanks/pits, and establish one demonstration study on the use of best management practices for erosion and pollution control in selected villages of the project area (Table A). In the second year, the frequency of installation of manure storage pits/tanks will be increased to more than double, with a proposed installation of a total of about 700 storage pits/tanks by project end.

Table A: Estimated number of manure storage tanks/pits to be installed

Region	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Watershed in Western Georgia	30	70	150	200	250	700

Proposals for the installation of manure storage tanks/pits will be invited from all qualified contractors in Georgia and contracts will be awarded on competitive basis for the best and most economical design as discussed in the Pilot study component of the project.

The project will work with qualified NGO's, commodity groups, university extension services, and private contractors to arrange the farmers training programs. Selection of these groups for providing training programs will be on a competitive basis and proposals for these programs will be invited by the CGB for funding. These training programs will be in the form of on-site training at the demonstration sites and through video/radio/TV or other media for mass communication.

The Project will provide handling equipment in the form of manure spreader and manure transportation equipment to the selected villages if needed. Villages selected for field demonstration study will be located in the selected watershed that will also be used for ground and surface water quality monitoring programs. Work on environment-friendly agricultural practices funded through the CGS will be included to provide comprehensive demonstrations of practices to reduce pollution. That is on-farm trials and demonstrations to promote the use of improved sustainable agricultural practices including reduced tillage, better chemical and manure management systems, and buffer strips for reducing soil erosion and improving water quality.

Investments in Manure Bio-digesters. This component will make investments in testing, demonstrating and promoting the use of bio-gas digesters in villages as alternate source of energy to provide bio-gas for cooking and other domestic use and ultimately help in reducing the emission of green house gases to atmosphere. The project will implement programs in installation, testing, and evaluation of bio-gas digesters in selected villages and will provide training for farmers and contractors on the use and maintenance of bio-digesters.

Bio-digesters will be tested and evaluated for their performance in these villages to select the most desirable design and size for western Georgia before moving into installing relatively large number of bio-gas digesters. Following work on design issues during the pre-project period, in year 1, the project will install about 10 bio-gas digesters in the project area. In the second year, the number of bio-digesters installed will be nearly doubled, with a target of about 196 by project end:

Table B: Estimated number of bio-gas digesters to be installed

Region	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Watershed in Western Georgia	10	19	39	58	70	196

Since bio-gas technology is to be introduced slowly, training must be provided to farmers in operating and maintaining the functions of bio-digesters such as feeding rates of manure, frequency of feeding, quality of manure to be used for feeding, storage and handling of slurry from digesters. There is a possibility that potential contractors may have to be trained on the use of quality material for construction as well as construction techniques. Most farmers are not familiar with this technology and under the proposed project, efforts will be made to educate them on the advantages of bio-digester use.

This demonstration component will familiarize and widen the understanding of farm/rural families and the public at large of the benefits accruing from the use of bio-gas units through study tours, farm visits, seminars/workshops and other outreach methods, including radio, video, leaflets and the Internet. Part of the GEF funds will be used to provide training to technicians who will assist farmers in installation, operation and maintenance procedures for the bio-gas units. The aim is to develop and build Georgia's capacity for large-scale use of bio-digesters in the future.

The above GEF-funded activities will help in reducing non-point source pollution of Georgia's water bodies as well as the Black Sea. Quantitatively, these sustainable practices have the potential of reducing the discharge of chemicals and manure into water bodies by 20 – 30% from the project area.

Investments in a Water Quality Monitoring Program. This component will make investments in implementing a water quality monitoring program for the rivers in the project area that drain into the Black Sea.

A clear-cut methodology for monitoring the soil and water system will be developed with external assistance in the first year of the project. Separate contracts will be signed with laboratories for carrying out monitoring of groundwater, drainage water and soil quality on plots where any of the improved technologies will be applied. Water quality will also be tested regularly in the rivers Chanis Tskali and Khobis Tskali that drain from the project area into the Black Sea. The dynamics of water quality in these rivers will be used as an indicator of the rate of nutrient pollution in the project area.

Project Component 4 - US$0.71 million

Project Management Unit

The Project would provide for a Project Management Unit (PMU) to co-ordinate project implementation and handle monitoring and evaluation of project activities (Figure 1). The PMU would be headed by a Project Manager, who would report to the Minister of Agriculture and Food, and would comprise the Environmental Engineer (heading the Environmental Pollution Control component), the Reform Component Coordinator, an Administrative Officer and Secretary/Interpreter. All accounting, financial management, procurement and disbursement matters would be handled by the World Bank Projects' Coordination Unit (PCU) under the overall supervision of the Director, who reports to the Minister of Finance. The PCU would be reimbursed for these services by the Project. The Project Manager would agree with the PCU on the budget process and release of funds, and would report to the PCU on the use of the funds.

For the CGS component (component 1), the CGS Board would approve annual work plans and budgets for each component and the PCU and CGS Secretariat would execute the decision of the CGS Board as described in the Operational Manual. The Reform Component Management Group would oversee the work on the Reform Component (component 2) while the Environmental Engineer in the PMU would manage the Environmental Pollution activities (component 3). The Inter-Ministerial Commission (established by Presidential Decree #357, of May 28, 1998, to oversee the reform of the Agricultural Research, Education and Extension System) would provide overall guidance and support at the highest level.

Annex 3: Estimated Project Costs

GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

Project Cost By Component	Local US $million	Foreign US $million	Total US $million
Competitive Grant Scheme	0.00	0.00	0.00
IDA Grants for Applied Research and Extension	2.55	0.85	3.40
GEF Grants for Dissemination of Pollution Reducing Practices	1.09	0.25	1.34
Competitive Grant Scheme Secretariat	0.71	0.23	0.94
Pilot Environmental Pollution Control Program (Biodigesters)	0.76	0.41	1.17
Support for Reform of the Agricultural Research, Education, and Extension System	1.63	1.89	3.52
Project Management	0.70	0.01	0.71
Total Baseline Cost	7.44	3.64	11.08
Physical Contingencies	0.28	0.23	0.51
Price Contingencies	0.67	0.15	0.82
Total Project Costs	8.39	4.02	12.41
Total Financing Required	8.39	4.02	12.41

Note: Physical and Price Contingencies are spread throughout all components. Therefore, the individual component total shown here in Annex Table 3, will not match the Indicative financing for each component in the Component Table in the Description section of the main text of the PAD. The Component Table in the Description section of the PAD shows totals for each component which include that component's portion of physical and price contingencies.

Annex 4

GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

Predicting and quantifying economic costs and benefits ex-ante of research and extension activities is problematic because the outcomes of the technology innovation or dissemination are not defined at the time of project design, but instead evolve with the project through a process of priority setting and consumer demand for the technologies. As a result economic returns from such an exercise are therefore difficult to predict. Please see the Summary Project Analysis section of the main text above for more information on the expected economic benefits, and fiscal impact, from the project.

Annex 5: Financial Summary

GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

Years Ending
2000, 2001, 2002, 2003, 2004

	IMPLEMENTATION PERIOD						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total Financing Required							
Project Costs							
Investment Costs	2.4	3.2	2.8	1.2	1.3		
Recurrent Costs	0.3	0.3	0.3	0.3	0.3	0.0	
Total Project Costs	2.7	3.5	3.1	1.5	1.6	0.0	0.0
Total Financing	2.7	3.5	3.1	1.5	1.6	0.0	0.0
Financing							
IBRD/IDA	1.8	2.5	2.0	0.6	0.6	0.0	0.0
Government	0.4	0.4	0.3	0.3	0.3	0.0	0.0
Central	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Provincial	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Co-financiers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User Fees/Beneficiaries	0.1	0.2	0.3	0.0	0.1	0.0	0.0
Others	0.4	0.4	0.5	0.6	0.6	0.0	0.0
Total Project Financing	2.7	3.5	3.1	1.5	1.6	0.0	0.0

	OPERATIONAL PERIOD						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total Financing Required							
Project Costs							
Investment Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recurrent Costs	0.0	0.0	0.0	0.0	0.0	0.7	0.7
Total Project Costs	0.0	0.0	0.0	0.0	0.0	0.7	0.7
Total Financing	0.0	0.0	0.0	0.0	0.0	0.7	0.7
Financing							
IBRD/IDA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Government	0.0	0.0	0.0	0.0	0.0	0.7	0.7
Central	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Provincial	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Co-financiers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User Fees/Beneficiaries	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Project Financing	0.0	0.0	0.0	0.0	0.0	0.7	0.7

Main assumptions:

1. The total Government contribution of US $1.7 million includes approximately US $540,000 in taxes.
2. For the Operational Period, Years 6 - ?: The CGS proves the cost-effectiveness of using grants to distribute limited government budget, and therefore government continues to finance the CGS at approx. US $500,000 per year.

3. For the Operational Period, Years 6 - ?: The government maintains core funding of the selected research institute of approximately US $160,000 per year.
NOTE 1: "Others" in the Financing Implementation Table refers to Global Environment Facility (GEF).
NOTE 2: Due to rounding down in the PDS, the beneficiary contribution in Project Year 4 is shown as 0.0. Beneficiaries will contribute approximately US $40,000 during PY4.
NOTE 3: For consistency in summation between tables, the Beneficiary contribution in Project Year 5 is shown as US $100,000. The actual amount of Beneficiary contribution in PY5 is approximately US $25,000.

Annex 6: Procurement and Disbursement Arrangements
GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

Procurement

The procurement arrangement for goods and services to be financed under the project, their estimated costs and proposed methods of procurement are presented in Table A. All procurement of goods to be financed from IDA credit proceeds would be procured in accordance with the World Bank Guidelines for Procurement under IBRD loans and IDA Credits, January 1995, revised January and August 1996, September 1997 and January 1999, and using the Bank's Standard Bidding documents. Consulting Services and training would be procured in accordance with the Guidelines for Selection and Employment of Consultants by World Bank Borrowers, January 1997, revised September 1997 and January 1999. A "General Procurement Notice" containing information about bidding opportunities will be published in January 2000, issue of Development Business before project negotiations in accordance with paras. 2.7 and 2.8 of IBRD Guidelines. Specific Procurement Notices will also be published, as appropriate, in Georgian newspapers with national circulation.

The PCU/PMU, staffed by a full time procurement specialist familiar with the Bank procurement requirements (already on the staff of the PCU), would be responsible for procurement arrangements with assistance of the PMU. Information regarding procurement administration would be collected and recorded and quarterly reports would be sent to the Bank. These reports would indicate: (i) status of procurement; (ii) an updated procurement plan; and (iii) compliance with aggregate limits on specified methods of procurement.

Competitive Grant Contracts

The Competitive Grant Scheme (CGS) that funds the research and extension activities of the research and extension community from the public and private sector form the main element of the project. The CGS, administered by an Competitive Grant Board (CGB), will award research and extension grant (estimated to range between $5,000-$100,000 based on an initial assessment of the likely size of proposals that would need grant assistance) to successful applicants of the grant. The Secretariat of the CGB will solicit research and extension proposals. The CGB will establish broadly the priority areas of research and extension services, the procedures for applying for the grant, and the criteria for review of proposals. All qualified private and public sector research, extension and farming specialists/organizations will be eligible to submit proposals to the CGB which will be reviewed with the assistance of peer reviewers. Funds will be approved for projects based on pre-determined criteria outlined in the CGS Manual and will be directly disbursed to the successful applicants.

In exceptional situations, if for one specific scope of work and same quality of proposal there are more than one competing agencies, the following principles will guide procurement:

(a) Government-owned universities, research institutes and extension agencies that do not demonstrate independence and do not operate under commercial law will not compete with private sector. However, they may be subconsultant to private sector firms.

(b) If one or more government-owned universities, research institutes and extension agencies are able to provide the same services of equal quality, the following procedures may be applied:

(i) Single-Source Selection when the case meets the criteria for this method of selection as set out in paras. 3.8 to 3.11 of the Consultant Guidelines.

(ii) Quality-Based Selection (QBS) when more than one of these institutions qualifies to execute the assignment and the assignment meets the criteria set out in the Consultant Guidelines (para. 3.2).

(iii) Selection Based on Qualifications when more than one of these institutions are uniquely qualified to execute the assignment and the assignment meets the criteria set out in the Consultant Guidelines (para. 3.7).

(c) Government-owned universities, research institutes and extension agencies under the direct control of the borrower shall be excluded from provision of services.

For research agreements, the grant will finance mainly the operating expenses, materials, field labor, fuel and supplies, project related over head costs and some expenses for capital items such as laboratory equipment, field equipment for small plots, vehicles, computers, technical bibliographic material and office equipment. For the extension agreements, the grant will finance items such as field demonstrations, leaflets, booklets, training, overhead costs, and some office equipment and vehicles. Procurement under the CGS will be done by the successful grant applicants through competitive procedures requiring as a minimum obtaining of three offers from three different suppliers/contractors and their thresholds would be same as described under Goods and Services.

Applicants, who are awarded the research and extension grants will carry out their own procurement as the items procured will vary significantly among the agreements depending on the nature of their work. It may be difficult to package items in terms of economy and efficiency since the items needed are quite small and needed at different times and at different places in the country. Also, it is expected that most of the grant agreements will use project funds to finance their operating costs of research and extension services.

The PMU will be responsible for supervising the technical and administrative aspects respectively of the contracted research and extension services. In order to ensure transparency, the successful CGS applicants will be required to keep all quotations, receipts and invoices of their procurement requests for inspection by PCU supervisors. For the implementation of CGS, a detailed Manual has been prepared by MAF which has been reviewed and agreed by the Bank.

The grants will be disbursed in tranches, and second and subsequent disbursements will require approvals by the technical team and the administrative team in the PCU based on physical implementation progress report and financial records.

Works

The works (estimated to cost US $871,000) to be financed would include construction of biodigesters, manure storage and handling will be procured through national competitive bidding NCB. These works to be implemented over the life of the project, are small, labor intensive and scattered through the county. Due to the nature of

works these contracts cannot be packaged in larger packages.

Goods

The goods (estimated to cost US $48,000) to be financed under the project would include furniture, vehicles, and office equipment required for the Project Coordination Unit and the Secretariat that administers the Competitive Grant Scheme. Furniture valued not more than $11,250 in aggregate will be procured through national shopping. Equipment packages valued under $50,000, which would consist mainly of office computers, fax machines, copiers and vehicles would be procured through national shopping obtaining price quotations from at least three qualified national suppliers.

Consultants for Technical Assistance and Training

The Consultants for TA and training will be selected competitively using the methods defined in the Loan Agreement and procurement plan. PCU/PIU staff competitively hired under PPF/PHRD will be financed under the project. The CG Secretariat core staff also hired competitively under PPF funds will be continued to be financed under the project. Other short-term consultants will be hired on a need-basis.

Reform of AKS

The reform of AKS will be defined only after the review of the institutes have been completed (possibly in the second year of the project). The procurement of the works, goods and services, if any will be procured through competitive procedures using the methods and thresholds defined in the Loan Agreement.

Incremental Recurrent Costs

The recurrent costs associated with the project includes O&M costs of office and vehicles of the PIU and Secretariat and their per diem cost for field travel.

Institutional Capacity building in Procurement

An assessment of MAF/PMU capacity to implement project procurement in accordance with the criteria outlined in Annex 3 of LACI Implementation Handbook was completed. This review addressed the legal aspects, procurement cycle management, organization and functions of the procurement unit in the PMU, support and control systems, record keeping, and staffing. The review assessed the risks (institutional, political, procedural etc.) that may negatively affect the ability of the agency to carry out procurement processes and has rated it a high risk country. Therefore, the prior review thresholds recommended are those applicable to a high risk country. In collaboration with PIU, who already has a procurement specialist on its staff, an action plan to address deficiencies has been prepared to strengthen PIU/PCU capacity to administer procurement in an effective and transparent way as part of sound governance and good project management. This includes: (a) provide additional training for procurement and PIU staff on the World Bank procurement procedures; (b) conduct a comprehensive procurement training for all project related

staff as part of the project launch workshop; and (c) use of Bank's Standard Bidding Documents. The Bank will monitor procurement activities, contract management and record keeping during periodic supervision missions. The Bank procurement specialist will not only conduct ex-post reviews but will also provide guidance and support to the PIU/PCU in carrying out the procurement plan.

Prior Review

First two contracts for procurement of civil works, and first contract for procurement of goods would be subject to prior review. Consulting contracts in excess of $100,000 for firms and $20,000 for individuals would be subject to prior review procedures. The Bank will also review, regardless of value, terms of reference of all consultants. All other contracts would be subject to ex-post review by the Bank on a random basis. The first international and national shopping contracts will also be subject to World Bank prior review.

The Bank would review the first batch of contracts awarded from the CGS. Any that do not correspond to the eligible types established in the Operational Manual would also be subject to prior review.

Procurement methods (Table A)

	Procurement Methods (in US $'000)						
	ICB	NCB	Other	NBF	Total	IDA * financing	GEF** financing
Works							
Environmental Pollution Control Program							
Pilot (Biodigesters)							
Sub-total		871.00			871.00		871.00
		(779.81)					(779.81
Equipment							
Vehicles			13.35				
Furniture			11.25				
Computers			16.31				
Communications Eq.			7.20				
Sub-total			48.11		48.11		
			(40.89)	*		(40.89)	
Consultants and Technical							
Assistance							
Sub-total			1,539.70		1,539.70		
IDA			(812.93)	*		(812.93)	
GEF			(726.77)	**			(726.77
Reform of AKIS							
Study for AKIS Ref.							
Implementation of AKIS Reform	800.00		1,554.21	1,313.65	3,667.86		
	(640.00)		(1,325.74)	*		(1,965.74)	
Project Operating Cost							
(Recurrent Cost)							
Under IDA*			1,538.56		1,538.56		
			(1,312.39)	*		(1,312.39)	
Under GEF			97.63		97.63		
			(82.99)	**			(82.99
Research and Extension Program -							
Competitive Grant Scheme							
Under IDA			3,630.61		3,630.61		
			(3,115.06)	*		(3,115.06)	
Under GEF			835.00		835.00		
			(709.75)	**			(709.75
Training and Public Awareness - GEF			183.00		183.00		
			(183.00)				(183.00
PPF							
Sub-total			293.01		293.01	(293.01)	
TOTAL					**12,704.48**	(7,540.03)	(2,482.32
IDA*						(7,540.03)	
GEF**							(2,482.32

NOTE:

National Competitive Bidding for contracts for works (biodigesters) estimated to cost <US $ 100,000 in aggregate of US $871,000

National Shopping for contracts for goods estimated to cost <US $ 50,000 in aggregate of US $48,000

Research and extension grant Agreements - procurement aill be based on the Competitive Grant Scheme selection proces (US $4.47 million)

Technical Assistance includes peer reviewer contracts, local and foreign specialists for adaptive research and extension, environmental specialists, monitoring/evaluation specialists, AKS reform specialists. All TA specialists, will be contracted form private sector and thus, not Government staff.

Training includes: training on biodigesters quality control, manure-handling, environmentally friendlly agricultural practices

Reform of AKS will be defined only after the review of institutes have been completed (possibly in a second year of the project)

Prior review thresholds (Table B)

(US$ million equivalent) Section 1: Procurement Review							
Goods and Civil Works	ICB	NCB	IS	NS	Minor Works	Other methods	Percentage of loan amount subject to prior review
Procurement thresholds: individual and aggregate, in ()	G > 0.100	W<0.500 (US$0.871)	n.a.	G<0.050 (US$0.048)	n.a.	n.a.	
Prior Review	All	First two	n.a.	First	n.a.	n.a.	1.5%
Consultants	QCBS	QBS	LCS	Qualifications	Individual	Sole Source	
Procurement method thresholds	>0.200	n.a.	n.a.	<0.100	<$0.050*	Only cons. contracts competitively selected under PHRD/PPF	
Prior Review	All	n.a.	n.a.	All	TORs for all and contracts >0.020	All	US$0.63 million or 8.5%
Expost Review All other procurement packages	Explain briefly the ex-post review mechanism: All the remaining procurement packages will be subject to ex-post review. Supervision missions will include a procurement specialist as needed To assist the TM with ex-post reviews.						

Section 2: Capacity of the Implementing Agency in Procurement and Technical Assistance requirements

The capacity of the PIU, which will with the PCU implement the project, has been assessed. Based on the analysis compiled in the Attachment 2 of the Assessment, the result is that Georgia is high risk country form the public procurement point of view. It has been determined that PIU is fully staffed and well equipped, and does have experience in Bank's project, procurement procedures and practices. The following is recommended to build PIU capacity to undertake procurement: i) staff will be provided with the additional training during the project launch workshop and other training organized by the World Bank and other institutions form time to time; ii) training shall also include the preparation of documents for each type of the procurement method proposed in the loan agreement. PIU/PCU will follow the World Bank Standard bidding documents, procedures, Guidelines and any other agreed procedures.

Country Procurement Assessment Report or Country Procurement Strategy Paper status: N/A	Are the bidding documents for the procurement actions of the first year ready by negotiations Yes No X

* except for PMU Manager and Head of CGS Secretariat

Section 3: Training, Information and Development on Procurement				
Estimated date of Project Launch Workshop February 2000	Estimated date of publication of General Procurement Notice January 2000	Indicate if there is procurement subject to mandatory SPN in Development Business Yes X No	Domestic Preference for Goods Yes No X	Domestic Preference for Works, if applicable Yes No X
Retroactive financing Yes No X Explain:			Advance procurement Yes No X Explain:	
Explain briefly the Procurement Monitoring System: Procurement implementation progress will be monitored through progress reports and supervision missions. Each supervision mission will include a procurement specialist. She/he will be responsible for updating the procurement plan, and conducting ex-post reviews. His/her findings will be included in the supervision reports for monitoring their implementation.				
Co-financing: Explain briefly the procurement arrangements under co-financing: Procurement for GEF co-financing activities will be administered by the PIU following the Bank procedures.				

Section 4: Procurement Staffing
Indicate name of Procurement Staff or Bank's staff part of Task Team responsible for the procurement in the Project: Name: Snezana Mitrovic, Procurement Specialist, Ext. 32812
Explain briefly the expected role of the Field Office in procurement: A project officer in the Resident Mission would be responsible for helping to supervise project implementation and would provide procurement support, in which she he will have received training.

Disbursement

Allocation of credit/grant proceeds (Table C)

Although the IDA Credit and GEF Grant will be implemented together - Allocation of Loan Proceeds (Table C) - is presented twice, to clearly indicate the different categories for each source of financing. The project will be implemented over a five year period, during which the total loan amount from both sources of $10.02 million will be disbursed. This total does not include approximately US $500,000 utilized during project preparation from a Project Preparation Facility. This amount will be refunded from the proposed Irrigation and Drainage Rehabilitation Project. The proposed closing date for the project will be December 31, 2005. The format of the Project Management Reports (PMRs) for the project has been agreed with the PCU and is enclosed as an annex to the PIP. The PCU will produce a complete set of PMRs for every calendar quarter throughout the life of the project. The project will initially disburse under the Association's traditional disbursement procedures, with the option of moving to the PMR-based disbursement method at the mutual agreement of the Borrower and the Association. The Borrower and Association will consider such a move on December 31, 2000 once the PCU has gained sufficient experience in producing the PMRs and these PMRs have been judged to be reliable, particularly in respect of their forecasting information.

IDA Credit

Expenditure Category	Amount in US$ million	Financing Percentage
Parts A, C, and D		
1) IDA Competitive Grants for Applied Research and Extension	2.75	80% of total grant award
2) Consultant Services and Training		100%
a) under Parts A, C, and D of the Project	1.07	
b) for the detailed design of Part B of the Project	0.10	
3) Goods	0.03	100% of foreign expenditures, 100% of local expenditures (ex-factory costs); 80% of local expenditures for other items procured locally
4) Incremental Operating Costs[1]	1.21	80%
Part B		
5) Reform of Priority Institutions	2.04	To be determined
6) Unallocated - IDA	0.34	
TOTAL	7.54	

[1] Incremental Operating Costs include: salaries of project management staff; office maintenance; vehicle operation and maintenance; local travel; and public relations. This definition also pertains to Incremental Operating Costs under the GEF (see below).

Table C: Allocation of Credit/Grant Proceeds

Expenditure Category	Amount in US$million	Financing Percentage
GEF Competitive Grants for Dissemination of Pollution Reducing Practices	0.89	80% of total grant award

Civil Works - GEF (Pilot Environmental Pollution Control Program)	0.79	100% of foreign expenditures; 80% of local expenditures for other items procured locally
Consultant Services and Training - GEF	0.63	100%
Incremental Operating Costs - GEF	0.08	80%
Unallocated - GEF	0.08	
Total Project Costs	2.47	
Total	2.47	

Use of statements of expenditures (SOEs):

For both the IDA Credit and the GEF Grant, the following disbursements will be supported by full documentation: (a) goods with a contract value of US$50,000 equivalent per contract or more; (b) services with a contract value of US$100,000 or more for consulting firms, and US$20,000 or more for individual consultants. All other disbursements will be made on the basis of State of Expenditures (SOEs) against eligible expenditures. Supporting documentation for SOEs will be retained by the Borrower and made available to the Bank during supervision.

Special account:

As noted elsewhere, the PCU for the Agriculture Development Project will serve this project administratively for financial, procurement, and disbursement matters. The PCU will, however, open two new Specials Account for this project, one for the IDA Credit and one for the GEF Grant, in a Georgian commercial bank acceptable to IDA. The PCU will manage both of these Special Accounts. **For the IDA SA**, the total authorized allocation will be US $750,000. At project start, the initial allocation to the SA will be limited to US $300,000. When total disbursements from the Credit, plus outstanding commitments, equal or exceed SDR 1,500,000 equivalent, the total authorized allocation will be made available. **For the GEF SA**, the total authorized allocation will be US $250,000. At project start, the initial allocation to the SA will be limited to US $125,000. When total disbursements from the Grant, plus outstanding commitments, equal or exceed SDR 500,000 equivalent, the total authorized allocation will be made available. Withdrawal applications for the replenishments of both SAs should be sent to the Bank on a monthly basis, or when the balance of the SA is equal to about half of the initial deposit or the authorized allocation, whichever comes first. The SAs will be audited annually by independent auditors and the audit report submitted to the Bank for review and approval within six months of the end of the fiscal year.

Financial Management

The following is a time-bound borrower-agreed action plan to strengthen the PCU's project financial management arrangements for all projects for whose financial management the PCU is responsible**:**

Action	Responsibility	Due date
Copper (existing computerized) accounting system 1. Development of printing routines for detailed account transactions 2. Resolution of problem of unbalanced general ledger	 GL GL	 Under review Not met
Financial and Operational Procedures Manual 5. Draft of manual for sections: flow of funds; accounting documents; budgeting and forecasting; and financial reporting for the existing projects managed by the PCU 6. Draft of complete manual for existing projects managed by the PCU	 BS BS	 Under review 2/28/00
Project Management Reports (for existing projects) 1. Partial production of PMRs as at September 30, 2000 for reports 1A, 1B, 1B1, 1B2, 1C and 1F 2. Full production of complete set of PMRs as at September 30, 2000 (including forecasting, output monitoring and procurement information)	 BS BS	 10/31/00 11/30/00
Fixed Asset Register Production of fixed asset register spreadsheet together with reconciliation of the same with the general ledger Copper accounting system	TT	Under review
Employee Advances 1. Reconcile outstanding employee advances receivable per the cashier's spreadsheet system to the Copper accounting general ledger system	TJ, GL	Under review
CUDC • Reach agreement with IFAD on the arrangements for the audit of the Credit Unions	IS	Under review

Audit arrangements for existing projects managed by PCU	NM	Under review
1. Appoint auditors	NM	3/31/00
2. Submit final audited financial statements		
ARET project financial management arrangements		
1. Revise the financial operation procedures of the CGS as described in the CGS Operational Manual.	NM	Under review
2. Produce a cash flow forecast for the project with a view to determining the required authorized allocation for the Special Account.	NM/RA	Under review
3. Confirm financial management staffing requirement of the PCU and PMU and assess adequacy of budget allocation.	NM NM/BS	Under review 03/31/00
4. Devise ARET-specific financial management procedures and controls for PMU and PCU	BS	02/29/00
5. Revise Financial Operational and Procedures Manual	NM RG	02/15/00 04/10/00
6. Recruit project accountant for the ARET		
7. IDA to visit PCU and confirm adequacy of project's financial management arrangements	NM RG	02/25/00 03/05/00
8. Present shortlist of auditors to IDA for No-objection	NM	03/25/00
9. IDA to confirm no-objection shortlist of project auditors	GOG/IDA	12/31/00
10. Appoint auditors		
11. Consider moving to PMR-based disbursements		
New Accounting Software (for all projects)		
5. Devise consultant TOR and budget for the process to select and implement a new accounting software	NM	Under review
6. Recruit consultant	NM	12/31/99
7. Revise plan for the selection and implementation of the new software and revise budget accordingly	Consultant	1/31/00
8. Evaluate system and software requirements and produce TOR for software	Consultant	2/28/00
9. Evaluate software alternatives	Consultant	3/31/00
10. Start implementation of software	Consultant	5/1/00
11. Complete implementation of software	Consultant	5/31/00

Key:

BS B. Sharashidze
GL G. Lordkipanidze
GOG Government of Georgia
IDA International Development Association
IS I. Shuker
RA R. Asatiani
RG R Ganguli
NM N. Mosashvili
TJ T. Jaiani
TT T. Tsintsadze

Annex 7: Project Processing Schedule

GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

Project Schedule	Planned	Actual
Time taken to prepare the project (months)	8	8
First Bank mission (identification)	05/25/98	09/25/98
Appraisal mission departure	09/01/99	09/26/99
Negotiations	03/01/2000	
Planned Date of Effectiveness	07/15/2000	

Prepared by:

Ministry of Agriculture / Ministry of Environment / PIU

Preparation assistance:

PPF, PHRD funds

Bank staff who worked on the project included:

Name	Speciality
Iain Shuker	Program TL – Financial and Economic Analysis
Jitendra Srivastava	Project TTL – Competitive Grant Scheme/Agricultural Research and Extension
Snezana Mitrovic	Procurement
Meeta Sehgal	Economic Development
David Bontempo	Project Costs
Ranjan Ganguli	Financial Management
Darejan Kapanadze	Project Operations
John Hayward	Quality Assurance
Sharifa Kalala	Team Assistant
Peer Reviewers:--	
Mahesh Sharma	Environment
Derek Byerlee	Agricultural Research

Annex 8: Documents in the Project File*

GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

A. Project Implementation Plan

1. Operating Manual for the CGS – main text plus annexes – prepared by Project Preparation Unit (PPU)
2. Organization and Operating Costs of CGS Secretariat - PPU
3. Implementation Plan for CGS - PPU
4. Operational Plan for Reform of Agricultural Research, Education and Extension System – PPU/M. Boyd, ISNAR
5. Draft Project Implementation Plan - PPU
6. Report on the Implementation Plan for Pilot Study on Agricultural Practices that Reduce Environmental Pollution

B. Bank Staff Assessments

C. Other

1. Background Data on the Agriculture Sector –prepared by PPU
2. Country Profile - prepared by ISNAR
3. Farming Structure and Development Constraints (Conclusion of Farm Surveys) - PPU
4. Impact of Land Reform on Farm Structure - PPU
5. Environmental Impact Assessment of Agricultural Practices – Ramesh Kanwar, Consultant
6. Environmental Study – PPU/Local Consultants
7. Improved Agricultural Practices to Reduce Pollution; The Biogas Initiative – Keith Openshaw, Consultant
8. Reform: Agricultural Research, Extension and Training – prepared by Ministry of Agriculture and Food
9. "Conception Framework for a National Strategy for Reform of the Agricultural Research, Education and Extension System" – prepared by Ministry of Agriculture and Food, Georgian Academy of Agricultural Sciences and Georgian State Agrarian University

*Including electronic files

Annex 9: Statement of Loans and Credits

GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

				Original Amount in US$ Millions				Difference between expected and actual disbursements[a]	
Project ID	FY	Borrower	Purpose	IBRD	IDA	Cancel.	Undisb.	Orig	Frm Rev'd
P008415	1997	Georgia	AGRICULTURE DEVELOP.	0.00	15.00	0.00	4.48	-2.48	0.00
P055573	1998	Georgia	CULTURAL HERITAGE	0.00	4.49	0.00	3.27	1.39	0.00
P064094	1999	Georgia	ENERGY SECAC	0.00	25.00	0.00	12.17	8.61	0.00
P008416	1999	Georgia	ENTERPRISE REHABIL.	0.00	15.00	0.00	12.87	2.88	0.00
P008414	1996	Georgia	HEALTH	0.00	14.00	0.00	7.40	7.87	0.00
P050911	1999	Georgia	INTEG. COASTAL MGT	0.00	4.40	0.00	3.92	0.47	0.00
P057813	1999	Georgia	JUDICIAL REFORM	0.00	13.40	0.00	12.65	-0.68	0.00
P050910	1998	Georgia	MUNICIPAL DEV.	0.00	20.90	0.00	16.79	10.48	0.00
P008417	1995	Georgia	MUNICIPAL INFRA. REH	0.00	18.00	0.00	0.46	2.08	0.00
P035784	1997	Georgia	POWER REHAB.	0.00	52.30	0.00	2.43	2.52	0.00
P052153	1999	Georgia	SAC III	0.00	60.00	0.00	39.67	52.07	0.00
P039929	1998	Georgia	SOCIAL INVEST. FUND	0.00	20.00	0.00	14.24	6.72	0.00
P052154	1999	Georgia	STRUCT. REF. SUPPORT	0.00	16.50	0.00	15.53	0.82	0.00
P056514	1999	Georgia	TRNSPT MIN RESTRUCT.	0.00	2.30	0.00	2.22	2.03	0.00
			Total:	0.00	281.29	0.00	148.10	94.78	0.00

GEORGIA

STATEMENT OF IFC's

Held and Disbursed Portfolio

31-Jul-1999

In Millions US Dollars

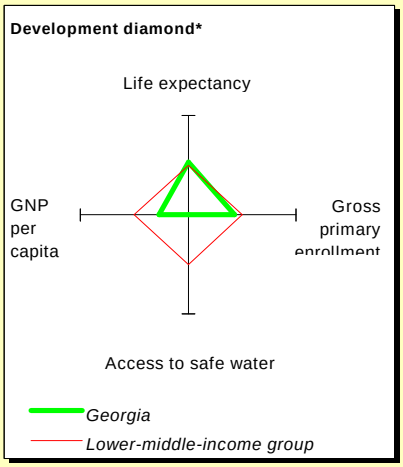
		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
1997	Georgia G&MW Co.	0.00	2.80	0.00	0.00	0.00	2.80	0.00	0.00
1999	Georgia M-F Bank	0.00	0.48	0.00	0.00	0.00	0.48	0.00	0.00
1998	Ksani	6.32	2.50	0.00	0.00	0.00	2.50	0.00	0.00
1998	TBC Bank	3.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00
1999	TbilComBank	3.00	0.00	0.00	0.00	0.68	0.00	0.00	0.00
1999	ninotsminda	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00
	Total Portfolio:	12.32	5.78	6.00	0.00	1.88	5.78	0.00	0.00

		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic
1997	GGMW	0.00	0.00	0.00	0.00
2000	GGMW RI	0.00	0.00	181.70	0.00
1998	TBC Bank	0.00	0.00	1000.00	0.00
2000	TCW LA Fund	0.00	0.00	70000.00	0.00
2000	Telasi	30000.00	0.00	0.00	0.00
1998	Titan Vinyl	18500.00	3500.00	0.00	34020.00
	Total Pending Commitment:	48500.00	3500.00	71181.70	34020.00

Annex 10: Country at a Glance

GEORGIA: AGRICULTURAL RESEARCH, EXTENSION AND TRAINING PROJECT

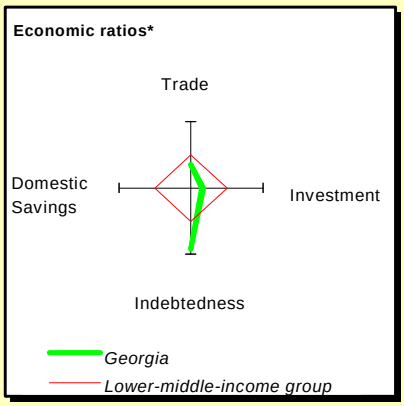
POVERTY and SOCIAL	Georgia	Europe & Central Asia	Lower-middle-income
1998			
Population, mid-year *(millions)*	5.4	473	908
GNP per capita *(Atlas method, US$)*	930	2,190	1,710
GNP *(Atlas method, US$ billions)*	5.1	1,039	1,557
Average annual growth, 1992-98			
Population *(%)*	-0.1	0.1	1.1
Labor force *(%)*	-0.1	0.6	1.5
Most recent estimate (latest year available, 1992-98)			
Poverty *(% of population below national poverty line)*	11	..	..
Urban population *(% of total population)*	60	68	58
Life expectancy at birth *(years)*	73	69	68
Infant mortality *(per 1,000 live births)*	17	23	38
Child malnutrition *(% of children under 5)*	..	..	..
Access to safe water *(% of population)*	..	..	75
Illiteracy *(% of population age 15+)*	..	4	14
Gross primary enrollment *(% of school-age population)*	88	100	103
Male	89	101	105
Female	88	99	100



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

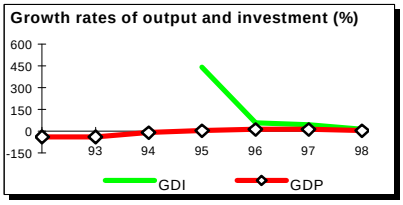
	1977	1987	1997	1998
GDP *(US$ billions)*	..	..	5.2	5.1
Gross domestic investment/GDP	..	28.6	7.2	7.8
Exports of goods and services/GDP	..	41.6	12.6	13.8
Gross domestic savings/GDP	..	29.7	-6.3	-6.4
Gross national savings/GDP	..	..	1.5	1.6
Current account balance/GDP	..	..	-7.2	-7.9
Interest payments/GDP	..	..	0.4	0.2
Total debt/GDP	..	..	29.4	32.8
Total debt service/exports	..	..	5.4	19.0
Present value of debt/GDP	..	..	..	..
Present value of debt/exports	..	..	..	..

	1977-87	1988-98	1997	1998	1999-03
(average annual growth)					
GDP	3.5	-15.4	11.0	2.9	4.1
GNP per capita	2.7	-14.3	16.7	2.7	4.0
Exports of goods and services	..	..	29.6	2.9	9.2

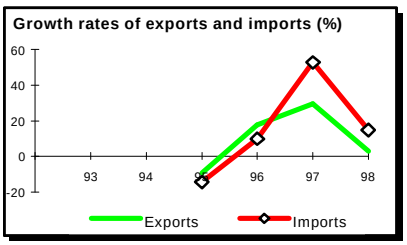


STRUCTURE of the ECONOMY

	1977	1987	1997	1998
(% of GDP)				
Agriculture	..	24.2	29.2	26.0
Industry	..	38.0	15.8	15.8
Manufacturing	..	28.0	15.9	15.6
Services	..	37.8	55.0	58.2
Private consumption	..	56.9	97.2	97.5
General government consumption	..	13.4	9.1	8.9
Imports of goods and services	..	40.4	26.1	28.0



	1977-87	1988-98	1997	1998
(average annual growth)				
Agriculture	..	..	3.0	-8.0
Industry	..	..	16.0	3.0
Manufacturing	..	..	5.0	1.0
Services	..	..	9.9	9.5
Private consumption	..	..	24.6	10.0
General government consumption	..	..	19.3	7.2
Gross domestic investment	..	..	41.4	10.3
Imports of goods and services	..	..	52.9	14.7
Gross national product	3.5	-14.4	16.0	2.7

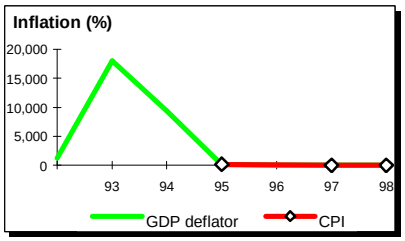


Note: 1998 data are preliminary estimates.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

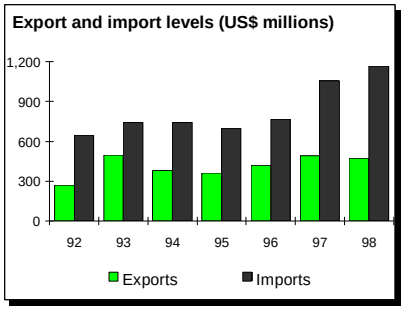
PRICES and GOVERNMENT FINANCE

	1977	1987	1997	1998
Domestic prices				
(% change)				
Consumer prices	..	..	7.1	3.6
Implicit GDP deflator	1.4	2.3	7.0	3.4
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	..	9.8	10.9
Current budget balance	..	..	0.0	0.0
Overall surplus/deficit	..	..	-4.6	-4.3



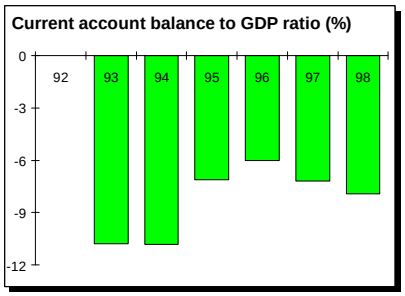
TRADE

	1977	1987	1997	1998
(US$ millions)				
Total exports (fob)	..	..	494	473
Black metal	..	..	115	111
Tea	..	..	41	38
Manufactures	..	..	219	223
Total imports (cif)	..	..	1,052	1,164
Food	..	..	286	332
Fuel and energy	..	..	191	186
Capital goods	..	..	198	213
Export price index *(1995=100)*	..	..	90	93
Import price index *(1995=100)*	..	..	101	93
Terms of trade *(1995=100)*	..	..	89	100



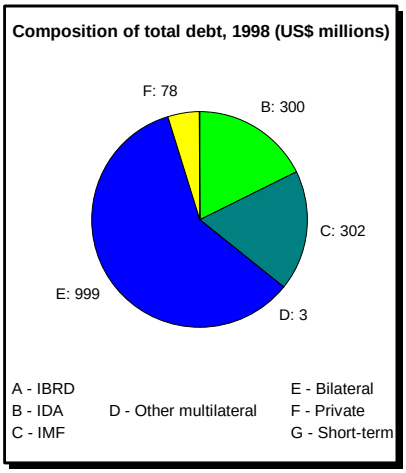
BALANCE of PAYMENTS

	1977	1987	1997	1998
(US$ millions)				
Exports of goods and services	..	..	661	705
Imports of goods and services	..	..	1,368	1,437
Resource balance	..	..	-707	-732
Net income	..	..	134	115
Net current transfers	..	..	196	211
Current account balance	..	..	-376	-406
Financing items (net)	..	..	315	315
Changes in net reserves	..	..	61	91
Memo:				
Reserves including gold *(US$ millions)*	..	..	..	..
Conversion rate *(DEC. local/US$)*	..	..	1.3	1.4



EXTERNAL DEBT and RESOURCE FLOWS

	1977	1987	1997	1998
(US$ millions)				
Total debt outstanding and disbursed	..	..	1,542	1,682
IBRD	..	..	0	0
IDA	..	..	227	300
Total debt service	..	..	46	171
IBRD	..	..	0	0
IDA	..	..	1	1
Composition of net resource flows				
Official grants	..	..	55	..
Official creditors	..	..	78	-73
Private creditors	..	..	0	-1
Foreign direct investment	..	..	50	..
Portfolio equity	..	..	0	..
World Bank program				
Commitments	..	..	174	26
Disbursements	..	..	64	73
Principal repayments	..	..	0	0
Net flows	..	..	64	73
Interest payments	..	..	1	1
Net transfers	..	..	63	72



Additional
Annex No.: 11

GEORGIA: AGR. RESTRUCTURING EXTENSION & TRAINING PROJECT

ENVIRONMENTAL DATA SHEET FOR PROJECTS in the IBRD/IDA Lending Program - DRAFT			
Country:	Georgia	***Project ID No.:***	GE-PE-55068
Project Name:	Agricultural Research, Extension and Education Project	***Total Project Cost:***	12 Million
Appraisal Date:	September 1999		
Board Date:	May-June 2000	***Team Leader:***	Mr. Jitendra P. Srivastava
Managing Unit:	ECSSD	***Sector:***	Environmentally and Socially Sustainable Development
Est. date for receipt of EA by Bank:			
EA Category (A/B/C):	C	***Date Assigned:***	March 4, 1999
Date Sheet Prepared/Updated: 02/11/1999			
(*Please do not leave any items blank: use "N/A" or "To be developed" when appropriate)*			

Major Project Components: (present description of project components)

The objective of this project is to increase sustainable agricultural production while reducing the pollution of natural resources. The proposed project would work towards this goal by developing efficient, cost-effective, sustainable and responsive (to the needs of farmers and agro-processors) agricultural knowledge and information systems with the full participation of all stakeholders. The consequent redirection in the technology-generation-and-transfer system would lead to the adoption of agricultural practices that are both economically and environmentally sustainable. The project would have three components as follows:

(i) Adaptive Research and Extension
(ii) Support for the reform of the agricultural research, extension and education system
(iii) Reducing Pollution from Agricultural Practices to the Black Sea.

Major Environmental Issues: (describes major environmental issues identified or suspected in project)

N/A

Other Environmental Issues: (describes environmental issues of lesser scope associated with project)

It is anticipated that since the project would contribute to a more sustainable and environmentally responsible use of agricultural resources, the overall impacts of the project will be positive. Competitive Grant Scheme-funded (CGS) activities under the environment component will be screened for their impact on the environment to ensure that there are no negative impacts or that the proposal has incorporated mitigating measures.

Efficient use of farm inputs has been identified as one of the priority areas of research and extension needs of farmers and agro-processors. Some of the CGS funds would be directed to research and extension contracts to address this concern of farmers and agro-processors and would over time contribute to a reduction of nutrient runoff from the crop sector. In the livestock sector, the project is expected to support interesting and innovative research and extension proposals relating to the use of organic wastes and biodigesters.

Demand-driven productivity-oriented farming is expected to promote the efficient and effective use of agriculture inputs. Research proposals which imply any adverse environmental effects will not be funded. In fact, because of the nature of the work likely to be funded, there should be long term environmental, welfare and health and safety benefits. The project will support environmentally-friendly and socially sensitive agricultural practices.

Most of the CGS-funded extension contracts would address environmental issues in a positive manner and would, in many instances, include improved agricultural practices, and more efficient use of organic farm wastes. This would reduce the impact that agriculture is having on the environment and could help address other problems such as soil erosion.

Proposed Actions: (describes actions proposed to mitigate environmental issues described in project)
None necessary

Justification/Rationale for Environmental Category: (reasons for env. category selected & explation of any changes from initial classification)

The project is primarily designed to provide Technical Assistance. There is no anticipated negative environmental impact resulting from project activities. However, all physical investments will be screened in accordance with Georgia's environmental regulations to address any impacts that might arise.

Status of Category A Environmental Assessment: (presents EA start-up date, EA first draft, and current status)

N/A

Remarks: (gives status of any other environmental studies, lists local groups and local NGOs consulted, tells whether borrower has given permission to release EA, etc.

Signed by:_____ Signed by:_____
Jitendra P. Srivastava, Team Leader Karin Shepardson
for Michele de Nevers, Sector Leader

December 15, 1998

Additional
Annex No.: 12

Approval of Environmental component by GEF Council

Type	Proponent	Country	Title	Response Date	Remarks
FP	WB	Georgia	Agricultural Research, Extension and Training	5/7/99	Approved by and subject to additional Council comments

Additional
Annex No.: 13

GEF Incremental Cost Analysis

GEORGIA
Agricultural Research Extension and Training (ARET) Project

Overview

1. The general objectives of the GEF Alternative are to protect the quality of water of the Black Sea by reducing point and non-point sources of pollution and promote biogas as an alternative source of energy. The project development objectives for the GEF component are to: (i) take steps to protect the quality of water of the Black Sea from non-point sources of pollution by promoting improved agricultural practices, such as the use of reduced tillage, crop diversification and rotation, terracing, contour farming and buffer strips; (ii) improved manure handling, storage and application and better nutrient management systems; and (iii) promote the use of bio-digesters as an alternate source of energy, thus reducing dependence on wood for fuel and controlling carbon emissions into the atmosphere. GEF funding will help remove institutional, financial and knowledge barriers, which currently act as disincentive to the adoption of environmentally sustainable agricultural practices and clean energy sources by farmers and rural populations, respectively. The GEF Alternative intends to achieve this at a total incremental cost of about US$2.5 million which will be financed by GEF.

Context and Development Goals

2. Georgia is a mountainous country, with a diversity in climate, soils, crop and livestock production systems. According to 1997 statistics, the total land area of Georgia is 6.97 million hectares of which about 3 million ha is agricultural land including 0.5 million ha under arable agriculture. In addition, a little more than 3 million ha is under forest and woodland. Georgia is divided into two main watersheds -- western and eastern -- with almost all major rivers originating in the central mountain ridge, an area marked by glaciers and numerous small mountain lakes. The average annual rainfall varies from 2000 to 4000 mm in the western watershed and 400 to 500 mm in the eastern watershed. The western watershed, covering an area of nearly 3.27 million hectares results in average runoff of about 41 billion cubic meters which drains into Black Sea. The eastern watershed covering an area of nearly 3.73 million ha. This generates an average runoff of about 12.7 billion cubic meters which drains into Azerbaijan and then eventually into the Caspian Sea.

3. Agriculture is the main sector of Georgian economy, accounting for 28% of GDP and as much as 55% of employment in 1997. During Soviet times, agriculture and livestock production systems were highly intensified in Georgia to meet the food and fiber needs of the Soviet republics. Agricultural production systems were unsustainable – absence of conservation tillage and crop rotation and diversification, excessive use of and improper storage of mineral fertilizers and pesticides, etc. Such farming practices caused soil erosion and the movement of fertilizers and pesticides to rivers, which resulted in Black Sea pollution. Also, animal production systems, especially swine and poultry, were highly industrialized (i.e. too many pigs and poultry at one concentrated location) resulting in large amounts of manure draining into major water bodies that fed into the Black Sea. All these pollutants affected the bio-diversity and attractiveness of the area. Tourism declined. Dissolved oxygen levels

diminished, adversely affecting fishing stocks and predatory jellyfish became dominant. Thus, the environment and the economy of littoral nations have suffered and will continue to do so, unless urgent measures are taken.

4. Since independence in 1991, the broad development goals of Georgia focus on public sector restructuring; private sector development; social protection and poverty reduction and environmental protection. The Government's overall development agenda attempts to focus on these issues consolidating the stabilization recently achieved, strengthening the current economic recovery while protecting the environment. The Government of Georgia has taken important steps toward improved environmental management in recent years, including the "Environment Protection Law", the "Law on Environmental Permits", and the "Law on State Ecological Expertise". A National Environment Action Plan (NEAP) is under consideration for formal adoption by the Government. Recognizing the importance of protecting the waters of the Black Sea, Georgia signed and ratified the Bucharest Convention for the Protection of the Black Sea Against Pollution (1992) and signed the Odessa Ministerial Declaration (1993). Further, the government of Georgia collaborated with other Black Sea coastal countries, and developed the Black Sea Strategic Action Plan. Under this plan, Georgia agrees to reduce nutrient loads into the Black Sea by adopting environmentally friendly agricultural practices and thus preserve the country's rich biological diversity and natural resource base for future generations.

5. In addition, Georgia ratified the Framework Convention on Climate Change in July 1994. Its National Communication under the UN Framework Convention on Climate Change is currently being prepared. The document will analyze the potential measures to reduce GHG emissions and to adapt to climate change. Georgia is currently preparing an inventory of GHG emissions and is making vulnerability assessments for the Black Sea coastal zone. Preliminary investigations into the agriculture sector reveal the use of fertilizer as an activity of serious concern, and recommends improved land cultivation technologies, including irrigation.

Baseline Scenario

6. The baseline scenario includes the activities under this project but without GEF support. This may encourage non-point source pollution from increased agricultural productivity in Georgia, contributing significant and excessive loads of nutrients into the Black Sea that may lead to widespread eutrophication and the ecological damage and economic losses associated with this process. The long-term implication will be continued degradation of a globally significant international waterbody and its associated bio-diversity in the shared coastal and marine environment of the Black Sea.

7. Since transition, unsustainable timber harvesting has accelerated to meet fuel needs for farming operations, heating, cooking and other domestic use. This has led to the accompanying consequences of excessive carbon emissions into the atmosphere, deforestation, and loss of natural habitat, to name a few. The Baseline Scenario does not include an effective mechanism to address this issue. Biogas could be a cost-effective and environmentally friendly alternative to the current fuel mix. However, its widespread use is hampered by a number of barriers, including behavioral adjustments (inadequate manure handling), technological risks (performance of digesters in cold climates), lack of familiarity and lack of capacity for service and maintenance.

8. ***Costs.*** Total expenditures under the Baseline Scenario are estimated at US$9.93 million, including US$1.72 from the Government of Georgia.

Global Environmental Objective

9. The global environmental objective of the project is to demonstrate the application of environment-friendly on-farm agricultural practices to reduce nutrient loads entering the Black Sea and help decrease GHG emissions over time. The dissemination and outreach features of the project will contribute to its replicability. The role of the GEF in this project is to reduce farmers' perceived risks in adopting environmentally friendly on-farm agricultural practices and remove barriers for their adoption. It would demonstrate that farmers who adopt these measures are able to get the most beneficial use out of their lands and minimize negative impacts on the environment while improving the health of the Black Sea ecosystem. In turn, this should lead to a sustainable increase in economic activities such as fishing and tourism and to a healthier and wealthier population. Finally, activities promoted under the GEF Alternative will facilitate the sharing of experiences on the search for feasible and affordable solutions to deal with non-point source pollution from agriculture to international water bodies.

10. ***Scope***. The GEF Alternative would provide the means (above and beyond the Baseline Scenario) for meeting the proposed project's goals. Specifically, it will: (i) install and promote manure storage and handling tanks in villages for efficient manure management; (ii) provide manure spreaders/applicators for efficient and cost-effective use of manure on croplands, together with judicious use of mineral fertilizers; (iii) conduct on-farm trials and demonstrations to promote the use of improved sustainable agricultural practices, including reduced tillage, better chemical management systems, terracing, contour farming and buffer strips for water quality benefits; (iv) establish a water quality monitoring program; and (v) promote use of bio-digesters in the villages to reduce carbon emissions into the atmosphere and to provide biogas for cooking and other domestic use.

11. ***Costs.*** The total cost of the GEF Alternative is estimated at US$12.41 million detailed as follows: (i) Component 1: Competitive Grant Schemes for adaptive research and improved agricultural practices -- US$5.60 million (GEF financing – US$1.19); (ii) Component 2: Support for Reform of Agricultural Research, Extension and Training; – US$4.14 million (same as baseline); (iii) Component 3: Pilot Environmental Pollution Control Program – US$1.82 million (GEF financing -- US$1.29); and (iv) Project Implementation Unit – US$0.85 million.

Benefits

12. ***Domestic and International Benefits.*** The GEF Alternative would go beyond the Baseline Scenario by allowing the project to promote environmentally friendly agricultural and rural practices that will reduce non-point sources of pollution to the Black Sea as well as carbon emissions into the atmosphere which has strong implications for global climate and human health. Given the country's precarious budgetary situation, the government can ill-afford to spend scarce funds as financial incentives to farmers to reduce nutrient loads into the Black Sea for regional and global gains, nor invest in promoting biogas as an alternative source of clean energy source for global benefits. GEF funds will allow additional investments in sustainable farm management practices and manure storage etc. in the selected project area of Khobi, Chkhorotku and Tsalenjikha regions that have an impact on the Black Sea and provide willing farmers with an alternate source of clean energy. Under the GEF Alternative, the promotion of improved sustainable agricultural practices and a decrease of manure flushing into water systems will provide greater environmental benefits and augment the demonstration potential of the exercise. It should also improve farm profitability. It will promote a public awareness program to effectively explain the benefits of improved environmental practices at farm level. It will also allow the development of a strategy for project replication within Georgia and internationally.

13. The proposed project is a pilot activity in the western part of Georgia comprising the three districts of

Khobi, Chkhorotku and Tsalenjikha. Table 1 gives an estimate of global benefits on the project area of 64,100 hectares assuming that, by the end of the project, all farmers in the area are taking advantage of the benefits the project is demonstrating. This assumes that all arable land of 20,100 ha is included in improved farming practices, that the 37,000 t. of dry manure from the equivalent of 75,600 cattle are handled and stored efficiently and 200 biogas units are in operation.

Table 1: Estimated Global Benefits from the Project Initiatives.

Units: tonnes per year

Project initiative	Saving of pollution			
	N	P	CO2	Organic matter
Improved farming practices	500	50	-	
Appropriate manure handling etc.	500	200	-	17,500
Biogas digesters and slurry use	(including above)		2,300	2,300
Total	1,000	250	2,300	17,500

Note: Through improved farming practices, there is an annual saving of dissolved nutrients flowing into the Black Sea of 25 kg/ha N and 2.5 kg/ha P.
The animals on the project produce an estimated 37,000 dry tonnes of manure each year. This is made up of 1,100 t. N, 400 t. P, 400 t. K and 200 t. of other minerals. The remaining 35,000 t. are of biodegradable material. It is assumed that through improved handling, half of the manure is prevented from being flushed into the river systems and hence into the Black Sea.

Source: Agricultural statistics collected by the Project Team. Romania Agricultural Pollution Control project (PCD).

14. Over a 20 year time period, the estimated saving of pollution flowing into the Black Sea from the project area is the equivalent of 20,000 t. of N, 5,000 t. of P and 350,000 t. of biodegradable matter. In addition, the equivalent of 46,000 t of CO2 will not be vented into the atmosphere.

15. This is a demonstration project that will provide training to farmers in the whole of Georgia and surrounding countries. If after 10 years, all the farmers in Western Georgia adopted similar practices, then the estimated annual saving of pollutants flowing into the Black Sea are: N 10,750 t.; P 2,575 t.; and biodegradable materials 175,000 t. There should be a saving of 580,000 t. CO2 equivalent, assuming that an estimated 50,000 digesters – 25% of the potential - have been installed. The possible global benefits from this GEF initiative are considerable. In addition, the farmer will benefit from reduced input costs and increased productivity.

Incremental Costs

16. The difference between the cost of the Baseline Scenario US$9.93 million and the cost of the GEF Alternative US$12.41 million is US$2.48 million, which will be financed by GEF. This amount represents

the incremental cost of achieving the global environmental benefits of reduced degradation of international waters and carbon emissions into the atmosphere detailed above.

Incremental Cost Matrix

Component	**Cost Category**	**US$ Mill.**	**Domestic Benefit**	**Global Benefits**	
				International Water	**Climate Change**
1. Competitive Grant Scheme Adaptive research and Technology dissemination (IDA funding) Improve Agricultural Practices to Reduce Pollution - On-farm Trials and Demonstration of sustainable practices, such as reduced tillage, manure handling systems, etc (GEF funding)	Baseline	4.41	Improved local capacity and knowledge to respond to the demands of emerging private farmers for technology innovation.	Reduced nutrient loads into the Black Sea by making available environmentally sustainable agricultural technologies.	
	With GEF	5.60	Improved land-use practices and water quality. Reduced soil erosion. Increased profitability of agriculture production. Increased rural incomes.	Reduction of nutrient loads into the Black Sea to guard against eutrophication and protect natural habitat. Enhanced technology transfer opportunities between riparian countries.	Increased carbon sequestration
	Incremental	1.19			

2. Reform of the Agricultural Research, Education and Extension System	Baseline	4.14	Strengthened policy and structural framework for agricultural research, education and extension.	Reduced nutrient loads by improving extension and research services.	
	With GEF	4.14	Same as above.	Same as above.	
	Incremental	0.00			
3a. Pilot Environmental Pollution Control Program -- Biogas Units	Baseline b	0.53	Energy provided by wood and imported kerosene	Increased nutrient loads into the Black Sea	Increased GHG emissions
	With GEF (CC)c	1.47	Improved environmental protection & nutrient management Reduced pressure on forest & imported kerosene Reduced health hazards	Reduction of nutrient loads in the Black Sea. Reduce BOD discharges. Enhanced possibilities for technology transfer between riparian countries.	Reduced GHG emissions.
	Incremental	0.94			
3b. Water Quality Monitoring	Baseline	0.00			
	With GEF (IW)d	0.35	Improved national and regional monitoring capabilities	Enhanced credibility of riparian countries on environmental benefits of agricultural practices to reduce nutrient loads.	
	Incremental	0.35			
4. PIU - Project Implementation Unit	Baseline	0.85	Increased capacity for project management: project successfully implemented		
	With GEF	0.85	Same as above	(IW)	(CC)
	Incremental	0.00			

Total	Baseline	9.93	No project; very slow improvements in nutrient control and GHG reductions.		
	With GEF	12.41	With project; rapid improvement in nutrient control and GHG reductions.	Above benefits	Above benefits
	Incremental	2.48			

Notes:

a. Participant farmers in trial demonstration schemes will contribute about 15 percent of the investment cost (in kind contribution) in the on-farm sustainable agricultural practice trials.
b. The option to be adopted without the project continues with the over cutting of trees.
c. Participant farmers will contribute about 10 % of the investment cost of the biogas plants
d. The project will cover 100 % of the investment cost in establishing a water quality monitoring system.

Additional
Annex No.: 14

Comments of STAP Reviewers

GEORGIA
Agricultural Research Extension and Training (ARET) Project