DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

GUYANA

AGRICULTURAL SUPPORT SERVICES PROGRAMME

(GY-0011)

LOAN PROPOSAL

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BASIC SOCIOECONOMIC DATA

The basic socioeconomic data for Guyana available on the Internet at the following address:

http://www.iadb.org/RES/index.cfm?fuseaction=externallinks.countrydata

INFORMATION AVAILABLE IN THE FILES OF RE3/RE3

PREPARATION:

1) Operating Regulation Manual (Draft)
2) Terms of Reference for the Supervision of civil works

ABBREVIATIONS

ASSP	Agriculture Support Services Program
ASL	Agriculture Sector Loan
ASSP	Agriculture Support Services Programme
BOD	Biochemical Oxygen Demand
CAFP	Caribbean Agricultural and Fisheries Programme
CARIFORUM	Caribbean Forum
CESI	Committee on Environmental and Social Impact
CIDA	Canadian International Development Agency
COD	Chemical Oxygen Demand
CP	Country Paper
CSP	Country Strategy Paper
D & I	Drainage and Irrigation
D&I	Drainage and Irrigation
DO	Dissolved Oxygen
EIRR	Economic Internal Rate of Return
EPA	Environmental Protection Agency
ESIA	Environmental and Social Impact
ESMP	Environmental and Social Management Plan
EU	European Union
FLAR	Latin American Fund for Irrigated Rice
FSO	Fund for Special Operations
GDP	Gross Domestic Product
GLSC	Guyana Land and Survey Commission
GOG	Government of Guyana
GRDB	Guyana Rice Development Board
GUYSUCO	Guyana Sugar Corporation
HIPC	Heavily-Indebted Poor Countries
IFAD	International Fund Agricultural Development
LSC	Lands and Surveys Commissions
LTR	Land Tenure Regularization
MMA	Mahaica, Mahaicony, Abary
MOA	Ministry of Agriculture
NDC	Neighbourhood Democratic Councils
NDIB	National Drainage and Irrigation Board
NPV	Net Present Value
O&M	Operation and Maintenance
ORM	Operating Regulation Manual
OVE	Oversight Evaluation Office
PEU	Project Executing Unit
PM	Program Manager
PT CB	Pesticide and Toxic Chemicals Control Board
PTCCB	Pesticide and Toxic Chemical Control Board
PTI	Poverty Targeted Investment

RDC	Regional Democratic Councils
RPA	Rice Producers Associations
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WUA	Water User Association

INTERAMERICAN DEVELOPMENT BANK
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GUYANA

IDB LOANS

APPROVED AS OF APRIL 30, 2004

	US$Thousand	Percent
TOTAL APPROVED	838,127	
DISBURSED	644,839	76.93 %
UNDISBURSED BALANCE	193,288	23.06 %
CANCELATIONS	41,405	4.94 %
PRINCIPAL COLLECTED	231,511	27.62 %
APPROVED BY FUND		
ORDINARY CAPITAL	115,230	13.74 %
FUND FOR SPECIAL OPERATIONS	715,963	85.42 %
OTHER FUNDS	6,934	0.82 %
OUSTANDING DEBT BALANCE	413,329	
ORDINARY CAPITAL	18,159	4.39 %
FUND FOR SPECIAL OPERATIONS	395,170	95.60 %
OTHER FUNDS	0	0.00 %
APPROVED BY SECTOR		
AGRICULTURE AND FISHERY	250,505	29.88 %
INDUSTRY, TOURISM, SCIENCE AND TECHNOLOGY	37,857	4.51 %
ENERGY	106,366	12.69 %
TRANSPORTATION AND COMMUNICATIONS	128,059	15.27 %
EDUCATION	92,568	11.04 %
HEALTH AND SANITATION	80,562	9.61 %
ENVIRONMENT	900	0.10 %
URBAN DEVELOPMENT	48,399	5.77 %
SOCIAL INVESTMENT AND MICROENTERPRISE	50,989	6.08 %
REFORM AND PUBLIC SECTOR MODERNIZATION	40,988	4.89 %
EXPORT FINANCING	934	0.11 %
PREINVESTMENT AND OTHER	0	0.00 %

* Net of cancellations with monetary adjustments and export financing loan collections.

Inter-American Development Bank
Regional Operations Support Office
Operational Information Unit

Guyana

Tentative Lending Program

2004

Project Number	Project Name	IDB US$ Millions	Status
GY0077	Health Sector Program	23.0	
GY0053	Fiscal and Financial Management Program	28.0	
GY0076	Moleson Creek-New Amsterdam Road	37.3	
GY0011	Agricultural Support Services	20.0	
*GY1002	Trans World Telecom Guyana	18.0	
GY0055	Georgetown Solid Waste Management	9.5	
GY0073	Public Management Modernization Program	5.0	
	Total - A : 7 Projects	**140.8**	
GY0066	Information & Communications Technology	21.3	
GY0071	Citizen Security Program	7.0	
	Total - B : 2 Projects	**28.3**	
	TOTAL 2004 : 9 Projects	**169.1**	

2005

Project Number	Project Name	IDB US$ Millions	Status
GY0075	Timehri Bypass Road	40.0	
GY0074	Rural Roads Program	20.0	
	Total - A : 2 Projects	**60.0**	
	TOTAL - 2005 : 2 Projects	**60.0**	
	Total Private Sector 2004 - 2005	**18.0**	
	Total Regular Program 2004 - 2005	**211.1**	

*** Private Sector Project**

INTERAMERICAN DEVELOPMENT BANK
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GUYANA

STATUS OF LOANS IN EXECUTION

AS OF APRIL 30, 2004

(Amount in US$ thousands)

APPROVAL PERIOD	NUMBER OF LOANS	AMOUNT APPROVED*	AMOUNT DISBURSED	% DISBURSED
REGULAR PROGRAM				
Before 1998	2	45,100	23,552	52.22 %
1998 - 1999	5	104,000	38,096	36.63 %
2000 - 2001	3	53,900	14,499	26.90 %
2002 - 2003	4	65,850	1,748	2.65 %
TOTAL	14	$268,850	$77,895	28.97 %

* Net of cancellations. Excludes export financing loans.

AGRICULTURAL SUPPORT SERVICES PROGRAMME

(GY-0011)

EXECUTIVE SUMMARY

Borrower:	The Cooperative Republic of Guyana		
Executing agency:	The Ministry of Agriculture		
Amount and source:	IDB: (FSO)	US$22,500,000	
	Local:	US$ 2,500,000	
	Total:	US$25,000,000	
Financial terms and conditions:	Amortization period:	40 years	
	Grace period:	10 years	
	Disbursement period:	Maximum: 5 years	
		Minimum: 3 years	
	Interest rate:	First 10 years:	1%
		Subsequent 30years:	2%
	Supervision and inspection:	1%	
	Credit fee:	0.5%	
	Currency:	US Dollars	

Objectives: The primary objective of the Agriculture Support Services Programme (ASSP) is to raise rural incomes by increasing the efficiency of agricultural production in the coastal plain of Guyana. This requires improving competitiveness in the sector through the timely availability of irrigation and improved drainage. More specifically, the Program will rehabilitate Drainage and Irrigation (D&I) structures, organize farmers to manage the Operation and Maintenance (O&M) of rehabilitated structures and support rice research and agricultural diversification.

Description: The Program includes four components: (i) civil works to rehabilitate primary and secondary D&I systems in selected areas; (ii) D&I institutional development which includes farmers' training and extension, and establishment of Water User Associations (WUAs) in those selected areas; (iii) rice seed research and production and (iv) agricultural diversification promotion.

Bank's country and sector strategy:

The Country Strategy Paper for the 2002-2005 focuses on the promotion of sustainable growth, social development and poverty alleviation. The proposed Agricultural Support Services Programme will support the objective of sustainable economic growth by strengthening the competitiveness of the rice sector, which accounts for a significant share of economic output, exports and employment in Guyana. The rehabilitation of drainage and irrigation systems, the formation of Water Users Associations to operate and maintain these systems, and other activities aimed at improving farmer expertise and the quality of seed inputs, will enhance productivity in the most important rice-producing regions (¶ 1.36).

Coordination with other official development agencies

The project team present the Program to local representatives of bilateral donors to verify its consistency with their actions in the agriculture sector (¶ 1.32).

Environmental/ social review:

The Committee on Environment and Social Impact (CESI) analysed the Profile II of the Program on August 29, 2003, and requested an environmental analysis. All the recommendations were taken into account and incorporated to this document.

Positive Impacts. The rehabilitation works will allow the timely availability of water, therefore minimizing production risks, and the formation of the WUAs will empower the farmers to manage the secondary D&I systems, maintain the canals in working condition, and have better control of the O&M costs. The extension programs and the public awareness campaigns will help the farmers diversify their production and reach different markets. Additionally, it would favour the development of a new relationship between the farmers and the population with the D&I systems in a new empowering environment. Better flood control will be obtained as a result of the development of operating rules for the conservancies.

The Program's design includes technical and institutional measures to deal with issues such as: flood hazards by developing operating rules for the conservancies with the respective probabilities of failure, salt water intrusion due to rising sea level related to climate change by adjusting drainage infrastructure to expected rise, inefficient land tenure by requiring regularization as a precondition to rehabilitate, and inefficiencies and inequitable water distribution by creating WUAs to manage the secondary D&I systems as prerequisite for rehabilitation.

Negative impacts. Potential negative social and environmental impacts were identified during the design, execution of the rehabilitation works and operation of the D&I structures. The rehabilitation works will cause temporary and localized impacts such as: noise, emissions of

atmospheric contaminants from the machinery, disruption of local traffic, potential for fuel contamination, and health and safety hazards. Specific guidance regarding the legal requirements and best practices to minimize the impacts related to these issues were developed and will be incorporated in the tender documents along with provision of financial incentive for performance by contractor (¶4.27 to ¶4.35).

Benefits: The Program will: (i) expand rural economy in Guyana's Regions 3, 4 and 6 by increasing farmer's income and employment in the agricultural sector; (ii) create a financially sustainable irrigation and drainage system through establishment of local organizations (WUAs) where farmers control management; and (iii) develop alternate farm production strategies.

Risks: Financial sustainability of primary irrigation and secondary D&I systems. There has been insufficient collection of D&I fees over the last 10 years. To reverse this trend, the implementation of a clearly designed O&M fee structure and rehabilitation cost recovery policy is essential. To accomplish this, a system has been established in which farmers organized in WUAs working with engineers will determine the costs required to pay for the O&M activities, and with adequate training and technical assistance support determine the method of fees collection. For the first time, they will assume responsibility for their own O&M. The landowners and lessees will pay the rehabilitation costs over a 20 year horizon. The NDIB will collect fees for the cost recovery for these works.

Primary drainage systems maintenance. The resources to maintain the primary drainage systems have also been insufficient resulting in inadequate maintenance of the systems and flooding. The general taxes collected by local and regional governments are mainly used for other local services. To minimize this problem, through the new contractual arrangements proposed for this Program, the National Drainage and Irrigation Board (NDIB) will have resources from the Government to provide for O&M of the primary drainage system. The Program will provide institutional strengthening to the NDIB to support this activity.

Land Tenure System. The risk and uncertainty of weak tenure rights on public land have been a long standing problem. The outcome of this has been land users employing a complex set of "informal" tenure arrangements. Informal rights lack official recognition, are not secure, have no legal basis and are not sustainable in the long term. The goal is to have 80% of the lands regularized prior to execution of works in any area. In order not to interrupt the ongoing process, the Program will provide additional financial support for the process in the areas of the Program.

Farmer's participation. The history of farmer organizations (including WUAs) has been problematic in Guyana. The principal reasons for this have been the lack of technical and organizational government support and the absence of a legal framework granting financial autonomy with the delegation of functions. To minimize this problem, the Program will pay particular attention to social, financial and organizational issues to guarantee farmers full involvement in O&M of the primary irrigation and secondary D&I facilities. The government now fully supports the WUA concept and financial autonomy has been granted to the WUAs giving them the right to collect fees.

Special contractual clauses:

Prior to the first disbursement the borrower will present, to the satisfaction of the Bank evidence: (i) that the Project Executing Unit (PEU) has been established, and its Program Manager and key personnel appointed (¶ 3.7); that a Memorandum of Understanding has been signed between the MOA and NIDB (¶ 3.2); and (ii) of the approval by the Government of Guyana (GOG) authorities of the Operating Regulations Manual (¶ 3.8).

Special execution conditions: (i) prior to the commitment of resources from the Program to rehabilitate any particular secondary D&I system, the borrower will present evidence that: (a) 90% of the parcels are occupied and that the land tenure for over 80% of the occupied parcels has been regularized, and that there exists a contract between the NDIB and the legally constituted WUA; (b) the special unit and the regional office in the NDIB have been created and its personnel appointed (¶ 3.12); (ii) prior to the commitment of resources from the Program to construct the rice seed facility, the borrower will present evidence that, based on the recommendations of the specialized firm, a successful tender procedure to award either a build, management and transfer contract or a build and management contract or a combination of them for the rice seed facility has been conducted.(¶ 3.30); and (iii) prior to the commitment of resources for component 4 "Agriculture Diversification", the borrower will present evidence that the Diversification Strategic Plan for the Agriculture Sector has been approved by the GOG authorities (¶ 3.33).

Poverty-targeting and social equity classification:

This operation does not qualify as a social equity enhancing project, as described in the indicative targets mandated by the Bank's Eighth Replenishment (document AB-1704). Furthermore, this operation does not qualify as poverty targeted investment (PTI) (¶ 4.36).

Exceptions to Bank policy:

None

Procurement: The Ministry of Agriculture through the PEU will be responsible for procurement of goods and related services and contracting works in accordance with the Bank's rules and procedures stipulated in Annex B of the loan contract. International competitive bidding will be required for procurement of goods costing US$250,000 or more and works costing US$1.5 million or more. Consulting services will be contracted in accordance with Bank policies and procedures and international competitive bidding will be used for contracts over US$200,000. Bids below these thresholds will follow domestic legislation, which is compatible with Bank procedures.

I. FRAME OF REFERENCE

A. The setting

1.1 Guyana, "land of many waters", is a place of contrasts. It is geographically South American, lying between Venezuela, Brazil and Suriname, but culturally and historically part of the Caribbean. It is the Caribbean's largest country with an area of 215,000 km^2 but is also the least densely populated, with under 800.000 inhabitants. Most of the population—a mixture of East Indian, Chinese, African, English, Dutch, Portuguese and Amerindian ancestries—occupy just a narrow strip of the coastal plain. The interior, with forest, mountains and dry savannah, is a pristine territory with natural resources that include gold and bauxite. The people, the nation's true wealth, are optimistic, determined to make the best of what they have, and justly renowned for their hospitality.

1.2 Most of the coastal plain lies below the Atlantic Ocean's high tide water level, but an array of sea defences (a 450 km long dyke), part of the country's Dutch legacy, protects the area from flooding. A system of dams (conservancies), canals and sluice gates controls the flow and discharge the rainfall water to the sea during the low tide period.

B. Socioeconomic framework

1.3 Guyana is a low-income, thinly-populated country with a predominantly agricultural economy. The total population according to the 1991 census was 719,000. Population growth since then is thought to have been marginal owing to substantial emigration. The vast majority of the population (around 90%) live in the coastal strip. The rural interior is sparsely populated, with communication being predominately along waterways, and/or by air and road to the coast. The country is divided into 10 Administrative Regions. Regions 1, 7, 8, and 9 are classified as rural and remote interior regions ,with small populations. Regions 2, 3, 4, 5, and 6 are the coastal regions, and Region 10 has one moderate sized town and a large rural area. Region 4 includes Georgetown, the capital, and represents the largest concentration of population.

1.4 Despite rich endowments of mineral resources, biodiversity and land, economic development was hindered in the 1970s and 1980s by a state-led development strategy which reduced Gross Domestic Product (GDP) per capita to one of the lowest levels in the region. Beginning in 1988, policy reforms in the fiscal, monetary, exchange rate and structural areas successfully stabilized the economy and gave the private sector a wider role. The liberalized policy framework had highly positive effects from the early 1990s onwards: during 1991-97, real GDP growth averaged 7% per year, while inflation was reduced from over 100% in the late 1980s to 4.5% in 1997. GDP per capita almost doubled in the 1990-97 period, from US$482 to $956, causing absolute poverty to fall from 43% (1993) to 35% (1999).

1.5 Notwithstanding these improvements, Guyana remains among the poorest countries in the Americas. It was ranked 92nd in the United Nations Development Program (UNDP's) 2003 Human Development Index Report—one of the lowest ranking in the English-speaking Caribbean. At the same time, however, Guyana ranks in the top 35 countries in school enrolment and the education index A deterioration in economic performance since 1997 indicates that there is also likely to have been a partial reversal of the downward trend in poverty. Inflation has remained low, yet growth averaged just 0.7% in the 1998-2002 period. A number of important factors have contributed to the downturn, including adverse movements in the terms of trade, large public sector wage increases, political instability, increasing rates of crime, and the slowing pace of structural reform.

1.6 The impact of these factors has been softened somewhat by the impact of debt relief awarded under the original and enhanced Heavily-Indebted Poor Countries (HIPC) Initiatives. After receiving US$256.4 million in net present value terms under the original HIPC framework in May 1999, Guyana gained permanent access to additional debt relief totalling a Net Present Value (NPV) of $334.5 million under the enhanced HIPC Initiative upon reaching the completion point in December 2003. The IDB is the single largest donor to Guyana under the HIPC initiative, with a share of just under 20% of the total. Debt relief under the two initiatives has allowed public spending to rise substantially. Social spending—on education, health, housing and water, and other poverty alleviation programs—grew by more than a third in the 1998-2002 period to reach 21% of GDP, compared to an overall rise in spending of only 3%. Total capital expenditure, on the other hand, has experienced broad decline, from an average of 17.8% of GDP in 1995-97 to 13.4% in 2000-02.[1]

C. The sector

1.7 Agriculture is the most important sector of Guyana's economy, accounting for around 30% of GDP, 30% of employment and 40% of export earnings. Agriculture occupies 400,000 acres of irrigated land. Sugar and rice are the most important crops in terms of area, value of production, employment creation, and contribution to export earnings. About 130,000 acres are currently used for sugar production, 200,000 acres are in rice and 70,000 acres are in other crops and livestock.

1.8 In addition to the Ministry of Agriculture (MOA), two other institutions support the production of rice—the Guyana Rice Development Board (GRDB) and the Rice Producers Association (RPA). The GRDB is a public institution with private participation that provides basic rice seeds and technical advice through the Burma Rice Research Station. The GRDB also provides quality certification for both exporters and the reproduction of seeds. All these activities are financed with the check-off tax imposed on rice exports. The RPA provides their associates with general political support and extension services.

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[1] The substantial underestimation of GDP tends to inflate these ratios.

1.9 In the late eighties production of paddy fell 25% from the levels that had been achieved in the early sixties. Exports of rice at the same time were about 50% of the levels attained in the mid sixties. In 1988 rice marketing and input supply services by governmental monopolies were eliminated, and rice mills were privatised. Positive response was fast. By 1992 rice production and exports were almost double the late 1980 level and by 1996 almost tripled. The new policies facilitated in the nineties benefited from European Union preferred market conditions. During the last five years rice exports averaged 10% of total country exports. However, both production and exports showed a downward trend for the period 1998-2002, decreasing by 20%.

1.10 According to the baseline surveys, rice extension services do not reach most farmers and research has been unable to provide farmers with an adequate supply of new seeds with high yielding potential and blast resistance. Moreover, rice seed production facilities are way below potential demand and the private sector has been reluctant to enter into the rice seed business due to a lack of a credible subsidiary role of the state.

1.11 During the 1990's several rehabilitation and improvement works were carried out that increased the availability of water, improved drainage and provided protection against flooding. Nevertheless, the O&M of the secondary D&I systems is not financially sustainable under current institutional arrangements. The D&I service roads were also not maintained during that period. The poor condition of these roads is a major impediment to the provision of timely O&M service to D&I infrastructure and to the transport of agricultural products.

1.12 During the late 1990's yields reached their highest point at an average of 3.9 tons/ha of rice. While significant gains have been made in yields over the past decade, Guyana lags behind other rice producing countries: Colombia 5.5 tons/ha, Venezuela 5.3 tons/ha, Indonesia 4.4 tons/ha. Problems are found throughout the entire production chain. Two main constraints at the farmer level that prevent increasing productivity to over 4 tons/ha are the lack of high quality seeds and the poor condition of the D&I system that in most cases do not deliver water for irrigation nor prevent flooding during the rainy season. New improved seed varieties would allow farmers to lower production costs, to increase yields and quality of the final product.

1.13 Sugar is the most important export product accounting for 23% of total exports. Guyana Sugar Corporation (GUYSUCO), a state owned enterprise, manages the sugar production and the O&M of their D&I systems. Moreover GUYSUCO is the main contributor for conservancies' maintenance in regions 3 and 4. They maintain the primary D&I systems in sugar plantation areas, and are in charge of the operation of some of the sluice gates for the sea wall defences.

1.14 A non-traditional crop sector is slowly developing, and it is still largely the domain of small-sized non-commercial growers, who supply the domestic market. Some limited export experiences show that there is potential in the sector.

However, the lack of adequate infrastructure and experienced enterprises hamper this potential. Exports in this sector increased from 0.50 % of the total country exports in 1995 to 0.75% in 2002.

1.15 Water management and other agricultural practices including pesticide and fertilizer use, and residue disposal, need to be improved. Excessive fertilizers are reaching the drainage canals and promoting weed growth and eutrophication, which in turn contributes to siltation and the clogging of the canals. Mishandling of pesticides and other hazardous chemicals are posing threats to the farmers, local residents and wildlife in the area.

D. Legal and institutional framework

1. Drainage and irrigation

1.16 Guyana has a complex structure for D&I management derived from organizational changes that occurred during the last decades. Before the 1960s most of the D&I systems were organized on sugar estates, which financed and managed the O&M of these systems. After independence and during 1960's through 1980's sugar estates were nationalized and the government took charge of the O&M of D&I systems; meanwhile large rice producing D&I schemes were built with external finance. Rice farmers were exempted from paying directly D&I fees. During 1990's the government outsourced sugar plantations to private management, including the O&M of sugar D&I systems. At the same time, the government started a policy to make rice farmers and other producers pay a fee to partially cover O&M primary and secondary D&I system expenses.

1.17 The infrastructure of the D&I system is composed by three main structures: (i) conservancy (similar to a dam); (ii) primary and secondary canals and (iii) sluice gates in the sea defence. The institutional arrangement includes the National Drainage and Irrigation Board (NDIB), GUYSUCO, Mahaica, Mahaicony, Abary (MMA) Authority (region 5) and regional and local governments[2], but varies among regions. The NDIB, which is the main actor in the D&I management structure, has the following functions: (i) policy making and decisions on D&I issues; (ii) financing of major works; and (iii) finance, supervise and advise the Regional Democratic Councils (RDC) in building new structures and performing the O&M of primary and secondary systems. At the conservancy level, GUYSUCO is responsible for operating and maintaining the conservancies of regions 3 and 4, and their pumps of region 6; in other regions the NDIB is responsible. By NDIB's delegation, the regional governments perform the O&M of the primary and secondary D&I systems, and in some cases they delegate to the local governments the management of the secondary systems. At the town level, the local governments are responsible for the management of the

[2] The Regional Democratic Councils (RDC), or Regional governments, and Neighbourhood Democratic Councils (NDC), or Local governments.

secondary canals. The sluice gates are managed by the RDC on behalf of the NDIB.

1.18 In 1995 a D&I policy was approved to separate the primary drainage D&I systems as public goods from primary irrigation and secondary D&I systems as private goods. Funding for the public components is under the responsibility of the government, and private components are under the responsibility of local users.

1.19 However, incentives are not properly aligned among the agents that operate in the D&I infrastructure: (i) The demand (i.e. level of service needs) for management, operation, and maintenance services is poorly taken into account by the government agencies that have been carrying out O&M activities; (ii) the government has not ensured proper funding for the public components; (iii) users have not been willing to pay the full cost of the D&I private components; (iv) O&M agencies face high transaction costs to collect O&M fees from users; (v) enforcing capabilities are non-existent or too extreme to be credible (i.e. take over land owner's assets); (vi) overlapping and confused responsibilities for water delivery among the different agencies; (vii) lack of efficient dispute-resolution mechanisms among water users and between water users and D&I agencies; (viii) the current level of service is below minimum standards which leads to a deterioration of the infrastructure; and (ix) the system's recurrent productivity losses due to lack of O&M tend to worsen its sustainability over time.

1.20 The setting and collection of D&I fees vary across regions. In region 5 the MMA Authority sets and collects D&I fees, while in other regions the NDIB is responsible for setting and collecting D&I fees through an arrangement with local governments. The D&I service fees collected from farmers and town residents, and other taxes and resources from the Central Government are deposited in a common and fungible account managed by the RDC to pay for O&M of primary and secondary D&I systems and other services originated at the local level.

1.21 The financing of the O&M activities of the D&I systems is, in general, insufficient. In principle, the O&M activities should be financed through the D&I fees collected from users. Due to the limited ability of the NDIB to set and collect D&I fees, the government subsidizes the O&M activities with national funds, which still do not cover the budget for regular O&M. The financing of O&M activities differs along the levels of the D&I system. At the conservancy level, GUYSUCO at regions 3 and 4 finances around 80%, while in the other regions is mostly financed through national funds. Due to the scarcity of resources, regular maintenance of primary and secondary systems is minimal. Therefore, maintenance of the system is mostly conducted through emergency rehabilitation works.

1.22 The institutional set up to collect D&I fees and perform regular O&M has demonstrated limited operational ability. Low farmer participation, political intervention, migration of lessees and unclear land tenure have made D&I fees

collection difficult (only some 20% of D&I fees are collected). As a result, the D&I system in Guyana requires physical rehabilitation and a better management and fee collection system to perform regular O&M, and, consequently, support a sustainable increase in agricultural productivity.

2. Farmers participation

1.23 Farmer involvement in D&I management is limited to three experiences: (i) Five WUAs were established in Region 5 in 1999 with poor results. Some of the reasons were that farmers did not receive enough training to run the organization and to perform O&M of transferred D&I systems. (ii) Two WUAs were established and trained in Region 3 in 1998, but they failed because although farmers collected fees on behalf of the RDC, they did not participate in the decisions on the ways funds were spent. After less than two years farmers decided to quit the organization. (iii) Currently, some 20 WUAs are operating in Regions 2 and 3 supported by the project financed by International Fund Agricultural Development (IFAD). So far WUA's members have been extensively trained, but the lack of authority to collect and use D&I fees has inhibited their ability to perform O&M. These experiences indicate that training and financial autonomy are crucial for WUA's success.

1.24 A clear institutional and policy framework for the irrigation sector has emerged as a result of the dialogue with the GOG during the execution of the Agriculture Sector Loan (ASL) and the preparation of ASSP. The amendment of the D&I Bill of 1995 gave the farmers the option to organize into WUAs. In 2000 with the issuance of the D&I Act Amendment, the NDIB was authorized to delegate the power to collect D&I fees to third persons. This legal framework allows the government to transfer O&M activities for secondary D&I systems to farmers duly organized in WUAs.

3. Land tenure

1.25 The risk and uncertainty of weak tenure rights on public land have been a long standing problem. The outcome of this has been land users employing a complex set of "informal" tenure arrangements. Informal rights lack official recognition, are not secure, have no legal basis and are not sustainable in the long term. Land originally allocated, transferred and documented on formal leases has, over time, undergone successive rounds of informal, undocumented transfer, subdivision and change of use.

1.26 Today, about 33% of the agricultural land in the coastal plain is held as private property; the remainder is owned by government and leased to farmers. Many of the leases are not regularized, but through the Land Tenure Regularization (LTR) program the Guyana Lands and Surveys Commission (GLSC) has made significant in-roads into re-establishing formal tenure arrangements on public land. Tenure may be regularized through the instrument of a Standard Agriculture lease or a Certificate of Title, depending on eligibility. The strategy for areas in

the Program varies—for example, Canals Polder is private, while Vreed-en-Hoop/La Jalousie, Blackbush Polder and Cane Grove are both freehold conversion (FHC) and Lease and Crabwood Creek is Lease.

1.27 The GLSC has prepared the new Leases and Certificates of Title for 100% of the lands for claimants in the sample, but farmers have been a reluctant to pick them up. With limited success, in recent months, the GLSC has mounted campaigns to convince the farmers of the advantages of the tenure regularization. Finally, in order to comply with the Bank requirement of 80% regularization, they have temporarily gone to a policy of issuing these forms of title to claimants upfront regardless of ability to pay. Shortly after this policy was introduced, the target was achieved in Vreed-en Hoop/La Jalousie.

1.28 A Land Tenure Regularization Impact Assessment has just been completed and a number of actions are recommended to accelerate the pace of the issuance. These include:

a. Continued public awareness and information campaign.

b. Rents and fee review: The most frequently cited reason for the low uptake of titles is financial. While this might be due in part to actual financial hardship, a number of key factors that have discouraged recipients from coming forward to collect leases/certificates have been identified and will be acted upon.

c. Overseas claimants: Although not given a high priority in this assessment overseas claimants are considered to be a highly important group to which more attention is due than has been the case. Action has been taken by writing to individuals; however the GLSC will consider making use of the internet by posting information about the LTR process online.

E. Lessons learned

1.29 For the past 25 years the Bank has been substantially in Guyana involved in the agricultural sector. Agricultural related loans approved since 1977 amount to over US$200 million. Bank lending for agriculture has covered basic infrastructure projects, input financing, technical assistance and policy-based activities. The Agricultural Sector Loan (ASL) executed from 1995 to 2001 introduced reforms in products and input markets which have prepared the sector for investment projects.

1.30 Agricultural private sector services in research and extension services in Guyana are almost non-existent. The Bank contributed to the introduction of private sector participation in the rice industry, which led to the privatization of the mills and a new land policy that introduced freehold lands. The GRDB as a new institution created under the ASL agreements focuses on trading and grading services, extension and research.

1.31 Relevant main lessons have been: (i) strengthening weak institutions responsible for managing areas that are politically sensitive takes a long time; (ii) issues of implementation with weak agencies were identified and addressed at the design stage, but not necessarily solved with the creation of a policy coordination unit at the Ministry; and (iii) regarding executor performance, in general the decision making process proved to be cumbersome due to the weakness within the Ministry of Agriculture, the lack of coordination between the key players and the lack of capacity in the agencies to respond to inputs provided by consultants.

F. Coordination with other official development agencies.

1.32 The mission held meetings with the EU and USAID/Chemonics, and in addition familiarized themselves with other donor sponsored programs in the sector. The European Union (EU) under an agreement with the CARIFORUM countries is executing the Caribbean Agricultural and Fisheries Programme (CAFP), which ends in April 2004. The CAFP objective is to strengthen the economies of CARIFORUM member states by consolidating and enhancing the contribution of the agriculture and fisheries sector. The CAFP has a rice component, and its total funding is €22.2 million.

1.33 Under a new agreement with CARIFORUM reached November 2003, a €24 million program for supporting the competitiveness of the rice sector in the Caribbean has been approved. This program includes €11.5 million for Guyana: a financial facility for working capital for the industry (€6.5 million) as well as technical assistance and water rehabilitation in areas different from the ones targeted by the Bank's program. The Bank through the COF/CGY participates in the EU project's steering committee.

1.34 USAID through Chemonics is completing a far-reaching program that includes a component that focuses primarily on promoting and expanding agriculture exports. Activities during this past year targeted three areas: (i) increasing market information and developing market linkages; (ii) improving product quality and meeting market requirements; and (iii) strengthening business skills. Expectations are that a similar program will be continued, although new funding has not been provided at this writing. Various other programs funded by USAID (PL 480) DFID, CIDA, and the CDB were also reviewed during the missions.

G. The country's sector strategy

1.35 The Government of Guyana through the Ministry of Agriculture has set high priority on the improvement of productivity of traditional crops (rice and sugar) in order to successfully compete in the international market. The GOG is also committed to establish a favourable environment to explore the country's potential for production and export other crops.

H. The Bank's sector strategy

1.36 The Country Strategy Paper for the 2002-2005 focuses on the promotion of sustainable growth, social development and poverty alleviation. The proposed Agricultural Support Services Programme will support the objective of sustainable economic growth by strengthening the competitiveness of the rice sector, which accounts for a significant share of economic output, exports and employment in Guyana. The rehabilitation of drainage and irrigation systems, the formation of Water Users Associations to operate and maintain these systems, and other activities aimed at improving farmer expertise and the quality of seed inputs, will enhance productivity in the most important rice-producing regions.

I. The Program strategy

1.37 The Program focuses on increasing agricultural productivity principally in the rice sector. Measures will be taken to enhance the competitiveness of rice such as D&I rehabilitation and O&M financial sustainability, land tenure regularization, and research and extension efforts.

1.38 The Program strategy consists in improving the drainage and irrigation (D&I) services for farmers in up to six specific areas executed through a gradual approach along with the introduction of incentive-based institutional arrangements and active farmer's participation to ensure sustainability.[3] The increased welfare will accrue not only from rehabilitation, but also from improvement in the value added due to increased productivity for existing crops and from diversification into new activities. The Program will support the new institutional arrangements through technical assistance and training.

1.39 The empowerment of farmers to operate a water management strategy is the key concept to ensure the sustainability of rehabilitation investments and lower the transaction costs for collecting the D&I user fees. Currently a Pilot Action Plan is being executed to organize farmers into WUAs and support their organizational strengthening. The empowerment of farmers will be complemented with an enhanced institutional framework to ensure efficient users fees, better collection rates, and improved quality on the services delivered.

1.40 The paddy rice and transfer of technology strategy takes place in the context of declining national production and uncertainty about future world and regional rice markets. It is intended to work in synergy with D&I rehabilitation and it will aim at boosting production, yields, exports and incomes to producers through a combination of greater access to improved varieties and expanded seed availability. Rice productivity increases arising from research and technology transfers will contribute to increasing farmers' ability to pay for the O&M fees thus improving sustainability.

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[3] The areas selected for improvement will be taken from the nine areas already indicated by the GOG on a "first come, first serve" basis depending on completion of the eligibility criteria.

1.41 The improvement of D&I services should create an increased availability of lands for cultivation that may be suitable for alternative productive purposes. The need for new sources of growth combined with the narrow and uncertain structure of the current agricultural base argue for agricultural diversification—primarily the diversification of agricultural exports, given the limited potential of the domestic market.

II. THE PROGRAM

A. Objectives and description

2.1 The primary objective of the Agriculture Support Services Programme (ASSP) is to raise rural incomes by increasing the efficiency of agricultural production in the coastal plain of Guyana. This requires reducing the frequency of flooding and improving productivity. The specific scope of the Program is to rehabilitate Drainage and Irrigation (D&I) structures, organize farmers to manage the Operation and Maintenance (O&M) of rehabilitated structures and support rice research and agricultural diversification.

2.2 The Program includes four components: (i) civil works to rehabilitate primary and secondary D&I systems in selected areas[4]; (ii) D&I institutional development which includes farmers' training and extension, and establishment of Water User Associations (WUAs) in those selected areas; (iii) rice seed research and production; and (iv) agricultural diversification promotion.

B. Project components (direct costs)

1. Civil works (US$15.5 millions)

2.3 This component will rehabilitate drainage and irrigation primary and secondary works, The proper functioning of these systems is necessary for the adequate performance of agriculture in the selected areas. Additionally to agriculture activity, the works to be rehabilitated are essential to prevent floods, protect health, lives and the main economic activities in those selected areas.

2.4 Based on a feasibility analysis and an engineering design, these works will include conservancies, primary and secondary drainage and irrigation channels, and water control structures. This component will finance the desilting of channels, the revamping of pumping stations, the repairing or replacement of sluice gates and other appurtenances, and will also finance the repair of the D&I service roads.

2.5 The Program is expected to rehabilitate: (i) approximately 400 kilometres of primary channels; (ii) approximately 800 kilometres of secondary channels; (iii) approximately 400 kilometres of service roads; (iv) 3 pumping stations; and (v) approximately 1200 sluice gates and other water control structures.

2. D&I Institutional Development (US$2.85 millions)

2.6 This component will finance activities aimed at the establishment and strengthening of WUAs and the training of farmers, supporting the NDIB

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[4] The selected areas are: Region 3: Vergenoegen / Bonasika, 27,300 acres; Den Amstel / Fellowship, 880 acres; Vreed-en-Hoop / La Jolousie, 4,465 acres, Canals Polder, 21,700 acres, Region 4: Cane Grove, 7,220 acres, Golden Grove/Victoria 5,052 acres; Region 6: Black Bush Polder, 27,600 acres, Lots 52-74, 22,352 acres and Crabwood Creek 4,365 acres.

reorganization as well. Currently a Pilot Action Plan is being executed with remaining funds from a TC program (ATN/SF-5098) to start organizing farmers.

a. WUAs support. This component will finance the necessary technical support for the establishment and strengthening of water users associations for the sustainable management and O&M of the secondary D&I systems in the areas of the Program. It includes all the activities to organize, register as a legal entity and prepare the contracts with the NDIB.

b. Farmers' training and extension. This component will provide resources for training farmer members of WUAs in four subjects: (i) management and administration skills, some 600 farmers are expected to be trained; (ii) D&I best practices for a sustainable O&M of rehabilitated works, some 6000 farmers will be trained; (iii) environmental aspects for the adequate use of pesticides, fertilizers and disposal of liquid and solid waste, some 6,000 farmers will be trained; (iv) extension services to improve yields of traditional crops and the introduction of new crops.

c. NDIB strengthening. This component will support the implementation of the D&I tariff structure to be applied to the primary D&I systems, providing training to NDIB personnel to perform their functions and give support to the WUAs.

3. Rice seeds development (US$1.2 million)

2.7 This category will finance the design and building of a seed rice facility that will be operated under a management contract, as well as related activities to facilitate and oversee its operation. This category will also finance the introduction and adaptation of disease resistant and high yield new rice seeds varieties.

4. Agriculture diversification (US$1.0 million)

2.8 This category will only finance those activities that require a public intervention to foster private sector environment for investment, i.e. supporting services related to research, technical assistance, market information, and plant and animal health certification for new production and exports.

2.9 The distribution of the Program's total amount by source of financing and category of investment is shown in the following table.

Table 2.1
Cost and Financing
(Thousands US$)

Categories	IDB	GOG	Total	%
I Engineering & Management	**1,000**	**1,190**	**2,190**	**8.8%**
1.1 Management	300	1,000	1,300	5.2%
1.2 Supervision	700	190	890	3.6%
II Direct Costs	**19,550**	**1,000**	**20,550**	**82.2%**
2.1 Civil works	15,800	500	16,300	65.2%
2.1.1 Rehabilitation of Primary D&I systems	6,500	250	6,750	27.0%
2.1.2 Rehabilitation of Secondary D&I systems	9,300	250	9,550	38.2%
2.2 D&I Institutional Development	2,400	450	2,850	11.4%
2.2.1 Water User Associations Support	1,000	250	1,250	5.0%
2.2.2 Farmers Training and Extension	1,050	200	1,250	5.0%
2.2.3 NDIB strengthening	350		350	1.4%
2.3 Rice Seeds Development	1,150	50	1,200	4.8%
2.4 Agriculture Diversification Promotion	200		1,000	0.8%
III Concurrent Costs	**1,210**		**1,210**	**4.8%**
3.1 D&I Technology Transfer	360		360	1.4%
3.2 Land Tenure Regularization	350		350	1.4%
1.3 Auditing	100		100	0.4%
1.4 Evaluation & Monitoring	400		400	1.6%
V Financing Costs	**740**	**310**	**1,050**	**4.2%**
5.1 Interest	515		515	2.1%
5.2 Credit fee		310	310	1.2%
5.3 F.I.V.	225		225	0.9%
Total	**22,500**	**2,500**	**25,000**	**100.0%**
%	90%	10%	100%	

C. Other costs

2.10 The description of the other categories of investment follows.

1. Engineering and management (US$2.19 millions)

a) Management (US$1.3 millions)

2.11 This category includes the operational costs of the Project Executing Unit (PEU) and the cost of hiring the consultants necessary to carry out its functions during the five years of Program execution. It also includes the office supplies and equipment such as computers and vehicles.

b) Supervision (US$890 thousand)

2.12 This category includes the cost of the firms that will support the PEU with the supervision of the construction and related environmental aspects.

2. Concurrent costs (US$1.21 millions)

a) D&I technology transfer (US$360 thousand)

2.13 This component will finance studies to adapt new D&I technologies to Guyana conditions and feasibility studies for alternative energy for irrigation.

b) Land tenure regularization (US$350 thousand)

2.14 This component is directed towards the financing of additional activities in land tenure regularization that will be needed in the area of the Program.

c) Auditing (US$100 thousand)

2.15 This category includes the cost of hiring an independent auditing firm to audit the financial statements of the Project.

d) Evaluation and monitoring (US$400 thousand)

2.16 This includes the data gathering and evaluation of the Program's performance, both mid and final evaluations, supervision and monitoring, including water quality, sampling, analysis and processing.

3. Financing costs (US$1.05 million)

2.17 This category, which accounts for 4.2% of the total cost of the Program, includes interest during the period of Program execution, and the cost of inspection and supervision of the Program by the Bank.

D. Financing conditions

2.18 The Bank will finance 90% of the total cost of the proposed Program from the Fund for Special Operations (FSO) to be disbursed in accordance with the Bank policies under the following conditions.

Table 2.2
Financing Conditions

Amount of the loan	US$22.5 millions
Interest rate	1% for the first 10 years; 2% thereafter
Credit fee	0.50%
Inspection and Supervision	1.00%
Disbursement period	Minimum 3 years, maximum 5.5 years
Grace period	10 years
Amortization period (including grace period)	40 years

III. PROGRAM EXECUTION

A. The borrower, and executing agency

3.1 The borrower would be the Cooperative Republic of Guyana (GOG). The executing agency would be the Ministry of Agriculture (MOA) which will constitute the Program Executing Unit (PEU) to manage, among other things the bidding, contracting, supervision of works and financial statements of the Program. The PEU will be in charge of the execution of components 1, 3 and 4.

3.2 With respect to component 2, the NDIB in close coordination with the PEU will be responsible for the organization and strengthening of the WUAs, as well as the training of farmers and extension. **For this purpose a Memorandum of Understanding will be signed between the MOA and NIDB**.

B. Program execution unit

3.3 The PEU will report to the Permanent Secretary of the MOA. A Program Manager will be appointed to head the PEU and will be directly responsible for all aspects of the Program, day to day operations, and the liaison with the Bank. The Program Manager will be supported by: (i) a procurement officer, dealing with procurement and tender documents; (ii) an administrative assistant, dealing with the daily administration of the PEU e.g. checks issuing, minor acquisitions, work permits, etc; (iii) a civil engineer to deal with the adequacy of the designs and the supervision of works; (iv) an agricultural engineer to deal with the rice seed production and diversification of agriculture produce; (v) a specialist to deal with institutional aspects and (vi) an accountant to maintain the Program accounts and prepare the financial statements. The professional services to make the supervision of the works and additional specialist technical support will be obtained from local and international consultants.

3.4 For the management of the project's financial resources, the MOA/PEU will open one separate and specific commercial bank account for managing the Bank's loan funds. The MOA/PEU will maintain adequate financial and accounting records of the project funds and internal control systems to allow for verification of transactions, identification of the sources and uses of project funds, provide documentation to verify transactions and to facilitate timely preparation of financial statements and reports.

3.5 Project financial and accounting records will be arranged so that: (i) the amounts received from the various sources can be easily identified; (ii) project expenses are reported in accordance with the chart of accounts approved by the Bank, with distinction made between the Bank loan and funds from other sources; and (iii) the necessary details are included to identify goods acquired and services contracted, as well as their use.

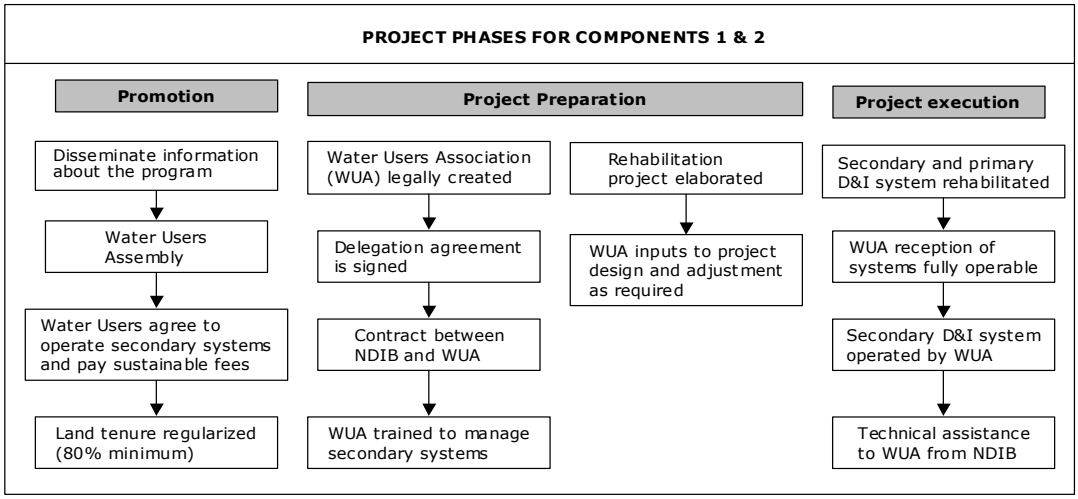
3.6 The MOA/PEU will be responsible for: (i) preparing and submitting disbursement requests to the Bank and the corresponding justification of expenses; (ii) preparing and submitting to the Bank the annual financial statements regarding project's expenses, and the semi-annual Revolving Fund Status Reports; and (iii) maintaining an adequate disbursements support documentation filing system.

3.7 The PEU will be provided with dedicated office space fully equipped with all necessary furniture, computing, reproduction, and communications equipment. **Establishing the PEU, appointing its Program Manager and key personnel will be a condition prior to first disbursement.**

C. Program execution and administration

3.8 The Program is designed to be executed as a multiple works program and has an Operating Regulation Manual (ORM) to set conditions for the eligibility of the works and others conditions to execute the Program. **The approval of the ORM by the GOG authorities with the previous Bank's consent will be a condition prior to first disbursement**.

3.9 The execution of the rehabilitation of D&I systems and the institutional development are interdependent because the execution of one is necessary for the proper O&M of the other. The following diagram presents the required activities to execute these components. The rehabilitation of the D&I systems will be responsibility of the PEU and the rest of the activities will be executed by the NDIB.



1. Civil works

3.10 The selection criteria used by the GOG to determine the areas in the Program were: (i) D&I areas where existing D&I infrastructure works presently exist in

these areas but need rehabilitation; (ii) D&I areas where farmers are willing to form themselves into groups to undertake the maintenance of the secondary D&I systems, resulting into the formation of WUAs; (iii) D&I areas where substantial acreage are presently under cultivation (rice and other crops), but productivity is hampered by inadequate functioning D&I infrastructure.

3.11 The procurement of civil works to rehabilitate the D&I systems will be organised as follows: (i) The two (2) sample areas (Canals Polder and Vreed-Hoop/La Jalousie may be tendered in a single bid in two lots. (ii) The prospective contractor(s) could bid for each lot separately and may offer a discount if they are awarded both. For the other areas, one criterion for determining the set of works to be tendered will be that one or more D&I secondary systems are combined with the corresponding portion (or total) D&I primary system. This will be done to avoid the possibility of rehabilitating some primary system that will not be used until the corresponding secondary system is rehabilitated.

3.12 To be eligible for rehabilitation under this program a given D&I secondary system **must have a WUA legally functioning that will take over the management and O&M of the rehabilitated system, 90% of the parcels in the area must be occupied and the land tenure must be regularized for at least 80% of the occupied parcels, and the borrower will present evidence that the special unit and the NDIB regional offices in the sample areas have been created and its personnel appointed.**[5] For the WUAs to be considered functioning, bylaws and delegation agreements must be established.

3.13 To be eligible for rehabilitation a given primary irrigation system must serve one or more secondary systems to be rehabilitated together or have been already rehabilitated according to the provisions and guidelines set forth in the ORM of this program.

2. D&I Institutional Development

3.14 The activities envisaged under the ASSP are aimed to the improvement of the D&I regulatory framework; establishment and strengthening of WUAs; setting efficient user fees and billing & collection procedures for the D&I infrastructure; establishment of individual and group incentives for collecting the D&I user fees; strengthening of the NDIB; execution of a social and environmental management plan; and monitoring of the D&I infrastructure sustainability.

3.15 More specifically, the drainage and irrigation system needs to be reorganized for the purpose of increasing its effectiveness and its efficiency. Under agreement with the GOG for this program, it is anticipated that: (i) land owners and lessees in rural areas will finance full rehabilitation costs of secondary D&I systems; (ii) farmers through their Water User Associations will finance full O&M costs of

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[5] Tenure may be regularized through the instrument of a Standard Agriculture lease or a Certificate of Title, depending on eligibility.

secondary D&I systems and will manage these systems; (iii) there will be contracts between WUA and the NDIB specifying obligations and benefits to both parties that should govern transactions (on water and services) for the management of primary and secondary systems; (iv) based on irrigated area, each farmer will pay his/her share of the O&M of primary irrigation system fees ; (v) the rehabilitation costs of primary irrigation and secondary D&I systems will be shared by the beneficiaries; (vi) as part of the contract with the WUAs, the NDIB will secure the collection of financial resources from water users and for the O&M of the primary drainage systems, the government will provide funds from the national budget.

3.16 The WUAs will charge the farmers a user fee that will include the O&M of secondary systems and their share of the O&M of the primary irrigation systems. The resources collected for the primary systems will be deposited in a special account managed by the NDIB. This arrangement will be specified in the contract between the WUAs and the NDIB. For the first time, farmers will assume responsibility for their own O&M and suffer the consequences if supervision and payments are inadequate. The NDIB would perform the O&M services of primary systems through third parties. As a last resort measure, the bylaws include a provision for cutting irrigation water to farmers who do not pay the required fees.

3.17 Rehabilitation costs of primary irrigation and secondary D&I systems will be paid annually by the farmers on behalf of landowners and lessees through the same channels as the O&M cost collection. It is expected that the tenants will discount these payments through their rental contracts with the landowner or lessee.

3.18 *Establishment and strengthening of WUAs*: The WUAs may hire a professional team to perform the O&M activities of the D&I system, or they may choose to do it themselves. It is expected that WUAs will receive legal support and technical assistance during the execution period of the loan. The WUAs should be organized to manage the entire D&I system within an area to perform an adequate water management in the system to take advantage of economies of scale and minimize operational costs; set user fees; raise D&I collection rates; and interact effectively with D&I authorities.[6] A special development of human resources plan to support farming communities and WUAs will be implemented. The WUAs will be consulted on their annual specific extension needs which will cover irrigation and drainage management, and farming management practices which will include rice, and other crops that are currently under cultivation or potential new ones.

3.19 *WUA By-Laws*. The by-laws define: (i) the functions and services to be provided to its members; (ii) governance structure; (iii) eligibility criteria to become a member and the rights and obligations of its members; (iv) election procedures to appoint members to the governing bodies; (v) dispute resolution mechanisms;

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[6] A program area may have more than one WUA depending on the size. The actual boundaries should be decided by the WUA members themselves.

(vi) financial management; (vii) rules for operation and maintenance, and (viii) rules for environmental practices.

3.20 *Design and implementation of user rates*. Based on area and potential water use, farmers will pay fees that cover 100% of the O&M costs for primary irrigation and secondary D&I canals. Payments will begin after the first harvest following the completion of the rehabilitation works. Capital costs for these rehabilitation works will be paid by the owners and lessees also beginning at the end of the first harvest. These payments will be paid over a twenty year horizon, but be introduced gradually over the first four years—25%, 50%, 75%, and 100%. If farm margins decrease due to crop prices decline or "force majeure", so that the tariffs represent more than 20% of net income, the GOG could take temporary measures to ameliorate this situation. The ORM provides guidelines for setting these tariffs. Technical assistance for determining the actual tariffs in a particular WUA will be provided. The NDIB will oversee that tariffs set by the WUAs are consistent with the principles stated above and applied in an equitable fashion.

3.21 *Establishment of individual and group incentives for collecting the D&I user fees*. Technical assistance will be provided to prepare each WUA's annual management plan to raise collection rates. The management plan presented to the NDIB may consider measures, subject to the approval of the WUA Assembly, such as: (i) tie-in arrangements with complementary inputs and services whereby benefits are linked to payment records, either of the individual or small groups of farmers; (ii) training to raise awareness on complying with the bills; (iii) agreements with third parties with better abilities to collect the O&M fees such as agribusinesses; (iv) disclosing individual payment records to other members or third parties such as microfinance institutions; (v) set up a comprehensive communications strategy for keeping members informed of status of maintenance works; (vi) adopt solidarity-based schemes similar to those used in microfinance; (vii) being eligible to be elected to the WUA Board and Regional WU Committees, or similar voice-based institutions; (viii) Provide discounts for prompt payments of D&I user fees and include arrears for late payments; and (ix) Set up an efficient conflict resolution institution within the WUA to clarify and resolve disputes among members regarding operation and maintenance. The NDIB should request the first year management plan before engaging in rehabilitation works.

3.22 As an alternative to the current system of determining water user charges (area), a study will be financed to investigate the viability of basing fees on actual water volume consumption.

3.23 *Strengthening of the NDIB*. The program will support the strengthening of NDIB to assume its new role in the sector. Areas to be strengthened include strategic and operational planning processes, human resources development, treasury and money management, the design and monitoring of quality service indicators and user fees structures, assessment and supervision of secondary D&I systems, billing and collection systems, statistical and information systems, drafting by-laws, and on launching consultation processes. The personnel will be trained to

perform their new functions, and special D&I Divisions will be created to support the establishment and strengthening of WUAs, and execute the social and environmental management plan. NDIB will also create 3 regional offices in regions 3, 4 and 6 to take care of the O&M of the rehabilitated primary D&I systems and to coordinate with other water users.

3.24 *Monitoring of the D&I Sustainability*. An institutional strategic plan in the first year of the project will be prepared by the NDIB. Basic data collection is also necessary to allow the national agency to generate accurate regional and nation-wide statistics, D&I system status and performance. The NDIB will engage in the following activities: (i) The NDIB will arrange for auditing financial statements of each WUA annually; (ii) The NDIB will arrange for technical assistance and training for WUAs during the first 3 years of their creation; (iii) The NDIB will conduct an annual maintenance audit in conjunction with each WUA. The maintenance audit would assess the condition of the D&I system facilities; and (iv) The NDIB will require an annual report from each WUA on its operation and performance. These will include area served, number of farmer's served, income and expenditures, collection rates, services rendered, and total quantity of water delivered. This program will start operations with the ASSP but it is intended to become a permanent service of the government to water users. On the other hand, quality of services surveys will be completed by farmers to assess the performance of the NDIB, services providers, and their own WUAs. Customer complaint and information services will be provided with user-friendly formats and in timely fashion by independent entities who will report to both the NDIB and the WUAs. Customer complaint records will be kept by the NDIB.

3.25 *Agreements between NDIB and WUAs*. Two set of agreements will be signed between the NDIB and the WUAs: a delegation agreement whereby the NDIB empowers the WUA to exert its authority within a D&I secondary system, and a contract that specifies the services to be provided between the parties. In the delegation agreement, the NDIB will grant authority to the WUA to manage, operate, and maintain the secondary drainage and irrigation system within a specific area, including the right to collect user fees. The agreement also describes the reporting requirements between the parties. In the contract, both parties will agree on the specific services to be provided and their financial responsibilities for each year. This includes quality of service targets and user fees for primary irrigation services; secondary D&I infrastructure baseline description and operational audit procedures to ensure the sustainability of secondary systems; evidence that each party has carried out O&M for primary and secondary infrastructure during the year; the management plan prepared by the WUA to raise collection of user fees; and the specific technical assistance that will be provided by the NDIB to the WUA.

3. Rice seed development

3.26 Guyana, through the Guyana Rice Development Board (GRDB) will join the Latin American Fund for Irrigated Rice (FLAR) and will transfer and adapt in the

Burma Research Station new rice seeds with high yield potential and resistance to plagues. The basic seeds obtained will be sold to an enterprise that will multiply the seeds through an arrangement with farmers to reproduce the seeds and a rice seed facility to dry, clean and select the final product that will be sold as a certified seed. The GRDB will make the necessary inspections during the process to provide the certification service. With local resources this program will finance the fees to join the FLAR, however, laboratory equipment and training of the Burma Research Station personnel, and the design and construction of rice seed facilities will be financed with loan resources.

3.27 **Rice Seed Facility.** The production of certified seeds on a commercial scale will be financed under this category through the financing of a seed production facility that will be operated under a management contract. The indirect beneficiaries of this component will be those farmers who will multiply the seeds for the rice facility, farmers that will buy the certified seeds and millers and rice exporters who will purchase the paddy rice grown with certified seeds.

3.28 To be eligible for financing for the design, building and operation of the rice facility, the firm should be private with experience in building and operating agribusiness, and in dealing with farmers organizations, preferably in the rice industry. Consortiums are allowed.

3.29 *Selection of the firm*. A tender will be conducted of the rice seed facility for its building and management. The payments to the government for leasing the facility should ensure that the latter recoups the economic capital costs within the period of the contract.

3.30 The management contract will include output-based indicators subject to penalties to ensure quality of service, minimum output targets, and farmers' equitable access to seed sales. Within the first year of the ASSP execution a specialized firm will be retained to prepare the tender documents and advise the GOG until the contract is awarded. **The facility will be built contingent to having a successful tender and when the winner fulfills the prerequisites stated in the bidding documents**. Competition among all seeds providers will be carried out on a level playing field (open competition). The GRDB will oversee the management contract.

3.31 Prior to the tender, the government: (i) will ensure a minimum supply of basic rice seed is available from the Burma Research Station to the operator of the rice facility; (ii) will allow the operator to import directly basic seed if appropriate; (iii) will ensure a level playing field for the rice seed operator; (iv) will put in place a seed certification system within the GRDB.

3.32 Eligible Activities. Funding will be available for the following activities: (i) technical assistance to design the rice seed facility; (ii) technical assistance to structure the build and management contract, prepare the tender documents, conduct the tender, assist in final negotiations if needed, and in closing the

required activities related to the tender; and (iii) technical assistance to the GRDB for certification of the product of the rice facility.

4. Agriculture diversification

3.33 The GOG is currently formulating a Diversification Strategic Plan for the Agriculture Sector and will identify the bottlenecks to diversify the agriculture production and export. Based on this plan the Program will finance the studies, training programs and workshops considered a priority and will contract with consultant firms or other service providers. No grant money will be provided directly to the private sector. **Prior to the commitment of Bank resources in this component the borrower will present evidence that the Diversification Strategic Plan for the Agriculture Sector has been approved by the GOG authorities**.

3.34 Eligible Activities. Funding will be available for the following activities: (i) technical assistance to streamline procedures and policies to foster entry into new businesses; (ii) trade promotion and negotiating tasks, and (iii) pre-feasibility studies for establishing a shared facility or service related to diversification efforts.

D. Status of program preparation

1. Studies and designs

3.35 A consulting firm was contracted to make the feasibility studies as well as the design of the rehabilitation works. The feasibility studies and final design for three areas[7] are completed and by the end of June 2004 the completion of the studies and design for the rest of the areas is expected. The tender documents for the nine areas are expected to be ready by the end of June 2004.

3.36 Three areas were originally selected to be the representative sample of the Program; however, in only two areas, were over 80% of the Certificate of Titles and Leases issued for claimants (Canals Polder and Vreed-en-Hoop/La Jalousie). In those two areas WUAs were created, legalized and delegation agreements to collect fees awarded. This sample represents 21% of the area to be potentially rehabilitated with this program.

E. Procurement of goods and services

3.37 The Ministry of Agriculture through the PEU will be responsible for procurement of goods and related services and contracting works in accordance with the Bank's rules and procedures stipulated in Annex B of the loan contract. International competitive bidding will be required for procurement of goods costing US$250,000 or more and works costing US$1.5 million or more.

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[7] Canals Polder, Vreed-en-Hoop/La Jalousie and Black Bush Polder

Consulting services will be contracted in accordance with Bank policies and procedures and international competitive bidding will be used for contracts over US$200,000. Bids below these thresholds will follow domestic legislation, which is compatible with Bank procedures. Presented in Annex III-1 is a tentative procurement schedule and the estimated cost of the lots.

F. Execution and disbursement schedule

3.38 The execution period of the Program will be five years. In table 3.1 are shown the amounts of disbursement by year and source of funds. The disbursement period will extend to six (6) months subsequent to the end of the execution period in order to allow sufficient time for the final audits of the project financial statements, as well as payments for the audit.

Table 3.1
Disbursement Schedule
(in US$ thousands)

Year	IDB	Local	Total	%
1	2,485.00	475.00	2,960.00	11.84
2	4,372.00	515.00	4,887.00	19.55
3	5,368.00	540.00	5,908.00	23.63
4	5,927.00	510.00	6,437.00	25.75
5	4,348.00	460.00	4,808.00	19.23
Total	**22,500.00**	**2,500.00**	**25,000.00**	**100.00**
%	**90.00**	**10.00**	**100.00**	

G. Revolving fund

3.39 After all the conditions precedent to the first disbursement have been complied with, the Bank may advance funds from the loan to establish a revolving fund of up to a maximum of 5% of the total cost of the Program. The funds are to be kept in a special bank account in the name of the Program. The PEU will present to the Bank within 60 days after the end of each six-month calendar period reports on the status of the revolving fund.

H. Monitoring and evaluation

3.40 The PEU will present an initial report to the Bank containing the Program's work plan and detailed execution schedule. Also, in the second semi-annual report the performance indicator values in table 3.2 will be included. The reports prepared by the Bank on the status of the loan will include problems encountered during the Program and their recommended solutions. Due to the complexity of the Program, the Bank will carry out annual reviews to determine the degree of compliance with the performance indicators shown in table 3.2.

1. Mid-term review

3.41 A mid-term review of the project will be performed when 40% of the loan resources for civil works have been committed. The review will verify compliance with the performance indicators below for each year and general progress made in program execution. To this end, the borrower will perform jointly with the Bank the mid-term review to examine the overall progress made in the project, and the extent to which the performance indicators have been fulfilled. Special attention will be given to financial and operating aspects of the WUAs, NDIB performance and progress on the diversification component. The commitment of resources above 60% of the loan resources for civil works will only be authorized after a satisfactory evaluation has been made by the Bank and PEU of the project benchmarks and performance indicators.

2. Final evaluation

3.42 When it has been disbursed 95% of the total cost and financed with Program resources a final evaluation of the Program will be done based on the indicators established in the Logical Framework (Annex III-2).

Table 3.2
Benchmarks and Performance indicators

Indicator	Base Line	Mid-term review	End of the Program
Number of WUA fully operating and with 80% collection of sustainable D&I fees.	0	3	6
Number of WUAs supervised annually by NDIB.	0	3	6
Number of secondary D&I system rehab.	0	3	6
Number of farmers trained in management.	Negligible	200	600
Number of farmers trained in O&M, environment, agricultural management practices.	652	2000	6,000
Total area covered with certified seeds (%).	11	15	24
Paddy Rice yields (TM/Ha).	3.2 – 4.5	3.9 – 5.0	4.5 - 5.5
Pesticide and Toxic Control Board and Pesticide Residue Laboratory fully operational.	No	Yes	Yes
Completion of the water and sediment quality survey.	No	Yes	Yes

3. Data collection

3.43 The PEU will collect, store and retain all necessary information, indicators and parameters, including the annual plans, the mid-term review, and final evaluations, to help the Bank to prepare the PCR.

4. Auditing

3.44 The PEU will prepare and submit to the Bank, within 120 days after the closing date of each fiscal year and within 120 days after the date of the last disbursement of the financing, the financial statements of the project as well as the NDIB especial account (¶3.16), audited by a firm of independent auditors acceptable to the Bank, based on the terms of reference previously approved by the Bank (Document AF-400). The private audit firm will be selected and contracted in accordance with the Bank's bidding procedures for audit firms (Document AF-200), and will be paid with the Bank's financing.

IV. VIABILITY AND RISKS

A. Institutional and financial viability

4.1 The MOA through the PEU assisted by ad-hoc consultancies will have the technical capacity and experience to contract and supervise the works. There are enough domestic and foreign companies to execute the works and supply local or imported materials and equipment. The new institutional arrangement with the NDIB taking care of the primary D&I systems and the WUAs in charge of O&M in the secondary D&I systems is designed to promote adequate maintenance of the systems to be rehabilitated under this program.

4.2 A program to form WUAs is underway and to date two WUAs have been created. Farmers recognize that for a WUA to be feasible, they would need extensive capacity building and training. The necessary training will be provided during project implementation.

4.3 The MOA has already committed itself to delegate it current secondary D&I responsibilities to two WUAs under the pilot program. GLSC is also accelerating the land regularization program and has recently approved a new procedure for delivery of leases and certificates of titles whereby they will be issued to claimants upfront and pending debts will be refinanced. Land regularization targets have been completed in two sample areas.

4.4 The current legal framework allows the Program to be launched through the delegation agreements between the NDIB and the WUAs. To consolidate this process, the Program has identified regulatory measures to improve the management of the system, which the GOG is willing to pursue.

4.5 The NDIB has been weakened by the D&I institutional instability during the last decades. The transfer period created in the 1995 Policy Directive whereby the NDIB functions were re-established is still in effect, with several of these functions are been carried out by the RDCs and NDCs. The NDIB has lost experienced staff; several position are unfilled, or filled by appointment of acting staff from more junior positions. The Program considers a strengthening program to overcome the current institutional limitations of the NDIB.

4.6 The GRDB created with the support of the ASL enjoys an earmarked source of revenues through the rice export check off that represented US$1.2 million in 2003, from which 56% was allocated to rice research and extension. This figure represents more than 2% of rice's value added which is reasonable by international standards. The GRDB is implementing a strategic plan that covers research, extension, quality control, and marketing activities. GRDB has 107 staff (14 senior technicians) devoted to research and extension activities. GRDB has the potential of increase its performance under a demand driven approach for research and extension activities.

4.7 Financial Viability Average budget allocation for the last year of capital and O&M costs for the D&I systems in Guyana has been US$5.8 million. This includes the NDIB budget as well as the regional and local governments' budgets. For regions 3, 4 and 6, the overall allocated budget has been US$1.5 million in 2003. Extrapolating the public component budget to these three regions, the public component requires an annual budget of US$1.1 million to cover O&M as well as capital costs, which is lower than historical allocations. Hence, with the establishment of WUAs, the GOG would realize a positive impact on the national budget, as measured by the current amount budgeted for the D&I sector.

B. Technical viability

4.8 The Program is technically feasible and amply justified from the technical standpoint since it responds to the needs of rural areas that are in high risk of flooding due to poor drainage, and lacking water during the dry season. The project also responds to the need to solve public health, life threatening and environmental pollution problems caused by the malfunctioning of drainage in urban areas.

4.9 The studies and final designs of the projects have been prepared in accordance with international standards in agreement with generally-accepted engineering principles. The designs correspond to technically feasible minimum-cost alternatives.

4.10 The execution schedule has taken account of the nature of the works, the bid processing periods and the lessons learned during execution of similar projects in Guyana and other countries.

C. Socioeconomic viability

4.11 The economic analysis was carried out at three levels: farm level—the secondary system and primary system. The analysis considered cash flow differences between scenarios with and without project.

4.12 Without the project the primary drainage system covers an area protected by conservancies and a system of canals that prevent the area to be flooded by creeks, rivers and tides. Currently the canals are silted, and the mechanical equipment (pumps and sluices) is badly deteriorated. The protected area (agricultural area, factories, and urban areas and settlements) is being affected by floods with increasing frequency over the years. Secondary systems (cultivated area) are experiencing similar phenomena. In addition, the irrigation systems draw water from the conservancies and these canals are suffering similar problems. For this analysis, it is assumed that incremental yields will gradually build up over the first four years after rehabilitation of the system. The prices used were international prices corrected for the quality of Guyana rice—EU price preferences were not used in this analysis.

4.13 **Financial Analysis at Farm Level.** Financial analysis of the rehabilitation projects in three principal project areas was undertaken to determine the likely implications of the proposed rehabilitation of the D&I systems on farmers' incomes once the new D&I fees have been. This analysis was then used to assess the farmers' capacity to meet future O&M costs. It is anticipated that the D&I improvements, and subsequent upgrading of O&M, will create more favorable and sustainable conditions for the adoption of improved farming practices.

4.14 The D&I benefits were estimated as the difference between the stream of net financial margins to be obtained in the area under better irrigation and drainage management "with the project" and the one to be obtained "without the project". Farm models for three size farms (small, medium and large) were estimated and evaluated for the "without and with project" situations in each system. The incremental net margin was gradually built up equally distributed during the first 4 years after rehabilitation of the systems as follows: 5.5% for paddy, 2.3% for sugar cane and 0% for vegetables that are the existing crops in the 3 areas analyzed.

4.15 The results of the farm budget analysis indicated that net farm income (after D&I fees) would increase by the amounts shown in the following table. With these improvements in net farm income, the project will significantly enhance the welfare of all types of farms within the project areas.[8]

Table 4.3
Incremental Net Farm Income after D&I Fees(*)

Canals Polder				
Farm Type	**% in area**	**Net Farm Income per Annum (US$)(**)**		
		Without Project	**With Project**	**Increment**
Small (5 acres)	6	4,168	4,246	78
Medium sugar (20 acres)	21	8,217	8,790	573
Medium rice (20acres)	22	3,162	4,763	1,601
Large (50 acres)	51	3,067	7,384	4,317
Vreed en Hoop/La Jalousie				
Farm Type	**% in area**	**Net Farm Income per Annum (US$)(**)**		
		Without Project	**With Project**	**Increment**
Small (5 acres)	4	1,344	1,614	220
Medium (20 acres)	69	2,296	3,443	1,147
Large (50 acres)	27	2,771	6,199	3,428
Blackbush Polder				
Farm Type	**% in area**	**Net Farm Income per Annum (US$)(**)**		
		Without Project	**With Project**	**Increment**
Small (5 acres)	2	1,976	2,329	352
Medium (20 acres)	42	1,911	3,282	1,371
Large (50 acres)	56	133	4,127	3,994

(*) After year four.
(**)Exchange rate US$1 = G$200

[8] The margins are less in the Blackbush without project case because of the dominance of rice in those areas, especially in the 50 acre case.

4.16 **Capacity to Pay Operation and Maintenance Fees.** The estimated O&M costs for the secondary and irrigation primary systems (including management expenses) were calculated. With regard to the farmers' capacity to meet O&M costs, D&I fees were then expressed as a percentage of the net farm income before fees. Besides, the incremental D&I fees were expressed as a percentage of the incremental income before fees for each type of farm.[9]

4.17 As a rule of thumb, fees should not be greater than 35% of the incremental net revenue, and 20% of the total net revenue. Fees are smaller than 20% of the net revenue, except for the large farms in Blackbush Polder. One should also compare fees with the incremental net revenue. Using this criterion, the fees exceed this 35% of the incremental net revenue only for small sugar farmers in Canals Polder (20% of the land). To the extent that these estimates are accurate, this suggests that these farmers may lack incentive to pay the full D&I fees, and consequently play an active role in future WUA activities, especially in the early years before the Program benefits are fully realized. For this reason, it is recommended that primary systems fees be charged beginning the third year after completion in order to allow farmers to realize the benefits of the new system.

4.18 **Rehabilitation Cost Recovery Fees**. The fees to recover the investment in rehabilitation were calculated taking into account works in secondary and irrigation primary canals. The works in primary drainage canals are assumed to be public goods according to the national policy of drainage and irrigation. Therefore, these works will be financed using resources from the central government. The fees were calculated annualizing the cost over 20 years.

4.19 Landowners and lessees will finance the primary irrigation and secondary D&I costs. With regard to the capacity to meet capital costs, D&I fees were then expressed as a percentage of the net farm income before fees as a proxy to the value of the land.

4.20 The rule of thumb that capital cost and O&M fees should be less than 20% of the total net income is satisfied except in the medium and large farms in Blackbush Polder that reach 59% of the value and the large farms in Vreed en Hoop. However, medium and small farmers would have the capacity to pay. Enforcing payment of these fees will encourage large farmers to diversify and increase the total income.

4.21 **Economic Analysis of Primary and Secondary Systems.** For estimating the Economic Internal Rate of Return (EIRR) and the net present value (NPV), market prices were transformed into economic prices. The crop budgets were transformed into economic crop budgets by adjusting the market product and input prices by a set of conversion factors. For internationally traded goods (rice

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[9] The low fees for D&I for sugar reflect the fact that in Guyana sugar does not require irrigation.

and sugar cane), economic prices were derived from the World Bank commodity price projections for 2010. This US$210 per ton for rice was further adjusted to take into account the quality of Guyana rice. The actual price used was US$180 per ton)[10]. The following table summarizes the results of this analysis.

Table 4.4
Economic Viability of the Sample Primary and Secondary Systems

System	Cultivated Area (Acres)		Capital Cost (US$ M)	Cost per Acre (US$)	EIRR (%)	NPV @ 12 % (US$ M)
	Without Project	With Project				
Canals Polder	13,565.	16,491.	5.2	315.3	17.2	1.90
Vreed en Hoop/La Jalousie	3,500.	3,500.	1.0	291.4	24.4	0.86
Blackbush Polder	17,170.	19,623.	7.4	377.1	25.8	6.70

4.22 The economic analysis demonstrates the feasibility of the projects. Therefore from an economic (and financial) point of view, the rehabilitation of the three projects is recommended.

4.23 **Sensitivity and Risk Analysis for the Economic Evaluation.** These analyses were carried out to see the importance of certain subcomponents to the success of the project and to identify the variables that could jeopardize this success, and to define actions to be taken to reduce the risk of failure.

4.24 The cases studied were: (i) the project includes rehabilitations of the infrastructure but does not include extension; (ii) % of the cost that is incremented and the project becomes unfeasible and (iii) a Monte Carlo simulation[11] varying costs and rice prices[12].

Table 4.5
Sensitivity of the Economic Viability of the Sample

System	No Technical Assistance Included		% Cost Increase for Project to not be Feasible	Probability Of Unfeasibility
	EIRR (%)	NPV @ 12 % (US$ M)		
Canals Polder	14.7	0.98	34	0.012
Vreed en Hoop/La Jalousie	14.0	0.12	77	0.001
Blackbush Polder	16.3	1.88	79	0.001

[10] Current international price of rice is US$236 per ton.

[11] Crystal Ball was used to run the Monte Carlo simulations.

[12] The probability distribution of rice prices was based on a historical series of the last fifteen years (1987-2003).

4.25 It can be seen that extension is a very important subcomponent and needs to be monitored very closely to reach the benefits expected from the project.

4.26 **Sensitivity and Risk Analysis for the financial analysis.** This analysis was carried out to examine the probability that the farmers lose the capacity to pay due to the fluctuations in the prices of the sugar and rice. For this analysis, in order to calibrate a Monte Carlo simulation model, the international price time series for the last 10 years was used. Results show that the farmers have a negligible probability (less than 2%) of not realizing a profit in a given year (after paying the O&M and capital cost). However, the probability that total fees exceed 20% of net income is 10% in the Vreed and Canals Polder areas and 18% in Black Bush Polder.

D. Environmental and social viability

4.27 An Environmental Analysis (EA) was performed for this operation with two objectives: (i) comply with the requirement of the Guyana's Environmental Protection Agency (EPA); and (ii) comply with the Bank's policies and procedures. As a result of the EA, an Environmental and Social Management Plan (ESMP) was prepared to be used during Program's execution. On February 13, 2004, EPA analysed the results of the EA and emitted a "construction permit", which means that the respective engineering works can be executed.

4.28 Regarding the compliance with IDB policies and procedures, the EA was focused on the following issues: (i) answer the relevant questions raised by the CESI, which involved the territorial rights of the Amerindian peoples and the equity of water distribution for the farmers; (ii) potential water and sediment contamination by pesticides and agricultural pesticides and fertilizers; (iii) potential for affecting especial natural habitats and important ecosystems; (iv) public and health aspects of water and wastewater usage in relation to the drainage and irrigation (D&I) systems in place; and (v) public consultation and community involvement in the decisions regarding the D&I systems.

4.29 The general conclusion of the EA is that the Program's positive environmental and social impacts far outweigh the negative. The rehabilitation works will allow the timely availability of water, therefore minimizing production risks, and the formation of the WUAs will empower the farmers to manage the secondary D&I systems, maintain the canals working conditions, and have a better control of the O&M costs. The extension programs and the public awareness campaigns will help the farmers diversify their production and reach different markets, and furthermore, will favour the development of a new relationship between the farmers and the population in general with the D&I systems in a new empowering environment. Finally, a better flood control will be obtained since operating rules with probabilities of failure will be developed for the conservancies.

4.30 Potential negative social and environmental impacts were identified during the design, execution of the rehabilitation works and operation of the D&I structures.

The Program's design included technical and institutional measures to deal with issues such as: flood hazards by developing operating rules for the conservancies with the respective probabilities of failure, salt water intrusion due to rising sea level related to climate change by adjusting drainage infrastructure to expected rise, inefficient land tenure by requiring regularization as a precondition to rehabilitate, and inefficiencies and inequitable water distribution by creating WUAs to manage the secondary D&I systems as prerequisite for rehabilitation. The rehabilitation works will cause temporary and localized impacts such as: noise, emissions of atmospheric contaminants from the machinery, disruption of local traffic, potential for fuel contamination, and health and safety hazards. Specific guidance regarding the legal requirements and best practices to minimize the impacts related to these issues were developed and will be incorporated in the tender documents along with provision of financial incentive for performance by contractor.

4.31 The results of the EA also show that no Amerindian territory and special natural habitat will be affected by the project. In Region 3, the Amerindian land Santa is located 15 Km from Canal Polder; in Region 4, the area of St. Cuthbert is located also 15 Km to the south of Cane Grove, and in Region 6, the nearest settlement is Orealla, located 55 Km up the Corentyne river. Regarding natural habitats, the coastal plains of Guyana where all the D&I systems are located is a man-made environment approximately 1 meter below high tide level, protected by an intricate system of seawalls and gates to avoid sea water intrusion and pumping stations to eliminate the excess of water, which is the main concern in this situation.

4.32 Irrigation water quality data is scarce in Guyana. Conservancy water has low dissolved solids content and low pH due the organic acids generated by the decaying organic matter. According to the existing data, conservancy water is suitable for irrigation. To improve the water quality data base and to assess the quality of sediments and drainage water, the MOA is conducting a survey in the projects of the sample. The ESMP specifies the parameters, frequency and location of sampling sites. The water quality and monitoring program will be implemented by the MOA/PEU with the support of the Pesticide and Toxic Chemical Control Board (PTCCB) and the chemical residue laboratory being constructed at the NARI. During the mid-term review, it will be ascertained that there exists a fully staffed and operative PTCCB, a fully operative pesticide residue laboratory, and that the water and sediment quality survey has been completed.

4.33 A comprehensive public health survey has been undertaken in the project areas, which shows that the population in the 5-15 age-range is exposed to water-born transmitted diseases. The use of the drainage and irrigation canals and the conservancies for recreation is linked to the findings of the health survey. Also, due to the higher water table in these areas, there is a direct connection between the pit latrines used for wastewater disposal and the drainage canals. The Program has designed a series of extension programs for the Water Use Associations

(WUA) that will be formed in all the D&I systems of the Program, which include productive components and education components that cover the population relationship with the D&I structures and the whole system. The WUA and the population will be trained in how to handle their waste and will also be informed of the status of the water-quality in the canals to avoid inadequate use.

4.34 To form the WUAs, approximately 40 meetings were held between the project team and the farmers. During the preparation of the EA, all the stakeholders were consulted and a sample from the nearby residents of the Neighbourhood Democratic Councils (NDC) was interviewed to elicit their perception of the need to rehabilitate the D&I systems. The results of these consultations were used to design the respective extension programs, public awareness campaigns and institutional strengthening activities.

4.35 The Program' ESMP consists of: (i) the capacity building activities for water and, pesticides and fertilizer management; (ii) public awareness and education campaigns relating waste management and the maintenance of the D&I structures; (iii) good construction and other mitigation practices to mitigate construction impacts to be incorporated into the respective tender documents; and (iv) water quality and sediment monitoring to feed the awareness campaigns and sediment management from the drainage operations. Activities (i), (ii) and (iii) are mainstreamed into the project's components or documents, and activity (iv) is part of the monitoring and supervision scheme and budget. The total cost of the Environmental activities is US$220,000.

E. Social equity and poverty reduction clasification

4.36 There are 2,155 farmers in the sample that will benefit from the Program. Only 4.3% of these farmers have an income lower than US$219.6 per year per capita which is the poverty line for Guyana. Therefore, this Program does not qualify as social equity enhancement nor as a poverty reduction targeted.

F. Risks

4.37 Financial sustainability of primary irrigation and secondary D&I systems. There has been insufficient collection of D&I fees over the last 10 years. To reverse this trend, the implementation of a clearly designed O&M fee structure and rehabilitation cost recovery policy is essential. To accomplish this, a system has been established in which farmers organized in WUAs working with engineers will determine the costs required to pay for the O&M activities, and with adequate training and technical assistance support determine the method of fees collection. For the first time, they will assume responsibility for their own O&M. The landowners and lessees will pay the rehabilitation costs over a 20-year horizon. The NDIB will collect fees for the cost recovery for these works.

4.38 Primary drainage systems maintenance. The resources to maintain the primary drainage systems have also been insufficient resulting in inadequate maintenance

of the systems and flooding. The general taxes collected by local and regional governments are mainly used for other local services. To minimize this problem, through the new contractual arrangements proposed for this program, the National Drainage and Irrigation Board (NDIB) will have resources from the Government to provide for O&M of the primary drainage system. The Program will provide institutional strengthening to the NDIB to support this activity.

4.39 Land Tenure System. The risk and uncertainty of weak tenure rights on public land have been a long standing problem. The outcome of this has been land users employing a complex set of "informal" tenure arrangements. Informal rights lack official recognition, are not secure, have no legal basis and are not sustainable in the long term.The goal is to have 80% of the lands regularized prior to execution of works in any area. In order not to interrupt the ongoing process, the Program will provide additional financial support for the process in the areas of the Program.

4.40 Farmer's participation. The history of farmer organizations (including WUAs) has been problematic in Guyana. The principal reasons for this have been the lack of technical and organizational government support and the absence of a legal framework granting financial autonomy with the delegation of functions. To minimize this problem, the Program will pay particular attention to social, financial and organizational issues to guarantee farmers full involvement in O&M of the primary irrigation and secondary D&I facilities. The government now fully supports the WUA concept and financial autonomy has been granted to the WUAs giving them the right to collect fees.

AGRICULTURE SUPPORT SERVICES PROGRAM (ASSP)
(GY-0011)

Tentative Procurement Schedule

MAIN PROGRAM'S ACQUISITIONS	LOTS	FINANCING SOURCES		METHOD	PRE-QUALI-FICATION	COST (US$ THOUSAND)	SPECIFIC PROCURMENT NOTICE (SEMESTER/YEAR)
		IDB %	LOCAL %				
A. Civil Works							
1. Rehabilitation of primary and secondary D&I systems in two areas[1]	2	97	3	ICB	YES	6,500	II / 2004
2. Rehabilitation of primary and secondary D&I systems in three areas[2]	3	97	3	ICB	YES	9,000	II / 2005
3.							
4.							
5.							
6.							
B. Goods							
1. Vehicles	1	0	100	NCB	NO	70	I / 2005
2. Information system equipment	1	100	0	ICB	YES	30	I / 2005
3.							
4.							
5.							
C. Services							
1. Construction supervision	1	80	20	ICB	YES	890	II / 2004
2. Alternative energy feasibility study	1	100	0	ICB	YES	180	II / 2005
3. Independent Financial Auditors	1	100	0	ICB	YES	200	II / 2004
4. New D&I technologies study	1	100	0	ICB	YES	180	II / 2005
5. Land tenure regularization	1	100	0	ICB	YES	350	II / 2005
6.							
7.							
8.							
9.							

ICB International Competitive Bidding **NCB** National Competitive Bidding

[1] Canals Polder and Vreed-en-Hoop/La Jalousie

[2] To be determined

GUYANA

(GY-0011)

ASSP - Agricultural Sector Support Project –

Logical Framework

Objectives	Indicator of Achievements	Means of Verification	Risks and Assumptions
GOAL: Contribute to economically efficient increase of rural incomes in the costal plain of Guyana	• Net farm returns increased by 35% in the selected areas[1] see baseline values in note (2) 4 years after completion of works	• Survey of incomes after program's completion • Rural income and employment data (Bureau of Statistics).	• GOG's D&I policies and agricultural support are sustained in the long term
PURPOSE: To improve competitiveness of agriculture.	• Costs of rice production per tonne reduce in real terms by 25% over the 5 years following D&I rehabilitation in the 6 areas ; see baseline values in note (1). • Satisfactory completion of primary and secondary D&I and service roads works in five project areas, covering 60,000 acres by the end of the program (30,000 by mid term review); • WUA D&I fees collected from 80% of farmers in each project area rehabilitated 4 years after completion of works; • D&I rates set to ensure effective and sustainable O&M system in the selected areas by the end of the program; • Capital cost of the rehab works fees collected from 80% of farmers in each project area 4 years after completion of works; • 60,000 acres located in secondary D&I system being operated by WUAs by the end of the program. Half of it ready for mid term review; • 60,000 acres located in primary D&I system being operated and maintained by NDIB by the end of the program • 24% of the area covered by the program using new seed varieties by the end of the program (15% by mid term review);	• Survey of incomes after program's completion • Information from WUAs and meteorological services • PEU reports	• World market price for rice does not fall in real terms; • Weather conditions are stable and good for agriculture • Caribbean rice market is not adversely affected by US exports under PL 480; • Pesticide and Toxic Control Board and Toxic Residue Laboratory fully operational by mid term review

[1] The area to be rehabilitated will be approximately 60,000 acres (3 to 6 project areas)
Notes (1) and (2) in page 4

Objectives	Indicator of Achievements	Means of Verification	Risks and Assumptions
	• Paddy rice yield increased from 3.2 to 4.5 TM/ha 4 years after completion of works (3.9 by mid term review); • Amount of quality paddy seed produced and distributed increase by 20,000 bags per year in the region where the seed factory is built. • Three new markets identified for Guyana's exports of non-rice products by the end of the program; • Land tenure is regularized for at least 80% of the occupied parcels of each area prior to the rehabilitation works.		
OUTPUTS / COMPONENTS 1. D&I systems working properly 2. D&I Institutional Development: • WUA trained • NDIB Strengthened 3. Rice seeds development program in place	1. Civil works • (i) 400 kilometres of primary channels; (ii) 800 kilometres of secondary channels; (iii) 400 kilometres of service roads; (iv) 3 pumping stations; and (v) 1200 sluice gates and other water control structures rehabilitated satisfactorily and on-time by the end of the program. Half of them ready by mid term review	• Supervising Engineers' reports; • WUA construction supervision reports; • NDIB construction supervision reports • PEU reports	

Objectives	Indicator of Achievements	Means of Verification	Risks and Assumptions
4. Agriculture diversification promotion in place	2. D&I Institutional Development • 6 WUAs legally formed by the end of the program • 30 NDIB staff receiving management and O&M training by the end of the program; • 300 to 600 WUA members receiving management training (200 by mid term review) and 6000 WUA members receiving O&M training by the end of the program.(2000 by mid term review); • 6000 of farmers receiving training and/or extension advice by the end of the program; • 6000 farmers receiving environmental training by the end of the program;	• Project progress reports and accounts. • WUA monitoring reports on service providers; • Complaints by WUAs and farmers; • Crop and settlement areas experiencing flooding and/or water shortages. • Project monitoring and evaluation reports; • WUA management procedures and meetings; • WUA internal monitoring reports; • MOM external monitoring reports; • Project progress reports; • PEU reports;	• WUAs are democratic and not dominated by local elites (e.g. larger farmers and millers); • WUAs supported by NDIB, GoG, local authorities (RDCs, and NDCs) and political parties; • Effective sanctions can be imposed by WUA to mitigate non-payment of D&I fees by farmers. • D&I system is operated for the benefits of all farmers, not just more powerful, larger farmers; • Farmer's willing to co-operate in agricultural activities (e.g. water distribution, block planting, use of machinery, bulk handling/storage, and marketing);
	3. Rice Seeds Development • Two new varieties of rice introduced and adapted to Guyana's conditions by the end of the program; • One seed factory built and producing paddy seeds by the end of the program. • GRDB performs satisfactorily seed certification by the end of the program • 18 on-farm research plots established by the end of the program;	• Project monitoring and evaluation reports for each scheme based on field survey; • Project progress reports and accounts; • Project auditor's report; • GRDP reports. • PEU reports	• Farmers' willing to adopt improved cropping practices; • No significant rise in the price of imported farm inputs (fertiliser, pesticides) and machinery; • Rice milling efficiency is improved and unit processing costs reduced (Cariforum/EDF programme);

Objectives	Indicator of Achievements	Means of Verification	Risks and Assumptions
	4. Agriculture Diversification promotion • Three studies completed for horticulture, fruit and cattle, appropriately disseminated by the end of the program; • 400 farmers trained in non-rice crop production • Main bottlenecks for export identified and solutions proposed by the end of the program • Ten workshops on diversification of agriculture and exports completed by the end of the program.	• Project monitoring and evaluation reports for each scheme based on field survey; • Government statistics on area, production, export quantities and prices (from GRDB, 'New' GMC, Ministry of Crops and Livestock). • PEU reports	• MoA and NDIB provide required D&I and agricultural support services to the WUAs; • There exist interest among the farmers in diversify the actual production for horticultural and livestock products; • Co-operation and support of Guyana Rice Producers Association and other stakeholder organisations is ensured.

(1) Costs of Rice Production
[Detailed Feasibility Studies of Principal Areas, December 2003][2]

Farm Size	Project Area & Variable Costs (G$/tonne)		
(acres/ha-*approx*)	**Canals Polder**	**Vreed-en-Hoop/La J**	**Black Bush Polder**
Small (5/2)	18,194	16,413	23,600
Medium (20/8)	16,810	14,470	19,475
Large (50/20)	15,767	13,222	18,987

(2) Net Farm Returns – After D&I Fees
[Detailed Feasibility Studies of Principal Areas, December 2003[2]***]***

Farm Size	Project Area & Annual Farm Income (G$)		
(acres/ha-*approx*)	**Canals Polder**	**Vreed-en-Hoop/La J**	**Black Bush Polder**
Small (5/2)	821,095 (Cane+)	278,791 (Rice+)	395,260 (Rice+)
Medium (20/8)	617,388 (Rice+)	459,212 (Rice+)	382,153 (Rice+)
	1,618,454 (Cane+)		
Large (50/20)	600,982 (Rice+)	554,205 (Rice+)	26,501 (Rice+)

[2] For the methodology see "Guyana Drainage and Irrigation System Rehabilitationb Project, Feasibility Study of Principal Areas", Mott MacDonald, 2004