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**STAFF APPRAISAL REPORT
GHANA
VILLAGE INFRASTRUCTURE PROJECT**

April 28, 1997

Agriculture Group III
Country Department 10
Africa Region

CURRENCY EQUIVALENTS

Currency Unit	=	Cedi (¢)
US\$1.00	=	¢ 1,800 (December 31, 1996)

WEIGHTS AND MEASURES

Unless otherwise stated, all weights and measures used in this report are metric.

1 metric ton (ton)	=	2,205 pounds (lb)
1 hectare (ha)	=	2.47 acres (ac)
1 kilometer (km)	=	0.62 miles (mi)
1 meter (m)	=	3.28 feet (ft)

FISCAL YEAR

Government of Ghana

January 1 - December 31

ABBREVIATIONS AND ACRONYMS

ASIP	Agricultural Sector Investment Project
CBOs	Community-based Organizations
DAs	District Assemblies
DACF	District Assemblies Common Fund
DFR	Department of Feeder Roads
DTB	District Tenders Board
ERPU	Economic Recovery Program
GAPVOD	Ghana Association of Private Volunteer Organizations in Development
GIDA	Ghana Irrigation Development Authority
GOG	Government of Ghana
GNAFF	Ghana National Association of Farmers and Fishermen
IDA	International Development Association
IFAD	International Fund for Agricultural Development (Rome)
IMTs	Intermediate Means of Transport
KfW	Kreditanstalt fur Wiederaufbau (Frankfurt)
MLGRD	Ministry of Local Government and Rural Development
MOFA	Ministry of Food and Agriculture
MTADS	Medium Term Agriculture Development Strategy
NGOs	Non-Governmental Organizations
NTSC	National Technical Steering Committee
PPCC	Project Policy Coordinating Committee
RICU	Rural Infrastructure Coordinating Unit
VIP	Village Infrastructure Project
VTTs	Village Tracks and Trails
ZCUs	Zonal Coordinating Units

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**REPUBLIC OF GHANA
VILLAGE INFRASTRUCTURE PROJECT**

STAFF APPRAISAL REPORT

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IBRD NO. 28275 GHANA - AGRO-ECOLOGICAL ZONES

The project was pre-appraised from April 8 to 26, 1996 by a team that included Messrs./Mmes. R. Polson (Task Team Leader), R. Roche (Sanitation Engineer), A. Drabo (NGO Specialist), L. Campbell (Rural Engineer, consultant), J. Dawson (Agricultural Economist, consultant), D. Spencer (Institutions Specialist, consultant) and L. Gyekye (Rural Sociologist, consultant.) The IFAD team comprised Messrs./Mmes. M. Tounessi (Project Controller) and B. Trottier (Rural Sociologist, consultant). KfW was represented by Mr. N. Gasten (Economist). The project was appraised from July 17 to August 17, 1996. Mmes. A. Goffin, W. Wiltshire, and A. Lodi, Task Assistants, AFTA3, provided technical support in preparing the final documents. Mr. J.P. Chausse is the Technical Manager, Agriculture Group III and Mr. S. Michailof is the Director, Country Department 10, Africa Region.

REPUBLIC OF GHANA

VILLAGE INFRASTRUCTURE PROJECT

CREDIT AND PROJECT SUMMARY

- Borrower:** The Republic of Ghana
- Beneficiaries:** Village Communities, Farmer Associations, District Assemblies, and NGOs; the Ministries of Food and Agriculture, and Local Government and Rural Development.
- Amount:** SDR 20.8 million (US\$30.0 million equivalent)
- Terms:** Standard with 40 years maturity

Project

Objectives: The project would support the efforts of the Government of Ghana to reduce poverty and increase the quality of life of the rural poor through increased transfer of technical and financial resources for the development of basic village-level infrastructure that can be sustained by beneficiaries. The project would also support capacity building of District Assemblies to better plan and manage these investments and would empower rural beneficiary groups and associations through training and other forms of technical assistance that would enable them to sustainably operate and maintain these investments at the community level.

Project

Description: In support of these objectives, the project would have the following components:

(a) ***Rural Water Infrastructure.*** The project would support the integrated development and management of water resources, including catchment management and other water conservation practices, and investments for the rational use of water for agriculture, livestock and human consumption including small dams, dugouts, boreholes, hand-dug wells, streamflow diversion and pumping to support small-scale irrigation in the dry season, and rainfall conservation and management for more effective use in rainfed crop production.

(b) ***Rural Transport Infrastructure.*** The project would support selective rehabilitation and spot improvements of degraded feeder roads, the development of village trails and tracks (VTTs) linking farms to villages that would permit the use of simple wheeled vehicles for reducing the drudgery

from head portage (a task performed mainly by women and children), and a pilot program to develop intermediate means of transport (IMTs) for the rural poor to increase the efficiency of evacuating produce from farms to villages and onwards to markets.

(c) *Rural Post-Harvest Infrastructure.* The project would support the development of on-farm and village-level drying facilities to reduce post-harvest losses, on-farm and community storage and other village-level market infrastructure for more efficient marketing of produce, appropriate facilities for processing of crops, livestock and fisheries products to increase their quality shelflife and market value, and income-generating activities targeted at the poorest segments of the rural population to enable them to enhance their incomes.

(d) *Institutional Strengthening.* The project would support capacity building within District Assemblies (DAs) to strengthen their planning and financial management of rural infrastructure; strengthen NGOs and other community-based organizations (CBOs) to provide more effective implementation support to beneficiary communities and groups in developing sustainable rural infrastructure; and empower beneficiary associations and groups to take direct responsibility for the sustainable operations and maintenance of rural infrastructure.

Project Benefits: Main project benefits would be: (i) increased smallholder productivity, employment and rural incomes; (ii) strengthened community institutions to participate more effectively in rural development; and (iii) improved community health and nutritional status. All of these benefits would help to reduce rural poverty, provide development and integration of the rural economy, and improve the overall quality of rural life.

Project Risks: Major project risks are: (i) slow development of capacity of DAs and farmer organizations, which may affect implementation performance; (ii) inadequate coordination among various partners in rural development; and (iii) slow adoption of new technologies. These risks are evaluated in the report and mitigation measures have been incorporated in the project design to reduce their likelihood.

Poverty

Alleviation: The project has a high poverty alleviation objective. It is targeted at poor farmers, rural communities and District Assemblies. At least 500,000 rural families would benefit directly from the project.

Project Costs and Financing Plan:

ESTIMATED PROJECT COSTS

<u>Component</u>	<u>Local</u>	<u>Foreign</u> (in US \$ million equivalent)	<u>Total</u>
Rural Water Infrastructure	10.8	3.0	13.8
Rural Transport Infrastructure	9.5	3.6	13.1
Rural Post-Harvest Infrastructure	3.8	1.0	4.8
Institutional Strengthening	5.5	4.1	9.6
Rural Infrastructure Coordinating Unit	6.4	0.7	7.1
Refinancing PPF	0.7	0.5	1.2
Base Costs	36.7	12.9	49.6
Physical Contingencies	3.4	1.2	4.6
Price Contingencies	4.4	1.4	5.8
Total Project Costs	44.5	15.5	60.0

PROPOSED FINANCING PLAN

<u>Financier</u>	<u>Local</u>	<u>Foreign</u> (in US \$million equivalent)	<u>Total</u>
IDA	21.2	8.8	30.0
KfW	4.1	2.9	7.0
IFAD	6.2	3.8	10.0
Government of Ghana (GoG)	7.1	--	7.1
District Assemblies (DAs)	3.0	--	3.0
Beneficiaries	2.9	--	2.9
Total	44.5	15.5	60.0

ESTIMATED IDA DISBURSEMENTS

<u>IDA Fiscal Year</u>	<u>FY98</u>	<u>FY99</u>	<u>FY00</u>	<u>FY01</u>	<u>FY02</u>	<u>FY03</u>
Annual	0.5	2.0	3.5	6.5	8.5	9.0
Cumulative	0.5	2.5	6.0	12.5	21.0	30.0

Economic Rate of Return (ERR): 26 percent

Environmental

Category: B; An Environmental Impact Analysis (EIA) has been completed for all potential subprojects.

Maps: IBRD No. 28274 Ghana - Project Coordinating Zones
IBRD No. 28275 Ghana - Agro-ecological Zones

REPUBLIC OF GHANA

VILLAGE INFRASTRUCTURE PROJECT

1. INTRODUCTION

1.1 Ghana's efforts at macroeconomic reforms over the past decade have been relatively successful. In the ten years since its inception, the *Economic Recovery Program (ERP)* has produced an average annual GDP growth rate of nearly 5 percent for the economy as a whole. The early stages of the ERP were focused on structural reforms, and progress has been good on several fronts. Specifically in the agricultural sector, the reforms have led to the elimination of most government monopolies, especially in the seed subsector, the liberalization of inputs and output prices, and improvement in the legislative and regulatory framework. These reforms have also contributed to the creation of a more competitive environment for private sector involvement in agricultural development.

1.2 However, measured by their impact on improving rural living standards, the economic reforms have been less successful. The agricultural sector, which accounts for more than 45 percent of GDP, has grown only at an average annual rate of 2.3 percent over the last five years, compared to a population growth rate of around 3 percent. Poverty remains high in rural areas in spite of over ten years of economic reforms. A recent study, the *Participatory Poverty Assessment (PPA)*, revealed that nearly 54 percent of Ghana's poor are food crop farmers who derive primary income from farming and other farm-based activities. Given the strong link between agriculture and rural poverty, sustainably reducing the incidence of rural poverty would require strong, sustained and broad-based agriculture sector growth.

1.3 Achieving broad-based agriculture growth in Ghana, however, will require not only on-farm productivity increases but also removing the existing off-farm constraints, including inadequate post-harvest processing, storage, drying and internal transport. In rural Ghana, access to markets is a severe constraint for most farmers as feeder and access roads are in poor conditions, with only a small percentage passable year-round. Transport constraints, when combined with the inherent low capacity of on-farm storage and processing, result in high post-harvest losses. It is estimated that farmers lose nearly a third of their output during the post-production phases. Rural marketing systems are also underdeveloped and market information is rudimentary and unreliable, with weak linkages existing between agriculture and the increasingly important industrial sector.

2. BACKGROUND

A. THE ECONOMIC SETTING

2.1 Following eight years of sustained fiscal adjustment and falling inflation since the start of the ERP in 1983, Ghana's fiscal performance received a setback during the run-up to the 1992 general elections and has remained fragile since then. Expenditure over-runs have resulted in large fiscal deficits and rising inflation. Though divestiture receipts helped to finance the excess expenditures in most of these years, the impact on inflation and public debt was unavoidable. On a year-end basis, inflation rose from 10 percent in end-1992 to 71 percent in end-1995 and interest obligations rose from 1.5 percent of GDP in 1992 to 4.5 percent of GDP in 1995. The latter was due to the growth in domestic debt and in Bank of Ghana's open market operations as well as the rising nominal interest rate. Since 1994, the Government has had to borrow domestically to service part of the interest bill which is an unsustainable situation.

2.2 In the face of rising inflation and balance of payments pressures, the Government entered into a three-year Enhanced Structural Adjustment Facility (ESAF) with the IMF in June 1995. The first year of the ESAF was completed in June 1996. However, large fiscal slippages, mostly in the second half of the year, have delayed the start of the second year of the ESAF which is now likely to be negotiated by the end of 1997 upon the implementation of several upfront measures. The narrow fiscal deficit in 1996 was 3.2 percent of GDP compared to the program target of a surplus of 1.8 percent of GDP. This was primarily due to over-runs in development expenditures and in non-interest recurrent expenditures. In addition, shortfalls in revenues from import taxes, excise taxes on petroleum, and non-tax sources also contributed to the slippage. Interest obligations increased to 5.6 percent of GDP and the Government's domestic borrowing was equivalent to 5.1 percent of GDP.

Recent Economic Developments

2.3 Notwithstanding the large fiscal slippages, the economic out-turn in 1996 was favorable. Real GDP grew by 5.2 percent largely on account of agricultural growth of 4 percent. Inflation fell from 71 percent at the end of 1995 to 32 percent at the end of 1996. This was due, in part, to the lagged effects of fiscal and monetary restraint in the first half of 1996 and, in part, to lower cost-push factors emanating from a good harvest, postponed adjustments in petroleum and power tariffs, and lower nominal depreciation of the *Cedi* due to foreign exchange market interventions.

B. THE AGRICULTURAL SECTOR

Sector Characteristics

2.4 Agriculture is the mainstay of the Ghanaian economy, accounting for 45 percent of GDP, 60 percent of export earnings and employing an estimated 70 percent of the rural labor force. However, agriculture is small-scale, characterized by low input, low output technologies. Farming systems are predominantly of the traditional bush-fallow system, with relatively few purchased inputs being used -- fertilizer imports have only been between 20,000 and 25,000 metric tons each year during the last 4 years. About 5.3 million ha, or 22 percent of Ghana's arable land area, were estimated to be under cultivation in 1995. Total area planted to the major food crops was 2.2 million ha, comprising of maize (28 percent of the total planted area), cassava (23 percent), and sorghum and millet (22 percent). Food crops, livestock and fisheries together account for 75 percent of agricultural GDP; non-food crops, notably cocoa and forestry, account for the remaining 25 percent. Ghanaian agriculture is largely based on smallholder farms. Although there are some large farms, particularly for plantation crops such as rubber, oil palm and cocoa, about 60 percent of all farms in Ghana are less than 1.2 ha, 25 percent are between 1.2 to 2 ha, and only 15 percent are over 2 ha in size.

2.5 These salient features of Ghanaian agriculture -- high employment, a large contribution to economic output dominated by smallholders, and significant untapped potential -- make it a strong potential vehicle for inducing high and equitable growth leading to poverty reduction. However, agriculture's contribution to overall economic growth and poverty alleviation has been below expectations during the last decade. The slow growth in agriculture is due to a combination of factors that reduce farmers' incentives to invest and produce. These include the high taxation of agriculture through explicit (export tax on cocoa) and implicit (parastatal inefficiencies) taxation, and severely constrained access to input and output markets due to the poor conditions of rural infrastructure. The later constraint has led to the relative isolation of rural communities from markets and to high post-harvest losses. Given that only about 8,000 km of the total 22,000 km of feeder roads are classified within the maintainable network, significant drudgery is imposed on rural dwellers, especially women and children, who must headload produce from fields to the villages, and onwards, to local markets. The poor state of rural roads presents a massive impediment to the spread of modern farm inputs and improved technology, and also to farmers' incentives to produce for the market, intensify production and diversify their farming activities. On-farm/rural labor productivity is also severely constrained by inadequate access to clean water which requires women to spend considerable time to secure the water necessary for household uses, an activity which also has a negative impact on their health.

Agriculture, Poverty and Rural Infrastructure

2.6 The profile of poverty in Ghana shows that it is largely rural and agricultural: 54 percent of those living in poverty are food crop farmers. Poverty also has a strong regional bias, linked to the relative natural resource endowment (climate, water, good soils and vegetation) of the three main agro-ecological zones of the country. Both the incidence and depth of poverty are found to be greater in the rural savannah than in any other parts of Ghana, but major pockets of

poverty also exist in the forest zone, the coastal belt, and in large urban centers such as Accra and Kumasi. Gender is also an important dimension of poverty, especially in northern Ghana, where sharp distinctions between the income-earning roles of men and women exist. Women also bear a disproportionate share of the burden of being poor -- they are obliged to spend a great deal of time not only at working in family enterprises, but also nurturing and rearing children, and performing other important household tasks, such as cooking and fetching water and firewood. These factors have strong implications for poverty targeting interventions (PTIs), not only on the basis of geography, but also on gender.

2.7 Given the strong links between the poor state of rural infrastructure and rural poverty, improving basic rural infrastructure on which the rural poor depend can act as a catalyst in accelerating rural development. For example, improvement in rural access roads lead to reduced transport costs, increased access to markets and market information, and lowered post-harvest losses. These, in turn, increase profitability and spur expansion in agricultural output. Increased market access not only enhances rural farm incomes, but also empowers rural people to better manage the risks associated with rainfed agriculture through crop diversification and better off-farm employment opportunities. When investment in rural transport infrastructure is linked to complementary facilities such as rural water supply and village storage, important synergies result that lead to significant multiplier effects in rural communities: improved health enables the poor to engage in productive activities such as farming, which in turn increase incomes and food security. One of the main issues associated with rural infrastructure is its maintenance. The sustainability of rural infrastructure development depends, to a large extent, on the level of community ownership, beginning with their active participation in planning, developing, prioritizing and implementing rural development programs, and culminating with their assumption of direct responsibility for operations and management. Proposing sustainable solutions to these issues is the basic objective of this operation.

2.8 ***Rural Water Infrastructure.*** While Ghana has an abundance of water from rainfall, this resource is very unevenly distributed both geographically and seasonally. Even in the high rainfall (over 1500 mm per annum) belt in the south and west of the country, water can be scarce in the dry season which lasts three to five months. In the northern and the southeast regions, annual rainfall is normally less than 1,500 mm, and in some areas below 500 mm, with the dry season spreading over eight to nine continuous months. In much of the drier regions, a large part of villagers' time, particularly of women and children, is occupied in collecting water from distant and often unsafe sources. This takes away a substantial amount of time from other gainful activities. Only an estimated 35 percent of rural communities presently have continuous and easy access to safe potable water. Scarcity of potable water increases the risk of water-borne diseases and has a very negative impact on labor availability and productivity. Provision of safe water and good sanitation in the rural areas is high among the rural development priorities of government. Recent client consultations among rural communities also indicate that the most pressing demands in the northern drier half of the country are for safe and reliable supplies of water. Even in the higher rainfall areas, the need for water is high among the priorities of rural communities particularly for intensification of valley bottom cultivation.

2.9 The scarcity of water, particularly in the low rainfall areas, is also a major limiting factor to crop and animal production. The rainfall in the drier parts of the country could be more effectively utilized for intensifying the production of crops and livestock. This would involve appropriate water conservation practices, such as storage in accessible aquifers and in simple surface storage facilities such as ponds, tanks, dugouts and small reservoirs for use in the dry months. In addition, free flowing seasonal springs and streams could be important sources for supplemental irrigation in the rainfall months or for diverting to storage facilities for later use during the drier months. There are also good prospects for making better use of water in the higher rainfall zones for producing high value crops and livestock, and for fish culture to improve incomes and nutrition of the populations.

2.10 ***Coastal Zone Degradation.*** The districts of Ghana's coastal zone represent only about 6.5 percent of the total land area of the country, yet these districts are home to 25 percent of the nation's population. Environmental degradation in the coastal areas has been identified as a major issue in Ghana's *National Environmental Action Plan (NEAP)*. Poverty is also extensive along Ghana's coast. Average welfare levels among food farmers in rural coastal areas, as estimated by the Ghana Poverty Assessment, are 12 percent below the national average, and about 38 percent below that in urban centers. Complex interlinkages exist between the resource base of coastal areas and the communities that subsist on these natural resources. Conflicts of resource use often lead to ecosystem degradation and deteriorating health in communities. Coupled with ailing health, the poverty and environmental degradation contribute to a vicious circle that inhibits socio-economic development in coastal areas. The lack of sanitation and waste disposal facilities leads to large amounts of waste being dumped directly into the ocean, left in piles on the beaches or dumped directly into lagoons causing the destruction of mangroves and coastal wetlands which have important economic and ecological uses. These wetlands provide valuable habitat to migrating birds, serve as spawning grounds for shrimp, lobster and other commercially important fisheries and also prevent flooding by absorbing excess waste water and runoffs. Fish smoking activities and lack of sanitation and waste disposal facilities in overcrowded coastal settlements pose a health hazard to the communities living in them and significantly limit the tourist potential of these areas.

2.11 ***Rural Transport Infrastructure.*** In addition to low coverage, two-thirds of Ghana's feeder road network are in poor conditions due to past neglect. Good rural roads are essential for achieving increases in agricultural production, especially in non-food export crops, which in turn, can lead to expanded use of agricultural credit, increases in land values, proliferation of traders and small shops, and expansion of rural markets. Improvements in rural transport infrastructure benefit the rural poor in two distinct ways: (i) directly, by generating employment through labor-intensive construction and maintenance programs; and (ii) indirectly, by reducing the cost of transport for goods and passengers. Since the rural poor tend to be small farmers or landless laborers, they benefit, along with the rural population at large, from better roads to the extent that roads decrease the cost of agricultural inputs and/or essential consumer goods within the village, or expand the labor market and increase the demand for unskilled labor. However, the extent to which the poor would benefit from rural roads to increase their access to output markets or economic and social services would be enhanced if they have access to affordable means of transport. The need therefore is not only for transport to link larger communities and markets,

but also for appropriate and cost-effective means of getting produce from farms to villages, including the use of non-motorized wheeled vehicles.

2.12 *Postharvest Management.* The inadequate levels of post-harvest facilities in Ghana provide a major bottleneck to any strategy aimed at accelerating agricultural growth. Many small farmers, particularly the poorer ones, are invariably forced to dispose of their produce immediately after harvest to meet urgent cash needs and reduce losses of highly perishable crops such as vegetables. It is estimated that losses due to pests and other forms of spoilage averages around 30 percent of the harvest. The impact on the poor of such high losses could be considerably reduced (to less than 5 percent) if improved post-harvest handling and processing techniques were adopted on farms and at village level.

2.13 Opportunities readily exist for small farmers and rural communities to reduce post-harvest losses and substantially increase the benefits from their crop, livestock and fish products. These include primary processing such as cleaning, smoking, drying, sorting, grading and storage, and secondary processing such as grating, frying, roasting, milling, extracting, juicing, fermenting and packaging, which further increase earnings by adding value to the intermediate products. Most of these techniques are simple in concept, appropriate in use, and easy to transfer. Also, evidence points to the fact that low level financial interventions do lead to significant improvements in incomes of the poorest of the poor. Local experience has shown that incomes of target groups could be doubled within two years of the adoption of improved practices and, in many instances, increases could be considerably larger. The secondary benefits arising from increased incomes for poor farmers can also be substantial, especially on housing, sanitation and health, and education, all of which further enhance rural populations' capacity for generating and sustaining higher incomes from other economic activities.

Decentralization and Local Empowerment

2.14 In Ghana, decentralization has involved the devolution of considerable fiscal, administrative, and development responsibilities to all 110 District Assemblies (DAs). In addition, each District Assembly has a Common Fund to which the central government cedes a portion of the total national revenue for development purposes. For 1996, the total amount ceded to all DAs was Cedis 82 billion (about US\$41 million), averaging US\$372,000 per District. Each DA also prepares a five-year District Development Plan to prioritize rural development. While the principle of decentralization is now well advanced in Ghana, in practice, its progress has been affected by many factors, including the following: (i) the reluctance of sector ministries to devolve part of their authority to the districts; (ii) the lack of qualified and experienced staff within many DAs, and (iii) poor logistics and lack of capacity for planning rural development at the District-level. In addition to lack of equipment and transport, many DAs lack the capacity to effectively support development programs because of inadequate skills in participatory development planning, project implementation, monitoring and evaluation.

2.15 *Ministry of Food and Agriculture.* During the past two years, the strategy of the Ministry of Food and Agriculture (MOFA), the government's agency responsible for the crop, livestock and fisheries subsectors, has been to develop local capacity as the key to achieving

broad-based and sustainable agricultural growth. In this respect, MOFA has appointed agricultural coordinators to all the 110 Districts as part of the decentralization process, as well as district agricultural advisory committees, comprising representatives of farmers and other community-based organizations, to participate in the formulation and preparation of the five-year District Development Plans. MOFA's efforts to enhance grassroots capability is consistent with the government's national development strategy as embodied in its *Vision 2020*. Recent sector work on *Rural Institutions*, undertaken by MOFA (with IDA assistance), has contributed to better understanding the nature and role of grassroots institutions in rural development, and helped to develop specific strategies for strengthening them.

C. IDA COUNTRY ASSISTANCE STRATEGY

2.16 IDA assistance strategy in Ghana supports the efforts of the government to reduce poverty through rapid and shared economic growth and human resource development. The core of the IDA assistance program are rural development, macroeconomic stability, and human resource development. This assistance has five medium-term goals. The first is to help the government to redefine its poverty reduction strategy and to develop a gender strategy. During the last year, the government designed a *National Action Program* for poverty reduction, and established a *Poverty Task Force* to implement the program. IDA's involvement in this task has been limited to advising on priorities and assisting in developing a set of action plans, including a national system for poverty monitoring. IDA is also assisting the government in the formulation of a gender strategy, for which GOG provided a special line of credit of one billion Cedis in its 1995 budget. The second area of IDA assistance is in stabilizing the macroeconomy, and reducing inflation in order to create a better environment for investments and growth. IDA, in collaboration with the IMF, continues to provide assistance through non-lending instruments and policy advice. The third focus of IDA assistance is capacity building, involving assistance for civil service reforms and the strengthening of public sector institutions. The fourth pillar of IDA assistance is private sector development, including support for the privatization of public sector enterprises. In this context, IDA is also supporting the government's new initiative to promote Ghana as the trade and investment gateway to West Africa. The fifth pillar of IDA assistance is environmentally sustainable development, which includes support for the *National Environment Action Plan (NEAP)*, among other initiatives

D. IFAD'S STRATEGY AND LESSONS FROM EXPERIENCE

2.17 To date, IFAD has financed six projects in Ghana, for a total loan amount of about US\$71 million. These projects focus mainly on agricultural development, with most of them also including rural infrastructure components (feeder road rehabilitation, rural waters supply for human, livestock and small-scale irrigation). Several operations are helping to strengthen rural financial services to smallholder farmers, including women. The ongoing projects are located in the northern half of the country because of the widespread and pervasive nature of poverty in this agroecological zone. IFAD's present medium term strategy includes five major elements: (i) focus on smallholder food production and food security and arresting environmental degradation; (ii) promotion of farm and non-farm income generation; (iii) focus on poverty alleviation and the

means by which the poor can be reached more efficiently and effectively; (iv) provision of specific support targeted at the rural poor, including women; and (v) close collaboration with NGOs and institutional support to government agencies especially at district levels to support the decentralization process. IFAD's strategy for assistance to Ghana aims at close collaboration and partnership with major donors to ensure that the Fund's intervention is playing a catalytic role and maximizing synergies with other donor programs of poverty alleviation.

E. BANK GROUP OPERATIONS

2.18 Since 1962, IBRD and IDA lending to Ghana has reached a total of US\$3.5 billion, of which IDA accounts for US\$3.2 billion, with total disbursements about US\$2.7 billion. The current IDA portfolio consists of projects with undisbursed balance of nearly US\$833 million. Nine of these projects are in the agriculture sector. The most recent project in the sector, and the last of the MTADS generation of projects, is the Fisheries Capacity Building Project (US\$21.5 million), which became effective in August 1995. The thrust of the agriculture sector portfolio is to support basic services for agricultural production (*Agricultural Extension, Agricultural Research, Livestock and Fisheries*), the diversification of agricultural sector activities (*Agricultural Diversification*), the rehabilitation of the cocoa sector (*Cocoa Rehabilitation*), the development of rural infrastructure (*Agricultural Sector Investment Project*), and the improvement of natural resources and environmental management (*Forestry and Environment*).

F. RATIONALE FOR IDA INVOLVEMENT

2.19 The recent *Participatory Poverty Assessment (PPA)* in Ghana estimates that one-fifth of Ghana's population of 16.5 million live below the poverty line. The main constraints to improving rural living standards have been identified as the poor state (or non-existence) of basic rural infrastructure (rural water supply, village post-harvest and rural transport infrastructure) on which the poor depend to improve their livelihood and which is needed to unleash a rigorous supply response from agriculture. Improving the quality of life of the rural population, therefore, requires significant investments in these types of basic rural infrastructure and this would require support of Ghana's partners in development, including, IDA. The *Village Infrastructure Project*, which is fully consistent with the objectives of IDA's Country Assistance Strategy (CAS) for Ghana, would be a primary vehicle for rural development and poverty reduction. It would assist rural beneficiaries to improve employment opportunities, have better access to basic services, reduce post-harvest losses, improve the nutritional value of their produce, and increase value-added through processing. It would increase access of the poor to rural water, both for home use and for agricultural intensification, and help to reduce drudgery which rural people face through the lack of appropriate means of transport between farms and villages. A central feature of the project is the empowerment of rural beneficiaries, community-level institutions such as NGOs, and DAs and their staff to participate in the design and implementation of development activities in their area. All of these interventions would help improve rural incomes and living standards.

G. RATIONALE FOR IFAD'S INVOLVEMENT

2.20 The proposed operation is consistent with the country medium-term IFAD strategy given its focus on poverty alleviation through the development of basic, village-level infrastructure leading to productivity and increase better farm incomes for the benefits of poor smallholders. A central feature of the project is the empowerment of rural beneficiaries and community-level institutions such as NGOs and District Assemblies through training and other forms of technical assistance. The proposed project will also allow IFAD to join forces with IDA on a larger scale for supporting the government strategy to decentralize planning and implementation of rural development at local level. The operation has many elements that are already contained in various projects funded by IFAD in Ghana (feeder roads, dams/dugouts, marketing and income-generation activities). Therefore, the involvement of IFAD would help incorporate a poverty-focused client-led approach based on experience gained over 15 years of rural development work in Ghana.

H. LESSONS FROM PREVIOUS OPERATIONS

2.21 *Lessons from the MTADS.* Since 1989, government strategy for agricultural development has been driven by its *Medium-Term Agricultural Development Strategy* (MTADS) which was developed with IDA assistance. The medium-term strategy focused on the following key areas: (i) agricultural sector reforms to liberalize internal markets and create an enabling environment for wider private sector participation in output marketing and input supply; (ii) expansion in agricultural services (extension, research and animal health) to smallholder producers; and (iii) provision of rural infrastructure such as small-scale irrigation, access roads and rural markets. One of the key lessons from implementation of the MTADS has been that significant shortage of implementation capacity exists at both the central and local levels and that this shortage is a major constraint to achieving accelerated growth. While counterpart funding has been a major problem for the sector in the past, there has been marked improvements in the past two years. Government has taken measures, both in terms of its own *Public Expenditure Review (PER)* process and in on-going dialogue with IDA, to ensure that counterpart fund requirements are met in a timely manner. Also, with the decentralization process well advanced, District Assemblies, although they still lack the financial resources needed to implement their set development objectives, are more aware today of their pivotal role in local development. These recent developments in terms of counterpart fund provision and greater awareness of development responsibilities by local governments therefore provide a positive environment for implementing the proposed operation.

2.22 *Project-Specific Lessons.* The three on-going IDA-financed operations supporting the development of rural infrastructure are the *Agriculture Sector Investment Project (ASIP)*, the *Community Water and Sanitation Project (CWSP)*, the *Transport Rehabilitation Project (TRP)*, and the *National Feeder Roads Rehabilitation and Maintenance Project (NFRRMP)*. The ASIP focuses on marketing infrastructure, with sub-projects financed through matching grants to local governments, communities and farmer groups. The key lessons from its implementation, which are internalized in the design of this project, are that: (i) strong community participation in the planning, implementation and management of rural infrastructure is essential for sustainability;

and (ii) project design must take into account implementation support by private sector firms and technical services agencies. The main lessons from implementing the CWSP are that: (i) rural water development must not focus simply on physical structures, but also on the institutional arrangements needed to sustain these investments; (ii) to ensure maximum impact, water resources must be developed in an integrated manner to address twin needs of household consumption and agriculture, including livestock; and (iii) community management and participation are essential elements of ensuring the sustainability of rural water development. Despite early teething problems, the experience of the TRP suggests that, if properly designed in a manner that is consistent with the resource base and culture of beneficiaries, intermediate means of transport (IMTs) can have significant impact on the economic life of rural dwellers. While affordability is likely to remain a considerable constraint, one lesson of the TRP is that this problem can be addressed by providing users with a more flexible menu of choices of IMT technologies and affordable hire-purchase arrangements. NFRMP has generated important lessons in labor-based contracting and budgeting an prioritizing for feeder roads rehabilitation. These lessons are also taken into account in the design of this project.

Lessons from IFAD Operations

2.23 IFAD's experience has shown that targeting the poor, while desirable, is often difficult in practice. One way to limit "leakage" of project benefits to the non-poor is by geographical targeting, whereby a project focuses on physical areas where the vast majority of the population is poor. This approach is feasible in Ghana where there is substantial uniformity of poverty within rural communities of a given ecological zone, and where poverty is perceived as a phenomenon that affects the community as a whole. However, even the most uniformly poor community will have some residents who are at a greater disadvantage. In the interests of the poor, it is essential to adopt a non-confrontational approach that does not compromise local solidarity systems. This can be done through the strong social pressures that are placed on everyone, including those who are relatively better-off, to contribute actively to general community well-being. Targeting within the community would be effected by applying participatory rural appraisal techniques that bring to light the more vulnerable or disadvantaged sub-categories of the inhabitants, facilitate a critical analysis of their specific constraints, provoke discussions on how they would benefit from the project, and also how it would benefit the community as a whole.

2.24 IFAD's experience has also shown that appropriate rural credit operations can have a major impact on increasing the production and incomes of smallholders. The main lessons of IFAD's experience are that: (i) careful organization and training of groups in credit use are determining factors in credit success, and recovery rates vary with the type of activities financed; (ii) groups organized and trained by NGOs have shown promising results mainly when group membership remained small and manageable; and (iii) to sustain the rural financial system, a strong emphasis should be put on savings mobilization. In addition, the experience has demonstrated that given a sound macro environment, the involvement of credit institutions (commercial banks, rural banks, credit unions) is essential in providing a sound competitive environment which directly benefits the smallholders. Finally, IFAD's experience has shown that there are quality problems in implementing the rehabilitation of dams and dugouts through

labor-intensive methods. It is essential to use qualified private sector engineering firms for more technically complex and large investments such as dugouts. Furthermore, dam rehabilitation work should only be started if the benefiting community has set up user associations with a firm commitment to operate and maintain the system once rehabilitation and community labor for less technically complex activities has been completed.

2.25 The lessons from these projects have been taken into account under the proposed project as follows: (i) the design of the rural infrastructure components would include provisions for beneficiary participation in planning, implementation and management; (ii) NGOs and other community-based organizations would be contracted to assist beneficiaries in implementation and to enhance their management skills to enable them to take direct responsibility for O&M of sub-projects; (iii) interventions would be targeted at the poorest communities and most vulnerable groups to ensure real impact on intended groups; (iv) rural water resources would be developed in an integrated manner, with community participation in watershed management; and (v) a more flexible menu of IMT technologies would be introduced on a pilot basis to farmers and introduction of IMTs in villages would be *systemic* -- linked closely to the development of other village level infrastructure such as village tracks and trails and to private sector provision of critical support services such as spare parts.

3. THE PROJECT

A. PROJECT RATIONALE, OBJECTIVES AND CONSISTENCY WITH CAS

Project Rationale and Objectives

3.1 The primary objective of the *Village Infrastructure Project* is to enhance the quality of life of Ghana's rural poor through increased transfer of financial and technical resources to develop and sustain basic village-level infrastructure. Specific project objectives are to: (i) empower local communities and beneficiary groups to identify, plan, implement and maintain small, village-level infrastructure investments; (ii) increase rural communities' access to development resources to leverage the implementation of rural development priorities set by government beneficiaries; (iii) strengthen institutional capacity at community and district levels order to improve the efficiency of rural resources transfer and to ensure the sustainability of poverty-reducing interventions; and (iv) support the government's strategy of decentralization of development responsibilities to District Assemblies and other local government entities.

Consistency with CAS

3.2 The 1995 Country Assistance Strategy (CAS) has as its central objective support for the government's efforts to reduce poverty through rapid economic growth and human resource development. This operation, with its focus on the development of rural infrastructure as a means of improving the incomes and productivity of rural inhabitants the majority of whom are poor, is fully consistent with the objectives of the CAS. It would assist rural beneficiaries to reduce post-harvest losses, improve the nutritional value of their produce, and increase value-added through processing and storage. It would also increase access of the poor to rural water and help to reduce drudgery which rural people face through the lack of appropriate means of transport between farms and villages. A central feature of the project is the empowerment of community-level institutions such as NGOs and DAs, through training and other technical assistance, and the improvement of their capacity to plan and manage local initiatives.

B. SUMMARY DESCRIPTION OF THE PROJECT

3.3 The project would finance civil works, equipment and technical assistance for the development of village-level infrastructure for rural water, rural transport, including intermediate means of transport (IMTs), and post harvest treatment of crop and animal products, particularly storage drying, and other simple processing techniques. In addition, the project would strengthen the capacity of local government and beneficiary groups to maintain these investments. The duration of the project is five years and its total estimated cost is US\$60 million.

C. DETAILED DESCRIPTION OF PROJECT COMPONENTS

Rural Water Infrastructure

3.4 This component would finance the integrated development of water resources for both agriculture and household uses. This would include dugouts (with adjoining facilities for drinking water), boreholes and wells, as well as small-scale irrigation development through streamflow diversion and pumping and run-off management to increase yields of rainfed crops. Detailed description of this component is given below.

3.5 ***Ponds, Dugouts, and Other Surface Impoundments.*** The topography of much of the drier regions of Ghana does not easily lend itself to efficient surface water storage. Although dugouts, ponds and other small water reservoirs may have relatively large water surface and shallow depths with disproportionate volume of earth moved in relation to water stored, they provide the only option for water supply in many areas of the North. Risks of contamination by diseases would be minimized by appropriate fencing to restrict general access to the water storage areas and their catchments by people and animals. In addition, safe water abstraction points would be installed into which the water would be filtered for human uses. Drinking ponds or special troughs would also be provided for livestock. Protection against erosion of exposed slopes and against siltation would be given priority by appropriate planting of trees and vetiver grass or other similarly deep-rooting and easily-managed vegetation. The project would finance the construction and/or rehabilitation of about 92 dugouts and other small surface impoundments over a five-year period, including the cost of engineering designs.

3.6 ***Boreholes, Hand-dug Wells and Spring Development.*** Much of the country's ground water is deep and slow yielding. Shallow ground water that may be tapped by relatively inexpensive means such as washbores and hand-dug wells is found in very limited areas. The deep aquifer water is expensive to extract with capital cost of boreholes and handpumps estimated at US\$1,100 per cubic meter daily discharge capacity (ddc). Its use could only be justified for human and livestock consumption (although for the latter, the physical effort of raising the water with hand-operated pumps may be tiresome and unattractive to the persons tending the animals). Washbores and hand-dug wells in shallow aquifers cost substantially less per unit of daily discharge and could be cost effective in small-scale irrigation producing high value crops. The project would support the development of about 425 washbores, tubewells and spring development on a demand basis, including the civil works, equipment, engineering design and the support for organizing and training communities for their operations and management. The project would also support spring water development in farming areas where the opportunity exists. This source of water is normally very reliable and relatively easy and inexpensive to harness for community use. Provision is being made to develop small farmers' plots in lowland areas using this technology.

3.7 ***Streamflow Diversions and Pumping.*** The project would finance the development of small-scale irrigation from streamflow diversions, pumping and run-off management. Gravity-fed systems usually involve lower costs and management skills and would generally be preferred to systems requiring pumping. Opportunities exist for such water extraction and use along the

considerable coastline of the Volta Lake and along many of the perennial streams and rivers in the transition and forest zones. Provision is being made to develop about 2,400 ha using these technologies to be managed by about 6,000 farm families.

3.8 *Runoff Management.* The yield of rainfed rice and other grain crops in the middle and northern belts are highly dependent on timeliness and distribution of the limited and often erratic rainfall. Failure of crops frequently occurs in these areas because of the unpredictability and irregularity of the rains. Simple and proven practical techniques are available to increase infiltration and retain in the soil a larger proportion of the rainfall for later use of crops and to raise their yields. These water conserving measures are cost effective and are being promoted in the northern areas where they are known to increase rice yields from about 800 kg/ha to over 2,500 kg/ha. The main investment costs are for the establishment of basic water retaining infrastructure such as earthen terraces, banks, bonds and other flow controlling structures to reduce the runoff and increase infiltration.

3.9 *Pilot Integrated Catchment Management.* Sustainable development of agriculture is strongly linked with sound conservation and watershed management practices which protect the soils, water, vegetation and wildlife. These types of activities should best be done by the owners and others who depend on the land and its natural resources for a living. Technical guidance in applying best practices may also be necessary under certain circumstances to achieve the desired objectives. The rural water component of the project offers opportunities for communities to improve agricultural production through a variety of activities such as those briefly described above. Communities would be assisted to prepare integrated water management plans for making productive use of available water, including related physical works and overall watershed management. Since local or community ownership is essential for success in such activities, beneficiary communities would be given the responsibility for undertaking integrated management of the catchment resources as well as the economic activities they support.

3.10 The project would support a pilot program to develop these basic skills in communities and set the stage for appropriate application of recommended catchment management practices as widely as possible throughout the country. Focus would be placed initially on selected catchments which reflect the major climatic zones in the country, including sahelian (Northern Region), transitional (Brong Ahafo Region), forest (Central Region) and the coastal plains (Volta Region). These pilots would be implemented under contract with local institutions which have capacity for conduct of such studies, including the four universities and some of the research institutes. Implementing agencies would be assisted by local NGOs for mobilizing the communities within the pilot catchment areas, and organize the required training programs in the recommended techniques. The pilot watershed management study would complement the development of a broader, region-wide *National Water Resources Management Strategy* by providing the opportunity to put community based watershed management into practice in these agroecological zones.

3.11 *Pilot Coastal Zone Management.* The project would finance a pilot program to improve, with community participants, water supply, sanitation and waste collection and disposal in coastal settlements as well as along the shore line of the Volta Lake. These interventions are

aimed at reducing the stresses on the fragile coastal ecosystems, which are currently threatened by inadequate facilities and services as well as the lack of awareness among coastal communities of the link between responsible methods of waste disposal and community health. The high water table along the shoreline contributes to the problems of coastal degradation and health hazards. Specific interventions would include (i) small-scale sanitation; (ii) water supply; (iii) domestic waste collection and disposal; (iv) small-scale industrial waste collection and disposal; (v) mangrove restoration and reforestation; and (vi) fuelwood lots. The pilot would also provide technical assistance for the development of criteria for eligibility, application processes, review and supervision processes, targeted environmental, sanitation and hygiene education to communities, and evaluation and supervision of community activities.

Rural Transport Infrastructure

3.12 The project would finance selective improvements in existing feeder roads, construction and upgrading of village arterial tracks and trails (VTTs), and promotion of various intermediate means of transports (IMTs) to reduce drudgery among the rural poor. Under this component, interventions would be planned to maximize synergy in the provision of rural transport infrastructure, such as that achieved by linking the development of village trails and tracks to the provision of IMTs with private sector support for services, and with NGOs' support for implementation assistance at the training, planning, and supervision stages. Implementation would be by labor-based method, following on the successes of the Department of Feeder Roads (DFR) with this method in its feeder roads programs. The DFR would coordinate the implementation of the feeder road rehabilitation program at the District level, and would train small local contractors where such skills do not exist for program implementation using mainly community labor, part of which would be the beneficiary groups' contribution to the investments.

3.13 ***Feeder Roads Rehabilitation.*** The project would finance the rehabilitation of at least 1,300 km of feeder roads and spot improvements (including provision of culverts and appropriate drainage) where the existing dilapidated conditions of these roads are major impediments to the development of the rural economy. The DFR would work with the District Assemblies and, in consultation with MOFA, agree on the priority target feeder roads to be rehabilitated and the timing for linking them with the tracks and trails to be improved. These roads would then become part of the DFR programs for routine maintenance and would be covered under the Road Fund. DFR would be responsible for ensuring design standards and specification and would supervise implementation of contracts for the rehabilitation and spot improvements of the feeder roads.

3.14 In Ghana, feeder road maintenance work is being gradually transferred from the public sector to private contractors. The DFR would provide guidance in selecting consultants for planning the roadworks, and pre-qualifying and training local contractors to implement this sub-component. It would also provide overall quality control and supervision of the performance of consultants and contractors. With the recent establishment of a Maintenance Performance Budgeting System (MPBS) and the Feeder Roads Maintenance Fund within the DFR, it is expected that resources would be made available by the DFR for the long-term maintenance of

feeder roads rehabilitated under the VIP. Assurances have been obtained from government that all such rehabilitated feeder roads would be included in the DFR annual maintenance programs, with such periodic maintenance financed under the Road Fund. The annual maintenance requirements would be drawn up jointly by the DFR and the participating District Assemblies, prior to preparation of feeder roads annual maintenance budgets.

3.15 *Village Tracks and Trails.* The project would finance the development of an estimated 270 km of priority village-to-farm tracks and trails (VTTs) identified by beneficiary communities. This component would also include institutional support particularly in training communities for routine maintenance. NGOs would be used for this training as well as for the planning of the works. The tracks would have standard cross-sectional dimensions with a standard width of 2.5 meters and shallow side ditches. Drainage would have safe outlets to reduce risks of erosion. An important consideration in the choice of target tracks and trails would be the linkage between village and main roads. Works would be implemented by labor-based contractors who would hire workers from beneficiary villages. To qualify for track rehabilitation, communities would have to agree to provide some of the initial labor and to assume full responsibility for maintenance of the improved tracks. This arrangement would be put in place with the knowledge and support of traditional and other community leadership. The sustainable development of communal VTTs is based on a long-standing tradition of community self-help and the age-old practice whereby common users of tracks and trails that form the main access routes to their farms meet periodically for routine bush clearing and maintenance of the paths.

3.16 *Improvements in Intermediate Means of Transport (IMTs).* Improvement of tracks and trails linking farms to villages would be conditional on the communities willingness to improve the efficiency of transporting materials to the farms and their produce to the villages and onwards to the markets outside the villages. This would involve the substitution of headloading by one or the other of three forms of intermediate means of transport (IMTs) which have been gaining acceptance in many parts of the country. These are mainly: (i) cycle trailers (CTs); (ii) donkey-carts; and (iii) light trailers drawn by power units of small garden tillers. The use of CTs was widely promoted under the *Transport Rehabilitation Project (TRP)* and is becoming widespread in the urban fringes of the Northern Region. It has not yet penetrated into the actual farming areas because of the lack of appropriate roadways or tracks to allow for their proper use. Donkeys are used in many areas of the Upper West and Upper East Regions for ploughing and transport, but the scope for their wider application is indicated by their widespread use in neighboring countries such as Burkina Faso. The garden power tiller has been successfully tested in some parts the forest zone during the last 10 years as a multi-purpose tool for light farming operations, as a source of power for short-haul light transport, water pumping for irrigation, and for threshing, shelling and milling of grain, grating of cassava, and soil tillage. Its importance, particularly for light farm transport, is being widely accepted and farmers are willing to save to purchase them. They are easily operated and maintained and spare parts and repair capacity are locally available with private sector agents.

3.17 The project would finance the purchase of IMT equipment, technical assistance from local NGOs to demonstrate the efficient application of IMTs, training workshops, and support to

private firms in promoting their use. The greater number of cycle-trailer units that would be procured under this project reflects their lower capital costs and greater affordability by the rural poor and huge impact. It is envisaged that donkey carts, cycle trailers, and light transport trailers powered by garden tillers would be made available to farmers' associations, upon certification by a support NGO that they have been properly trained and are ready for this investment.

3.18 ***Technical Assistance, Technology Improvements and Training.*** The main measures for ensuring that these investments are properly maintained would rest on the training of users to operate in groups to take full responsibility for these access tracks, trails and transport facilities and to undertake their routine maintenance. This training would be undertaken by NGOs and for VTTS with technical guidance from the DFR. Experience with cycle trailers in some areas of Ghana has shown the need to improve the design for a more robust unit to cope effectively with the conditions between farms and villages. To address this need, the Project would enter into contractual agreements with the Intermediate Technology Transfer Unit (ITTU) in various parts of the country to test improved designs of IMTs.

Postharvest Infrastructure

3.19 This component would provide facilities for post-harvest treatment of crops and animal products to enhance their value and shelflife (on-farm and village-level facilities for drying, processing, storage, and other income-generating activities). It would also finance rural market facilities. Given their limited resource base, farmers produce a wide range of crop and livestock commodities in small quantities, but most of the products need some forms of post-harvest treatment or processing to improve their nutritional and market values, convenience in use, and storage capabilities.

3.20 ***Village-level Drying and Processing Facilities.*** Funding would be provided for the construction and/or rehabilitation of small-to-medium size postharvest facilities such as drying floors and platforms, cribs, crop processing and fish smoking units for small farmers and fish handlers working in formal groups. These facilities (average cost of about US\$1,500 per unit) are applicable throughout the country but are particularly needed in the high rainfall zone of the southwest and east where improper drying and storage often lead to high levels of waste and lower crop values.

3.21 The range of crops which could benefit from intermediate processing includes food grains (maize, rice, sorghum, millet), oils and seeds (sheanut, groundnut, oil palm, coconut), roots and tubers (cassava and yams), and vegetables and fruits (tomatoes, plantains, bananas and pineapples). The project would finance the procurement of eligible processing equipment and facilities such as grinding mills, digesters, extractors and presses and other miscellaneous equipment where the communities have organized themselves into management groups, saved the required down payments, and acquired the skills to manage the investment on a commercial basis.

3.22 Coastal and inland fishing villages would also benefit from this component. It would provide support to fishermen along the Atlantic coastline and the shoreline of the Volta Lake, to

improve technologies for fish smoking and drying in order to be able to store the products and take advantage of the market when prices are favorable to them. These activities are essentially undertaken by women. Priority would be given to the simple and relatively inexpensive “Chorkor” fish smoking technique which has been shown to be highly effective in producing a better quality product in less time and with less firewood than the traditional method. Ownership and management of these smoking and storage facilities would be by individuals or by groups, with implementation assistance from NGOs in pre-requisite skills training.

3.23 *On-Farm and Village Storage.* The project would support the development of appropriate individual as well as group-owned and managed storage facilities for small producers of grain and other crops. In the maize belts of the Brong Ahafo, Ashanti and Eastern Regions, these interventions are essential for protecting crops from damage by insects and other pests and for maintaining quality while awaiting higher prices in urban markets. Technical support would be provided by NGOs which are active in the development and management of appropriate methods of storage and with expertise in crop inventory credit, for training beneficiaries, to develop and manage these storage facilities.

3.24 *Cottage Industries and other Targeted Income-Generating Activities.* This component is aimed at the more deprived families, particularly those headed by women. It would help them to undertake to increase their incomes through small-scale business opportunities which could be started with small amounts of “seed money” and with appropriate training by NGOs. Special efforts would be made to target the more remote and isolated villages which are particularly vulnerable to deprivation towards the end of the long dry season and during the rainy season before the crops have matured.

3.25 *Technical Assistance - Organizing and Training Users.* The project would finance technical assistance through local NGOs to assist beneficiaries to organize themselves into manageable groups, who would then be given the essential management skills, including the ability to get into a savings mode so as to ensure reliable debt service capacity for future credit operations. Beneficiaries would be required to set aside on a regular basis a part of the income from the operations of the investment and hold it in escrow in savings accounts in rural banks for repairs, equipment replacement, or expansion of the operation. The operation of the savings account would be one of the conditions for support from the project and monitoring its proper maintenance would be one of the functions of the NGOs assigned to assist user groups. An important function of properly maintained savings accounts is the building of the type of confidence between bank and account holders required to establish credit worthiness, and to link rural groups to the formal financial sector, preparing them to be self-sufficient and independent in making future investment decisions.

Institutional Strengthening

3.26 *Rationale.* The main objectives of institutional strengthening under the proposed operation would be to: (i) develop the capacity of local communities and beneficiary groups, through technical and financial assistance, to plan and maintain village-level infrastructure in a sustainable manner; (ii) strengthen the capacity of district-level institutions to improve the

efficiency of rural resource transfer; (iii) strengthen the capacity of the District Assemblies for planning and financial management (District Development Plans and district budgets); and (iv) strengthen the planning, coordination and management functions of supporting departments of MOFA and Ministry of Local Government and Rural Development (MLGRD) and agencies such as Ghana Irrigation Development Authority (GIDA) and DFR that provide policy and technical assistance to the districts and communities.

3.27 *Specific Interventions.* The project would finance technical assistance for the strengthening of farmer groups and community associations and their training in specific skills (management, small enterprise development, relevant technical skills, etc.). Technical assistance for beneficiary groups would be implemented by local NGOs and other community-based organizations. Other capacity building efforts would be targeted at the District Assemblies and their staff (participatory planning, district tendering capacity, procurement, financial management, etc.), sector institutions (regional MOFA and MLGRD offices, regional development planning committees, etc.) and community leaders. The project would also finance equipment for training, office equipment, vehicles and installation and training for basic Management Information System (MIS) with District administrators. In addition, the project would train the more experienced and technically capable NGOs to provide skills enhancement to weaker, but indigenous community-based organizations, thereby leading, over time, to the creation of a larger pool of qualified NGOs that would provide implementation assistance to beneficiaries in this and future operations. Small contractors and other local entrepreneurs would be trained in the basic skills for organizing labor intensive roads construction and maintenance. Farmers being served by new or improved tracks and trails would be trained in routine maintenance of their tracks and transport facilities.

Rural Infrastructure Coordinating Unit (RICU)

3.28 Project implementation would primarily be at the district level under the supervision of District Assembly operational staff. At the national level, however, responsibility for coordinating implementation support to Districts and communities would be vested in a Rural Infrastructure Coordinating Unit (RICU) with head office in Accra and four Zonal Offices located at Tamale, Kumasi, Cape Coast and Accra (para. 5.10). Management coordination costs over the five year period would cover the cost of staff assigned to these offices and their essential equipment and operating costs, the establishment of a management system (MIS) for project planning and monitoring, as well as the monitoring and evaluation of the impact of the program on beneficiaries.

3.29 *Project Preparation Facility (PPF).* The first claim on the credit would be for reimbursement of withdrawals from the PPF for financing of project preparation, including essential pre-project activities and pilot programs in village infrastructure development.

3.30 *Unallocated.* The project would have a total of US\$2.8 million in unallocated resources to provide flexibility in responding to changes in client needs and to be more responsive to changes in priorities during implementation.

4. PROJECT COSTS AND FINANCING

A. PROJECT COST ESTIMATES

4.1 Total project cost, including duties and taxes, is estimated at US\$60 million (Cedis 229.7 billion) over five years, of which US\$15.5 million (Cedis 58.4 billion), or about 26 percent of total cost, is in foreign exchange. Duties and taxes are estimated at US\$5.8 million (Cedis 19.9 billion) or about 9.7 percent of total project cost. Price and physical contingencies are estimated at US\$5.8 million and US\$4.6 million, equivalent respectively to 12 percent and 9 percent of project base cost. Price contingencies on local costs are based on the projections of domestic inflation of 14.2 percent in 1997, and remaining steady at 5 percent thereafter up to the year 2001 (COD, 1996). Price contingencies on foreign exchange costs are based on estimates of international inflation of 3.4 percent in 1997, 2.9 percent in 1998, and 3.0 percent for the remaining three years of the project. Project costs are summarized in Table 4.1 and detailed estimations of project costs are included in Annex I.

Table 4.1: Project Costs Summary

Project Components	Local	Foreign	Total	Percent Foreign Exchange	Percent of Base Costs
	(US\$ million)				
A. Rural Water Infrastructure	10.8	3.0	13.8	22	28
B. Rural Transport Infrastructure	9.5	3.6	13.1	28	26
C. Post-Harvest Infrastructure	3.8	1.0	4.8	21	10
D. Institutional Strengthening	5.5	4.1	9.6	42	19
E. Rural Infrastructure Coordinating Unit	6.4	0.7	7.1	10	14
F. Refinancing PPF	0.7	0.5	1.2	40	2
Total Base Costs	36.7	12.9	49.6	26	100
Contingencies:					
Physical Contingencies	3.4	1.2	4.6	27	9
Price Contingencies	4.4	1.4	5.8	23	12
Total Project Costs	44.5	15.5	60.0	26	121

B. PROPOSED FINANCING PLAN

4.2 The project would be financed by international donors (IDA, IFAD, KfW) and by the Government of Ghana, District Assemblies, and local communities and beneficiary groups. The IDA credit of US\$30.0 million would finance 50 percent of total project costs, including contingencies. IFAD and KfW would provide co-financing of US\$10.0 million and US\$7 million, respectively (16.7 percent and 11.7 percent of total cost). The Government of Ghana would finance US\$7.1 million (11.8 percent), including duties and taxes of US\$5.8 million, District Assemblies US\$3 million (5 percent) and beneficiaries US\$2.9 million (4.8 percent). Participating District Assemblies would provide counterpart funding from their District Assembly Common Fund (DACF). Preparation of District Development Plans (in a participatory manner to ensure that the priorities of communities are included) would be an eligibility criterion for district participation in the proposed project (para. 7.6). Beneficiary communities would contribute in kind and/or in cash. The financing plans are detailed in Table 4.2 below:

Table 4.2: Proposed Financing Plan by Project Components
(US \$ million)

	IDA	IFAD	KfW	GOG	District Assemblies	Beneficiaries	Total
Rural Water Infrastructure	7.5	2.0	2.4	2.9	1.2	1.0	17.0
Rural Transport Infrastructure	6.6	2.3	3.3	2.4	0.9	0.7	16.2
Post Harvest Infrastructure	2.0	0.9	0.9	0.6	0.3	1.2	5.9
Institutional Strengthening	7.5	1.8	0.4	1.0	0.6	--	11.3
Rural Infrastructure Coordinating Unit	5.2	3.0	--	0.2	0.6	--	8.4
Refinancing PPF	1.2	--	--	--	--	--	1.2
Total	30.0	10.0	7.0	7.1	3.0	2.9	60.0

C. PROCUREMENT

4.3 Procurement procedures for the proposed project are detailed in the *Project Implementation Manual*, previously reviewed by the Bank, and would follow procurement arrangements consistent with Bank Procurement Guidelines. For clarity and transparency, two types of procurement activities are recognized: those by the beneficiaries in implementation of their rural development programs, and those by the Rural Infrastructure Coordinating Unit. Given the large number of small subprojects spread over a wide geographical area, a fair amount of procurement activities would be through local shopping procedures. The summary of procurement activities under the project is in Table 4.3 below.

Table 4.3: Summary of Procurement Arrangements

Project Item	(US\$ million)				Total
	Procurement Method				
	ICB	NCB	Local Shopping	Consulting Services	
Civil Works	--	20.7	13.8	--	34.5
	--	(8.3)	(5.5)	--	(13.8)
Goods and Equipment	1.2	0.9	0.9	--	2.9
	(0.4)	(0.4)	(0.4)	--	(1.2)
Vehicles	4.1	--	0.5	--	4.6
	(3.0)	--	(0.3)	--	(3.3)
Consulting Services	--	--	--	5.0	5.0
	--	--	--	(3.6)	(3.6)
Training	--	0.7	1.1	--	1.8
	--	(0.4)	(0.5)	--	(0.9)
Studies	--	0.7	1.0	--	1.7
	--	(0.4)	(0.5)	--	(0.9)
RICU/Operating Costs	--	3.3	5.0	--	8.3
	--	(2.1)	(3.1)	--	(5.2)
Refinancing PPF	--	--	0.5	0.7	1.2
	--	--	(0.5)	(0.7)	(1.1)
Total	5.3	26.3	22.7	5.7	60.0
	(3.4)	(11.4)	(10.9)	(4.3)	(30.0)

Figures in parentheses are amounts financed by the IDA credit. Totals include contingencies.

Procurement for Works (Subprojects)

4.4 Procurement for works by the District Assemblies would follow the procedures and guidelines of the District Tender Board (DTB). These procedures are acceptable to IDA and are detailed in the Implementation Manual. The RICU would monitor the process, ensuring that all procurement are done in accordance with transparency and in line with the principles of economy and efficiency. The project would, during the first year, assist in strengthening district-level procurement teams in carrying out these tasks.

4.5 **Applicable Thresholds.** Applicable thresholds for civil works would be as follows:

- (a) *Contracts for up to US\$50,000 up to an aggregate amount of US\$13.8 million.* The DAs would administer such contracts and the Zonal Project Office would approve financing after review of the costs estimates and bills of quantity.

Contracts would be through price quotations from at least three contractors from a pre-qualified list of contractors in the respective Zone.

(b) *Contracts of more than US\$50,000 but less than \$100,000 up to an aggregate of US\$20.7 million* would be through District Tender Board procedures. These include advertisement of tenders in local newspapers, detailed procedures on bid opening, evaluation and award, and award to the lowest evaluated responsive bidder. The Zonal Project Office would verify and issue a “no objection” before disbursement occurs. The zonal office would replenish the DACF for the amount of the contract less the districts contribution (counterpart) funding. When the amount of the contract exceeds the envelope of the DACF, the Zonal Project Office would pay the supplier directly upon verification by the zonal engineer that the work or applicable portion thereof has been completed as specified under the contract. The threshold for subprojects for each Zonal Coordinating Unit is US\$100,000. Contracts above US\$100,000 but less than US\$200,000 are within the threshold of the National RICU and the RICU engineer would review and clear such contracts before award. The threshold for IDA prior review is US\$200,000 and selection and contracts would be reviewed and approved by the IDA Project Officer at the Resident Mission before disbursement. The RICU has prepared simplified bidding documents and these are available at all zonal offices.

(c) *Contracts of more than US\$200,000*, if any, would follow national shopping procedures, with selection and contracts approved by the IDA Project Officer at the Resident Mission. Given the nature of individual subprojects involving small construction work scattered in a rural environment, it is not envisaged that there would be any ICB for civil works for district and/or community-based subprojects.

4.6 ***Local Communities and Beneficiaries.*** When the work is carried out by the beneficiary groups themselves, disbursement for the physical work completed would be made after certification by the engineer from the responsible Zonal Project Office. Communities and groups would be assisted by NGOs in selecting contractors from the prequalified list. The District Rural Infrastructure Fund (DRIF) manager would witness all contracts signed between the communities and the contractor, with a copy sent to the zonal office. The zonal office would replenish the DRIF or pay suppliers directly. All such procurement will follow procedures detailed in the implementation manual.

Procurement for Goods and Equipment

4.7 Procurement of all goods and equipment, including rental of earthmoving equipment, pumps, building materials, etc., would be based on the following procedures:

(a) *Goods and equipment costing less than US\$10,000, up to an aggregate of US\$900,000.* This would be through direct purchases from local suppliers. If only one supplier is available, beneficiaries should also check the nearest urban center to compare prices. The Zonal Project Office would keep a database of costs for purposes of comparison and monitoring and provide advice to beneficiaries on such purchases.

(b) *Goods and equipment above US\$10,000 but less than US\$50,000* would be through price quotations of at least three suppliers. Regular audits would be made *ex-post* by auditing firms assigned to each Zone of the project by comparing costs with prevailing market prices.

(c) *Goods and equipment exceeding US\$50,000 up to an aggregate of US\$900,000.* NCB procedures using standard bidding documents with IDA prior review for contracts above US\$75,000.

(d) ICB procedures would be used for lots exceeding US\$250,000 up to an aggregate of US\$1.2 million.

Procurement of Consultancy Services

4.8 Given that the rural areas do not have a critical mass of private sector consultants, each Zonal Project Office would assist District Assemblies and beneficiaries groups in putting together a list of qualified consultants in each zone. Payments for contracts for technical assistance to groups, communities, and Districts would be through the DRIF, replenished periodically by the Zonal Office. Contracts exceeding the capacity of the DRIF would be paid by the Zonal Project Office directly to the supplier. The Zonal Office would also prequalify all NGOs active in the zone, with input of GAPVOD (the apex organization of NGOs in Ghana), taking into consideration their areas of expertise, staffing, experiences and current areas of work. This list would be available to all DAs and beneficiary groups participating in the project.

(a) Contracts less than US\$15,000. At least three consultants or NGOs would be consulted from the prequalified list and the contract awarded to the lowest quotation. The contract would be between Beneficiary group and the NGO/firm, and witnessed by the DRIF, with a copy of the contract sent to the Zonal Project Office.

(b) *Contracts more than US\$15,000 but less than \$50,000* The Zonal Project Office would request detailed proposals from interested firms and groups in the Zone and award contracts based on the lowest quotation. The threshold for each zone is US\$50,000. Contracts exceeding US\$50,000 would be sent to the national RICU for review.

(c) *Contracts exceeding US\$50,000.* Both technical and financial proposals would be solicited from at least three firms from the pre-qualified list and the contract awarded to the lowest evaluated responsive bidder. IDA would review the selection and contract before award. For purposes of efficiency and economy, the threshold for IDA prior review is US\$100,000.

4.9 The RICU shall package procurement of vehicles, equipment, and goods where appropriate, when several Districts and beneficiaries are involved. These are expected to be larger lots that would serve the needs of a collection of Districts and other beneficiary groups. Procurement of such vehicles and goods and equipment would normally be through international

competitive bidding (ICB) procedures, apart from units or equipment required out of normal scheduling which will be procured from IAPSO or national shopping procedures. Such contracts will not exceed US\$50,000 for an aggregate amount of US\$400,000.

4.10 Assurances were received during negotiations that the procurement arrangements described above would be implemented (para. 7.9)

Procurement under the RICU

4.11 Procurement of goods and consultancy services for the RICU and its Zonal Offices are detailed in the Implementation Manual.

4.12 Procurement of goods and equipment for use by the RICU and its zonal offices would be based on the following procedures:

(a) *Goods, equipment, and supplies costing less than US\$50,000 up to an aggregate of US\$5.0 million* would be purchased by the RICU or any of its zonal offices through direct purchases based on price quotations from at least three suppliers.

(b) *Goods and equipment costing more than US\$50,000 up to an aggregate of US\$3.3 million* would be procured through NCB procedures with IDA prior review of contracts exceeding US\$100,000.

D. DISBURSEMENT

4.13 The IDA credit of US\$30 million would be disbursed over a period of six years beginning in FY98. The disbursement profiles assumes that very limited civil works would be undertaken during the first year as the initial year would be devoted to project start-up activities, including setting up of the Zonal Project Offices, evaluating and pre-qualifying NGOs, and strengthening the implementation capacities of the District Assemblies. After the initial year, project disbursement would be expected to increase gradually as familiarity with the procedures increases and more districts and organizations meet initial eligibility requirements for participating in the project (Annex III). While the current disbursement profile for Ghana is eight years, the anticipated slightly faster schedule under the VIP reflects the following: (i) greater autonomy and decentralized procurement responsibilities to zonal offices based on pre-determined thresholds; (ii) the increased familiarity of borrower with procurement procedures through on-going projects; (iii) emphasis on pre-project activities in order to lay foundation and put mechanisms in place before effectiveness; and (iv) detailed planning of procurement activities before effectiveness. Detailed disbursement schedule is in Table 4.4 below.

4.14 A *Special Account* for the project would be opened in a commercial bank in Accra at terms and conditions acceptable to IDA. An initial amount of US\$1 million would be deposited into this account for the first year of operations; this would be increased to US\$2 million during the second year when the zonal project offices in Kumasi, Tamale, Cape Coast, and Accra become operational. In addition, a *Project Account* would be set up in Accra for receipt and disbursement of borrower's counterpart funds. The establishment of the Project Account by the

Borrower with an initial deposit of US\$100,000 equivalent would be a condition of effectiveness of the IDA credit (para. 7.12).

Table 4.4: Summary Disbursement Schedule

Expenditure Category	Amount Allocated (US\$ million)	Amount Financed by (US\$ million)				%
		IDA	KfW	IFAD	Total by Donors	
Civil Works	34.5	13.8	6.3	4.3	24.4	71
Goods and Equipment	2.9	1.2	0.4	0.4	2.0	69
Vehicles	4.6	3.3	0.1	1.3	4.7	98
Consulting Services	5.0	3.6	0.2	0.3	4.1	82
Training	1.8	0.9	--	0.5	1.4	78
Studies	1.7	0.9	--	0.3	1.2	71
RICU/Operating Costs	8.3	5.1	--	3.0	8.1	97
Refinancing PPF	1.2	1.2	--	--	1.2	100
Total Project	60.0	30.0	7.0	10.0	45.9	77

Note: Donors finance 100 percent of foreign exchange costs.

4.15 Disbursement for expenditures under contracts valued below US\$75,000 for each zonal project office would be on the basis of statements of expenditures (SOEs). IDA would replenish the *Special Account* upon review and verification of all SOEs. SOEs from the zonal offices would be sent directly to the responsible project officer at the Resident Mission with copy sent to the RICU in order to avoid delay.

Advances to Zonal Offices

4.16 Funds would be transferred from the Special Account in Accra to the four Zonal offices on the basis of a 90-day advance. The zonal offices would, at the start of operations, submit to the RICU a forecast of their needs for the first six months of operations. The RICU would review these requests and for the first of such advances, submit a letter to the IDA Disbursement Division requesting concurrence to the establishment and operation of such advances. The amount of such advances will be reviewed every six months and the necessary adjustments made in the level of advance based on actual usage of the funds. In assessing the requests of the zonal authorities, the RICU would ascertain that each zonal authority concerned has an accounting and financial unit in a place that will be responsible for: (i) the proper recording of expenditures incurred; (ii) the collection of the necessary documentation justifying these expenditures; and (iii) their submission to the central RICU in Accra on a timely basis. The zonal authority should open a Bank account in a commercial Bank within the zone and notify the RICU of the name of the officials permitted to make withdrawals from this account. The operations and accounts of the Zonal project offices will be reviewed every six months by independent auditors to ensure

that replenishment requests submitted by these authorities reflect expenditures related to project activities eligible for financing under the project.

4.17 **Replenishment of the Zonal Accounts.** The zonal project offices would every month, but no later than the fifteenth day of the following month, submit to the RICU a replenishment request in the form of a letter signed by the Financial Manager and Zonal Coordinator indicating the amount claimed on the basis of supporting documentation. The zonal authority should submit to the RICU, along with this letter, the original of all invoices for expenditures incurred, attaching an up-to-date Bank statement showing withdrawals made from the Bank account for the payment of these expenditures. The RICU shall agree not to advance any additional funds to the Zonal authorities without IDA's concurrence and will ensure that the zonal authorities receive only the equivalent of funds they can justify through the submission of appropriate documentation and invoice. Replenishment requests and documentation so approved by the RICU would be sent to IDA as part of the documentation supporting the replenishment of the Special Account in Accra.

E. AUDITING AND REPORTING

4.18 There shall be two types of audits: (i) a semi-annual review of implementation performance of the Zonal Project Offices and the financial management performance at the District level (both the DACF and the DRIF accounts), to be carried out by independent firms under contract to the RICU; and (ii) the regular annual audit of the Special Account, Project Accounts and SOEs to be carried out by an independent auditing firm (to be distinct from the semi-annual audit).

4.19 **Semi-Annual Performance Review.** Given the large number of District Assemblies and potential number of small subprojects covering a wide geographical area, the project would employ the special services of four local auditing firms acceptable to IDA to conduct, on a regular basis, semi-annual reviews/process audits of project financial performance at the zonal and district levels. Terms of reference of the audit firms are in Annex IV. The objectives of the audits would be to: (i) provide an early warning system to zonal project management; (ii) assist the District Assemblies in improving their internal financial management and controls by providing advice and feedback on their performance; (iii) provide advice to District Assemblies on issues of procurement and disbursement, ensuring that procedures laid down and/or internal controls are being adhered to; and (iv) conducts audits of zonal accounts. All reports of the independent auditors would be made available to IDA and government. The frequency of the review would be increased or decreased depending on acceptability of performance.

4.20 **Annual Audits.** All project accounts would be audited annually by independent auditors acceptable to IDA. The auditors would submit audited financial statements and a long form. These reports would be submitted no more than six months after the end of the government's fiscal year (December 31).

4.21 **Reporting.** In addition, each Zonal Project Office will prepare semi-annual progress reports of project implementation in each zone that would cover physical achievements,

procurement, disbursement, key monitoring indicators, and studies under implementation in each zone. These reports would be aggregated into a national report by the RICU Coordinator based in Accra.

4.22 Assurances were obtained during negotiations that the auditing and reporting arrangements described above would be implemented (para. 7.10).

5. PROJECT MANAGEMENT AND IMPLEMENTATION

5.1 Rural poverty alleviation and capacity building requires multi-faceted interventions, and as such, project implementation would require close collaboration and coordination between several ministries and agencies as well as local governments and community-based institutions. During project preparation, broad consultations were undertaken with all sector ministries and agencies and with the NGO community on project design, and these consultations provided the framework for detailed project implementation arrangements. The arrangements are underpinned by the following requirements: (i) the need for strong coordination on policy matters that affect the efficient delivery of rural infrastructure services to the poor; (ii) the need for close technical coordination at the level of various implementing agencies; (iii) the need for an autonomous agency responsive to beneficiaries and with flexibility to work efficiently across many sector ministries and institutions; (iv) the need to build capacity within the administrative staff of the District Assemblies as the focal point of support for the government's decentralization strategy; and (v) the need to ensure efficient and transparent management of numerous small infrastructure contracts scattered over a wide geographical area.

A. OVERALL PROJECT COORDINATION

5.2 *Project Policy Coordinating Committee.* Policy coordination would be at the ministerial level, while technical coordination would be at the levels of the chief directors (for ministries) and directors (for agencies) or equivalent levels for other collaborating institutions. At the policy level, the project would be coordinated through an inter-ministerial Project Policy Coordinating Committee (PPCC) comprising representatives of the following ministries: (i) Finance; (ii) Food and Agriculture; (iii) Local Government and Rural Development; (iv) Works and Housing; (v) Environment, Science and Technology; (vi) Trade and Industries; (vii) Employment and Social Welfare; and (viii) Transport and Communication. The PPCC would provide overall policy guidance on project implementation and would be chaired by the Minister of Food and Agriculture (or his designate). It would meet at least twice a year. Terms of reference of the PPCC are in Annex VI. During negotiations, assurances were received from government regarding the establishment, composition and responsibilities of the PPCC (para. 7.4).

5.3 *National Technical Steering Committee.* At the technical level, the project would be coordinated through a National Technical Steering Committee (NTSC) that would comprise representatives of the three main sector stakeholders - the Ministry of Food and Agriculture, the Ministry of Local Government and Rural Development, and the Ministry of Works and Housing - as well as representatives of: (i) the Department of Feeder Roads (DFR); (ii) the Ghana National Association of Farmers and Fishermen (GNAFF); (iii) the National Board for Small Scale Industries (NBSSI); (iv) the Department of Cooperatives (DOC); (v) the Ghana Irrigation Development Authority (GIDA); and (vi) the Ghana Association of Private Volunteer Organizations in Development (GAPVOD). Membership would also include the Ministry of Health, and the Ministry of Environment, Science and Technology (MEST). The NTSC would

be chaired by the Chief Director, MOFA or his/her designate, and the RICU Coordinator will serve as Secretary to the Technical Committee. It would meet semi-annually to review the work program and progress reports of the project, and make recommendations to the management on the steps needed to achieve program targets. Terms of reference of the NTSC are in Annex VI. During negotiations, assurances were received from government regarding the establishment, composition and responsibilities of the NTSC (para. 7.4).

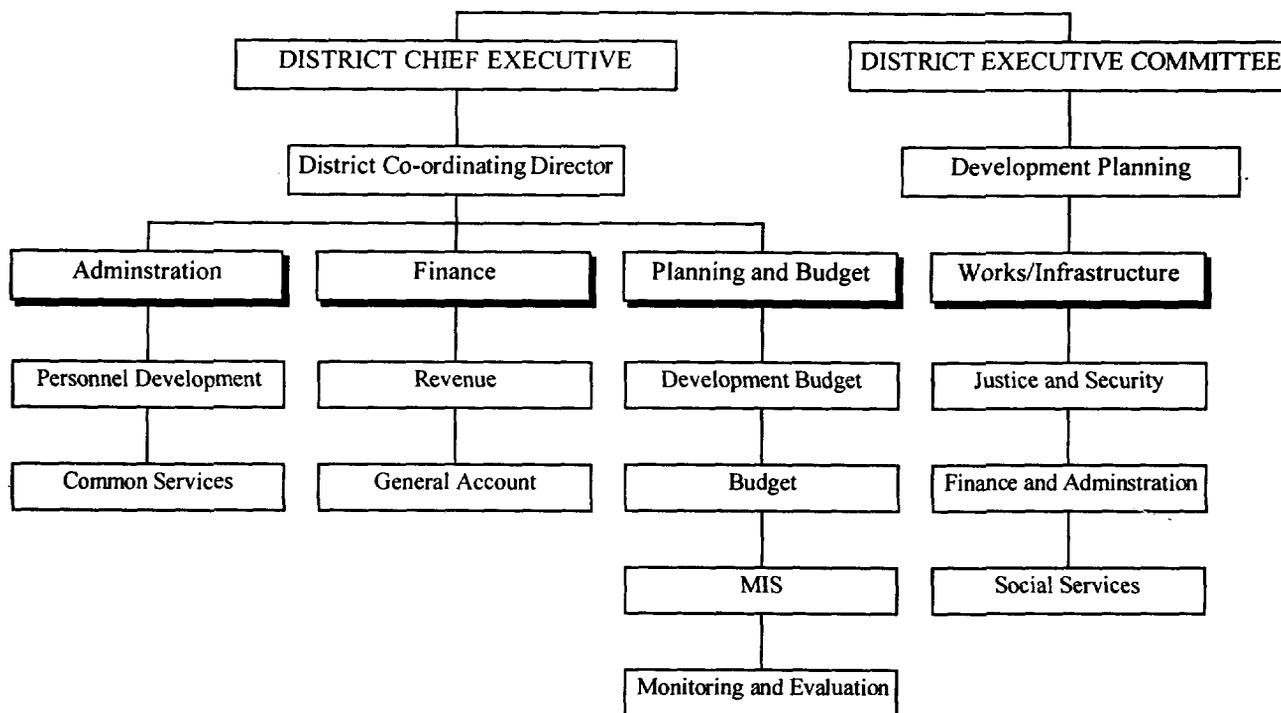
B. PROJECT IMPLEMENTATION ARRANGEMENTS

District-level Management

5.4 The Local Government Law 1988 (P.N.D.C.L 207) which established the District Assemblies empowers each District to be responsible for all development activities within the District. Each District has an Executive Committee, headed by a Chief Executive, with specialized Departments for Planning and Budget, Finance, and Administration. In addition, each DA has the following (i) statutory sub-committees responsible of rural development planning; (ii) a 5-year District Development Plan; and (iii) a District Assembly Common Fund (DACF) to which the Central Government cedes in an annual basis, a portion of the national revenue for rural development purposes. This level of fiscal and administrative decentralization, coupled with the preparation of district-level rural development plans, provides an important foundation for empowering rural stakeholders to sustain rural development. However, planning and financial management capacity are generally weak within the Districts and strengthening these functions is essential to any strategy of sustaining rural development. A key project objective would therefore be to strengthen the capacity of DAs to better organize and implement rural infrastructure programs in a participatory, sustainable, and cost-effective manner. This is essential if rural communities and Districts are to be truly empowered to take direct responsibility for infrastructure development at the community-level. Given this emphasis, *no parallel structure would be established at the district level for purposes of project implementation.* Instead, project management would be mainstreamed within the existing administrative structure of each participating District Assembly, with training and other technical assistance provided to directly strengthen such functions as procurement, financial management, internal controls, and reporting. The existing administrative structure of the DA relevant for project implementation is summarized in Figure 5.1.

5.5 ***District-level Subprojects.*** Each participating District would provide counterpart funds from its District Assembly Common Fund (DACF) for sub-projects that are included in the District Development Plan. For such eligible sub-projects, the District Executive Committee, chaired by the District Chief Executive or his representative, would meet periodically to decide on the priority subprojects such as feeder roads, dugouts, or boreholes that are within the District's Development Plan and to also allocate the level of counterpart funding required from the DACF. Implementation would begin once agreement has been obtained from the responsible zonal project office as to the eligibility of the sub-project, the costs, and the availability of District counterpart funding.

Fig. 5.1: Administrative Structure of the District Assemblies



The District may pre-finance the entire investment from its DACF, using the applicable procurement procedures. After completion of works or portions thereof in accordance with the contract, the zonal office would replenish the DACF less the counterpart funding provided by the District. Where the sub-project cost is too large relative to the DACF, the zonal office may pay suppliers and consultants directly (para. 4.5b).

5.6 Community-Owned Subprojects. For sub-projects owned by community groups and associations, each participating District would establish a District Rural Infrastructure Fund (DRIF). Subproject applications from beneficiary groups and communities would be sent to the DRIF Committee for vetting and approved sub-projects forwarded to the manager of the DRIF for processing, i.e., ensuring that beneficiaries, with NGO assistance, provide their matching grants, sign contracts with partnership organization, receive training and are properly organized to manage the investment. The DRIF committee would be inter-departmental and would be chaired by the District Chief Executive and would comprise the District Coordinating Director and the District Head of Finance, Planning, Works, Agriculture, and one representative each of an NGO and Farmer organization and two community leaders. The secretary to the committee should be the Manager DRIF selected from the private sector, but responsible to the DA. Decisions by the committee would be by consensus. Approved sub-projects are then forwarded for financing through the DRIF. The Draft Operating Procedures and Policies of the DRIF and terms of reference of the DRIF Manager are in Annex VIII. Evidence acceptable to IDA that at least 5 Districts have satisfied the eligibility criteria for participating in the project would be a condition of effectiveness of the Project (para 7.13).

Rural Infrastructure Coordinating Unit

5.7 While each District would be in charge of implementing its rural development program, there is a need to effectively coordinate rural infrastructure development activities across potentially 110 District Assemblies, and as many communities and groups. This is necessary to ensure that a common strategy exists, to avoid duplication of efforts, and more importantly, to avoid stressing the weak capacities of the Districts. There is also the need to coordinate the activities of the various donors. For the initial process, and until DAs are properly strengthened, these activities are best carried out through an autonomous unit flexible enough to respond to the diverse needs of the many stakeholders.

5.8 Coordination of implementation support to the Districts and communities on a the day-to-day basis would therefore be through an autonomous Rural Infrastructure Coordinating Unit (RICU). The RICU would be composed of a national office in Accra and four zonal offices in Tamale, Kumasi, Cape Coast and Accra. It would be headed by a National Coordinator, selected through a competitive search process and whose experience, qualifications and terms of reference would be acceptable to IDA. The National Coordinator would be supported by two core staff: a Rural Infrastructure Engineer to coordinate technical aspects of subproject implementation and an Institutions Development Specialist to coordinate institutional building efforts among the Districts, communities, and NGOs. In addition to these staff, there will be other appropriate technical and financial officers responsible for finance, accounting, MIS, and internal audits. During Negotiation, agreement was reached that all staff of the RICU would be appointed on fixed-term contract through a competitive search process (para. 7.2).

5.9 A key responsibility of the RICU would be to coordinate technical and institutional strengthening aspects of the project, linking directly with the zonal offices and providing the technical liaison with the sectoral ministries and agencies. It would be responsible for the policy and technical liaison with the PPCC and NTSC, ensuring that project actions and interventions complement those of other similar projects and donor initiatives in the sector. In addition to the administrative functions of the project, including timely reporting and auditing, the RICU would establish and maintain a strong MIS to provide up-to-date information on the status of implementation of sub-projects in the various zones. MOFA would second to the RICU at least four staff of the Policy, Planning, Monitoring and Evaluation Division (PPMED) who would be responsible for monitoring and evaluation and impact assessment activities of the project in each zone. The project would provide the appropriate logistics and training, where required, to enable the staff to carry out their responsibilities. During Negotiations, agreement was reached regarding the integration of the Project Unit of the ASIP into the RICU to create a single unit for implementing the government's rural infrastructure program (para. 7.3).

5.10 **Zonal Project Offices.** The RICU would establish four decentralized zonal structures as follows: (i) Zone I, with head office in *Tamale*, for the Northern, Upper East and Upper West Regions; (ii) Zone II, with head office in *Kumasi*, for the Ashanti and Brong Ahafo Regions; (iii) Zone III, with head office in *Cape Coast* for the Central and Western Regions, and (iv) Zone IV, with head office in *Accra*, for the Greater Accra, Eastern and Volta Regions. Each Zonal Project Office would be headed by a Zonal Project Coordinator, with a full complement of technical and

administrative staff. To facilitate quicker response and faster processing of beneficiary requests, each zonal office would have autonomy within pre-determined thresholds as set out in the Implementation Manual and would not have to defer to the national office of the RICU on routine implementation matters (para. 7.1). Zonal offices would provide technical input to Districts within each zone in implementing all sub-projects, including the implementation of technical assistance to rural communities and beneficiary groups. Zonal offices would draw upon the services of short-term consultants and contractors as needed to assist in various aspects of project implementation assistance. They would also work with the various regional and District level agencies of government as well as with NGOs in coordinating assistance for the implementation of the District rural infrastructure program. Measures taken within the scope of the project to ensure financial accountability of the zonal offices and the administrative offices of participating districts are detailed in Annex IV and para. 4.19. Terms of reference of the Zonal Project Offices are in Annex VII.

C. COMMUNITY PARTICIPATION AND OWNERSHIP

5.11 Community groups and associations will play an important role in project implementation. Through their elected representatives within the District Assemblies, they would meet to vet the District development plans and, therefore, the nature, priority and location of the infrastructure subproject to be financed under the project. They would also be responsible in part or in full, for the maintenance of community-level facilities. Each beneficiary community would contribute in cash or in kind towards the capital costs of the investments, with different levels of contribution set based on the different categories of subprojects.

5.12 Beneficiaries' contribution are detailed in the Project Implementation Manual. For each sub-project, a committee of beneficiaries would be established to handle the operation and maintenance of facilities, including the collection, management and safekeeping of funds, and the purchase of goods and services required for the efficient functioning of the investment. Communities would also designate caretakers who would receive training and appropriate tools as part of the project technical assistance, and who would be responsible for all routine preventative and simple corrective maintenance of the facilities.

5.13 An important aspect of the sustainability of income-generation investments under the project would be to put associations and groups of these poor small farmers and villages into a savings mode and link them with rural financial institutions. NGOs would provide guidance in opening and operating group and individual savings accounts. The contributions of the participating groups to the investments would be met partly from these savings as well as from pooled funds. The savings accounts of groups would be maintained during implementation of sub-projects to take care of necessary repairs and replacements of parts. The long-term benefits of a savings strategy is that poor rural groups would develop the capacity to deal more effectively with formal financial institutions in obtaining credit at market rates. During the early stages of group formation, the cost of development and training would be borne by the project and would form part of the institutional development benefits to these rural communities and groups.

5.14 For private-good subprojects such as postharvest facilities whose benefits accrue to individuals, beneficiaries would be expected to repay the principal of the investment over a period of time and installment amounts defined in the applicable contract signed with the DRIF. Such repayments would go into the DACF, and would only be used for development purposes within the District. These development activities are expected to be those that facilitate private sector activities within the districts.

D. BENEFICIARY ELIGIBILITY CRITERIA

5.15 The eligibility criteria for participation by districts, communities and farmer groups and associations are detailed in the Implementation Manual. A summary is provided in Annex III. These criteria were finalized during appraisal, and agreed upon during negotiations (paras. 7.6 and 7.7). However, these criteria are guidelines and would therefore be subject to periodic reviews and adjustments made as necessary based on implementation experience. Such adjustments would be agreed upon between IDA and the Borrower during supervision mission. In order to avoid start-up delays, steps have been taken by MOFA to ensure that as many potential beneficiaries as possible meet these requirements in the period after appraisal and prior to credit effectiveness. The eligibility criteria for District Assemblies would include: (i) adequate staffing; (ii) agreement to use the District Assembly Common Fund account for purposes of counterpart funding; and (iii) a District Development Plan, prepared in a participatory manner with the communities. Before project effectiveness in each District, an assessment of the institutions strengthening needs would be undertaken to ensure complementarity with other donor programs (para. 7.8).

5.16 Beneficiary groups and associations would be required to have formed an association, whose membership is consistent with the needs and cultural outlook of the group (where such organizations already exist, their current functions could be expanded to include developing and managing infrastructure facilities to be supported under the project). They would also have to agree as part of the technical assistance contract signed with the partnership NGO, to take full responsibility for the proper operation of the facility, including adequate routine recurrent maintenance to sustain it. For post-harvest equipment, such as those for small-scale processing, drying, storage, etc., the project would require that beneficiaries have opened an account with the local rural bank or other commercial bank from which they would; (i) provide a designated amount of the capital costs of the investments; and (ii) part of the annual net income of the investment would be lodged in a rural financial institution to be applied to operate and replace assets and diversify into other infrastructure type ventures in the district. NGOs would be contracted to provide technical assistance to the groups from the sub-project identification stage through the implementation and management stages and would monitor and ensure that the group goes through the essential learning steps to sustain the investments.

E. PROJECT MONITORING AND EVALUATION

5.17 The RICU, the Policy, Planning, Monitoring and Evaluation Departments (PPMEDs) of MOFA and MLGRD and IDA would monitor project implementation performance on a regular basis through reports, audits, and supervision missions. The monitorable indicators for specific

project actions are in Annex X. Quantitative input and output matrix with major project factors are in Annex XI. In addition, IDA would monitor the compliance of the RICU with procurement and disbursement procedures, and credit agreements and legal covenants.

5.18 *Implementation Monitoring.* The RICU unit would provide regular and up-to-date information and data on the progress of each subproject and the progress made on all relevant sub-projects as of program implementation. The RICU would set up and maintain a modern Management Information System (MIS) for monitoring implementation progress. The MIS would monitor the timeliness of pre-investment actions (awareness campaigns, pilots, workshops), the efficiency of processing beneficiary requests (response time, number of visits, time taken to complete individual steps, number of beneficiaries covered, etc.), and the performance of supporting NGOs. The RICU would prepare regular reports on these performance indicators for submission to NTSC and IDA. In addition, independent firms would be contracted to provide, on a semi-annual basis, process audits of all sub-project activity at the zonal and District-level. These process audits will include contracting procedures, internal controls procedures within District financial units, transparency in approval of sub-project requests, record keeping, physical location of sub-projects, and standards and specifications.

5.19 *Impact Assessment.* The RICU will also collect data on the impact assessment of the project on beneficiaries (communities, Districts, and groups) and this will be supported by the collection of baseline information on project environment and potential beneficiaries. Both the PPMEDs of MOFA and MLGRD would be strengthened to meet the specific needs of impact assessment, including training and logistics.

5.20 *Financial Monitoring.* Financial audits would be conducted (see paras. 4.19 to 4.20) to monitor management of accounts and compliance with procurement procedures. These would be conducted by independent auditing firms.

F. PROJECT SUPERVISION

5.21 IDA supervision will be closely linked to the project implementation schedule (Annex II). IDA supervision will include: (a) continuous supervision and implementation assistance through the resident project supervisor; (b) regular supervision and monitoring of key events through supervision missions; and (c) yearly review of the work program, the project launching workshop and the Mid-Term review. MOFA will participate in supervision through progress reports and participation in supervision and review missions.

5.22 *Regular Supervision and Review Missions.* Regular supervision will include review of progress reports, procurement, correspondence and implementation assistance to the Borrower. Apart from the Task Team Leader (TTL), the regular supervision team will include: a rural infrastructure specialist, a rural sociologist, a procurement analyst, a disbursement analyst, and a financial analyst. The infrastructure specialist will focus on the technical quality of the investments, the management of the contracts, and recommend adoption of standard formulas in contracts with small contractors. The Institutions Specialist will review participation issues with local communities and design ways to improve project impact. The procurement and

disbursement specialist will assist the Borrower with implementation of IDA's procedures and requirements. The financial analyst (or economist) will review the financial management (including Special Accounts) and recommend ways to improve financial management.

5.23 The Project supervision missions will focus on the physical implementation, the management performance, impact assessment and financial control. The key areas to supervise are:

- (a) Physical implementation: the physical project targets such as number and type of projects; number and type of beneficiaries; involvement of local communities; implementation rate; regional investment spread; etc.
- (b) Management performance: project response to local demands; subprojects lead times; procurement, disbursement and accounting practices; subprojects cost control; and
- (c) Financial control: maintenance of adequate controls at all levels of implementation.

5.24 ***Project Launching Workshop.*** The Project Launching Workshop will take place as soon as the conditions for effectiveness are met. The workshop will focus on: (i) general and specific procurement guidelines such as: local shopping, price quotation, direct contracting, guidelines for recruitment of local consultant; (ii) disbursement methods for project funds such as direct payments to suppliers, Statements of Expenditure and documentation to be kept and to be forwarded to IDA; (iii) management of the Special Account and the control of the revolving fund; (iv) audit requirements; (v) project supervision and reviews (vi) communications with IDA; (vii) implementation of the project; and (viii) other subjects of particular interest to the Borrower and zonal Offices.

5.25 ***First Year Implementation Review.*** At the end of the first year of implementation, a joint review by IDA and the Borrower would be undertaken in order to examine the overall and detailed performance of the project and, if necessary, make recommendations and take steps to improve the project performance. It will cover the same subjects as the supervision mission, but will enter into much more detail on the physical project implementation aspects (quality, standards, efficiency of implementing subprojects, etc.).

5.26 ***Mid-Term Review.*** The Project mid-term review will evaluate in-depth the physical and financial aspects of project implementation, and in particular, its developmental impact. To this extent the government, and in particular PPMED, will prepare a Mid-Term report of the project to facilitate this review. Terms of Reference for the MTR will be drawn up during the project implementation at least three months before the time of the review and will be agreed upon with IDA.

5.27 ***Implementation Completion Report.*** An Implementation Completion Report summarizing the achievements of the project and its impact *vis-à-vis* its objectives will be submitted by the government to IDA not later than six months after the completion of the project.

The ICR will be carried by the government and IDA and will cover a full *ex-post* evaluation of the project.

5.28 ***Participation by Borrower.*** Borrower will participate in the supervision through half-yearly progress reports by the RICU to be sent to IDA. The Borrower will assist all supervision missions by providing information on the project and organizing wrap-up meetings. The Borrower will participate in all reviews: Project Launching Workshop, First Year Implementation Review, Mid-Term Review and Implementation Completion Review.

5.29 Assurances were obtained at negotiations that the above monitoring and evaluation arrangements would be followed (para. 7.9).

6. ECONOMIC ANALYSIS, JUSTIFICATION AND RISKS

A. DETERMINATION OF BENEFITS AND COSTS

Measurement of Benefits

6.1 The approach taken here is to include in the economic analysis only those benefits that can be quantified. Intangible benefits, such as health status of the community from accessing safer water sources which are difficult to quantify, are excluded from the economic analysis. To the extent possible, these nonquantifiable benefits are described in terms of their impact on the welfare of rural communities and groups.

6.2 **Quantifiable Benefits.** Benefits of post-harvest facilities are measured from two sources: (i) reduced losses; and (ii) lowered cost of processing, the latter measured in terms of the opportunity cost of time saved as a result of substituting traditional technologies with more efficient processing methods. In addition to reduced losses and time saved, processing of food crops would also result in improvement in the quality of food available for consumption or sale and quantity. A third category of benefits of post-harvest technologies is employment. The adoption of post-harvest technologies would lead to increased demand for operators and unskilled workers, as farmers expand farm size in light of higher prices, improved storability and greater demand for processed products.

6.3 Benefits from rural water are measured both by the value of time saved and the “imputed price” of water. For water used for small-scale irrigation, such as that from streamflow diversion and pumping, benefits are measured in terms of the incremental yield of crops and the value of additional dry season cultivation made possible with the availability of water. For water consumed by rural families, an important benefit is the reduction in water-borne diseases as safer water sources are made available close to the villages, but this is difficult to quantify. Given that the primary use of most dugouts and streamflow diversions proposed for development under the project would be for intensification of agriculture, estimation of benefits focused mainly on the incremental value of agricultural production due to the adoption of these technologies.

6.4 Rural transport infrastructure, such as village trails and tracks, increase access of rural inhabitants to a wide range of social and economic facilities and services. Access roads and village tracks also facilitate easier transport of agricultural inputs to farms as well as the efficient evacuation of crops from farms to villages and onwards, to urban markets. The timely evacuation of crops reduce post-harvest losses and the availability of inputs and increased access to markets enable smallholders to respond quicker to market signals, either by expanding farm size or changing their crop mix. Development of trails and tracks, combined with appropriate introduction of intermediate means of transport (IMTs), can also significantly reduce drudgery associated with headloading produce from farms to villages, an activity largely performed by women and children. The benefits of rural transport infrastructure development are many but

only few are quantifiable. Determination of the economic viability of rural transport subprojects therefore focused on two sources: benefits of increased agricultural output from the zone of influence of the road, and reduction in transport costs. The zone of influence is estimated to be within a of 5 km corridor on both sides of the rehabilitated feeder roads or 3 km for village trails and tracks developed. These benefits from rural transport were estimated using the procedures of Beenhakker and Lago, 1989.¹

Determination of Costs

6.5 All costs were estimated using prices for goods, equipment, labor and other inputs prevailing in Ghana in March 1996. The costs of post-harvest equipment were from the various regional Intermediate Technology Training Units (ITTUs). Cost information for rural water resource, including the costs of dugouts, streamflows and diversions were from the Irrigation Development Authority, updated during appraisal. Cost data for feeder road rehabilitation and for the construction of village trails and tracks were furnished by the Department of Feeder Roads and validated during field visits to the North, Ashanti and Brong Ahafo Regions. The rural wage rate was estimated at Cedis 1,200 per person-day for unskilled farm workers. All agricultural outputs were priced at the farmgate, and prices of processed products were ex-processing units. For internationally traded commodities, such as rice and maize that would be produced from small-scale irrigation, import parity prices were estimated on the basis of the prevailing world market price for each commodity, appropriately adjusted for transport costs (international and domestic), local handling and other charges and converted to local currency equivalents (Cedis) using the exchange rate US\$1.00 = Cedis 1,600 that was prevailing during appraisal (March 1996). Prices for internationally traded commodities were from the World Bank *Commodity Markets and Developing Countries* (May 1996).

B. FINANCIAL AND ECONOMIC VIABILITY

Financial Models

6.6 *Post-harvest Investment.* Financial models were constructed for post-harvest processing investments and income-generating activities. The financial models for post-harvest equipment were based upon the following assumptions: (i) a useful life of equipment of 10 years for mills and 15 years for engines; (ii) an estimated life of 20 years for physical structures; and (iii) investments are through group ownership but with hired operator/manager providing custom services. Cost of technical assistance provided by the project for organizing and training users

¹ The functional form can be stated as: $PMB(Q_2 - Q_1) = (C_2 - C_1) - (K_2Q_2 - K_1Q_1)$, where, $B = B_1 + B_2$; $B_1 = P_2Q_2 - P_1Q_1$; $B_2 = F_2Q_2 - F_1Q_1$; $C_1, C_2 =$ economic costs of producing the entire output with and without the project; $F_1, F_2 =$ fare paid to evacuate one ton of surplus over the access roads, with and without the project; if access road did not exist, the cost of headloading can be used as a proxy; and $K_1, K_2 =$ economic costs of evacuating a ton of commodity, with and without the project.

was considered a grant and therefore not included in the analysis. No financial models were estimated for roads, tracks and dugouts development given the public good nature of these investments. The financial models showed a positive cashflow after the initial one-year investment period for all options of processing technologies, indicating the relative profitability of these investments for smallholders.

6.7 Crop Models - Small-scale Irrigation. Financial models were also constructed for agriculture production using small-scale irrigation technologies. The investment in streamflows and diversions would enable smallholders to grow higher value crops in valley bottoms or to extend cultivation to the dry season. The main crops planted were assumed to be maize and vegetables in the North and maize and irrigated rice in the South, with supplemental irrigation for dry season production of rice. Around peri-urban areas, higher value vegetable crops would be grown for sale to larger stores in nearby centers. The financial profitability of intensification of farming, using small-scale irrigation are high and justify on profitability grounds, adoption of these technologies by small farmers.

Economic Analysis

6.8 Assumptions. Financial prices were converted to economic values by removing distortions in market prices of tradable and non-tradable commodities. Tradables were valued at border prices, appropriately adjusted for domestic transport and handling. For non-tradable commodities, a standard conversion factor (SCF) of 0.85 was used to convert financial prices into economic terms. The opportunity cost of labor was also estimated based on the standard conversion factor.

6.9 The determination of the economic viability of the project was based on the following assumptions: (i) a project life of 20 years with a one-year lag for the accrual of benefits; (ii) an investment period of five years; (iii) all prices expressed in constant 1996 values; and (iv) an opportunity cost of capital of 12 percent. Based on these assumptions, the economic rate of return (ERR) for the individual project components are as follows: post-harvest, 32 percent; rural water infrastructure, 23.1 percent; and rural transport infrastructure, 26.6 percent. Overall, project economic rate of return (ERR) is 26 percent with a net present value (NPV) of Cedis 218,683 million. The models for the economic analysis are in Annex IX.

Sensitivity Analysis

6.10 The procedure used to determine the sensitivity of project outcomes to various changes was the switching value method. It measures the extent of change in the project NPV that would make the project to “switch” from being acceptable to unacceptable. Based on pre-appraisal mission findings, it was determined that project viability would be sensitive to the following factors: (i) implementation delays, due to the time required to conduct community awareness and implement other institutional strengthening measures before actual construction of subprojects can begin; (ii) changes in project benefits due to fall in output prices or lower-than-expected prices for processed output; and (iii) increases in costs of production mainly as a result

of increases in the rural wage rate. These factors therefore formed the basis of the sensitivity analysis whose effect on project ERR are summarized in Table 6.1 below:

Table 6.1: Sensitivity of Project NPV to Changes in Selected Risk Variables

	Project Components			
	Post-harvest (a)	Rural Water	Rural Transport	All Project
Base Case:				
ERR	32.0	23.1	26.6	26.0
NPV @ 12 percent OCC (Million Cedis)	173,363	129,138	38,897	218,683
Scenario I				
<i>Output-Side Sensitivity</i>				
20 percent fall in benefits:				
ERR	n.a	17.1	22.0	20.1
Switching Value (percent)	n.a	33	57	84
Scenario II				
<i>Input-Side Sensitivity</i>				
Costs increased by 20 percent:				
ERR	n.a	18.7	23.5	18.9
Switching Value (percent)	n.a	53	77	64
Scenario III				
<i>Project Delayed by One Year:</i>				
ERR	n.a	23.0	24.2	23.5
Switching Value (percent)	n.a	86	97	93

Source: mission estimates.

n.a: not applicable; (a) Not estimated for postharvest component given various intermediate processing stages.

6.11 These estimates showed that overall project NPV is not sensitive to changes in either project benefits or costs within a 20 percent deviation from the base case. Similarly, individual project components were also less sensitive to changes in benefits and costs of magnitudes not exceeding 20 percent. Even for the most sensitive component, rural water, it would require at least a 33 percent fall in benefits to render this investment component uneconomic. Because there are numerous intangible benefits not captured in the economic analysis, the switching value of 33 percent is within an acceptable limit for purposes of assessing the viability of aggregate investments in rural water. However, during implementation, the viability of individual subprojects, where applicable, would be ascertained before investment takes place.

Fiscal Impact

6.12 Government financing responsibility under the proposed project is estimated at US\$7.1 million, which includes duties and taxes totaling US\$5.8 million. Since the duties and

taxes represent transfer payments, the actual central government contribution would amount to US\$1.3 million over five years. Because the proposed operation is targeted at farmer groups, communities and District Assemblies, and it provides little support for sectoral ministries, the fiscal burden on the central government is therefore assumed to be negligible.

6.13 The second level of fiscal impact is at the level of the District Assemblies. The project would leverage development resources ceded by the central government to local governments entities for the purpose of undertaking projects which are included in the District Development Plan. For participating District Assemblies, project funds would complement the existing District Assemblies Common Fund (DACF). Under the project, the total counterpart fund requirements for districts is currently estimated at US\$3.0 million over five years, averaging 5 percent of total project costs. The counterpart fund requirement therefore compares favorably with a total of Cedis 82 billion (US\$42 million) ceded to the District Assemblies in 1996 as Common Funds allocations. The counterpart fund requirements under the project would therefore not impose any undue financial burden on District Assemblies for the following reasons: (i) DAs receive ceded revenues from the central government for undertaking development activities on a regular basis; (ii) and the project would finance sub-projects already in the Districts' Development Plans, for which budgetary allocations would have been made by DAs; and (iii) annual counterpart fund requirements would be minimal, compared to the average level of ceded revenue of Cedis 350 million (US\$184,000) per annum per District, equivalent to US\$158,000 per annum.

6.14 **Matching Grants and Advances.** Assistance to DAs would be in the form of grants that would be used to leverage the implementation of subprojects in the District rural development plan. However, districts would be expected to provide counterpart funding from their Common Fund and to budget for O&M and other operating expenses in their recurrent budgets. Project resources transferred to beneficiary groups and farmer associations, would be subject to the following: (i) groups must contribute in cash or in kind to the investments; and (ii) groups would be required to open an account with a rural bank or branch of a commercial bank to which regular contributions would be made, for the required initial contribution by the users undertaking O&M activities, replacing asset when it reaches the end of its useful life, or as a collateral to secure additional loans from the bank for second generation investments; (iii) beneficiaries would be expected to pay back the principal of the investments in equal installments as set out in the contract; (iv) the reflows would be into the DACF, and these would be used for development purposes as defined under the existing operating procedures and policies of the DACF.

C. PROJECT BENEFITS

6.15 Key project benefits would be: (i) increased productivity and incomes; (ii) increased rural employment; (iii) reduction in rural poverty; (iv) human resource development; and (v) institutional development.

6.16 **Increased Productivity and Incomes.** The project would lead to higher incomes for at least 500,000 households over the investment horizon. The introduction of labor-saving

technologies would free up time previously devoted to transport, food-processing and water collection. In parallel, improved access to safe potable water would result in a healthier and more productive work force. As agricultural output grows, improvements in post-harvest facilities would enable rural communities to reduce crop losses and undertake more higher value-added activities. Incomes and employment would grow with the development of village-based agro-industries. This effect would be further stimulated by enhanced income from livestock, especially in the arid North, where access to water resources would help to stabilize herds. Improvement of rural transport capacity would facilitate the movement of harvests from farm to village; and of semi-processed products from villages to markets. Improved access to health, educational and extension services as a result of better rural road linkages would also have a beneficial longer-term impact on rural productivity and incomes.

6.17 *Increased Rural Employment.* The project would lead to increase employment of both unskilled and skilled labor in the rural areas. This would come from the hiring of operators of processing enterprises and of unskilled labor to provide services for bagging, packing and storing. The rehabilitation of roads and the construction of village trails and tracks through labor-based methods would also create employment opportunities in rural communities, and this direct infusion of cash into erstwhile poor communities would promote food security and help to reduce poverty.

6.18 *Impact on Poverty Reduction.* Given that isolation and drudgery are two central defining characteristics of rural poverty, the project would play a significant poverty-alleviating role. Improved access to potable water carries substantial benefits in terms of time and energy savings and improved health. A reduction in the workload associated with food-processing and off-road transport would also contribute significantly to time and energy savings for the poor. Improved access to health and educational facilities would help the poor to break out of the cycle of poverty in which they are currently trapped. Insofar as women are primarily responsible for food-processing for household needs as well as for most transport tasks, including the collection of water, they are expected to benefit significantly. Coastal communities will also benefit from improved sanitation facilities, water supply and waste collection and disposal facilities.

6.19 *Human Resource Development.* The project would lead to capacity building in the rural sector through basic training of rural communities and districts in technical and managerial skills. The core civil service within District Assemblies, notably financial, planning and budgeting officers, would be strengthened and this would lead to a greater pool of skilled and experienced staff for planning and managing rural development at the District-level.. Other benefits would be training of members of farmer associations and groups in basic financial management skills are timely provision of O&M.

6.20 *Institutional Development.* The project would lead to institutional strengthening of District Assemblies, community groups and farmer associations. It would also develop capacity among the local NGOs that would be involved in providing sub-project implementation assistance to beneficiary groups. These efforts would promote sustainability of the poverty reduction interventions being provided under the project. Stronger District Assemblies would be better able to provide support to community development efforts, attract development resources,

and better manage scarce resources. Stronger farmer associations and other rural groups would lead to empowerment of rural beneficiaries to take direct responsibility and play a more active role in local development efforts.

D. PROJECT RISKS

6.21 The likely project risks are: (i) slow development of capacity especially at the district level; (ii) lack of coordination among various partners in the implementation of the program; and, (iii) slow adoption new technologies by poor farmers, which may affect both the patterns and uptake of new technologies. The likely impact of these risks on program viability are summarized in Table 6.2

6.22 *Slow Development of Capacity.* While significant institutional capacity building is programmed for under the project, capacity building is however a slow process. Slow development of capacity especially at the District level would result in implementation delays for key project components. However, from the sensitivity analyses, delays of one to two years would have very little impact on achievement of project outcomes. Measures taken in project design to mitigate these risks include close monitoring of NGO assistance, regular quality supervision and management audits of all participatory District Assemblies, and regular training of project beneficiaries and NGOs. A capacity assessment of Districts and NGOs would be undertaken before effectiveness and interventions designed to address capacity deficit problems.

6.23 *Weak Coordination Among Many Stakeholders.* Project success would depend on effective coordination and sequencing of activities among a large number of stakeholders - community associations, District Assemblies, local NGOs, private sector actors, financial institutions, and sector ministries. Weak coordination would diminish potential synergies arising out of the project and would affect outcomes. The likely impact of this risk on the project would be implementation delays. However, project ERR is not very sensitive to this risk. Measures taken to reduce this risk are the establishment of the RICU as an autonomous agency, preparation of detailed operating procedures and policies of the RICU and a full-scale information education and communication (IEC) program to increase awareness of beneficiaries, including their roles and responsibilities.

6.24 *Slow Adoption of New Technologies.* Some project activities would involve the introduction of new processes and techniques with which beneficiaries may not be altogether familiar. This is likely to be the case particularly with some types of IMTs. While conditions for technology dissemination appear favorable, the introduction of new technologies is rarely straightforward, and resistance among beneficiary communities may slow down project implementation. The project has taken steps to ensure that technologies are simple and appropriate; that they are cost-effective; and that they would be monitored regularly to ensure that cultural problems are addressed.

Table 6.2: Risk Assessment Matrix

Risk Factor	Likely Impact	Probability of Occurrence	Mitigatory Measures
Slow Development of Capacity	Project implementation may be delayed or some components made difficult.	Low to medium probability.	Steps taken before credit effectiveness to provide training. Continuous monitoring and feedback. Regular training programs
Lack of Coordination Among Many Project Interests	Delayed implementation. Lack of transparency.	Medium to high probability.	Extensive IEC campaigns. Group training and feedback. Ensure regular meeting of local implementation committees. Regular monitoring and intensive supervision.
Slow Adoption of Technologies	Delays in Project benefits. Impact less than anticipated.	Low.	Simple technologies selected. NGO support for beneficiary training. Flexibility in menu of options. Pre- and post-investment support.

E. PROJECT ENVIRONMENTAL IMPACT

6.25 The project is classified as Category B for purposes of environmental assessment. The various interventions proposed are therefore expected to create localized environmental problems. For example, establishment and/or rehabilitation of dugouts, village tracks and trails, and threshing and drying floors could, if improperly done, raise localized gully erosion, water contamination and groundwater depletion. The sinking of additional boreholes would increase the abstraction rate from the aquifers in the immediate vicinity of the wells (less so on the overall level of groundwater resources). Appropriate mitigation measures have been prepared for each specific sub-project to minimize these environmental effects. The environmental aspects of all project interventions were carefully reviewed by the Ghana Environmental Protection Agency and appropriate mitigation measures designed for implementation under the project, including water quality testing of sources likely to be used for human and livestock consumption. The design of the watering points for cattle, for example, would also include measures to minimize contamination from surface sources. Test will also be made of aquifer yield potential before decisions are made to establish new wells, to ensure that abstraction rates are compatible with sustainable yields of the aquifer. The project would also have some possible environmental impacts through implementation of the integrated catchment management and coastal zone management components. Coastal communities would be assisted with water supply and sanitation services as well as with technical assistance to restore and rehabilitate wetlands, afforest mangroves, promote fuelwood lots and other such environmentally-responsive interventions.

F. IMPACT ON WOMEN

6.26 The project is part of a comprehensive effort to assist rural women and girls to better their living conditions through direct transfers of technical and financial resources. Women would benefit in several ways. First, given the dominance of agro-processing activities by women groups, they would be the primary beneficiaries of this component. Reduction in post-harvest losses, coupled with value-added through processing would directly increase incomes of rural women. Second, women and girls are the major participants in the daily efforts to secure safe drinking water for households. This activity often involves trips of up to 3 km to fetch water, especially in the drier North of the country. Therefore, the development of water resources close to village communities would result in time-savings and reduction in drudgery among rural women. The time saved would give rural women greater flexibility to undertake other tasks such as taking better care of children or engaging in productive economic activities, and girls, the opportunity to go to school. Third, women and girls are the main headloaders of produce from farms to the villages. The development of village tracks and trails and the introduction of IMTs would remove some or all of the drudgery for them and reduce on-farm losses as products would be evacuated more efficiently and quickly to village storage. Women in coastal fishing villages would benefit through the provision of improved technologies for fish smoking and drying and in the provision of storage and waste disposal facilities.

7. AGREEMENTS REACHED WITH THE BORROWER, CONDITIONS AND RECOMMENDATION

A. AGREEMENTS OBTAINED DURING NEGOTIATIONS

During Negotiations, agreements were reached on the following:

7.1 Establishment of the Rural Infrastructure Coordinating Unit, decentralized with four zonal offices in Tamale, Kumasi, Cape Coast and Accra, with broad autonomy to implement within pre-determined thresholds and on a day-to-day basis, the coordinating support for rural infrastructure development (paras. 5.8 and 5.10).

7.2 That staff of the Rural Infrastructure Coordinating Unit and the zonal offices would be contract staff hired through a competitive process with terms of reference, qualification, and experience acceptable to IDA (para. 5.8).

7.3 MOFA would ensure that the existing Project Unit of the Agricultural Sector Investment Project (ASIP) would be integrated into the Rural Infrastructure Coordinating Unit to establish a unified institutional arrangement for the delivery of rural infrastructure services to the poor (para. 5.9).

7.4 Composition and terms of reference of both the Project Policy Coordinating Committee (PPCC) and National Technical Steering Committee (NTSC) acceptable to IDA (paras. 5.2 and 5.3).

7.5 The appointment of independent firms of local auditors to provide semi-annual reviews of financial management procedures and recordkeeping and monitor sub-projects implementation performance at the District level and the performance of the zonal offices (para. 5.18).

7.6 The eligibility criteria for participation in subprojects by District Assemblies, amongst which will be the following: (a) adequate staffing; (b) development of a District Development Plan in a participatory manner; and (c) agreement to use the District Common Fund for counterpart funding purposes under the project (para. 5.15).

7.7 The eligibility criteria for participation in subprojects by communities and groups and the nature of beneficiary contributions (para. 5.16).

7.8 The Assessment of District Assemblies institution strengthening needs to ensure complementarity with the initiatives of other donors (para. 5.15).

7.9 Implementation monitoring (para. 5.18), assessment of project impact on beneficiaries (para. 5.19), financial audits (para. 5.20), and implementation of all

procurement procedures in accordance with criteria and thresholds specified (paras. 4.3 - 4.11).

7.10 Regular supervision of physical implementation, management performance and financial controls (para. 5.22), and preparation and organization of the project Mid-Term Review (para. 5.26) and the Implementation Completion Report (para. 5.27), and participation of the Borrower in these activities (para. 5.28).

7.11 As **conditions for Board**, the Borrower has established the Rural Infrastructure Coordinating Unit and its zonal offices acceptable to IDA (para. 5.10); prepared detailed operating procedures and policies of the District Rural Infrastructure Fund (DRIF) and terms of reference of DRIF Managers acceptable to IDA (para. 5.6 and Annex VIII); and prepared detailed terms of reference of independent auditors for purpose of conducting semi-annual audits of DRIF and zonal implementation performance (para. 5.18; Annex VII).

B. CONDITIONS OF EFFECTIVENESS

7.12 The deposit by the Government of Ghana of US\$100,000 equivalent into the Project Account in a Commercial Bank (para. 4.14).

7.13 Evidence acceptable to IDA that at least five (5) District Assemblies have met the eligibility criteria for participation in the Project (para. 5.6).

C. RECOMMENDATION

7.14 Based on the above, the proposed project is suitable for an IDA credit of SDR 20.8 million (US\$30.0 million equivalent) to the Government of the Republic of Ghana.

GHANA
Village Infrastructure Program
Components Project Cost Summary

	(Local Million)					(US\$ Million)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
1. Rural Water Infrastructure	25,364.8	7,153.5	32,518.2	22	28	10.8	3.0	13.8	22	28
2. Rural Transport Infrastructure	22,175.1	8,544.0	30,719.0	28	26	9.4	3.6	13.1	28	26
3. PostHarvest Infrastructure	9,020.7	2,333.0	11,353.6	21	10	3.8	1.0	4.8	21	10
4. Institutional Strengthening	13,029.0	9,457.0	22,486.1	42	19	5.5	4.0	9.6	42	19
5. Rural Infrastructure Coordinating Unit	15,088.0	1,682.6	16,770.5	10	14	6.4	0.7	7.1	10	14
6. Refinancing PPF	1,638.4	1,092.3	2,730.6	40	2	0.7	0.5	1.2	40	2
Total BASELINE COSTS	86,315.9	30,262.2	116,578.1	26	100	36.7	12.9	49.6	26	100
Physical Contingencies	7,891.6	2,917.0	10,808.6	27	9	3.4	1.2	4.6	27	9
Price Contingencies	76,424.7	25,259.8	101,684.5	25	87	4.5	1.4	5.9	23	12
Total PROJECT COSTS	170,632.2	58,439.1	229,071.3	26	196	44.5	15.5	60.0	26	121

GHANA
Village Infrastructure Program
Local/Foreign/Taxes by Financiers
(US\$ Million)

	IDA		KfW		IFAD		District Assemblies		Beneficiaries		The Government		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
I. Foreign	8.8	57.0	2.9	18.6	3.8	24.4	-	-	-	-	0.0	-	15.5	25.8
II. Local (Excl. Taxes)	21.2	54.6	4.1	10.6	6.2	16.0	3.0	7.8	2.9	7.6	1.3	3.4	38.8	64.6
III. Taxes	-	-	-	-	-	-	-	-	-	-	5.8	100.0	5.8	9.6
Total Project	30.0	50.0	7.0	11.7	10.0	16.6	3.0	5.0	2.9	4.9	7.1	11.8	60.0	100.0

GHANA
Village Infrastructure Program
Components by Financiers
(US\$ Million)

	IDA		KfW		IFAD		District Assemblies		Beneficiaries		The Government		Total		For. Exch.	Local (Excl. Taxes)	Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%			
1. Rural Water Infrastructure	7.5	43.9	2.4	14.1	2.0	11.7	1.2	7.2	1.0	6.0	2.9	17.1	17.0	28.3	3.7	11.3	2.0
2. Rural Transport Infrastructure	6.6	40.9	3.3	20.1	2.3	14.3	1.0	6.1	0.7	4.1	2.4	14.5	16.2	27.1	4.5	9.4	2.4
3. PostHarvest Infrastructure	2.0	34.4	0.9	14.8	0.9	14.5	0.3	4.5	1.2	21.1	0.6	10.7	5.9	9.8	1.2	4.0	0.6
4. Institutional Strengthening	7.4	65.7	0.4	3.9	1.8	16.2	0.6	4.9	0.0	-	1.0	9.2	11.3	18.8	4.7	5.9	0.7
5. Rural Infrastructure Coordinating Unit	5.2	62.4	0.0	0.2	3.0	35.4	0.0	-	0.0	-	0.2	1.9	8.4	14.0	0.8	7.5	0.1
6. Refinancing PPF	1.2	100.0	-	-	-	-	-	-	-	-	0.0	-	1.2	2.0	0.5	0.7	-
Total Disbursement	30.0	50.0	7.0	11.7	10.0	16.6	3.0	5.0	2.9	4.9	7.1	11.8	60.0	100.0	15.5	38.8	5.8

**GHANA
VILLAGE INFRASTRUCTURE PROJECT**

Project Implementation Schedule

Borrower's Fiscal Year	Responsibility	FY97				FY98				FY99				FY00				FY01				FY02				FY03							
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Quarter																																	
Negotiation	IDA, GOG	■																															
Board Presentation	IDA			■																													
Effectiveness Date	IDA				■																												
Project Management																																	
<i>Recruit National Coordinator</i>	GOG/MOFA			■																													
<i>Recruit Zonal Coordinators</i>	MOFA			■																													
Pre-Project Activities																																	
<i>Study for Pilots</i>	RICU	■	■																														
<i>Recruit NGOs/consultants</i>	RICU	■	■	■																													
<i>Initial training activities</i>	RICU	■	■	■	■																												
<i>Launch Pilot Activities</i>	RICU	■	■	■	■	■	■																										
Qualification and Training																																	
<i>Pre-qualification of NGOs</i>	RICU			■																													
<i>Assessment of District cap.</i>	RICU			■																													
<i>Assessment of training needs</i>	RICU			■																													
<i>Design of training modules</i>	RICU			■																													
<i>Pre-Qualify contractors</i>	RICU			■	■																												
<i>Prepare Sample documents</i>	RICU			■	■																												
Information, Education, Communication																																	
<i>Project IEC Campaign</i>	RICU			■	■	■	■																										
<i>Begin public announcements</i>	RICU			■	■	■	■																										
<i>Recruit district facilitators</i>	RICU/DAs			■	■	■	■																										
<i>Train facilitators</i>	RICU			■	■	■	■																										
<i>Project launching</i>	RICU/MOFA			■	■	■	■																										
Implementation of Subprojects	RICU					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Reviews																																	
<i>Supervision missions</i>	IDA/KW/IFAD							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<i>First year review</i>	IDA							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<i>Mid-Term Reviews</i>	IDA/GOG							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<i>Semi-annual audits</i>	RICU							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<i>Annual audits</i>	RICU							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Project completion																																	
<i>Project closing date</i>	IDA																																
<i>Project completion date</i>	IDA																																
<i>Implementation completion</i>	RICU/MOFA/IDA																													■	■	■	■

GHANA
VILLAGE INFRASTRUCTURE PROJECT

Eligibility Criteria

1. **Eligibility Criteria.** The following pre-requisites would have to be satisfied before individual districts and communities could benefit from the provisions of the VIP. In order to avoid start up delays, it would be important to prepare for these requirements in the period after appraisal and prior to credit effectiveness. The credit effectiveness conditions would include at least 5 Districts having satisfied the eligibility criteria set out below.

A. DISTRICTS AND COMMUNITIES

2. Implementing capacity at the District level would depend on the available skills of the core administrative staff of the District Assembly. The following senior staff would have assumed duty within the District Administration: (a) District Coordinating Director; (b) District Financial Controller; (c) District Engineer; (d) District Financial Controller; and (e) District Agricultural Officer.

The required training for these staff, where necessary, would be provided in part under the PPF. Training programs would be designed to complement those provided by other donors such as the EU and GTZ.

3. The District Assembly would have an operating District Assembly Common Fund and agreement that the DACF would be used for providing counterpart funds for subprojects financed under the project for the District.

4. The District Assembly would have established a District Rural Infrastructure Fund (DRIF) as a separate window for financing private sector infrastructure.

4. Adequate operational facilities would have been provided, including: office accommodation, together basic office equipment, and materials safe storage and other operational space.

5. The District Assembly would have prepared a participatory District Development Plan, in close consultation with the community, taking into account their priority needs and resources, implementation capacity and sustainability considerations.

B. COMMUNITIES AND GROUPS

6. For private community infrastructure, communities would be required to take ownership and to operate and maintain them at sustainable levels. The benefiting communities would, therefore, have to organize themselves to take full responsibility for the proper operation of the facilities and to provide routine maintenance. The process of assuming ownership would require contributions from the users, primarily in kind (labor and/or materials) to the capital investments and full responsibility for their operation and maintenance. Community and beneficiary groups

would also be expected to repay the principal of the investment to the District Rural Assembly Common Fund. Such second generation funds can only be used for development purposes at the District-level and not for recurrent expenditures of the District. The following requirements would have to be satisfied for support under the VIP:

- (a) The beneficiaries would have formed a user group or association formally registered in accordance with prevailing regulations on group activities for accounting and monitoring purposes.
- (b) The user association or group would have satisfactorily completed appropriate training in group dynamics and management provided through a partnership NGO, as well as receive basic understanding of the nature of operating the investment as a rural enterprise. The Executive Officers of the organization (Chairman, Secretary and Treasurer) and at least four other literate members would have to satisfactorily complete special training in (i) managing
- (c) finances of the organization and the investment, and (ii) basic technical and management procedures for the efficient operations and maintenance of the facility.
- (d) The user group or association would be required to have opened and operated a savings account in a commercial bank for at least three months immediately prior to application of the VIP, and to have saved the minimum financial contribution to the investment.
- (e) The organization would also be required to provide adequate assurances that its required contributions to the capital investment would be available at a time and at a level to be mutually agreed upon. It would also agree take full responsibility for the proper operation of the facility, including adequate routine recurrent maintenance to sustain it and to repay the principal in installments as set out under the agreement with the DRIF.

**GHANA
VILLAGE INFRASTRUCTURE PROJECT**

TERMS OF REFERENCE

Financial and Process Audits

1. Financial management and audit services are provided under this project to cover all districts participating in the project for oversight purposes of the DRIF and to ensure financial accountability and transparency at all levels of implementation. In general, the services of the independent auditors would include: (i) technical assistance to DAs in proper financial management and accounting, stores management and procurement; (ii) auditing of DA special and project accounts and SOEs for individual subprojects; and (iii) auditing zonal accounts and procedures. Emphasis will be given to establishing constructive and cooperative working relations between the zonal project entities and the DAs with a view to resolving financial management issues as they arise, and to provide guidance to the District Financial Management Team.

Tasks:

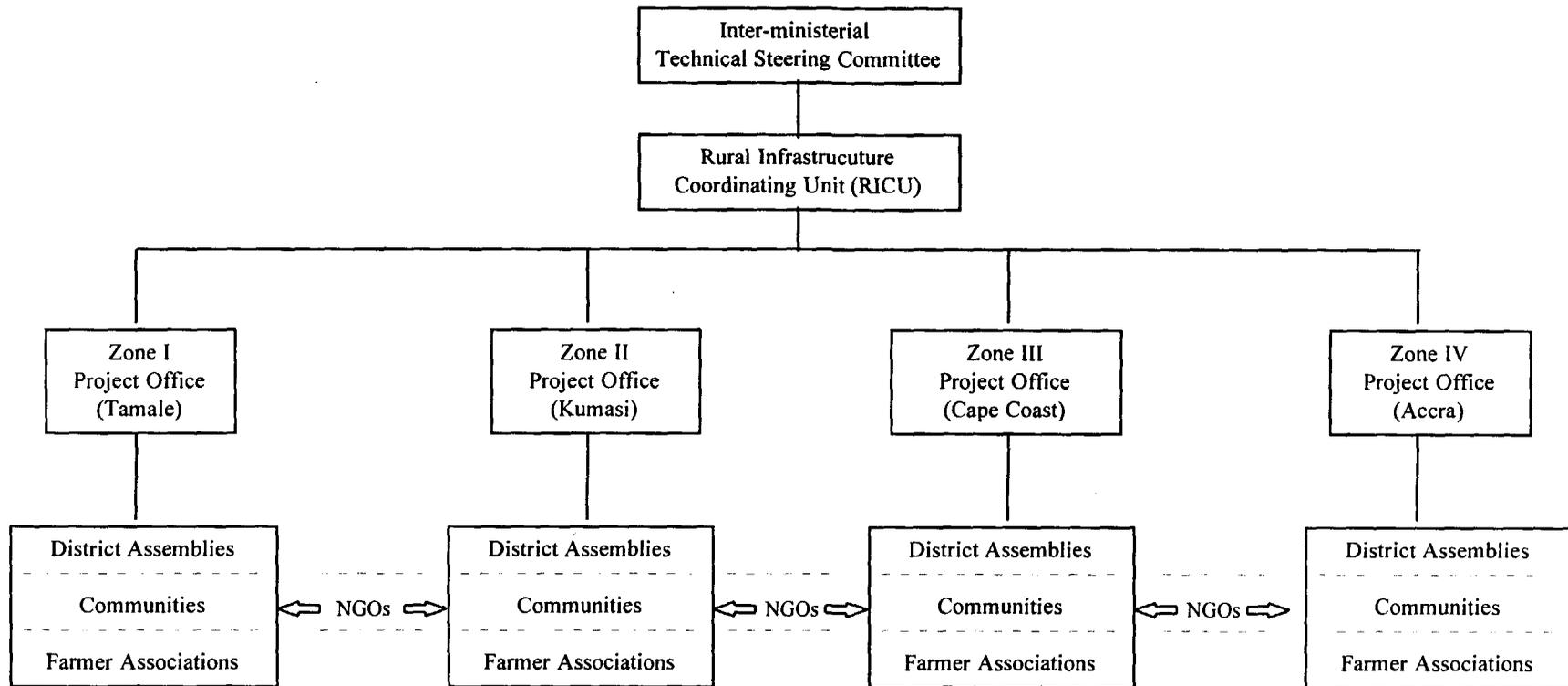
2. Financial management support to DAs and process audits will be undertaken for each DRIF account by private sector auditors. Key responsibilities will include the following:

- (a) conduct financial management workshops before the start of subproject actions in each participating District;
- (b) undertake semi-annual field visits to each participating DA to provide on-the-job training, financial management support, accounts and stores supervision, physical and financial audits;
- (c) assist DAs to follow good financial and stores management practices;
- (d) regularly compare the efficacy of financial management systems in the districts with those recommended in the VIP Implementation Manual and recommend any necessary changes to the DA;
- (e) regularly review the stores management and procurement procedures in place in the DA in order to determine their adequacy for authorization, purchase, storage, recording, security, stock-taking and control of stock;

- (f) review the accuracy and timeliness of the application of recommended financial and stores management procedures by the DAs in administering the project accounts;
- (g) examine the ability, competence and efficiency of the finance and stores personnel responsible for VIP activities within each district, and make recommendations for reassignments, appointments and in-service training as applicable;
- (h) maintain close liaison with Technical Service Agencies, especially with respect to cost estimates, timely purchase of materials by the DAs in line with the scheduled program of civil works;
- (i) present a detailed semi-annual audit report (June 30 and December 31 of each calendar year) to Zonal and National Project Coordinators and the Resident IDA supervision authority, clearly outlining and qualifying the findings and indicating those problems which it has not been possible to resolve with the relevant DA. The reports should clearly express the auditor's professional opinion regarding the degree to which the DAs expenditure statements and DRIF processes are: (i) in line with the level of execution of subprojects, including materials purchased and in store, (ii) cost estimates for the subprojects as approved by the zonal offices; and (iii) comparison with prevailing market prices;
- (j) during each semi-annual field visit, follow-up on the issues identified during preceding visits with the DAs with a view to resolving problems in a collaborative and constructive manner;
- (k) at the end of each subproject cycle, prepare and submit a "final" report that would certify expenditure properly undertaken for each completed subproject which have been reconciled with record held by TSAs, and make recommendations for enhancing the effectiveness of implementing any future activities in the districts; and
- (l) all reports must be submitted to the RICU, Resident IDA representative and responsible zonal office within one month of a field visit.

**GHANA
VILLAGE INFRASTRUCTURE PROJECT**

Project Coordinating Arrangements



GHANA VILLAGE INFRASTRUCTURE PROJECT

TERMS OF REFERENCE

National Technical Steering Committee

1. An inter-ministerial Technical Steering Committee (NTSC) would be established with representatives of key sector stakeholders such as Ministry of Food and Agriculture (MOFA), Ministry of Works and Housing (MWH), Ministry of Local Government and Rural Development (MLGRD), Ministry of Health, Ministry of Environment, Science and Technology, the Department of Feeder Roads (DFR), Ghana National Association of Farmers and Fishermen (GNAFF), National Board for Small-Scale Industries (NBSSI), Department of Cooperatives, Ghana Irrigation Development Authority, and GAPVOD. The National Coordinator of the RICU will act as secretary, to the NTSC and will be charged with implementing the decisions of the Committee. Each meeting of the NTSC would have clear minutes that would be distributed and kept on file for reference.
2. The NTSC would meet twice a year to review the semi-annual work program of the RICU and to provide guidance on sectoral issues and priorities. Decisions taken at this level should be communicated to the regional and district levels within two weeks by the RICU. Issues which would require policy decisions should be referred to the Project Policy Coordinating Committee for urgent attention in order to remove all bottlenecks to project implementation.
3. The tasks of the NTSC would include the following:
 - (a) discussion of semi-annual progress reports submitted by the National Coordinator of the RICU;
 - (b) discuss and approve the project annual workplans, and provide additional inputs after six months to the revised plan; and
 - (c) advise on sectoral coordination problems that may arise;
 - (d) advise the National Coordinator on general implementation issues; and
 - (e) deliberate on any other issues referred to by the National Coordinator or donors.
4. The NTSC would from time to time, visit project sites to assess on-the-spot progress and receive feedback from beneficiaries. Such field visits would be coordinated by the RICU and its zonal offices.

**GHANA
VILLAGE INFRASTRUCTURE PROJECT**

TERMS OF REFERENCE

A. Rural Infrastructure Coordinating Unit (RICU)

1. The government would establish a Rural Infrastructure Coordinating Unit (RICU) for purposes of implementing its rural infrastructure program. Initially, the RICU would serve both the ASIP and the VIP but with time, it would be expanded to handle projects from other sectors as well. All staff of the RICU will be directly hired through a competitive process and will not be seconded from any individual ministry or agency. In the latter case, the official would have to resign and go through a competitive hiring process. At the national level, the RICU will consist of the following core staff: a National Coordinator and two core staff, a Rural engineer and a Rural Institutions Specialist. Other staff of the RICU will include finance, internal audit, procurement, public relations, administrative assistant, etc. The RICU will be responsible for implementing the policies established by the Project Planning Coordinating Committee (PPCC) and Technical Steering Committee, assuring direct linkages with the 9 Sectoral ministries, and the day-to-day management of the project, including reporting, monitoring and evaluation, and audit services.

Tasks:

2. The specific tasks of the RICU would be to:
- (a) plan, organize and control project operations;
 - (b) represent the project towards third parties and donors;
 - (c) manage project information and promotion campaigns;
 - (d) elaborate and review of standard project documents and procedures;
 - (e) coordinate the activities of the Zonal Project Offices;
 - (f) carry out project disbursement and accounting in cooperation with zonal offices;
 - (g) manage project funds including the Special and Project Accounts;
 - (h) review qualifications and prequalifications of supporting agencies, NGOs and consultants in collaboration with zonal offices and participating districts;

- (i) evaluate the performance of supporting agencies, NGOs and consultants in collaboration with zonal project offices;
- (j) report semi-annual progress to IDA and the National Technical Steering Committee and annually to IDA;
- (k) elaborate work plans and cash flow projections;
- (l) liaise with and receive Monitoring and Evaluation reports from PPMED and other sector evaluation functions;
- (m) develop all manuals for training activities associated with the project and program the training sessions in collaboration with the appropriate training institutions and consultants;
- (n) develop project financial reporting formats for the use of zonal offices in collaboration with appropriate consultants; and
- (o) develop and maintain a MIS to track project progress and performance, including the timing of specific subprojects and the effectiveness of implementation assistance provided by NGOs and consultants.

B. ZONAL COORDINATING OFFICES

1. In addition to the RICU there would be four zonal project offices (Tamale for Zone I -- North, Upper East and Upper West Regions; Kumasi for Zone II -- Northern and Brong Ahafo regions; Cape Coast for Zone III -- for Western and Central regions, and Accra for Zone IV, for Greater Accra, Eastern and Volta Regions). These zonal offices will be responsible for the day-to-day implementation of the project in each geographical area. Each zonal office would be headed by a Zonal Coordinator, who will report to the National Coordinator, and consist of Rural Engineers, Community Development Specialist, a Finance Officer, an Internal Auditor and a Gender Specialist. Other staff of the zonal offices would be added as needed and as project implementation proceeds. All staff would be directly recruited on fixed-term contracts.

2. Zonal offices would have appropriate authority and responsibility to liaise and interact with each participating DA, with the objectives of ensuring that a district program of rural infrastructure is developed and implemented efficiently and effectively, and in accordance with prudent management practices. In interacting with the districts, the role of the zonal office is primarily to serve and service the districts, who bear primary responsibility, in collaboration with communities, groups and individuals, for implementation of individual subprojects. In performing its duties, zonal offices will interact closely with the RICU and keep it informed on issues relating to policy or availability of funds.

3. Each zonal office would exercise a limited degree of autonomy with predetermined thresholds as set out in the implementation manual. However, zonal offices will report to the RICU on all administrative matters and copy the RICU on all communications. Each zonal office will keep and maintain a zonal MIS but these would be aggregated and fed into the RICU.

4. Independent auditors would be assigned to each zonal office for purposes of semi-annual audits and review of progress made and determine that procedures are being followed and that appropriate procedures are also in place.

Tasks:

3. The key tasks of the Zonal Project Offices shall be to:

- (a) initiate meetings and other activities as appropriate with DAs to enable them to prepare integrated district development plans that contain subprojects prioritized by local communities;
- (b) zonal offices will have responsibility to effect financing decisions for procurement and disbursement within agreed thresholds;
- (c) zonal offices will have responsibility to give appropriate corrective advise to DAs concerning implementation of subprojects;
- (d) zonal offices will receive, review and approve subprojects for the districts within agreed thresholds; and signature contracts between communities and partner NGOs on DRIF programs;
- (e) forward to the attention of the RICU implementation issues at the zonal level requiring intervention by the National Technical Steering Committee;
- (f) engage technical consultants, audit firms, NGOs and private sector institutions from a list of prequalified institutions shortlisted for the zone to provide assistance to DAs in the planning, organizing and implementing subprojects;
- (g) assist DAs to initiate procurement processes and to strengthen financial management;
- (h) receive and review all reports emanating from audit firms, consultants and contractors during implementation;
- (i) assist National Coordinating Unit to review and negotiate agreements between financial institutions, contractors including NGOs, IMT manufacturers and DAs within agreed limits and thresholds;

- (j) organize the training program for participatory groups through NGOs;
- (k) review procurement and disburse within agreed thresholds for beneficiaries and communities; and
- (l) prepare quarterly and annual reports as appropriate for the RICU on progress made in the zone.

GHANA VILLAGE INFRASTRUCTURE PROJECT

A. Operating Procedures and Policies of the DRIF

For small-scale infrastructure such as boreholes, villages trials and tracks, bottomland development, agro- processing, storage, drying floors, etc. and private good a(income-generation activities), the DA would establish a District Rural Infrastructure Fund (DRIF) as a separate fund or a specific window of the DACF. A district-level committee comprising members of the DA, NGOs, and private sector would be constituted as the decision-making body of the DRIF. The Committee would consist of: the District Coordinating director, District Agricultural Officer, district Planning officer, district Financial Officer, a NGO active in the District and two representatives or elders in the District. A private manager would be hired by the DA to manage the Fund. The Committees would approve the operating policies and procedures of the fund, menu of eligible subprojects, and the share of funding for the DRIF. It would also approve the individual investment subproject proposals from communities and associations.

The Management of the DRIF. The day-to-day management of the DRIF would be entrusted to a manager hired on contract by the DA through a competitive process. Responsibility of the manager would include:

- (a) receiving, reviewing, and presenting individual investment proposals to the District Assembly committee on rural infrastructure;
- (b) managing the procurement and disbursement process of implementing subprojects, liaising with the appropriate district official (finance, budgeting, etc.);
- (c) being accountable to the DA, supervised by the RICU, and audited each quarter by independent external auditors.

Investments are funded through matching grants, not through credit. The proportion of the grant varies with the public good nature of the project, with beneficiaries contributing a significant amount to the investment costs.

Procurement arrangements. Procurement arrangements would be as follows:

- (a) private procedures would apply for infrastructure/goods/consultancy services financed by the DRIF;
- (b) clear and efficient (thresholds) would be established for procurement decisions; and

- (c) subproject proposals must come with fully justified O&M arrangements, if at all possible with secured technical assistance from NGOs.

Supervision and Control. Supervision and control would be vested in the RICU and in zonal levels. The national RICU would provide overall monitoring and financial/auditing supervision.

Flows of Funds. There would be an initial advance from the respective zonal project account to a District Rural Infrastructure Fund (DRIF) for financing smaller, community-level subprojects and small income-generating activities. The DRIF manager would manage the DRIF account. Advances would be replenished based on disbursement requests from the DACF and the DRIF. Alternatively, the national RICU office would also repay suppliers directly.

Terms of Reference of DRIF Manager

As a condition for participating in the VIP, each District would establish a District Rural Infrastructure Fund (DRIF) that would be under the control of the District Assembly. The DRIF would be a sustainable window for financing small-scale, community, and group infrastructure at the level of the District. Each District would hire a manager who would be responsible for managing the day-to-day activities of the DRIF. The manager would be backstopped at the technical level by the zonal office. The manager would be paid by the DA through project funds, and would report directly to the District Chief Executive. The manager will not be a civil servant of the DA, but would be contract staff serving the District to ensure an efficient implementation of its rural infrastructure program. The manager serves at the pleasure of the DA.

Specific terms of reference of the manager:

- (a) The review and process of all applications for subprojects for submission to RICU;
- (b) ensure proper procedures are followed;
- (c) work with NGOs and other support groups in reviewing applications for subprojects;
- (d) preparing annual and periodic reports, as necessary;
- (e) liaise with the zonal project office in ensuring that timely actions are taken on requests;
- (f) prepare certification of work completion for payment of works; and
- (g) manage the DRIF, preparing adequate records to facilitate quarterly audits.

At the zonal level, in addition to the technical staff, there should be management specialist to provide backstopping of the DRIF manager.

GHANA
VILLAGE INFRASTRUCTURE PROJECT

Net Flows to Postharvest Investments

Year	Cassava		Fish Processing		Grain Milling		Oil Palm Processing		Sheanut		Crop Storage		Net Flows
	Model I	Model II	Model I	Model II	Model I	Model II	Model I	Model II	Model I	Model II	Model I	Model II	
1	-6,600	-15,136	-9,900	-17,820	-2,750	-4,950	-5,313	-8,701	-4,300	-6,820	-9,900	-10,230	-102,420
2	1,200	1,020	860	-1,200	420	2,950	1,043	-2,564	-1,200	-1,200	1,784	544	3,657
3	3,996	2,202	1,786	2,435	349	3,736	1,526	3,245	1,346	3,478	2,345	1,189	27,633
4	4,262	2,907	2,412	7,906	517	7,920	1,822	7,685	1,631	7,612	2,675	1,844	49,193
5	4,529	3,790	3,024	8,468	683	4,651	2,545	9,474	1,910	8,528	3,309	2,480	53,391
6	4,529	4,015	2,336	7,939	73	4,415	2,153	9,461	1,988	8,484	3,527	3,102	52,022
7	4,529	3,482	3,090	9,090	568	4,232	1,345	7,829	1,293	6,840	4,125	3,270	49,693
8	4,262	3,200	3,219	8,876	402	3,573	1,723	8,266	1,367	7,205	4,194	4,194	50,481
9	3,996	2,759	3,357	9,169	232	2,552	1,455	7,231	637	5,905	4,275	4,275	45,843
10	3,739	2,261	3,051	9,455	61	2,423	999	7,355	820	5,367	4,286	4,286	44,103
11	3,196	2,342	3,622	10,238	214	3,573	1,297	8,741	2,425	3,014	4,436	4,436	47,534
12	3,739	2,572	2,328	7,448	110	2,552	1,651	4,581	2,278	4,897	4,515	4,515	41,186
13	3,739	2,541	2,431	7,448	216	2,423	2,027	5,787	2,278	5,580	4,465	4,465	43,400
14	3,739	2,541	2,431	7,448	216	2,884	2,027	5,787	2,278	5,580	4,465	4,465	43,861
15	3,739	2,541	2,431	7,448	216	3,664	2,027	5,787	2,278	5,580	4,465	4,465	44,641
												ERR @ 12% OCC	33%
												NPV	143,964

Assumptions on technical capacity:

Cassava Model 1: 2,000 kg tuber/day
Cassava Model 2: 5,000 kg tuber/day

Fish Model 1: 500 kg/yr
Fish Model II: 1,500 kg/yr

Sheanut Model I: 1,000 kg/yr
Sheanut Model II: 2,500 kg/yr

Oil Palm Model 1: 1,500 fb/day
Oil Palm Model II: 4,000 fb/day

Grain milling Model I: 1,000 kg/yr
Grain milling Model II: 3,000 kg/yr

Crop Storage Model I: 180 tons/yr
Crop Storage Model II: 360 ton/yr

GHANA
VILLAGE INFRASTRUCTURE PROJECT

Economic Rate of Return of Rural Transport Development

Year	Feeder Road Rehabilitation					Village Tracks and Trails				
	Investment	Periodic Rout/Maint	Benefits Farmers	Benefits Transprt	Net Flow	Investment	Regular Maintenance	Benefits Farmers	Benefits Transprt	Net Flow
1	1,904,546	190,455	0	0	-2,095,001	2,033,102	508,276	0	0	-2,541,378
2	3,999,561	399,956	1,615,875	94,904	-2,688,739	3,084,666	771,167	1,292,700	1,518	-2,561,614
3	12,598,550	1,259,855	5,639,925	165,622	-8,052,858	5,223,147	1,305,787	4,511,940	2,650	-2,014,344
4	13,228,469	1,322,847	13,262,268	243,412	-1,045,635	5,208,706	1,302,177	10,609,814	3,895	4,102,826
5	31,731,126	1,586,556	13,262,268	243,412	-19,812,002	16,692,100	4,173,025	10,609,814	3,895	-10,251,416
6		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
7		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
8		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
9		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
10		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
11		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
12		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
13		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
14		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
15		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
16		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
17		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
18		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
19		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
20		1,586,556	13,262,268	243,412	11,919,124		4,173,025	10,609,814	3,895	6,440,684
ERR					15.39%					29.84%
NPV @ 12% OCC ('000 Cedis)					2,727,705					15,936,633

GHANA
VILLAGE INFRASTRUCTURE PROJECT

Economic Returns to Small-Scale Irrigation

	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10-20
Inflows		25,625,250	68,334,000	68,334,000	85,417,500	85,417,500	85,417,500	85,417,500	85,417,500	85,417,500
Investment	122,116,950	20,352,825	13,568,550	13,568,550	13,568,550					
Outflows	216,272 6,488,162	242,628 16,983,965	310,394 27,935,442	352,500 35,250,005	336,360 33,635,960	336,360 33,635,960	336,360 33,635,960	336,360 33,635,960	336,360 33,635,960	336,360 33,635,960
Net Incremental Benefits	-128,605,112	-11,711,540	26,830,008	19,515,445	38,212,990	51,781,540	51,781,540	51,781,540	51,781,540	51,781,540
ERR @ 12% OCC	23.10%									
NPV @ 12% OCC ('000 Cedis)	95,036,392									

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VILLAGE INFRASTRUCTURE PROJECT

Economic Rate of Return, All Components

Year	Postharvest		Rural Water Component				Rural Transport Component				Total Project		
	Net Inflows	Investment	Recurrent Costs	Benefits	Net Inflows	Investment	Recurrent Costs	Benefits	Net Inflows	Investment	Recurrent Costs	Total Benefits	Net Inflows
1997	-102,420	122,116,950	6,488,162	0	-128,605,112	3,937,648	698,730	0	-4,636,378	127,640,898	8,808,933	0	-136,449,831
1998	3,657	20,352,825	16,983,965	25,625,250	-11,711,540	7,084,227	1,171,123	2,908,575	-5,346,775	30,045,052	22,401,079	34,940,138	-17,505,994
1999	27,633	13,568,550	27,935,442	68,334,000	26,830,008	17,821,697	2,565,642	10,151,865	-10,235,474	37,351,347	37,484,944	95,569,365	20,733,074
2000	49,193	13,568,550	35,250,005	68,334,000	19,515,445	18,437,175	2,625,023	23,872,082	2,809,884	42,208,525	46,687,530	109,289,582	20,393,528
2001	53,391	13,568,550	33,635,960	85,417,500	38,212,990	48,423,226	5,759,581	23,872,082	-30,310,725	71,199,976	47,804,531	130,643,957	11,639,450
2002	52,022		33,635,960	85,417,500	51,781,540	0	5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2003	49,693		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2004	50,481		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2005	45,843		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2006	44,103		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2007	47,534		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2008	41,186		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2009	43,400		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2010	43,861		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2011	44,641		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2012	44,641		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2013	44,641		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2014	44,641		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2015	44,641		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
2016	44,641		33,635,960	85,417,500	51,781,540		5,759,581	23,872,082	18,112,501		47,804,531	130,643,957	82,839,426
Project ERR	33.02%				23.10%				26.66%				26.00%
NPV (million)	173,363				129,138,634				38,897,958				218,683,339

Note: This includes the cost of institutional strengthening, for which benefits are not captured in the economic analysis. In addition, only those quantifiable benefits from the three components are included. During appraisal, the database would be expanded to capture those benefits excluded from the present analysis.

**GHANA
VILLAGE INFRASTRUCTURE PROJECT
Logical Framework/M&E Indicators**

Project Components	Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Risks/Assumptions/Comments
<u>Development Objectives</u>	To improve the quality of life of the rural poor through increased transfer of financial and technical resources for the improvement of basic infrastructure	<ul style="list-style-type: none"> - Average income of rural beneficiaries increased by at least 25% during project life; - No. of groups with agro-processing increased by 30% by 2002 - Additional 750 km of feeder roads in maintenance network by 2002 	Quarterly reports mid-term Review Project ICR	Project is evaluated as viable and donor funding is available Beneficiaries trained in O&M
<u>Specific Objectives</u>	<p>Develop post harvest infrastructure to increase value-added and incomes of the poor, especially women</p> <p>Development of integrated rural water infrastructure for agriculture and household use to increase the productivity of small farmers and reduced incidence of water-borne diseases</p> <p>Develop rural transport infrastructure to improve access of the poor to markets, construct village trails and tracks and pilot introduction of intermediate of transport (IMTs) to reduce drudgery and costs of moving surpluses from farms to villages</p> <p>Strengthen District Assemblies' capacity for project management; strengthen beneficiary groups to take responsibility for post-project sustainability; and train community leaders; strengthen NGOs to provide technical assistance</p>	<ul style="list-style-type: none"> - Incomes of project beneficiaries increased by at least 25% by 2000. - No. of common groups benefiting increased 50% by 2000 - Yield levels of program farmers increased by 25% for food grains - Incidence of disease reduced by 20% by end of project - No. of villagers benefiting from safe water increased by 50% by end of project - 750 kms of feeder roads rehabilitated by 2002 - 1000 Kms of access tracks constructed - Level of adoption of IMTs expanded to 50 new communities by 2001 - Reduction in transport costs - 110 of DAs financial staff trained by 2000 - 200 beneficiary groups trained by 2000 - 400 community leaders trained by 2000 - At least 50 NGOs participating in implementation by 2000 	<p>Mid-term Review Project ICR</p> <p>Mid-term Review Project ICR</p> <p>Mid-term Review Project ICR</p> <p>Mid-term Review Project ICR</p>	<p>Post harvest losses currently estimated at 30%. About 80% of Ghana's agricultural output consumed in raw form</p> <p>Rehabilitation limited to existing feeder roads village. Access tracks and trails to be maintained by communities</p> <p>DAs lack capacity for planning, implementation and monitoring</p>

GHANA
VILLAGE INFRASTRUCTURE PROJECT
Logical Framework/M&E Indicators

Project Components	Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Risks/Assumptions/Comments
<p>Rural Water Infrastructure <i>Dugouts/dams</i></p> <p><i>Borehole</i></p> <p><i>Small-scale irrigation</i></p> <p><i>Run-off control</i></p> <p><i>Off-stream pumping</i></p>	<p>Finance the integrated development of water resources for agriculture and household users. To include dugouts and other surface empoundments, built to minimize contamination and fence to restrict general access to water storage areas by cattle. Special design to protect against erosion, such as tree planting, physical works to include 92 dugouts, 115 boreholes, 141 spring development and over 3 000 ha of small-scale irrigation</p>	<p>Inputs</p> <ul style="list-style-type: none"> - 92 dugouts/dams constructed/ rehabilitated by 2001 - At least 115 boreholes constructed by 2001 - At least 3000 hectares of low land intensification by 2001 - No. of pumps provided <p>Outputs</p> <ul style="list-style-type: none"> - Yields increased by 20% for vegetables through supplemental irrigation by 2001 - Dry season crop intensification of at least two harvests for vegetable each year - Access to safe water assured <p>Outcomes</p> <ul style="list-style-type: none"> - Incremental crop production of at least 20% per annum - Water-borne disease reduced. 10% annually by type of illness, by gender and by age - Supplemental income increased by 25% for farmers <p>Impact (indicators)</p> <ul style="list-style-type: none"> - Food security enhanced due to greater survival of livestock (insurance policy in rural areas), more reliable crop production and dry season sources of income. Better quality of life due to higher incomes from sales of additional surpluses and safe water - Local capacity strengthened (catchment area and slopes of reservoirs and dugouts protected, boreholes properly maintained) - Communities better organized to; - deal directly with district technical offices, - identify, plan new operations, and - provide regular O&M 	<p>Supervision</p> <p>Supervision</p> <p>Supervision Quarterly and Annual reports</p> <p>NGO reports MTR Site surveys</p> <p>Annual Reports MOFA Briefs</p> <p>Comparison with baseline data Socio-economic studies</p> <p>Periodic visits Project management Field studies</p>	<p>Dependency syndrome: no maintenance or protection Land may be monopolized by the non-poor and/or men Bilharzia may be introduced from outside</p> <p>Access to extension service required Assumes no conflict in access rights Assumes proper management of water resources</p> <p>Crop diversification and use of improved varieties follows current projections</p> <p>Access to markets crucial for sales of surpluses Storability of processed product</p> <p>Effective Community mobilization required</p>

GHANA
VILLAGE INFRASTRUCTURE PROJECT
Logical Framework/M&E Indicators

Project Components	Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Risks/Assumptions/Comments
<p>Post harvest Processing <i>Processing equipment</i></p> <p><i>On-farm storage</i></p> <p><i>Fish processing</i></p> <p><i>Drying Facilities</i></p>	<p>Finance post harvest management facilities for small farmers to reduce post harvest losses (currently estimated a 30% in Ghana), increase shelf life and storability, thereby enhancing market flexibility, and increasing product diversity and value.</p>	<p>Inputs</p> <ul style="list-style-type: none"> - 600 new cribs and drying floors by 2001 - At least 1000 grinding machines installed by 2001, these would include: shea butter extractors, cassava processors ,oil palm extractors, and other miscellaneous equipment. 3000 on-farm storage facilities constructed by 2001 - 3000 improved community-level storage facilities constructed by 2001 <p>Outputs</p> <ul style="list-style-type: none"> - Outputs of quality processed food and goods increased by 25% by 2001 - Incomes to beneficiaries increased by at least 25% by 2001 - Quantity of stored products increased by 50% at the community level by end of Project <p>Outcomes</p> <ul style="list-style-type: none"> - At least 50% of all facilities still operating after six years - Healthier (more hygienic) food available locally and at wider level. Shelf-life increased by 50% of current levels by 2000 - Prices of processed food stable due to increases in supplies <p>Impact</p> <ul style="list-style-type: none"> - At least 50% of communities with enhanced food security by 2001 (e.g. elimination or reduction of lean season stress; - Better quality of life (e.g. improved indicators for health, including attendance at health facilities and nutrition, higher school enrollments, esp. of girls) - Capacity enhanced and empowerment fostered (village undertakes new projects with own funds, without relying in outside assistance) Long term sustainability assured (facilities are properly run and maintained independent of project) 	<p>AWP/B Monitoring Supervision Progress reports quarterly audits</p> <p>Supervision Progress reports</p> <p>Supervision Progress reports</p> <p>Supervision Quarterly reports</p> <p>MOFA Reports</p> <p>MHO/MOE Annual Reports</p> <p>District Assemblies records</p> <p>District Assemblies records</p>	<p>Capacity building aiming beneficiaries critical linkages between individual investment to enhance synergy</p> <p>Construction would involve contribution of labor and basic material by beneficiaries</p>

GHANA
VILLAGE INFRASTRUCTURE PROJECT
Logical Framework/M&E Indicators

Project Components	Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Risks/Assumptions/Comments
<p><u>Institution Strengthening</u> <i>District-level</i> <i>Community-level</i> <i>Groups/Associations</i> <i>NGOs</i></p>	<p>Develop a broad programme to build capacity within District Assemblies, Community groups and associations, as well as NGOs that will act as private sector partners in implementation. Capacity building will consist of training, workshops, IEC, and other information campaign to enhance beneficiary awareness. Collaboration will be with Government, training institute and other private sector groups.</p>	<p><u>Inputs</u> - At least 90% of district covered by project by 2001 - At least 30% of all communities participating within District by 2001 - At least 25 NGOs trained by 2001 - At least 50 NGOs providing technical assistance by 2001 - Training/sensitisation of 110 district assemblies completed by 1998 end - Training/sensitisation of district NGO staff completed by 1998 end - IEC campaign for traditional leaders (village chiefs and elders) launched in all areas by 1999</p> <p><u>Outputs</u> - At least 220 district assembly members trained by Mid-term Review - At least 110 planning officers trained by 2001 - At least half of all traditional leaders participating in the project trained by 2001</p> <p><u>Outcomes</u> - Backlog in DA processing of rush project reduces by half by 2000 - Assembly members and traditional leadership more aware of gender and poverty issues - NGO staff assure support role effectively</p> <p><u>Impact</u> - DAs capable of independent setting of development priorities by 2001 - At least 75% of DAs with improve district administration by 2001 - At least 50% of DAs with improved financial management by 2001 - At least 50% of participating villages capable of undertaking new projects with own funds, without relying on outside assistance by 2001 - At least 50% of all facilities are properly run and by beneficiaries by 2001</p>	<p>District Assemblies records MLGRD Annual Reports MOFA Annual Reports Zonal Project Reports MLGRD annual assessment of DAs Quality of District Development Plans Supervision Annual DAs Reports MOFA Reports MOH/MOE Annual Reports Supervision District Assemblies records Supervision</p>	<p>Staff availability within DAs is crucial to achieving desired programme impact Lack of capable NGOs may delay implementation Full complement of key DA staff needs to be in place Capacity building to be parallel financed with E.U. Human Resources Development Programme (HRDP)</p>

GHANA
VILLAGE INFRASTRUCTURE PROJECT

Quantitative Inputs/Outputs, Targets and Key Project Factors

Components		Unit	PY1 (a)	PY2	PY3	PY4	PY5	Total	Instruments/Comments
A	<u>INFRASTRUCTURE DEVELOPMENT</u>								
A.1	Postharvest Management								
A.1.1	Inputs								
	a) Village Drying and Processing								
	Construction of drying floors and platforms	unit	8	100	450	600	600	1,758	Basic investments to strengthen postharvest management through collaboration between MOFA, Crop Services and Postharvest Unit.
	Construction of coolers	unit	2	6	12	12	12	44	
	Crop processors (chippers, graters, etc.)	unit	10	50	225	300	300	885	
	b) On-farm/village storage								
	Group-owned storage	No.	4	20	40	100	200	364	Use of NGOs for organizing and training farmer groups.
	Village-level storage	No.	4	20	100	100	200	424	Address constraints of poor farm and village storage. Use of inputs (TA) of SG 2,000.
	Farmer Group Training	No.	40	200	560	800	800	2400	
	c) Targeted Income Generation								
	Smallscale Income Activities	Unit	20	200	200	200	200	1000	Technoserve
	Group Credit	No.	10	100	100	100	100	500	
	Training Beneficiaries	No.	10	100	100	100	100	500	Focus on the poorest segment of the poor through geographic targeting.
	Group Training	No.	20	20	20	20	20	100	
	Organising associations	No.	20	20	20	20	20	100	Use of NGOs
	NGOs	No.	10	10	10	10	10	50	
A.1.2	Output								
	Facilities constructed	No.	-	480	1,440	1,440	1,440	4,365	Demand-driven activities.
	Mills operation	No.	45	150	150	150	150	600	Actual number depends on ability to train village groups in management and provision of O&M.
	Groups trained	No.	15	15	15	15	15	65	
A.1.3	Impact								
	Higher incomes								The proposed interventions would lead to higher rural incomes, food security and market flexibility. The combined impact would be reduced poverty.
	Groups sustaining								
	Farmers using better seed for new investments								
	Incremental production and food crops								
	Flexibility in marketing								
	Improved quality products								
B.	<u>RURAL WATER INFRASTRUCTURE</u>								
B.1	Design/Construction of Dams								
B.1.1	Inputs								
	Dams Rehabilitation with spillways as needed	No.	2	10	20	30	30	92	Engineering works designed by irrigation Dept. Authority and executed by private contractors after local tender.
	Pilot protection works	No.	2	10	20	20	20	72	Pilot protection works to test catchment protection techniques designed to halt silting up.
	Dugouts rehabilitation (with spillways)	No.	2	10	20	30	30	92	Designs provided by GWSC, built by local contractor.
	no irrigation	No.	5	20	20	30	60	135	
	Handdug wells sunk	No.	11	50	80	110	140	391	
	Schemes maintenance								Beneficiaries responsibility through users groups

(a) First year devoted mainly to organizing and training beneficiary communities and groups.

GHANA
VILLAGE INFRASTRUCTURE PROJECT

Quantitative Inputs/Outputs, Targets and Key Project Factors

Components		Unit	PY1 (a)	PY2	PY3	PY4	PY5	Total	Instruments/Comments
B.	RURAL WATER INFRASTRUCTURE (cont'd)								
B.1.2	Outputs								
	Sites developed	No.	5	20	40	75	75	215	
	Family units benefitting	No.	5	25	40	40	40	145	Land allocation by compound according to number of family units av.2.5 family units/compound - 1000 m2/family unit 15-20% of overall area allocated to local women's groups 500 m2/women.
	Women benefitting	No.	2	10	20	55	55	142	
	Population with safe water	No.	72	420	660	1,020	1,020	3,192	
	Livestock access to water		144	840	1,320	2,040	2,040	6,384	
B.2	Boreholes/Spring Development								
	Inputs								
	Included in crop production sub-component Agricultural Development								
B.2.2	Outputs (cumulative)								
	Incremental area planted	ha	1	20	30	40	40	131	
	- Rice	ha	1	20	30	40	40	131	
	- Tomatoes	ha	1	20	30	40	40	131	
	- Onions	ha	1	20	30	40	40	131	
	- Cabbage	ha	1	20	30	40	40	131	
	Incremental field								
	- Rice	ha	0.2	0.4	0.8	1.0	1.2		
	- Tomatoes	ha	0.6	0.8	1.2	1.2	1.4		
	- Onion	ha	0.2	0.4	0.8	0.8	1.0		
	- Cabbage	ha	0.4	0.8	1.4	1.8	2.0		
B.3	Stream flow Divers./pumping								
B.3.1	Inputs								
	Small-scale irrigation	ha	5	25	60	75	75	240	Initial TA to be supervised by Ghana Irrigation Development Authority (GIDA); Crop Services to provide technical inputs; and NGOs to organize and train beneficiaries.
	Stream flow diversion	ha	5	25	60	75	75	240	
	Gravity-fed System	ha	5	25	60	75	75	240	
	Routine maintenance	ha	15	75	180	225	225	720	
									Focus on sample design and management.
B.3.2	Outputs								
	Intensification of village production	ha	15	75	180	225	225	720	
	Higher fields	t/ha	0.5	0.8	1.0	1.2	1.4	1.4	
	Incremental production	t/ha	0.5	0.8	1.0	1.2	1.4	1.4	
B.4	Run-off Management								
B.4.1	Inputs								
	Water conservation methods								
	Bundling	ha	5	150	300	400	400	1,255	Focus on middle and northern belts.
	Water storage	no.	20	600	1,200	1,600	1,600	5,020	
	Terraces and banks construction	no.	20	600	1,200	1,600	1,600	5,020	
B.4.2	Outputs								
	Intensification	t/ha	0.5	0.8	1.0	1.2	1.4	1.4	
	Higher Yields	t/ha	0.5	2	3	4	3		

(a) First year devoted mainly to organizing and training beneficiary communities and groups.

**GHANA
VILLAGE INFRASTRUCTURE PROJECT**

Quantitative Inputs/Outputs, Targets and Key Project Factors

Components		Unit	PY1 (a)	PY2	PY3	PY4	PY5	Total	Instruments/Comments
B.5	Pilot-catchment Management								
B.5.1	Inputs								Focus of pilots to develop and test basic skills of communities to manage integrated catchment water resources. This would be linked to National Water Resources Management Steering Committee. Lessons learnt to be used to better plan, manage and sustain surface water impoundment.
	Community/groups organization	No.	4	20	40	60	60	184	
	Group training	No.	4	20	40	60	60	184	
B.5.2	Outputs								
	Beneficiary members	No.	40	200	400	600	600	1,840	
	Beneficiaries inventory credit	No.	20	100	200	300	300	920	
	Beneficiaries women's working working capital loans								
	Beneficiaries production loans not estimated	No.	20	100	200	300	300	920	
C.	TRANSPORT INFRASTRUCTURE								
C.1	Inputs								Inputs and technical guidance from Ghana management of Feeder Roads (DFR). DFR offices at the level of District Assemblies to provide technical supervision.
C.1.1	Road rehabilitation	km	0	50	100	300	300	750	
	Spot improvement	km	-	50	100	200	200	550	
	Roads regreveling	km	-	50	100	200	200	550	
	Routine maintenance	km	-	100	200	500	500	1,300	
	Period maintenance	km	-	100	200	500	500	1,300	
	Feasibility studies and road surveys	unit	4	5	5	5	5	24	
C.1.2	Outputs								
	Access to markets	No		10	20	50	50	130	
C.2	Village Tracks and Trains (VTT)								
C.2.1	Inputs								For VTTs, communities organized and trained by NGOs. Involvement of community leaders.
	VTT construction	Km	0	20	50	100	100	270	
	Drainage	km	0	10	25	50	50	135	
	Routine maintenance (by communities)	km	0	30	75	150	150	405	
	Group training	no.	0	40	100	200	200	540	
C.2.2	Outputs								
	Access to farms	No.	0	49	100	200	200	540	
	Reduction in post harvest losses	t/ha	0	0.5	0.8	1.0	1.0	1.0	
C.3	Intermediate Means of Transport								
C.3.1	Inputs								Technical supervision by DFR and District Assemblies.
	Group formation	Unit	0	125	125	125	125	500	
	Units trained	No.	0	125	125	125	125	500	
	Cycle trailers	No.	0	100	100	100	100	400	
	Donkey carts	No.	0	100	100	100	100	400	
	Light trailers	No.	0	50	50	50	50	200	
C.3.2	Outputs								
	Groups trained	No.	0	125	125	125	125	500	
	Units adopted	No.	0	250	250	250	250	1,000	

(a) First year devoted mainly to organizing and training beneficiary communities and groups.

GHANA
VILLAGE INFRASTRUCTURE PROJECT

Quantitative Inputs/Outputs, Targets and Key Project Factors

Components		Unit	PY1 (a)	PY2	PY3	PY4	PY5	Total	Instruments/Comments
D.	INSTITUTION STRENGTHENING								
D.1	Inputs								
	Development of Groups/Associations	No.	20	40	60	120			District Assemblies strengthening in collaboration with E.U. Information campaign on programme in PY1, reporting on programme experiences in PY2 to PY5 Multiple workshops for low density districts and one for high density district. To review project performances and obtain beneficiary feedback. Workshop organised for 24 key regional and district staff, by private agency engaged on a contract basis. Workshop to include practicals in form of field survey in 6 villages not covered by existing surveys. Workshops organized for 24 key regional and district staff (incl. overlap with previous workshop) Additional training and support to communities benefiting from dams rehabilitation.
	Procuring and training NGOs	No.	10	20	30	-			
	Workshops	No.	10	20	5	5			
	MIS for District Assemblies		20	20	20	20			
	IEC								
	Training for trainers participatory rural development, communications and gender sensitization	Worksh.	4	4	2	2			
	Financial management	Worksh.	3	3	3	3			
	Training by trainers of GIMPA	No.	4	4	4	4			
	Village support and training	No.	3	3	3	3			
	Annual and quarterly audits	No.							
D.2	Outputs								
	Trainers trained in participatory rural development, etc.	No.	100	100	100	100	-	400	
	Trainers trained in financial management	No.	10	10	10	-	-	30	
	Trained juniors/NGO staff	No.	100	100	100	100	-	100	
	Baseline survey of villages in districts	No.	20	20	20	20	30	110	
E.	RURAL INFRASTRUCTURE COORDINATING UNIT								
E.1	Inputs								
	Office Rehabilitation	Unit	1	-	-	-	-	1	Three zonal and one national programme offices established. Greater autonomy of zonal offices. Zonal programme officers (3), procurement, engineering and administrative staff. TA to design and install MIS, consultancies for special studies and surveys (e.g. M&E) Study tours to IFAD/IDA projects with similar features Twinning b/w District Assemblies Community mobilization officer (from CDD) and rural engineer.
	Contractual staff	Years	11	11	11	11	11	55	
	Technical assistance	Month	2	2	2	-	-	6	
	Studies and surveys	Unit	-	1	-	2	-	3	
	Twinning arrangements	Unit	20	20	-	-	-	40	
	Seconded staff	Years	20	20	-	-	-	20	

(a) First year devoted mainly to organizing and training beneficiary communities and groups.

GHANA
VILLAGE INFRASTRUCTURE PROJECT

Bill of Estimated Quantities for Village Tracks
1 km of Village-to-Farm Track (Width = 2.5m)

ITEM	ACTIVITY DESCRIPTION	UNIT	QUANTITY	RATE ₵	AMOUNT ₵
1.	Setting out	m	1000	108	108,000.00
2.	Site Clearing	m2	5100	25	127,500.00
3.	Tree felling 1-2m girth	No.	5	29,295	146,475.00
4.	De-stump trees 1m	No.	5	66,559	332,795.00
5.	Grubbing	m2	2500	48	120,000.00
6.	Form Camber	m2	2500	293	732,500.00
7.	Trapezoidal drains	m	400	300	120,000.00
8.	Exc. Sub-grade material from borrow pit and bill n.e. 200m	m3	150	5906	885,900.00
9.	Exc. unsuitable material in swampy areas and dispose	m3	50	3994	199,700.00
10.	Exec. for culvert & drain (3m/km, 4m long)	m3	17.16	3994	68,537.04
11.	Conc. 1:3:6	m3	18.2	76601	1,394,138.20
12.	Conc. 1:2:4	m3	5.04	98,193.40	494,793.94
13.	Sawn Formwork	m2	70.2	5313	372,972
14.	Reinforcement 13mm O m.s out, bent, fixed	kg	400	990	396,000.00
15.	Exc. sub - base, spread & compact haulage n.e 1 km	m3	75	7229	542,175.00
16.	E. O. Haulage	m3-km	375	351	131,625.00
17.	Sconor Checks	No.	30	8169	490,140.00
18.	Excavate, break and remove boulders and dispose	No.	5	11,497	57,485.00
19.	Exc. dry unsuitable material and dispose.	m3	50	1997	99,850.00
				Sub-Total	<u>6,820,586.00</u>

Add 30% Contingency - 2,046,175.86 Grand Total - 8,866,762.06 US\$5,912/km

**GHANA
VILLAGE INFRASTRUCTURE PROJECT**

Tentative Project Field Supervision Schedule

Dates	Activities	Skill Requirements	Staff Weeks
Year 1	(a) Project Launching Workshop	Task Team Leader	2
		Procurement Analyst	2
		Disbursement Analyst	2
	(b) Supervision	Task Team Leader	2
		Rural Infrastructure Specialist	2
		Financial Analyst/Economist	2
	(c) First-Year Implementation Review	Task Team Leader	2
		Rural Infrastructure Specialist	2
		Sociologist	2
Year 2	(a) Supervision	Task Team Leader	2
		Monitoring/Beneficiary Assessment Specialist	2
		Financial Analyst/Economist	2
	(b) Supervision	Task Team Leader	3
		Rural Infrastructure Specialist	2
		Sociologist	2
	(c) Supervision Annual Work Program	Task Manager	2
		Financial Analyst	2
	Year 3	(a) Supervision	Task Manager
Rural Infrastructure Specialist			2
Beneficiary Assessment Specialist			2
(b) Supervision		Task Manager	2
		Financial Analyst/Economist	2
		Task Manager	3
(c) Supervision Annual Work Program		Rural Infrastructure Specialist	3
		Financial Analyst/Economist	3
		Task Manager	3
Year 4	(a) Supervision	Task Manager	2
		Rural Infrastructure Specialist	2
		Beneficiary Assessment Specialist	2
	(b) Supervision	Task Manager	2
		Financial Analyst/Economist	2
		Task Manager	3
	(c) Supervision Annual Work Program	Rural Infrastructure Specialist	3
		Financial Analyst/Economist	3
		Task Manager	3
Year 5	(a) Supervision	Task Manager	2
		Rural Infrastructure Specialist	2
		Beneficiary Assessment Specialist	2
	(b) Supervision	Task Manager	2
		Financial Analyst/Economist	2
		Task Manager	3
	(c) Supervision Annual Work Program	Rural Infrastructure Specialist	3
		Financial Analyst/Economist	3
		Task Manager	3
TOTAL STAFF WEEKS			92

**GHANA
VILLAGE INFRASTRUCTURE PROJECT**

**Spot Improvement of 1 km Feeder Road
(Road Width : 6m)**

ITEM	DESCRIPTION	QTY	UNIT	UNIT RATE CEDIS	TOTAL AMOUNT CEDIS
1.	Clear existing road of neglected bush	4500	m2	25	112,500.00
2.	Clear out and deepen existing side drains	1400	m	300	420,000.00
3.	Shape road (cambs) formation	1000	m	293	293,000.00
4.	Excavate sub-grade material from borrow pit place and compact in low-lying areas and culvert approach	100	m3	3994	399,400.00
5.	Provide and lay sub - base	50	m3	7229	361,450.00
6.	E.O. haulage of sub - base	600	m3-km	351	210,600.00
7.	Provide scon checks	8	No.	8169	65,352.00
8.	Construct 1m b.c. including excavation backfilling, formwork and concrete.	1	No.	4,500,000	4,500,000.00
9.	Setting out	2000	m	108	216,000.00
Total without Contingency + 30% contingency = US\$ 6,578,302.00					

**GHANA
VILLAGE INFRASTRUCTURE PROJECT**

Performance Characteristics and Relative Cost of Some IMTs

Vehicle	Max. Load (kg)	Max. Speed (km/h)	Route Requirements	Relative Cost
Wheel barrow	100	5	Flat, narrow path	20
Bicycle	75	20	Flat, narrow path	50-90
Bicycle and trailer	200	10-15	Flat, wide track	90-150
Bicycle and sidecar	150	10-15	Flat, wide track	90-150
Pack Animal	100-250	5	Hilly, narrow path	Variable
Animal-drawn sledge (buffalo)	200-400	5	Unsuitable for steep terrain	10
Animal-drawn cart (oxen)	500-1500	5	Flat, wide track	100-180
Motorcycle	100	40-90	Motorable path	250-600
Motorcycle and sidecar	250-500	30-60	Unsuitable for steep hills	350-800
Motorcycle and trailer	250	30-60	Unsuitable for steep hills	350-800
Single axle tractor and trailer	1500	15-20	Unsuitable for steep hills	1500
Asian Utility Vehicle	1000	60	Motorable road or track	3000

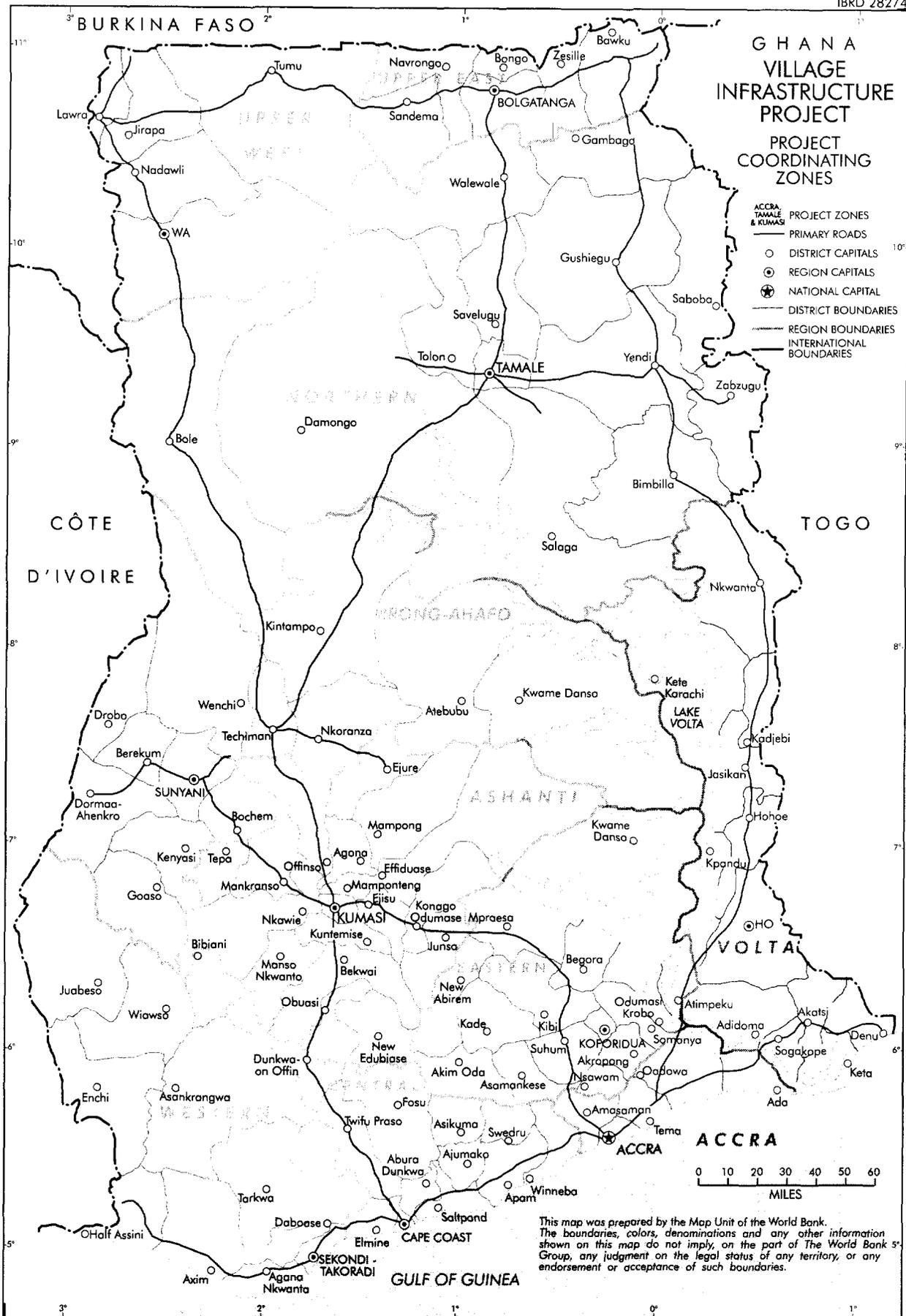
1. Typical values are quoted with variations expected in specific locations. No currency is quoted or intended for the relative costs. The order of cost magnitude is in relation to other values in the table.

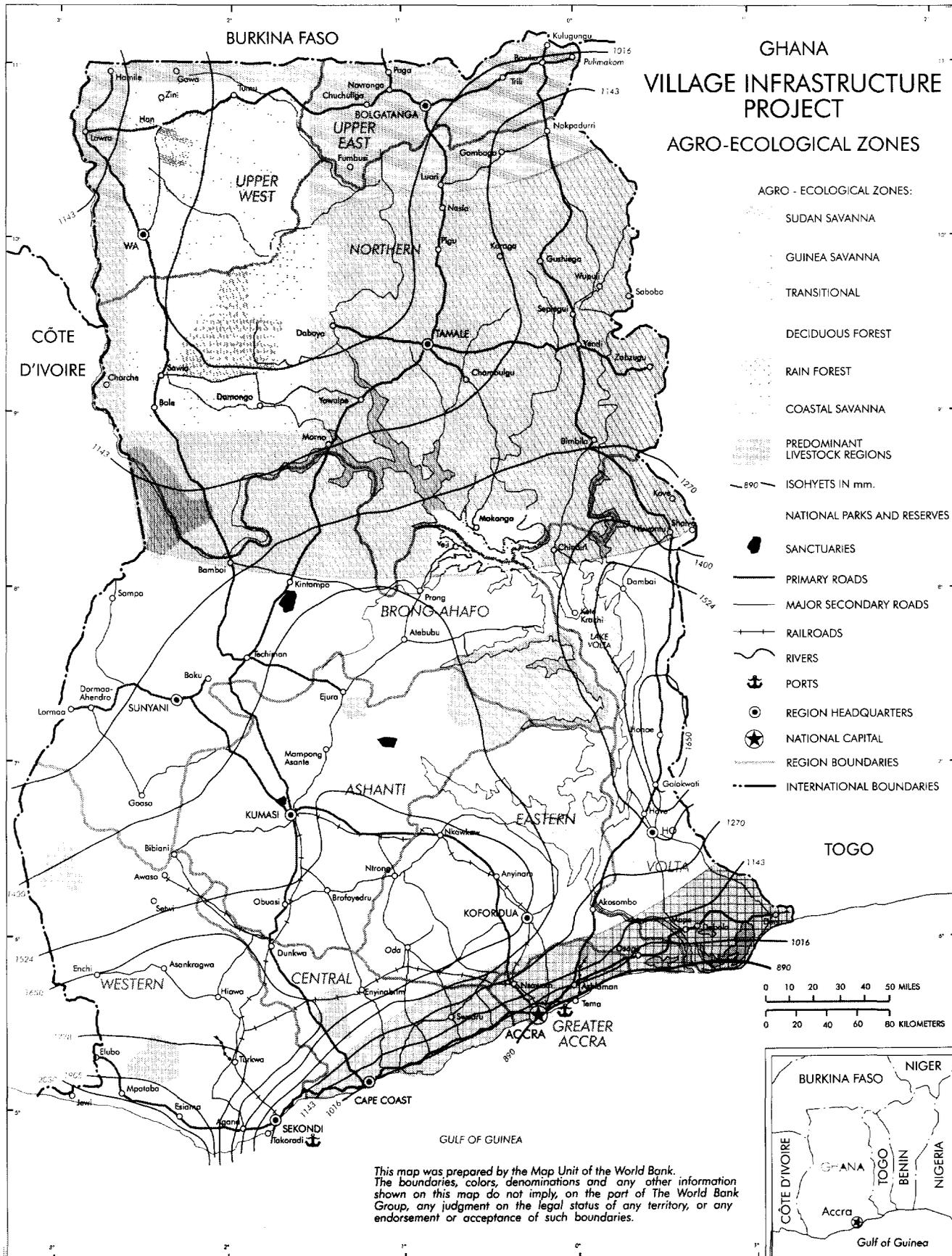
GHANA
VILLAGE INFRASTRUCTURE PROJECT

Comparative Costs of Village Tracks and Trails

ITEM	ACTIVITY	COST PER KILOMETER		
		2m. wide	2.5m	4m
1	Setting Out	108,000.00	108,000.00	108,000.00
2	Site Clearance	82,500.00	127,500.00	175,000.00
3	Tree Felling	146,475.00	146,475.00	292,950.00
4	De-Stump Trees >1m girth	332,795.00	332,795.00	665,590.00
5	Grubbing	96,000.00	120,000.00	192,000.00
6	Camber Formation	586,000.00	732,500.00	1,172,000.00
7	Trapezoidal side	120,000.00	120,000.00	230,000.00
8	Filling to culvert approaches and low areas	708,720.00	885,900.00	1,488,312.00
9	Excavate swampy material	199,700.00	199,700.00	279,580.00
10	Excavate for culvert foundation	54,829.32	68,537.04	164,488.90
11	Concrete 1:3:6	1,115,310.56	1,394,138.00	3,345,931.68
12	Concrete 1:2:4	395,914.18	494,793.94	1,196,214.57
13	Sawn Formwork	298,378.08	372,927.26	559,390.89
14	12mm O m.s. reinforcement	316,800.00	396,000.00	950,400.00
15	Excavation and laying of sub-base	433,740.00	542,175.00	1,301,220.00
16	Excavate dry unsuitable material	99,850.00	99,850.00	99,850.00
17	Sconor checks	490,140.00	490,140.00	490,140.00
18	Remove boulders	57,485.00	490,140.00	490,140.00
19	E.O. for haulage of sub-base	105,300.00	131,635.00	315,900.00
	TOTAL	5,747,937.14 or US\$3,832.00	6,820,551.44 or US\$4,547.00	13,084,553.04 US\$8,723.00

Note: Comparative costs of 1 km of 2m, 2.5m and 4m wide
Village -to-farm tracks for imts
Using labor based technology





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IMAGING

Report No.: 15942 GH
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