

ETHIOPIA

APPRAISAL OF AN AGRICULTURAL MINIMUM PACKAGE PROJECT

I. INTRODUCTION

1.01 Since the mid-sixties when the first significant agricultural development schemes were undertaken in Ethiopia, the main emphasis has been on comprehensive projects designed to develop a limited area through the intensive application of a number of inputs. Important among such projects have been the Chilalo Agricultural Development Unit (CADU) established with assistance from the Swedish International Development Agency (SIDA) and the Wolamo Agriculture Development Unit (WADU) assisted by IDA (Map, IBRD 10232). The impact of these and similar projects has necessarily been limited by their high cost and trained manpower requirements; their benefits have however included considerable experience and technical knowledge in assisting small farmers and, since 1967, this has been furthered by a Danish Government financed FAO fertilizer trial program.

1.02 Based on this experience and in response to the need to increase food production and reach more peasant farmers over large areas, Government in 1971 initiated its experimental Minimum Package (MP) Program. Under this Program the Ministry of Agriculture through its Extension and Project Implementation Department (EPID) is introducing throughout the highlands a few proven technical innovations, notably the application of fertilizer and improved seeds, in association with farmer credit. In 1971 the Bank's agriculture sector mission to Ethiopia ^{1/} endorsed the appropriateness of the MP approach. The proposed Project would support Ethiopia by helping to finance three years of the MP Program.

1.03 This would be the Bank Group's eighth lending for agricultural development in Ethiopia since 1969. Six IDA assisted projects have been approved: the WADU Project, the Humera Agricultural Development Project, the Addis Ababa Dairy Development Project, the Coffee Processing Project, the Agricultural and Industrial Development Bank Project, and the Second Livestock Project. Performance under the on-going projects has been satisfactory. A seventh project, the Armibara Irrigation Project, has been negotiated.

1.04 The proposed Project was prepared by EPID with assistance of the Bank's Permanent Mission in Eastern Africa and a pre-appraisal mission which visited Ethiopia in June 1972. This report is based on the findings of an appraisal mission which visited Ethiopia in July/August 1972, comprising Messrs. F.M. Crowe, F.D.T. Reid, E.P. Riezebos, W.B. Stolber and E. Zimmer-Vorhaus (IDA), and P. Calkin (consultant). The proposal for a study of the impact of rural roads was prepared by the Research Division of the Bank's Transportation Projects Department.

^{1/} Report No. Pa-143a dated January 15, 1973.

II. BACKGROUND

A. General

2.01 Ethiopia, with an area of about 1.2 million km², and lying on an elevated plateau broken by the Rift Valley, has a wide range of ecological and climatic conditions. Rainfall increases from 250 mm in the northeast near the Red Sea to over 2,000 mm in the mountainous plateau region of the southwest. About 10% of the land is under crops, about 28% is taken up by grazing, and the remainder is open bush and scrub, woodland, and areas not suitable for plant or livestock production.

2.02 The population is about 25 million and increasing at about 2 to 2.5% per year. Over 90% of the people live in rural areas - some 85% in the highlands, the country's main agricultural area - but urban population is climbing rapidly by about 7% a year. Gross Domestic Product (GDP) has been growing at about 4.8% a year, and in 1970 totalled US\$2.0 billion. Per capita income is US\$76 a year, one of the lowest in the world. The economy is based on subsistence agriculture.

2.03 In 1971 exports were valued at US\$190 million, of which agriculture accounted for over 90%. Coffee provides some 58% of export earnings, with oilseeds and cakes, pulses, hides and skins accounting for most of the remainder. The trade deficit has averaged between US\$30 and US\$40 million in recent years, but capital inflows have enabled the country to avoid serious balance of payments difficulties.

2.04 Ethiopia's transport facilities are poorly developed; most of the country is still remote from modern means of communications and relies predominantly on animal transport. Considerable progress has been made in recent years in expanding the nation's road network, and in late 1971 there were about 8,000 km of all-season roads and about 15,000 km of dry-weather roads.

2.05 Few secondary and feeder roads serve the rural population; perhaps as many as three-quarters of the country's farms are more than half a day's walk from any road. This means that transport difficulties and high cost almost oblige farmers to sell goods brought to market regardless of the price offered.

B. The Agricultural Sector

Main Features (Annex 1)

2.06 Agriculture provides 90% of employment, but only about 58% of GDP. Over the period 1961-69, production increased by 1.8% a year, falling short

of both population and GDP growth. Cereals account for almost half of crop production, and coffee for about 15%. There is a large livestock population including an estimated 26 million cattle. Only about 25% of agricultural production is marketed.

2.07 In its report to the Consultative Group for Ethiopia in April 1971, the Government stated that "more than any other sector, agriculture maximizes the use of Ethiopia's abundant resources," and went on to suggest that investment and development policies should be directed to this sector. Despite this, public outlays for agriculture have been small and in 1971/72 amounted to only Eth\$40 million (US\$19.3), or about 6% of the total (some Eth\$650 million); about Eth\$28 million (US\$13.5) was for capital expenditure and the remaining for recurrent costs.

Grain Production and Marketing (Annex 2)

2.08 Ethiopia has moved from surplus to deficit in grains since the middle 1940's, and, over the last decade, has had to import wheat and flour. Local grain prices have been above import parity. Grain production (mainly teff ^{1/}, barley, sorghum, maize and wheat), estimated at about 4 million tons in 1970, fluctuates widely from year to year. A good 1971/72 harvest resulted in sharp price declines and probably temporary self-sufficiency at present low consumption levels, but overall deficiencies can be expected in most years for some time. Grain consumption per capita is greatest among the market-dependent population, particularly the fast-growing urban population.

2.09 The Ethiopian grain market handles some three-quarters of a million tons annually. It is characterized by inefficiency and price instability, with wide regional price difference and severe seasonal and annual fluctuations. There are a number of reasons:

- (a) The absence of a national market, due partly to poor communications between market centers;
- (b) Severe pressure on prices immediately after the harvest. This is due in part to the lack of storage facilities and in part to the lack of farmer and trader credit. Small farmers, who have usually had to borrow on onerous terms in order to see themselves through the year, must sell their output to repay debts;
- (c) The absence of sound marketing practices such as reliable quality determination, enforcement of standard weights and measures, and adequate hygiene and phytosanitary controls; and
- (d) Fragmentation of the market with numerous merchants, traders and brokers, and limited price competition. The largest

^{1/} Teff (*Eragrostis Abyssinica*): a short annual grass whose tiny seed is used to prepare an unleavened bread.

trader, the parastatal Ethiopian Grain Corporation, handles less than 1.5% of the domestically marketed supply, excluding imports.

2.10 The Ministry of Commerce and Industry and the Ministry of Agriculture have prime responsibility for grain marketing, the former through the Grain Board (a regulatory body) and Grain Corporation, and the latter through its Planning and Programming Unit and Economic Research Division. These organizations have, however, so far had little impact. The Government acknowledges the urgent need for an efficient marketing system and has approached the Bank for assistance in preparing a suitable project (scheduled for appraisal in early 1974). The creation of an efficient marketing system is fundamental to the long-term success of the Program; meanwhile the Project includes some provision for marketing credit (para 4.11).

Land Tenure

2.11 In addition to a significant amount of Government-owned land, there are two main categories of land ownership: individually-owned and communally-owned. The former dominates in the southern provinces while the latter prevails throughout the north. While individually-owned holdings vary considerably in size, most are less than 2 ha; the majority of farmers under communal tenure operate holdings of less than 1 ha. There is no registration of deeds or titles and, as a result, land transactions are cumbersome and disputes are numerous.

2.12 More than half the total cultivated area, both individually and communally-owned, is farmed by tenants who, as a group, comprise more than half the rural population. This has had an inhibiting effect on agricultural development as there are a number of factors which lessen any incentive tenant farmers might have to invest in improvements or to undertake innovative practices: rents are usually paid in kind and are high, amounting to one-third to one-half of the crop; tenants are seldom compensated for permanent improvements such as erosion control or improved storage; and security of tenure is inadequate. Landlords can, and apparently do evict without justification and at short notice.

2.13 While the Government recognizes the need for tenure change, land reform measures have proved difficult to promulgate. Parliament has twice rejected tenancy legislation but is now considering a third bill. It provides for (a) rents to be limited to one-third of production, or to one-half where the landlord provides services; (b) the sharing of the cost of cash inputs between landlord and tenants; (c) improved security of tenancy with two years' notice of eviction in most cases; (d) compensation for permanent improvements at eviction; and (e) tenancy tribunals to resolve disputes before involving local courts. While legislation is an important factor in agricultural reform, effective implementation will take some years. The annual review of plans and financial forecasts (para 4.04) would provide details of land tenure arrangements in each of the MP areas scheduled to be opened under the Project.

2.14 Communal and sharecropping systems of land tenure aggravate the problem of soil conservation, particularly in the highlands. The increasing intensity of farming over many centuries has resulted in the progressive shortening of fallow periods, the clearing and cultivation of all but the most precipitous slopes, almost total removal of tree cover, and the degradation of soil structure resulting in declining crop yields and livestock productivity. Government appreciates the importance of the problem and in 1970 created a Soil Conservation Division in the Ministry of Agriculture which has started small conservation schemes. While solution of this problem is beyond the scope of the present Project, provision is made to educate participants in the MP Program on proper soil conservation methods (para. 4.14(g)).

The Use of Inputs

2.15 Despite increased expenditure on agricultural inputs, which doubled between 1964 and 1967, the vast majority of Ethiopian farmers continue to use traditional methods and tools. Fertilizer imports have increased significantly, from about 1,300 tons in 1966 to about 24,000 tons in 1971, largely in response to technical assistance and Government-sponsored programs. Seed imports have also grown from about 100 tons in 1966 to about 400 tons in 1970. These have been supplemented by improved seed being developed by the Institute of Agricultural Research or that produced under several comprehensive development schemes, notably CADU and the Ministry of National Community Development project at Awasa (Annex 3). Pesticides are rarely used - only Eth\$3 million (US\$1.5 million) in 1970 - except on cotton. The exemption of agricultural tractors and fuel from taxes and duties has encouraged some mechanization, particularly for rainfed or irrigated crops in the northwestern border areas and the Awasa Valley; in 1971 there were about 2,500 tractors operating in these areas. The Association has discussed this policy with Government and it is currently under review. In some instances where there were no appropriate land tenure arrangements this has resulted in the eviction of tenants at short notice. Because, however, of the shortage of extension services and inadequate credit facilities, improved inputs have reached relatively few farmers.

Credit and Cooperatives

2.16 At the end of 1970, commercial banks had loans outstanding to agriculture of Eth\$13 million (US\$6.3 million) on medium and long-term, and Eth\$28 million (US\$ 14 million) on short-term, together equivalent to about one-half of 1% of the gross output of the agricultural sector in that year. Farmers traditionally borrow from traders and others at short-term interest rates that are often as high as 10% a month or more.

2.17 In 1970, Government established the Agricultural and Industrial Development Bank (AIDB) (Annex 4) as a development institution mainly designed to meet the financial needs of the larger industrial, commercial and agricultural enterprises. Within well defined policies, it may make loans (including short-term) and equity investments in virtually any commercially viable development scheme and it has established a nucleus of well qualified

staff. Since 1971, AIDB has been responsible for the procurement of the fertilizer requirements of EPID, and in 1972 it formed a subsidiary company, Agricultural Inputs and Marketing Services (AIMS), to supply credit and inputs to small farmers and with a view eventually to operating grain storage facilities. AIMS has only a token staff and its operations are dependent on and closely integrated with those of AIDB. Its future role both in relation to grain marketing and the wider supply of small farmer credit will require careful definition in the near future; to assist in this, the IDA Credit for the AIDB project includes financing for a consultancy study of a national agricultural credit program.

2.18 Extension of credit to farmers is complicated by a lack of rural roads, by the systems of land tenure and by the very limited development of agricultural cooperatives. In 1971, there were only 36 registered agricultural cooperatives, mostly in the marketing field, with 11,500 members and an annual turnover of Eth\$4.4 million (US\$2.2 million). The Cooperative Development Department in the Ministry of National Community Development is charged with the regulation and support of cooperatives. Activities include promotion, registration, supervision, audit, arbitration and training. The Department's policy has been to proceed cautiously in the promotion of cooperatives, a caution which is well justified in view of its limited resources of trained manpower. However, in the long term, cooperatives will be of critical importance in giving small farmers access to credit as well as to the future of the Program as a whole.

Extension Services

2.19 Until 1971, the extension services of the Ministry of Agriculture consisted of about 120 trained extension staff. Funds were inadequate, research information was limited and there were no credit facilities for peasant farmers. In 1971, the Extension and Project Implementation Department (EPID) (paras 3.10-3.12) was created and assumed responsibility for extension services throughout the country. It now employs over 250 extension staff in MP areas.

III. THE MINIMUM PACKAGE PROGRAM

General

3.01 The objective of the MP Program (Annex 5) is to raise production and the incomes of small farmers quickly over a wide area, with a minimum reliance on scarce resources, while building the foundations for future development. Under the Program, extension agents, assisted by model farmers, advise in the use of simple inputs or innovations - fertilizer, improved seed and storage - and make them available in conjunction with credit through marketing centers. The MP Program is being extended in selected areas throughout the highlands, which cover about half the country and contain 80% of the population.

The Highlands

3.02 The highlands are divided into three ecological zones. The northern highlands are the driest, with rainfall between 600 and 800 mm and, with broken topography, present particular problems of soil and water conservation. The western highlands, with an annual rainfall of over 1,400 mm, have the highest agricultural potential; they are heavily incised by river gorges, between which lie large rolling plateaus. The central and southern highlands have a varied topography, from extremely rocky terrain to wide flat plateaus and rolling hills; rainfall is between 800 and 1,400 mm.

3.03 The central highlands are intensely cultivated by subsistence farmers, with commercial farming in the less densely settled areas in the Rift Valley and in the northwest. About 70% of the cropped area is under cereals (teff 23%, wheat 8%, barley 15%, sorghum 13%, and maize 11%), the rest is mainly under oil seeds and pulses. (Map, IBRD 10233) Only about half of the farmers own their land; a large portion are tenant farmers, cultivating land owned by absentee landlords. North of Addis Ababa, communal ownership with individual cultivation rights dominates, giving some security; in the areas of individual ownership, mainly south of the capital, tenants have little security.

3.04 On the better drained sloping areas in the south, soils are mainly red, reddish brown clays and clay loams of excellent inherent fertility. Of good permeability, they are partly leached and have suffered considerable erosion. In the flat plateaus and valley bottoms soils are grey to black clay, generally of high nutrient status, but with cropping potential limited by poor internal drainage.

The MP Areas

3.05 The basic unit of the MP Program is the MP area, which typically contains about 10,000 families and extends 5 km on either side of a 75 km stretch of all-weather road. The area is divided into five sub-areas, each with a market center and 1 ha trial and demonstration plot. The market center provides a base for market assistants and extension agents, storage for inputs and grain, and a focal point for farmers.

3.06 The development of an MP area has three phases. After a preliminary survey, an observation area in the cereal-growing region and adjoining an all-weather road is selected for one or two years' detailed study, including tests of fertilizer and other inputs. If suitable, it becomes a demonstration area. Fertilizer is then distributed to model farmers, who are selected from sub-areas containing about 100 farm families each. If within a year other farmers have shown sufficient interest, the area becomes an MP area and additional staff are posted to it. About 18 MP areas had been established by mid-1972 and the Program envisages that about 10 new areas will be opened each year until 1979.

Farm Inputs and Credit

3.07 In the early years of the MP Program, only a few proven inputs are introduced in order to keep the required extension services to a minimum. Emphasis is placed on fertilizer (diammonium phosphate and urea) and improved seeds, because they are easy to introduce and have been shown to give favorable results. A few improved implements are also available. Other innovations, such as improved on-farm storage, are being gradually introduced as they are tested and proved, and as farmers gain experience.

3.08 Credit for inputs, extended only to farmers with holdings of less than 20 ha, is at an interest rate of 1% per month for 9 months, with a 25% down payment. Credit in the first year is restricted to Eth\$200 but may be increased to Eth\$400 in the second and subsequent years for farmers with good repayment records.

3.09 Credit may be suspended throughout a sub-area if the repayment rate is unsatisfactory. Experience to date under both the comprehensive projects and the MP Program has been that most small farmers accept repayment obligations, given effective control and debt collection procedures. As of August 1972, 11% of MP credits from the previous season were outstanding, but of this 60% was in respect of one MP area where a previous credit program had been loosely administered. Delays in the other areas were due to the sharp fall in cereal prices and crop failure.

Program Administration

3.10 The MP program is administered by EPID. Most of the senior posts in EPID are filled by expatriates provided by SIDA, with Ethiopian counterparts, and some by FAO. EPID is also responsible for the comprehensive development projects which are testing new innovations and producing improved seed for use in the MP areas.

3.11 The Department has three divisions: (a) Common Services, which provides accounting, staff and general administrative services; (b) Liaison, which supervises the comprehensive projects and coordinates the exchange of agricultural information; and (c) Extension, which has main responsibility for the MP Program. (See attached Chart.) The field staff of the Extension Division are responsible to the Head of the Division, through regional coordinators, for the operation of observation, demonstration and MP areas. Each MP area has an area supervisor who has responsible to him, in each of the sub-areas, an extension agent supported by a market assistant. In addition to its field staff, the Extension Division is establishing technical and advisory groups in agronomy, marketing and credit, cooperatives, animal husbandry, home economics, training, soil conservation, farm storage and project evaluation.

3.12 EPID has agreements with AIDB for the supply of inputs and credit, and, until cooperatives are established, would act as agent for AIDB in the provision of inputs, processing credit applications, keeping the accounts and collecting repayments. EPID staff advise and assist farmers in the formation of cooperatives and collaborate in the field with the Cooperative Development Department.

3.13 Progress in the existing MP areas has been satisfactory. During the two years of operations 9 new areas were opened annually; 3,600 farmers received credit in the first year, 12,000 in the second. Repayments of credit were on the whole satisfactory, and the target rate of adoption of innovations was exceeded (by 100% in the first year and 50% in the second). All indications are that participating farmers have benefitted substantially.

IV. THE PROJECT

A. General Description

4.01 The Project would comprise a three-year segment (1973/4-1975/6) of the Minimum Package Program. It would provide agricultural inputs, infrastructure requirements and related extension and administrative support services to small farmers in the Ethiopian highlands in an effort to increase the production of cereals. It would include the incremental requirements of inputs for the MP program (both for existing MP areas and for about 30 new MP areas expected to be initiated over the Project period at the rate of 10 each year) as well as the total other needs of the Program (Map, IBRD 10231). It would be executed by EPID with technical assistance from SIDA. Credit would be channelled through AIDB using EPID's field staff as agents.

4.02 Specifically, the Project would include:

- (a) The incremental requirements over the Project period of fertilizer and other inputs (i.e., those necessary to satisfy the needs of farmers new to the Program and the increased needs of farmers already participating) and permanent working capital required to finance fertilizer through AIDB;
- (b) The construction of farm-to-highway roads serving existing MP areas and of penetration roads to open up new areas for future development;
- (c) The total extension and support services required (i.e., those needed not only to support the 30 new MP areas to be established over the Project period but also to give continued assistance to the MP areas already in operation and to identify and prepare areas for future MP development);

- (d) Consultant and technical services for further project preparation and planning; and
- (e) The provision of credit to enable market centers and cooperatives to make advances to farmers against grain delivery pending final sale.

4.03 The MP areas vary considerably in ecological conditions, crops grown, land tenure arrangements, access to markets, and population density and dietary habits, all of which affect the response of individual farmers to the Program. For the purpose of forecasting the required inputs under the Project, as well as the expected production, financial and economic effects of the Program, the variables were identified (i.e., the distribution of farm holdings by size, the areas under different crops and their yields, the rates at which farmers join the Program and adopt different innovations) and a model MP area was constructed based on national averages, the experience of the Program to date and of the comprehensive development programs. Annex 6 details expected farmer participation, adoption of inputs and incremental output.

4.04 The projections resulting from the model are essentially illustrative, and individual MP areas are likely to vary considerably from the model. On the basis of experience, the projections will be updated and refined each year, and will form the basis of annual plans and financial forecasts for the Program. During negotiations, it was agreed that three months in advance of each fiscal year Government would submit to the Association for its review and approval, plans and financial forecasts for the MP Program for the following year. This would include details of land tenure arrangements in the new MP areas (para 2.13) to enable IDA to make a judgement of the suitability of each new area for development.

B. Detailed Features

Farm Inputs

4.05 Under the Project, the incremental inputs for increasing cereal crop production would be provided. Their purchase by small farmers would be made possible through the extension of credit on reasonable terms. Fertilizer would continue to be the major input, and eventually would be provided to about 50% of all farm lands under cereals. In view of the time lag between purchase of farm inputs (particularly fertilizers), their distribution and sale and loan recovery, permanent working capital is required and has been provided to AIDB for this purpose. Two seed multiplication farms would be operated by EPID under the Project to ensure a supply of improved seed. It is assumed that the use of improved seeds for maize, wheat and teff would lag one or two years behind fertilizer application, but eventually would cover about 40% of the total area cultivated under cereals. Construction of improved farm storage units would increase to 30% of participating farmers

in year 12. Use of these along with pesticides is expected to reduce grain losses to 10%. (These are presently estimated at about one-fifth of the crop). A few improved implements including the mould board plow and spike-tooth harrow developed at CADU would also be available.

Credit

4.06 The Project would provide credit to participating farmers following the present practices outlined in paragraphs 3.08 and 3.09; down payments would continue to be 25%. To emphasize the mutual responsibility of farmers for the repayment of credit, whenever the repayment rate in a sub-area falls below 90%, AIDB in consultation with the Association would consider the suspension of credit facilities. They would take into account local crop failure and other relevant factors.

Rural Roads (Annex 7)

4.07 To facilitate extension work, reduce transport costs between farms and market centers, and encourage farmers' participation in the Program, the Project would include the construction of farm-to-highway roads in MP areas. They would be mainly used for crop movements in the dry season, but would also be capable of taking four-wheel drive vehicles in all but the wettest conditions. The roads would be built to minimum standards and gravelled selectively in weak areas with locally available materials at an average cost of about Eth\$8,000 (US\$3,900) per km. On the assumption that, beginning in the fourth year of its operation, each MP area requires about 10 km of such roads each year, about 550 km would be constructed. This would be phased over the three years of the Project period, building up from about 6% in the first year, to 24% in the second year, and with the balance of 70% in the third year.

4.08 The Project would also provide for the construction of about 600 km of penetration roads to ensure that the Program is not delayed for lack of suitable roads along which new MP areas could be established. These roads would be of similar general standard as the farm-to-highway roads, but gravelled and costing about Eth\$12,000 (US\$5,800) per km. The annual maintenance of both types of road is estimated to cost about Eth\$500 (US\$240) per km. As the cost would be difficult to isolate from capital expenditure and during the Project period would be minimal in view of the phasing of the construction program, maintenance would be included in the Project. Assurances were obtained during negotiations that responsibility for future maintenance would be assumed by the new rural roads organization (para 4.09).

4.09 No organization presently exists for the planning, construction and maintenance of low standard roads serving rural areas such as those to be constructed under the Project. The Government is aware of the importance of rural roads to economic development, however, and it has recently commissioned a study to determine what organization should be given overall responsibility in this area; the results of the study are awaited. Funds are

provided under the Bank Group's Fifth Highway Project to finance the services of two experts to assist the Government in implementing its recommendations. Since actual establishment of the new organization would require careful planning and technical expertise, it is unlikely to be operational before the end of 1975. (Appraisal of a project to assist in its implementation is presently scheduled for 1974). In the interim the Imperial Highway Authority (IHA) would be responsible for rural road development. Under its direction, five construction units responsible for the construction and maintenance of roads in MP areas would be gradually established under the Project. Estimates are that each unit would include two bulldozers and two concrete mixers as well as a grader, roller and loader. The unit would carry out its own minor repairs; major repairs would be undertaken by local suppliers of equipment. Each unit would have a civil engineer and a plant operator/instructor. The units would eventually be absorbed by the newly-established rural roads organization, which would then assume all responsibility (including maintenance) for roads in MP areas. These arrangements were discussed and agreed upon during negotiations.

4.10 The Bank Group's research program includes various studies on the impact of rural roads on economic development. As part of this work, the Institute of Development Research at the Haile Selassie I University in Addis Ababa is under contract to study the Agaro-Chira road being constructed under the Fifth Highway project. The Project would include baseline surveys by the Institute of rural roads constructed in two MP areas and subsequent follow-up surveys and evaluation of benefits in all three study areas, thus assisting in the preparation of future rural road development schemes.

Fund for Marketing Credit

4.11 Grain prices are normally depressed immediately after harvest and farmers find difficulty in obtaining ready markets at reasonable prices for their produce. A fund for marketing credit would be established to provide loans to market centers and cooperatives which would permit payment of advances to farmers against delivery of their crop. Pending sale when prices are favorable, the crop would be held in stores provided under the Project. This would be supplementary to the marketing project now under preparation. Assurances were obtained that before introducing advance payments on crops, full details of the scheme would be submitted to IDA for its approval.

Administrative, Extension and Support Services

4.12 The Project would provide administrative, technical and extension services required to support the MP Program. These would include the total administration and extension services of EPID and, to the extent they meet the incremental needs of the Program, services provided by other agencies: the Cooperative Development Department of the Ministry of National Community Development, the Soil Conservation Division of the Ministry of Agriculture, and the Institute of Agricultural Research (IAR).

4.13 EPID's administrative staff would comprise 50 professionals with responsibility for supervision, accounting, procurement, and personnel management, with about 30 secretaries, clerks and messengers. By the end of the Project period (in mid-1976) the EPID extension services employed in MP areas would include about 900 supervisors, agents, assistant agents, and marketing assistants (including home economics staff) with 190 trainees. The EPID training school at CADU would be enlarged to provide regular in-service training of all field staff. Other training would be provided by existing institutions (para 5.05). Extension staff would be engaged in establishing new MP areas, in providing advisory services to the growing number of farmers participating in ongoing MP areas and in the selection of new observation/demonstration areas. The Project would also provide for vehicles and equipment to support this work, and for the construction of necessary administrative buildings, including a headquarters building for EPID, offices and stores for farm inputs and grain.

4.14 The technical services, including local and expatriate EPID staff to be provided under the Project, would include:

- (a) Agronomy. A team of six agronomists at EPID headquarters would liaise with the IAR and provide technical advice and guidance to EPID's extension staff.
- (b) Animal Husbandry. While EPID could not for some time undertake a large scale animal husbandry program, a team of four experts would be provided to plan livestock improvements suitable for the MP Program. Pilot operations with existing field staff would be conducted and the unit would cooperate with the Livestock and Meat Board and Livestock Division of the Ministry of Agriculture. 1/
- (c) Credit and Marketing. A team of nine experts in EPID would assist the extension staff in the establishment of market centers, the training of marketing assistants, the supervision of grain storage and handling operations, the dissemination of all forms of market intelligence and would advise the extension staff on credit procedures. Pending the grain storage and marketing project, the team would plan and supervise the scheme to provide advance payments on crops (para 4.11). In cooperation with the Economic Research Division of the Ministry of Agriculture, they would also undertake market studies of consumption output and price patterns and trends in planned and existing MP areas.

1/ The Second Ethiopian Livestock Project would provide 48 primary and 6 terminal markets, stockroutes, transport vehicles and slaughter facilities in selected areas.

- (d) Home Economics. A team of three home economics specialists in EPID would give advice to farmers' wives in a few selected MP areas.
- (e) Project Evaluation. A Project evaluation unit would be established at EPID headquarters to evaluate the Program and other projects for which EPID is responsible. The unit would work in consultation with the Institute of Development Research (para 4.10) which would be responsible for studying the impact of rural road development. The exact procedures and guidelines (Annex 8) to be employed for Project evaluation are being discussed with Government.
- (f) Cooperative Promotion. As the Cooperative Development Department has limited staff and facilities, accounting consultants acceptable to the Association would be engaged by EPID, as required, to design a simple bookkeeping system for market centers and Project cooperatives. During negotiations an assurance to this effect was obtained. In addition, the Department would provide support to the MP Program so that cooperatives can be formed in MP areas to take over credit-related functions from EPID. The Department would recruit three inspectors and 10 cooperative assistants annually and EPID would employ six experts under the Project.
- (g) Soil Conservation. Under the Project four soil conservation survey teams, each composed of five specialists, would be established in the Soil Conservation Division to work fulltime in MP areas. They would produce conservation plans, introduce new techniques on demonstration plots and model farmers' fields, and supervise farmers carrying out conservation works.
- (h) Field Trials. The Project includes funds to cover the cost of services to the MP Program provided by the IAR. The Institute would help and advise on demonstrations on model farms and on EPID's trial and demonstration fields, and would carry out the subsequent analysis and interpretation of data. It would also establish experimental sites of about 5 ha each in areas with ecological conditions differing from those within existing MP areas.
- (i) Project Preparation and Planning. Consultant and technical services would be provided to assist Government in the planning of its agricultural programs and the preparation of future agricultural projects.

C. Project Cost (Annex 9)

4.15 The total cost of the Project is estimated at US\$28.9 million, with a foreign exchange component of about US\$12.3 million or 43%. The estimated costs are summarized below:

	----Eth\$ million----			----US\$ million			Foreign Exchange
	Local	Foreign	Total	Local	Foreign	Total	
<u>Farm Inputs</u>	2.97	3.18	6.15	1.43	1.53	2.96	52%
<u>Permanent Working Capital to AIDB</u>	0.84	1.03	1.87	0.41	0.49	0.90	55%
<u>Rural Roads</u>							
Construction and maintenance	3.59	8.37	11.96	1.73	4.03	5.76	70%
Road study	0.23	-	0.23	0.11	-	0.11	-
	<u>3.82</u>	<u>8.37</u>	<u>12.19</u>	<u>1.84</u>	<u>4.03</u>	<u>5.87</u>	69%
<u>Fund for Marketing Credit</u>	1.70	-	1.70	0.82	-	0.82	-
<u>Extension and Support Services</u>							
Salaries	11.20	3.80	15.00	5.40	1.83	7.23	25%
Other operating costs	7.32	2.13	9.45	3.53	1.02	4.55	22%
Equipment & vehicles	0.68	1.31	1.99	0.33	0.63	0.96	66%
Buildings	2.02	0.50	2.52	0.77	0.24	1.21	20%
	<u>21.22</u>	<u>7.74</u>	<u>28.96</u>	<u>10.23</u>	<u>3.27</u>	<u>13.95</u>	23%
<u>Project Preparation and Planning</u>	-	2.07	2.07	-	1.00	1.00	100%
Sub-total	30.55	22.39	52.94	14.73	10.77	25.50	42%
<u>Contingencies</u>	<u>3.78</u>	<u>3.16</u>	<u>6.95</u>	<u>1.83</u>	<u>1.48</u>	<u>3.32</u>	45%
TOTAL	<u>34.33</u>	<u>25.55</u>	<u>59.88</u>	<u>16.56</u>	<u>12.31</u>	<u>28.87</u>	43%

Costs are given in 1972 prices and have been adjusted to reflect recent currency realignments. The estimates include average cumulative contingencies of about 5% annually. Taxes and duties account for about 2% of total costs.

D. Financing

4.16 The financing of Project costs would be shared in the following amounts and proportions:

	US\$ million				<u>Total</u>
	<u>Farmers</u>	<u>Govt.</u>	<u>SIDA</u>	<u>IDA</u>	
Farm Inputs	0.75	-	-	2.21	2.96
Permanent Working Capital to AIDB	-	0.20	-	0.70	0.90
Rural Roads	-	1.47	-	4.40	5.87
Fund for Marketing Credit	-	0.10	-	0.72	0.82
Extension and Support Services	-	2.79	2.17	8.99	13.95
Project Preparation and Planning	-	-	-	1.00	1.00
Unallocated	-	0.29	-	2.98	3.37
	<u>0.75</u>	<u>4.95</u>	<u>2.17</u>	<u>21.00</u>	<u>28.87</u>
Foreign costs	-	-	2.17	10.14	12.31
Local costs	0.75	4.95	-	10.86	16.56

4.17 The IDA credit of US\$21 million would be on standard terms to the Government and would finance about 82% of the foreign costs and about 66% of local costs, or 73% of total Project costs. The percentage of IDA financing is considered appropriate in the context of Ethiopia's need for foreign exchange. The contribution of SIDA (US\$2.17 million equivalent) represents about 8% of total Project costs, and assumes that SIDA's technical assistance to EPID would continue throughout the Project period. The Association has discussed with SIDA the extension of its technical assistance agreement with EPID which expires approximately one year prior to Project completion, on July 7, 1975. This matter will be reviewed by the Board of SIDA later this year. The farmers' contribution to Project costs, amounting to about 3% of the total, US\$0.75 million, represents the down payment from those farmers purchasing agricultural inputs on credit, and assumes that some participating farmers would pay in full. Funds for farmer credit will be on lent to AIDB at 7-1/4% for a term not exceeding 15 years (the rate at which AIDB currently borrows from Government). The signing of a subsidiary loan agreement between Government and AIDB would be a condition of effectiveness of the Credit.

E. Procurement

4.18 Imported fertilizer (US\$2.8 million), road construction equipment (US\$2.7 million) and extension equipment and motor vehicles (US\$0.9 million) would be procured by international competitive bidding in accordance with Bank/IDA Guidelines. During negotiations, an assurance was obtained that orders for fertilizer, equipment and vehicles would be grouped whenever possible to allow for international competition. Those orders of less than US\$30,000 would follow Government procurement procedures. Construction of EPID's headquarters building (US\$0.2 million) would be by competitive bidding on the basis of local advertisement; construction of other buildings and of roads, which in view of their small size, remoteness and scattered nature would not attract foreign contractors, would be by local contract or force account. Farm implements (US\$100,000) would be locally advertised and procured over a period of three years in accordance with Government procedures, which are satisfactory. Improved seeds not obtainable locally (US\$90,000) would, in view of the special nature of seed required, be imported directly from Kenya. Appropriate assurances that these procedures would be followed were obtained during negotiations. Assurances were also obtained that draft tender documents for all contracts exceeding US\$30,000 would be submitted to IDA for approval before invitations are issued, and that bid analysis and recommendations for award would be sent to IDA for comment before award.

F. Disbursements

4.19 Disbursement of funds from the Credit account would be on the following basis:

- (a) 100% of foreign costs and 50% of local costs of imported incremental farm inputs, permanent working capital related to purchase of fertilizers, road construction equipment;
- (b) 75% of total expenditure for locally procured farm inputs, cost of road construction, construction of buildings, equipment and vehicles and the cost of EPID and other support services except for those financed by SIDA;
- (c) 100% of total expenditure for the rural road study; and
- (d) 100% of foreign expenditure or 75% of total expenditure for project preparation and planning consultants.

Disbursement on all items would be made against import documents and appropriate records of expenditure certified by the Project Director and the Chief Accountant

who would prepare the claims. The estimated schedule of disbursements is shown in Annex 10. Any funds remaining on the Credit account upon completion of the Project would be used, at the Association's discretion, for the continuing development of the MP Program.

G. Accounts and Audit

4.20 EPID has a double entry accounting system operated by an accountant provided by SIDA. The accounts of AIDB are satisfactory and well maintained. Accounting systems for the Cooperative Development Department and other Government departments associated with the Project are satisfactory.

4.21 The accounts of EPID and AIDB are presently audited by a private firm of auditors and those of the Cooperative Development Department by the Government Auditor-General. During negotiations assurances were obtained from Government that the accounts of EPID and AIDB would continue to be audited by independent auditors acceptable to IDA, and that such audited accounts would be submitted to IDA annually no later than six months after the closing of the financial year.

V. ORGANIZATION AND MANAGEMENT

A. Administration

5.01 Overall responsibility for Project execution would rest with EPID which would continue to be responsible for the MP Program (Chapter III). Specifically it would administer and supervise the Program, provide extension and technical services in MP areas, arrange for the supply of farm inputs, act as AIDB's agent in the field for the supply of farmer credit, and monitor progress of the Project and Program. Pending Government's proposals for administering the fund for marketing credit, (para 4.11) this responsibility would also rest with EPID.

5.02 EPID would coordinate the work of institutions with responsibility for specific services:

- (a) AIDB would purchase and deliver agricultural inputs and provide credit to farmers (para. 4.01);
- (b) Once established, the agency given responsibility for rural roads would construct and maintain roads in MP areas; in the meantime, this responsibility would be assumed by IHA (para. 4.09);

- (c) CADU would provide in-service training facilities for marketing staff (para. 4.13);
- (d) Institute of Development Research would carry out the rural road study (para. 4.14(e));
- (e) Cooperative Development Department would encourage the formation of cooperatives in MP areas and provide the necessary administrative services for these to operate efficiently (para. 4.14(f));
- (f) Soil Conservation Division would plan conservation works required in MP areas and instruct farmers in the use of sound soil conservation practices (para. 4.14(g)); and
- (g) IAR would provide research and seed development services (para. 4.14(h)).

EPID would also collaborate with the Livestock and Meat Board, the Dairy Development Agency, the Grain Board, the Grain Corporation and the Ethiopian Standards Institute in connection with services these agencies render to the MP areas.

5.03 The head of EPID, a Minister of State, working through his deputies (one expatriate, one Ethiopian), would be responsible for the Project. It is the Government's intention to use the existing interministerial committee to coordinate EPID's work with other Government authorities. The committee is comprised of: Minister of Agriculture (Chairman); Ministers of Finance, of Interior, of Land and Administration, of National Community Development and Social Affairs, and of Public Works and Water Resources; Head of the Planning Commission (in the Prime Minister's office); and a representative from the Prime Minister's office. Other members would be co-opted as required.

B. Staffing

5.04 EPID. Senior Ethiopian staff would fill the posts of Deputy Director, the heads of the Liaison and Extension Divisions and the chief accountant. A number of senior posts (some 14) would continue to be filled by SIDA (para. 4.17) including: a second Deputy Director, head of the Common Services Division (finance controller), assistant head of the Extension Division (senior agronomist), assistant head of the Liaison Division (senior economist), and senior specialists within the evaluation, agronomic, animal husbandry, credit and marketing, cooperative promotion, and accounting groups. Each expatriate would have a local counterpart. It was agreed during negotiations that the Association would be consulted before appointments were made to the posts of deputy head of EPID, the heads of the Extension and Common Services Divisions and the chief accountant.

5.05 EPID's incremental field staff requirements include (a) 15-20 area supervisors, normally graduates from Alemaya College (25% of output); (b) 40-70 extension agents - diplomates from Ambo and Jimma agricultural schools (about half of output); (c) 45-65 assistant agents - initially from Bako Mission Agricultural School but later from the three training schools to be established under the Third IDA Education Project; and (d) 65-75 marketing assistants from Awasa Cooperative Training School and EPID's training school (para. 4.13).

5.06 AIDB. Staffing of AIDB is adequate to support the Project. AIMS, on the other hand, is a comparatively new organization and for the present will be dependent on AIDB for support staff. Its future role would be defined by the consultancy study on agricultural credit (para. 2.17).

5.07 Cooperative Development Department, and Soil Conservation Division (paras. 2.18, 4.14 (f) and (g)). The additional staff required to support the MP Program would be recruited locally.

5.08 Road Construction Units: One civil engineer and one plant operator/instructor would be required for each of the five projected rural road construction units (para. 4.09).

VI. PRODUCTION, PRICES AND FARMER BENEFITS

A. Yields and Production (Annex 11)

6.01 Four years of trials under the country-wide FAO fertilizer program, results from the Institute of Agriculture Research, and two years of EPID's country-wide tests and demonstration, have shown that the introduction of simple, proved inputs such as those included under the MP Program bring about substantial increases in grain yields. The use of fertilizer, improved seeds and improved harrow is estimated to increase yields as follows.

	Production (quintals/ha)			
	<u>Wheat</u>	<u>Teff</u>	<u>Maize</u>	<u>Sorghum</u>
Without improved inputs	9.0	7.0	15.0	12.0
With fertilizer	13.8	11.8	26.0	22.0
With fertilizer and improved seed	16.8	14.8	36.0	-
With fertilizer, improved seed & harrow	19.6	-	-	26.8

6.02 In translating improved yields into production increases for the purpose of estimating Project benefits, it has been assumed that farmers would increase the proportion of land devoted to cereals from 70% to 75% but that the total cultivated area would remain the same. (Although the use of fertilizer would, in fact, allow the reduction of land kept fallow.) Given these assumptions the incremental production of grain from the MP Program is expected

to increase from 62,000 ton in 1975 through 309,000 ton in 1981 to 427,000 ton in 1987. Projecting present trends of a 2% annual increase, the gross national production in 1975 would increase from 6.3 million ton to 8.1 million ton in 1987. Incremental production of the MP Program would thus rise from 1% of gross national production in 1975 to 5% in 1987. The residual effects of fertilizer on unfertilized crops such as barley, pulses and legumes, have not been taken into account.

B. Markets and Prices (Annex 2)

6.03 There is no national grain market in Ethiopia (para 2.09); poor communications and marked regional disparities have resulted in a number of semi-autonomous markets scattered throughout the country, of which Addis Ababa ^{1/} is the largest. These have contributed to wide regional price differences and severe price fluctuations. Incremental production will therefore be confronted with a wide variety of demand/cost conditions as it comes on the market. Since 1946 cereal exports have declined sharply and imports of wheat and flour have risen. A cereal deficiency of between 300,000 and 400,000 tons is projected by 1980.

6.04 Future cereal production is not expected to meet total national demands. However, as production rises, there is expected to be some decline in prices which would particularly affect coarse grains (maize, sorghum). Farmers will react by growing more wheat and over the long term the effects would not be a serious factor.

^{1/} Prices in this market were used in estimating producer prices for major cereals.

C. Farmer Benefits

6.05 The following table, based on projections under the model, illustrates the expected increases in farmer income under the Program. More details are shown in Annex 11, Tables 6, 7, and 8.

Output and Cost per Hectare of Cereal
on Four Representative Farms
(with and without innovations)^{/1}

	<u>Farm A</u>	<u>Farm B</u>	<u>Farm C</u>	<u>Farm D</u>
<u>Breakdown of Cereal Area (%)</u>				
Teff	50	15	30	30
Barley	25	25	20	5
Wheat	10	-	20	5
Sorghum	15	25	15	20
Maize	-	35	15	40
<u>Gross Output Value (Eth\$)</u>				
Without	126	122	127	130
With	250	255	273	289
Incremental	125	133	137	159
<u>Cash Cost of Production (Eth\$)</u>				
Without (no debt service)	10	10	10	10
With (including debt service)	53	71	63	80
Incremental	43	61	53	70
<u>Net Output Value (Eth\$)^{/2}</u>				
Without	116	112	117	120
With	197	184	210	209
Incremental	81	73	83	89

Note: Farm A is representative of farms in Begemdir, Gojam, Welo and Tigre provinces.
Farm B is representative of farms in Sidamo, Gemu-Gofa and Hararge provinces.
Farm C is representative of farms in Shewa province.
Farm D is representative of farms in Wellega, Kefa and Illubabor provinces.

^{/1} Based on present prices; for effect of projected price decreases see Annex 11, Tables 6, 7 and 8.

^{/2} Before home consumption.

6.06 At current prices, farmers can substantially increase their incomes by adopting innovations. The income of sharecropping tenants would be between one-half and two-thirds of the above, assuming that landlords - to their own benefit - share the cost of inputs. Grain prices would have to fall by about 60% before the increased cost of inputs would exceed the expected benefits. There is, therefore, little risk that grain prices would fall sufficiently to jeopardize the success of the Program. To the extent, however, that individual MP areas deviate from the assumptions made under the model, the effect of price fluctuations will vary. Consideration was given to the introduction, under the Project, of a price support program to minimize the effect of price fluctuations. However, the element of risk in the short-term is not considered so serious as to require special, and necessarily limited improvements pending the introduction of a comprehensive market project planned for 1975. The fund for marketing credit would, however, go some way toward stabilizing prices. (para 4.11).

6.07 Farmers net incomes would also be increased by the reduction of farmers' dependency on high interest loans. The impact could be substantial. As an example, interest on a loan of Eth\$35 for, say, six months at 10% a month would be Eth\$21, largely offsetting the average farmer's cash income. While the savings to the farmer would be largely at the expense of the money-lender/ grain trader, the overall income situation of the grain traders would not necessarily deteriorate because of the larger volume of output.

D. Government Budget and Foreign Exchange (Annex 12 and 13)

6.08 The implications of the MP Program for the Ethiopian Government's budget have been projected up to 1992. Government revenues from the MP Program will arise mainly from (a) taxes on the inputs for the Project, (b) taxes on the incremental net output and (c) the margin on the interest on the loan to AIDB.

6.09 The MP Program would result in a substantial increase in recurrent Government expenditure (mainly in respect of staff salaries and road maintenance) which would not be matched by incremental revenues. The resulting deficit is projected to reach a maximum of about Eth\$25 million (US\$12.1 million) in the mid-seventies, leveling off to about Eth\$12 million (US\$5.8 million) per year after 1985. This compares with total public outlays for agriculture in 1971/72 of Eth\$40 million (US\$19.3 million), amounting to only 6% of total Government expenditure. Although further external assistance may be anticipated for the continued financing of the MP Program, Ethiopia will in due course be faced with significant increases in budgetary demands to pay for it, entailing the need to increase revenues and/or reallocate existing resources. It is considered that the additional funds required should be within the capacity of Government.

6.10 Interpretations of the Program's net foreign exchange impact depend on assumptions concerning the foreign exchange benefits of incremental cereal

production. Gross foreign exchange costs will rise rapidly from about US\$2.5 million in 1974 to a stable level of about US\$9.6 million annually from 1983 onwards. Supply and demand projections for the more desirable food grains (wheat and teff) show an increasing shortfall which will only partially be met by incremental MP production. If therefore it is assumed that the total incremental output of grains would replace imports, the gross foreign exchange value would amount to US\$1.8 million in 1974, increasing to about US\$19 million annually after 1985. It would be realistic to assume that one half of Ethiopia's cereal deficiency would be imported. In such circumstances, with the Program the net foreign exchange savings in 1980 would be US\$1.3 million and US\$5.3 million in 1985.

VII. BENEFITS AND JUSTIFICATION

7.01 Benefits have been calculated for the MP Program as a whole through the mid-1980's, as it would not be possible to calculate separately the benefits attributable to the three-year segment financed by the Project. The main benefits of the Program would result from improved grain yields on some 600,000 small operator-owned and tenant farms, and from reduced storage losses on about 150,000 such farms. The Program is designed to raise farmer incomes. At present grain prices and if all available inputs are adopted, an owner-operator cultivating 1 ha could raise his net cash income from subsistence to some Eth\$80 (US\$39) within two or three years. On a 3 ha farm he could double his present net cash income of Eth\$150 (US\$72). In the case of tenants, these benefits would be shared with their landlords. However, although the landlord would receive some benefit from the Program, the income effects would be concentrated on the least favored segment of the population. In addition to the more intensive use of farm labor, there would also be employment effects arising out of the road construction program.

7.02 Other benefits that are not quantifiable include:

- (a) Psychological effect of the Project on the whole agricultural sector, in particular the demonstration effect on other farmers;
- (b) Establishment of a nationwide extension service and rural road services; and
- (c) Development of cooperatives and a small farmer credit system.

7.03 The Project faces some risks: EPID has limited experience on which to base its planned rapid expansion; a rural roads organization needs to be established; the market system must be improved; and present land tenure arrangements are unsatisfactory. It is unlikely, however, that any one of the risks would of itself jeopardize the Project. In view of

the potential benefits and the fact that the MP Program offers the best means available of raising a substantial part of the rural population above subsistence level, the risks are considered worth taking.

7.04 The economic return of the MP Program (Annex 14), of which the Project finances a three-year segment, is estimated at 15%. ^{1/} An increase of 20% in the cost of inputs would lower the return to 10%, while an increase of 10% in grain prices would raise it to 20%; a combination of these two factors would give an economic return of 16%.

VIII. RECOMMENDATIONS

8.01 During negotiations, agreement was reached on the following principal points:

- (a) EPID would submit for IDA's approval, at least three months in advance of each financial year, the plans and financial forecasts for the Minimum Package Program for the next year together with updated long-term projections, and details of land tenure arrangements in each new MP area (para. 4.04);
- (b) Construction and maintenance of rural roads in MP areas would be undertaken by IHA until the creation of an organization with this specific responsibility; IHA would also ensure that the road construction units established under the Project would employ suitably qualified engineers to oversee road construction and maintenance and would obtain prior approval from the Association of road design standards (paras. 4.08 and 4.09);
- (c) Before introducing advance payments on crops, full details of the scheme would be submitted to the Association for its approval (para 4.11);
- (d) Procurement of fertilizers, equipment and vehicles in orders exceeding \$30,000 would be by international competitive bidding procedures in accordance with IDA guidelines; orders for these items would be grouped whenever possible to allow for international competition; EPID headquarters building would be constructed after competitive bidding on the basis of local advertisement; other buildings would be constructed following Government procurement procedures; roads would be constructed by force account. Other items required by the Project would be procured following Government procedures (para. 4.18);

^{1/} Assuming incremental family labor at zero cost.

(e) The Association would be consulted before appointments were made to the posts of deputy head of EPID, heads of the Extension and Common Services Divisions and chief accountant. (para. 5.04).

8.02 Condition of effectiveness would be the signature of a subsidiary loan agreement between Government and AIDB (para. 4.17).

8.03 The Project is suitable for an IDA Credit of US\$21 million to the Imperial Ethiopian Government.

ETHIOPIAAGRICULTURAL MINIMUM PACKAGE PROJECTAgriculture in the Economy

	<u>1967</u>	<u>1970</u>
Agricultural GDP (Eth\$ million) as % of total GDP	1,581 ^{1/} 68 ^{1/}	1,858 ^{2/} 56 ^{2/}
Agricultural Labor Force (millions) as % of total Labor Force		9.5 85
Agricultural Exports (Eth\$ million) as % of total Exports	246 97	286 93
Agricultural Imports (Eth\$ million) as % of total Imports	39 10.9	42 10
Agricultural Trade Balance (Eth\$ million)	207	244
Public Sector Investment in Agriculture (Eth\$ million) as % of total Public Sector Investment		312 ^{3/} 11 ^{3/}

1/ 1961
2/ 1969
3/ 1968-73

Source: IBRD Report No. PA-143a, Agricultural Sector Survey,
January 15, 1973

February, 1973

ETHIOPIA

AGRICULTURAL MINIMUM PACKAGE PROJECT

Main Features of Agricultural Sector, 1970

<u>Total Land Area</u> (million ha)	122
Agricultural Area	79
Crop Land	10.3
Cereals	7.3
<u>Number of Farms</u> (millions)	3.0
Less than 5 ha (%)	99
Less than 1 ha (%)	68
<u>Value Agricultural Output</u> (Eth\$ million)	1,887
Livestock Products	554
Crops	1,340
Cereals	642
<u>Fertilizer Use</u>	
Quantity (tons)	13,500
Value (Eth\$ million)	2.2
<u>Farm Machinery</u>	
Tractors (number)	2,500

Sources: IBRD Report No. 143a, Agricultural Sector Survey, January 15, 1973
National Sample Survey Reports

February 1973

ETHIOPIA

AGRICULTURAL MINIMUM PACKAGE PROJECT

Composition of Crop Production

	<u>Quantity(tons '000)</u>		<u>Value(Eth\$million)</u>		<u>Value(%)</u>
	<u>1967</u>	<u>1970</u>	<u>1967</u>	<u>1970</u>	<u>1970</u>
<u>Cereals</u>	3,538	3,868	590.7	644.0	48.0
Teff	986	1,030	197.1	206.0	15.4
Wheat	503	556	100.5	111.2	8.3
Barley	753	819	105.4	114.7	8.5
Maize	656	726	91.8	101.7	7.6
Sorghum	628	727	94.2	109.1	8.1
Other	12	10	1.7	1.3	.1
Coffee	150	164	179.4	196.7	14.7
Ensete	449	477	26.9	28.6	2.1
Oilseeds	368	448	83.3	102.9	7.7
Pulses	501	543	91.2	98.9	7.4
Vegetables	459	496	50.8	54.8	4.1
Industrial Crops	879	1,162	46.0	54.4	4.8
Straw	n.a.	n.a.	74.0	76.3	5.7
Other	163	180	67.4	73.3	5.5
Total			1,209.7	1,339.9	100.0

Source: IBRD Agricultural Sector Survey, January 15, 1973

February 1973